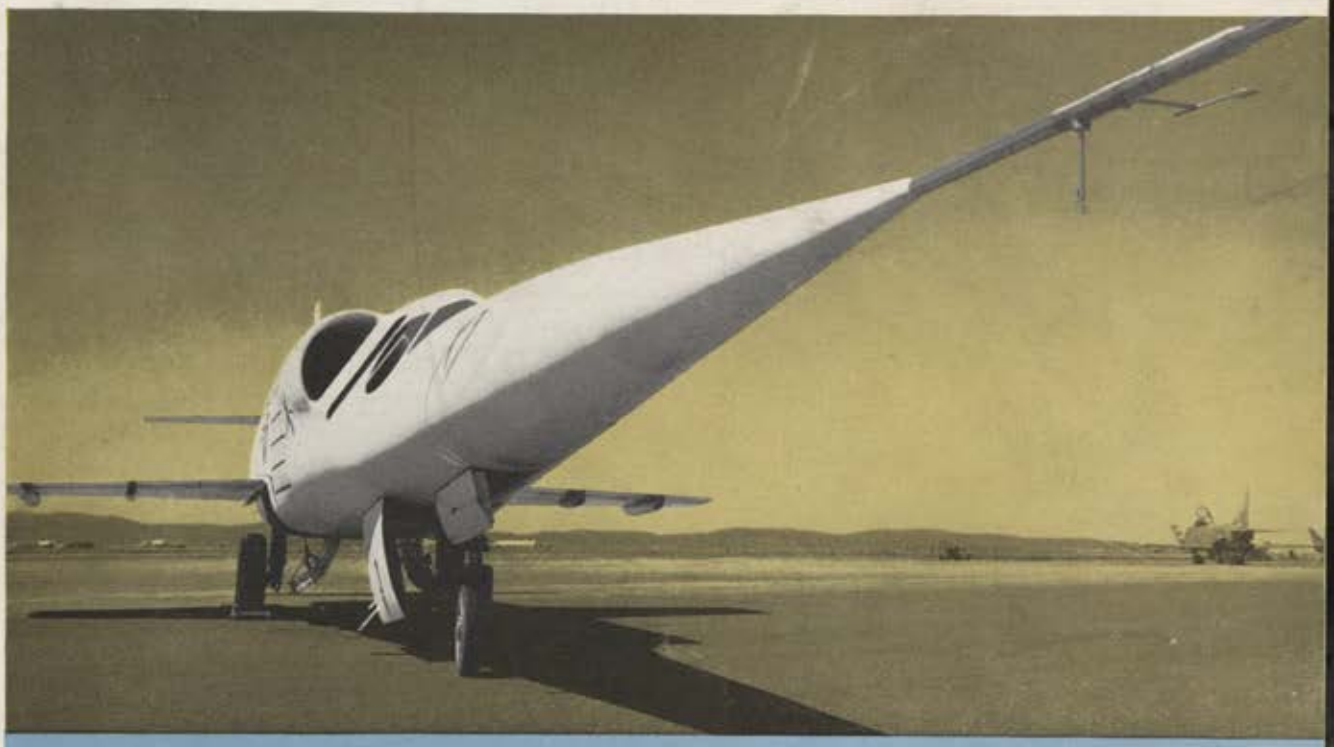
AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

January 1956 • 35c



Strange Bird of the American Desert

THE AF'S FLIGHT TEST CENTER AT EDWARDS AFB

ALSO IN THIS ISSUE:

The Man Who Put the Squeeze on Aircraft Design

Why a Ready Reserve?

All in a day's work for TAC

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CLOSE AIR SUPPORT

INTERDICTION

TROOP CARRYING

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TACTICAL RECONNAISSANCE

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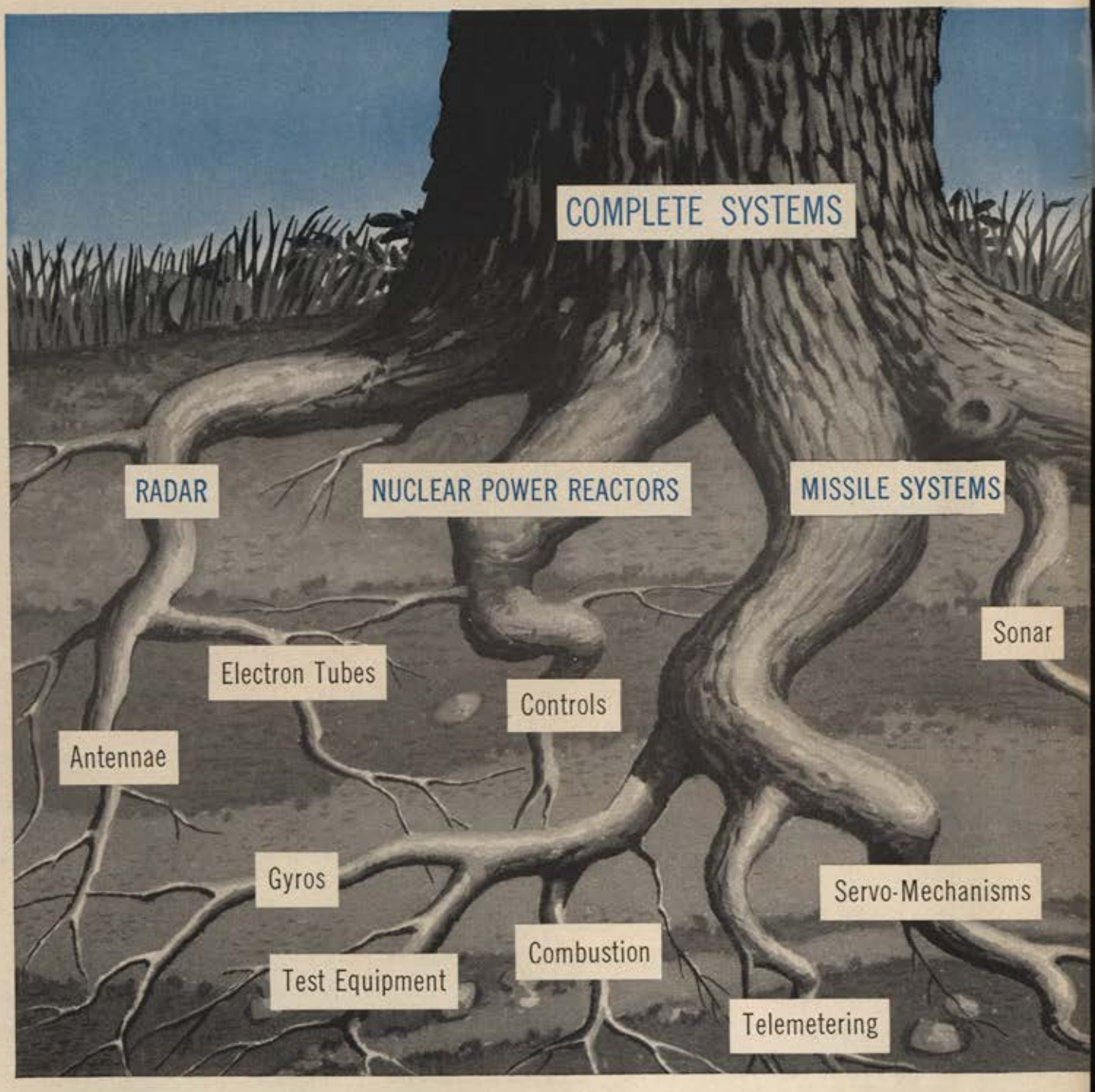

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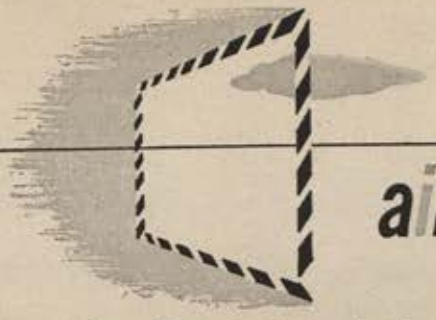

air mail

Survival Insurance

Gentlemen: I've just finished Ed Mack Miller's "The Hike of the Horrible Hunger" and was very impressed by this fine article. As with every training phase, "the walking Air Force" probably has more than its share of gripes, but when the throttle jockey *has* to walk out he will be more than just thankful for his nine-and-a-half days on the hoof.

This may sound like copy material, coming from a guy who hasn't set foot in a military airplane since May of 1943, an ex-Marine to top it off, but a lot of guys didn't get back then that could have, with the right training and knowledge of the few possessions we carried. When we bailed out, our equipment was usually a "Mae West," a shark knife, a .45, and what knowledge we had picked up from a couple of survival pamphlets—and the "smart" thing to do was bury your chute. I don't know how the Air Force handled survival training then, but there weren't any more of them walking (or swimming) out of those Solomon Islands than Marine or Navy pilots and crews. When crews bailed out they spent the rest of the war in Japanese POW camps, or they didn't get back at all.

The book *Beyond Courage* is a perfect example of the difference in your chances of survival with the right training. Don't expect to use this training every day, but learn it well. It may mean the difference between whether you spend tomorrow eating rice—or planting it!

Being the only Marine in a strictly Air Force family, my home life during the war years became fairly warm. I took a lot of good-humored ribbing from family and friends, but enjoyed it just as I enjoy being able to read AIR FORCE Magazine every month. I wonder how many other ex-Marines belong to AFA? Probably a lot more than most members suspect.

Although my flying is strictly confined to civilian life, I have continued to see that my ship carries some kind of survival equipment at all times. Walking out is a big problem in my kind of flying, too. Probably tougher, because we civilian pilots have no compulsory training along this line.

Keep up these articles and maybe a few of us who learned a little from your efforts will be around next issue.

Ted Kuykendall
Texarkana, Tex.

That Starfire Jinx

Gentlemen: Seems to me the F-94C Starfire on page 63 of the November issue is an earlier F-94A or B.

Byron Rosenberg
Bronx, N. Y.

Gentlemen: Have just read your November issue which as usual was full of good reading material.

Not meaning to throw stones, but have noted in your article on page 63, entitled "The Air Gunnery Meet," that the F-94Bs involved were repeatedly referred to as Starfires. To my knowledge the only plane to have this name is the F-94C, which is somewhat different from the F-94B. Am sure you are aware of this, and am also sure that I am perhaps the umteenth one to have made comments on this. As aforementioned, not meaning to throw stones, just a friendly quip.

Gilbert V. Dolloff
Somersworth, N. H.

● *Our captions were wrong (see below) but not our designation. The name "Starfire" was coined at about the time the "C" model of the F-94 appeared and was applied to the earlier "A" and "B" models as well as the "C." See below as well for some of the differences between the "C" and earlier models of the F-94.—The Editors.*

Gentlemen: You have goofed again! The so-called F-94C Starfire on pages 63 and 64 of your November issue are not F-94C Starfires. They are F-94B Starfires.

The principal difference externally is that the F-94C has a bullet-shaped nose armed with twenty-four 2.75 Mighty Mouse rockets which are radar fired and it has no machine gun armament at all. The F-94B, however, has the nose that is pictured in the article in the November issue and it is armed with four .50 caliber machine guns mounted in the nose. It has no rocket armament at all.

The main difference internally are that the F-94B is powered by a 4,600-pound thrust Allison J-33-A-33 turbojet plus an afterburner. The F-94C is powered by a Pratt & Whitney J-48-P-5 turbojet rated at 6,250 pounds static thrust, 8,000 pounds of water injection and 8,750 with afterburner.

Quite a difference, eh!

Fred Zendell
Toronto, Canada

● *Reader Zendell is right about everything except armament. The F-94C has both the rockets mounted in its nose plus optional wing pods, each containing an additional twelve 2.75 FFAR rockets. The "B" also has wing pods with a total of twenty-four rockets. These pods, the Air Force says, were a "retrofit," that is, added after the plane was in production.—The Editors.*

Silent Saucer

Gentlemen: The recent USAF announcement that Avro has a contract to build what looks like a "flying saucer" overlooked one very interesting characteristic of this aircraft, related to the "Coanda Effect" on which its operation is based. This was described on pp. 456-465 of the *Proceedings of the Fifth International Congress for Applied Mechanics*, J. P. denHartog and H. Peters, eds., (John Wiley and Sons, N. Y., 1939). One

(Continued on page 7)

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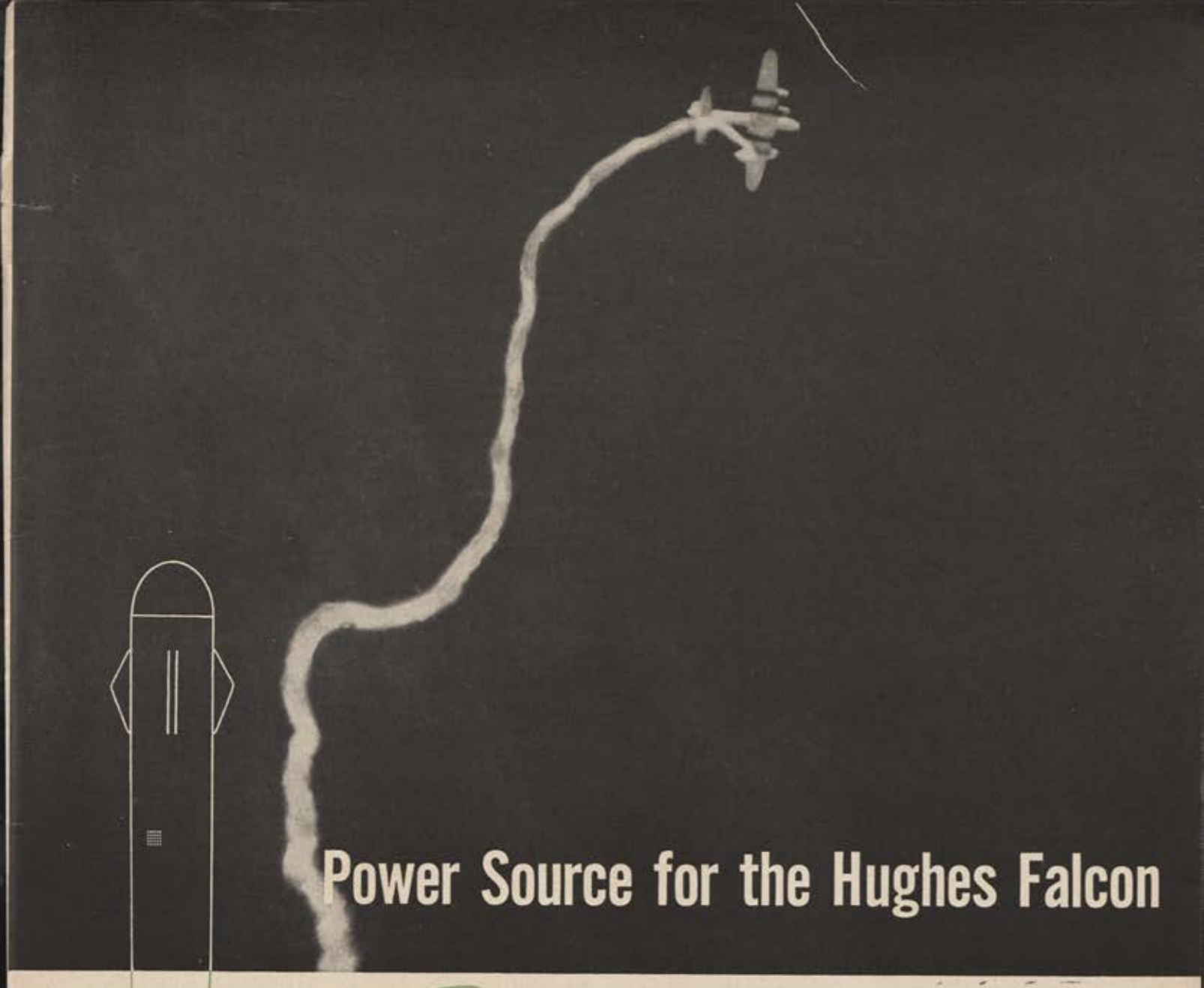
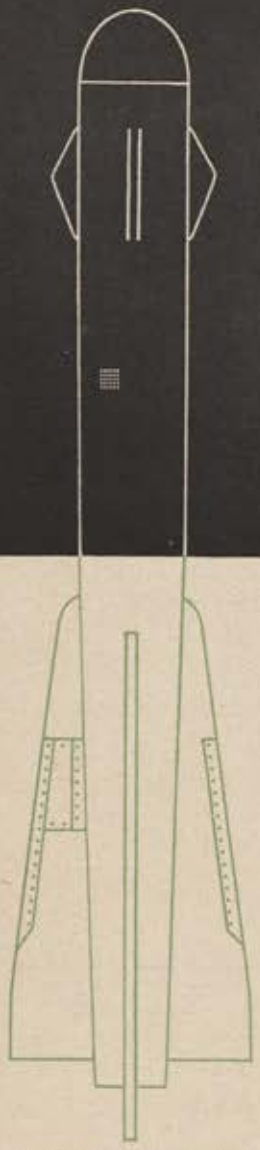


Power Source for the Hughes Falcon



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The Falcon, designed and built by Hughes Aircraft for the United States Air Force, is one of the smallest air-to-air guided missiles in production. It is launched from interceptor planes and is capable of pursuing and destroying enemy bombers taking evasive action.

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"For Want of a Nail..."

For want of a nail the shoe is lost,
for want of a shoe the horse is lost,
for want of a horse the rider is lost.

George Herbert's statement applies to electronics today as it did to riders three centuries ago. The point may be illustrated by considering a vital electronic unit made up of thousands of components. If the least of these components fails, the whole unit may fail—and with it a strategic military mission.

The problem of *reliability* is becoming increasingly important as the science of electronics advances. "Black boxes" are hard pressed to perform more complicated tasks with increasing efficiency. And at the same time, the requirements call for smaller dimensions. Notwithstanding environmental extremes of an order hitherto unknown, every resistor, capacitor and relay *must* perform *reliably*. Each "nail" is critical.

That is why RCA is continuing its vigorous search for ways and means to increase the reliability of every component in an electronic unit. This program never ceases. It follows through from design to field evaluation. Everything learned is immediately applied to current development and production.

In seeking a degree of electronic perfection never before attained, RCA joins hands with others in this field. This matter of *reliability* is an industry challenge to be met by ingenuity, brain power and engineering knowledge wherever it is found.

DEFENSE ELECTRONIC PRODUCTS
RADIO CORPORATION of AMERICA
CAMDEN, N.J.

significant application of the Coanda nozzle was its use as a motorcycle engine muffler or silencer. Not only did it silence the exhaust, but the back pressure was less than for free discharge conditions!

This indicates that the Avro saucer will probably be remarkably silent in operation. This feature is a further example of the astounding prescience of the great number of saucer observers who since 1947 have not only predicted the shape and performance of the Avro craft, but have also almost invariably remarked on the amazing silence of "saucers" in flight.

Leon Davidson
White Plains, N. Y.

Author's Opinion

Gentlemen: It has been brought to my attention that some of your readers may consider that my article "Winning Tomorrow's War" in your December issue reflects the views of the Air Research and Development Command. I would like to make it clear that the opinions expressed therein are my own, and do not represent those of ARDC or the USAF.

Richard D. Coons
Baltimore, Md.

Ace Nowotny

Gentlemen: Reference your July and October "Air Mail" letters on Maj. Urban L. Drew. The October letter wondered whether Major Drew was actually the American pilot who shot down the very famous Maj. Walter Nowotny of the German Luftwaffe.

Nowotny was killed on November 8, 1944 (Galland in his book was one month and one day in error), six kilometers north of Bramsche, while flying an ME-262. Nowotny had just attacked a bomber stream which was protected by Mustangs and his transmissions are quoted: "Made just the third kill . . . left jet has failed . . . been attacked again . . . been hit. . . ." His following words were not understood. Seconds later a screaming whistle was heard by ground observers and a burst of flames seen. Nowotny did not get away from his falling airplane. Source: German Luftwaffe records and 1st Lt. Hans Dortenmann, who was in charge of twelve Staffel Jagdgeschwader 54 on that day and who was awaiting Nowotny's instructions to take off.

Therefore, since records show Major Drew made his two kills on the seventh day of October 1944, he was one month and one day ahead of the fatal day for Nowotny.

Also, please note that Major Nowotny was not exactly Germany's (or

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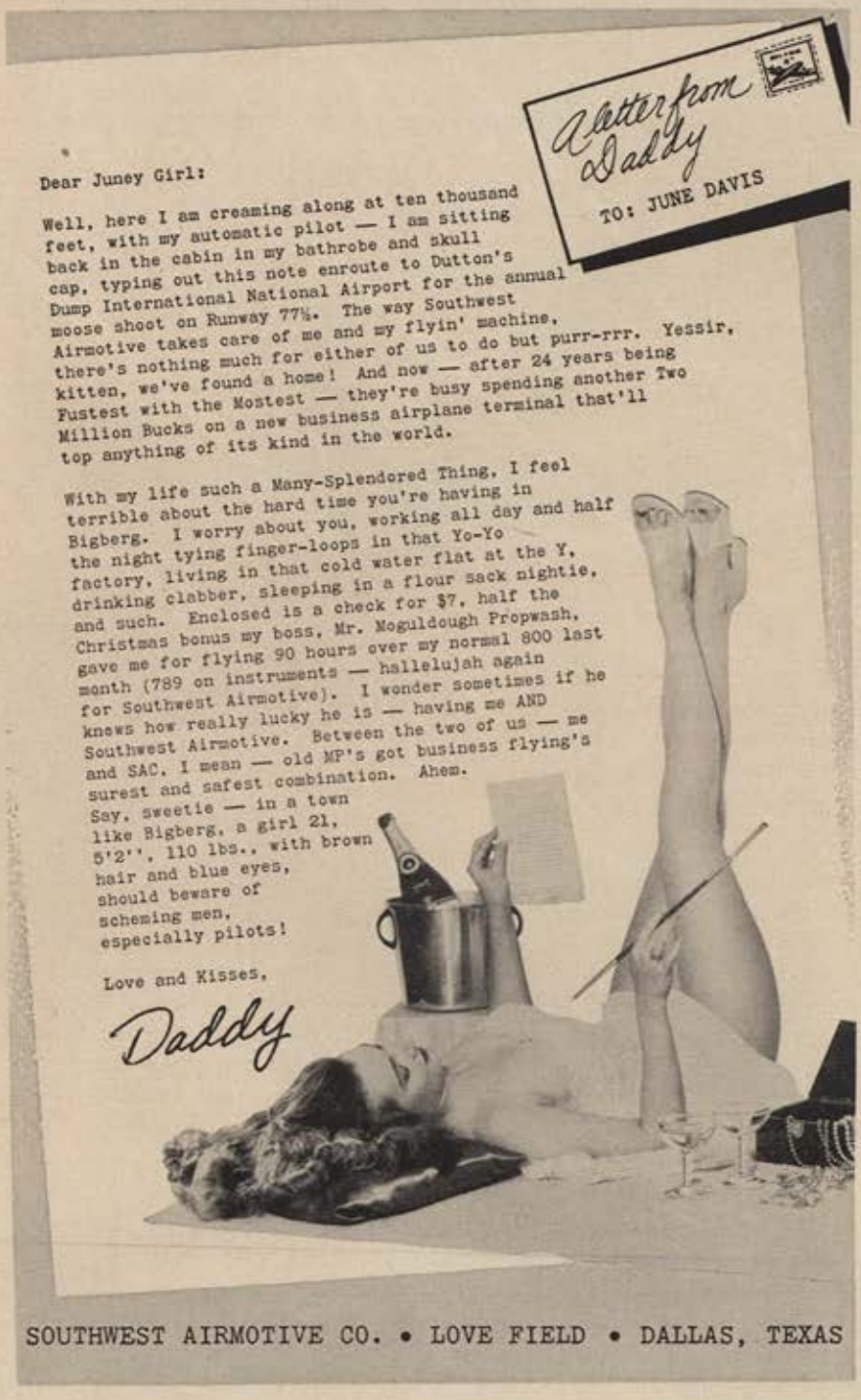


AIR MAIL — CONTINUED

the world's, for that matter) greatest ace. He was number *six* in rank with 258 confirmed kills. Erich Hartmann (Maj.) of J/G 52 was and is the number one fighter ace with 352 confirmed kills. He is alive today, released by the Russians on October 21, 1955.

Col. R. F. Toliver
APO, New York, N. Y.

Gentlemen: I don't know how accurate this info is, but according to *The Big Show*, the diary of Pierre Clostermann, a French fighter pilot, the ace Nowotny was shot down by one of his men. The trick to shooting down ME-262s was to wait around in their Tempests near the airfield, and when a jet came in to land, get him as his undercart was down. Nowotny was supposedly killed this way.

L. McVicker
W. Cheshire, Conn.

War of Ideas

Gentlemen: Re Monroe Schaff's letter in the November issue—being against Communism is about the safest stand in the US today. Being against it in Russia would take more courage.

But opposing the existence of the Communist *Party*, as Mr. Schaff seems to do in urging the AFA to "come out flatfooted against it," is scarcely the time-proven American and Democratic way to handle its members, its sympathizers and its program. This is a war of ideas, and this is the ground on which the Communist Party must fight. If we propose that the party be outlawed or restricted we are saying in effect: "Your arguments are so much better than mine that I cannot answer them, so—shut up!" I, for one, am not willing to make such an admission. I hope the AFA never finds itself, by motion of some unthinking and overzealous member, in such a position.

Come to think of it, isn't that precisely the way the Russians handle the opposition? We ought to *be* different, not just say we are.

Mr. Schaff makes a common error in linking Communist infiltration with the Communist Party. Law enforcement agents concerned with the problems of infiltration, espionage, and sabotage know that party members do not engage in such activities. They would be too easily traced.

Robert J. Jain
Denver, Colo.

Ground Observer Inertia

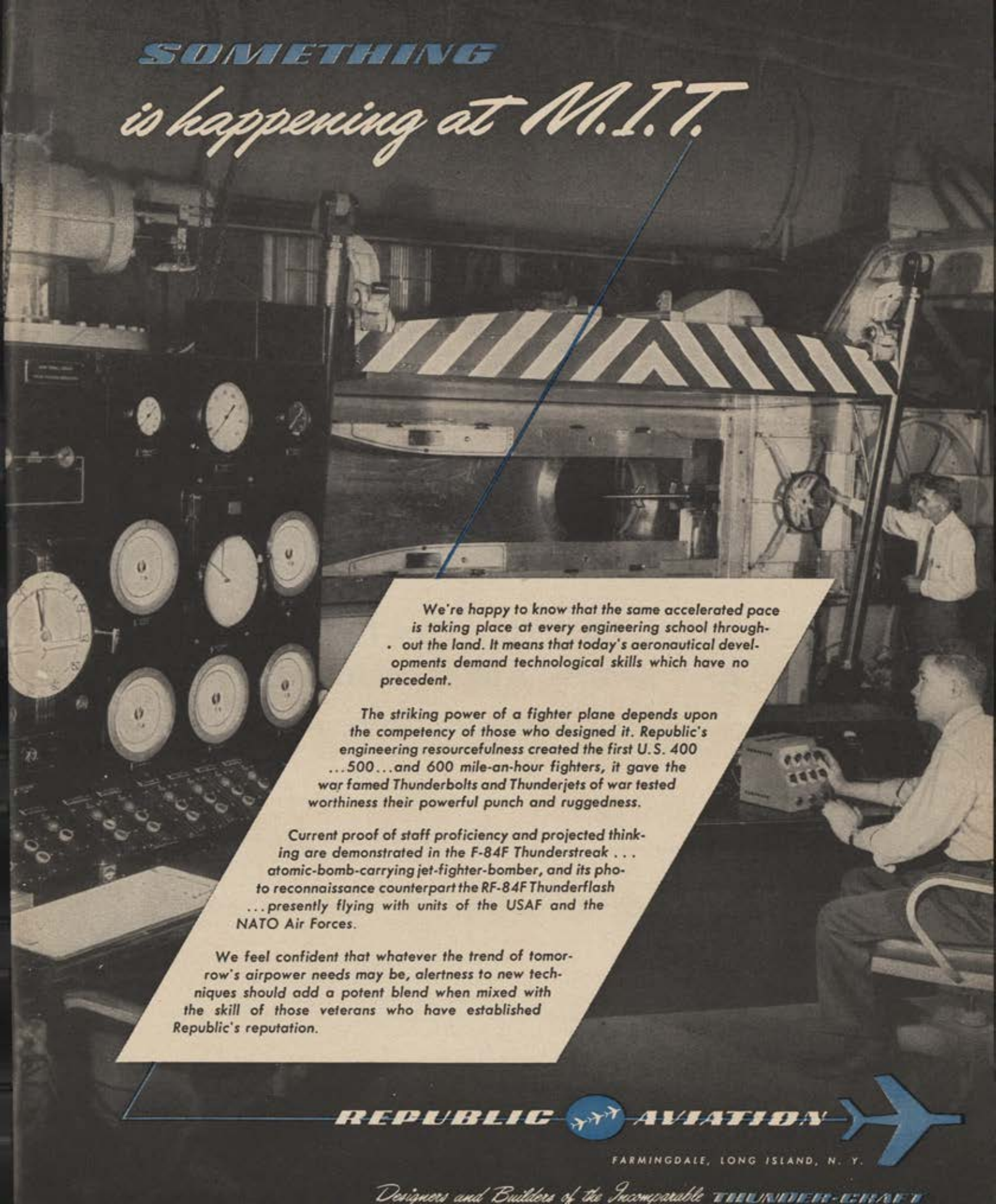
Gentlemen: I am the post supervisor of the Five Towns Observation Post, Pownal, Me. There are five towns under my post and in four months of campaigning for volunteers I got only forty members.

If your magazine is for the advancement of airpower, I would suggest an article on the GOC. As Val Peterson, Administrator, Federal Civil Defense Administration, said, "The Ground Observer Corps is the outpost of Civil Defense." We are an integral part of the Air Defense System.

What happened in Hiroshima could happen to any city in the United States. With Russia's airpower today she could bomb almost any city in this country. When Russia strikes it will not be in small numbers but in hundreds, and in hundreds of different places.

The American people today do not realize the danger of an air attack. The more observation posts manned the safer we are against air attack. Every time a volunteer enters one of our observation posts for duty he has the knowledge that he protects his country while in that post. He might be that one volunteer who would put in that *one call* that would alert this nation against attack.

Stephen J. Myers, Jr.
Pownal, Me.


SOMETHING
is happening at M.I.T.
We're happy to know that the same accelerated pace is taking place at every engineering school throughout the land. It means that today's aeronautical developments demand technological skills which have no precedent.
The striking power of a fighter plane depends upon the competency of those who designed it. Republic's engineering resourcefulness created the first U.S. 400 ...500...and 600 mile-an-hour fighters, it gave the war famed Thunderbolts and Thunderjets of war tested worthiness their powerful punch and ruggedness.
Current proof of staff proficiency and projected thinking are demonstrated in the F-84F Thunderstreak ... atomic-bomb-carrying jet-fighter-bomber, and its photo reconnaissance counterpart the RF-84F Thunderflash ...presently flying with units of the USAF and the NATO Air Forces.
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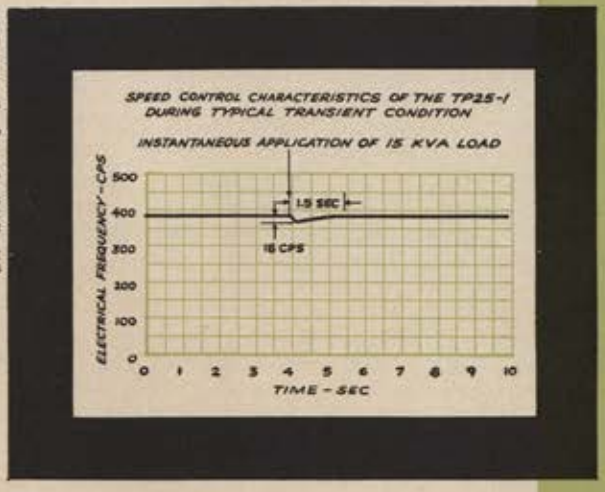

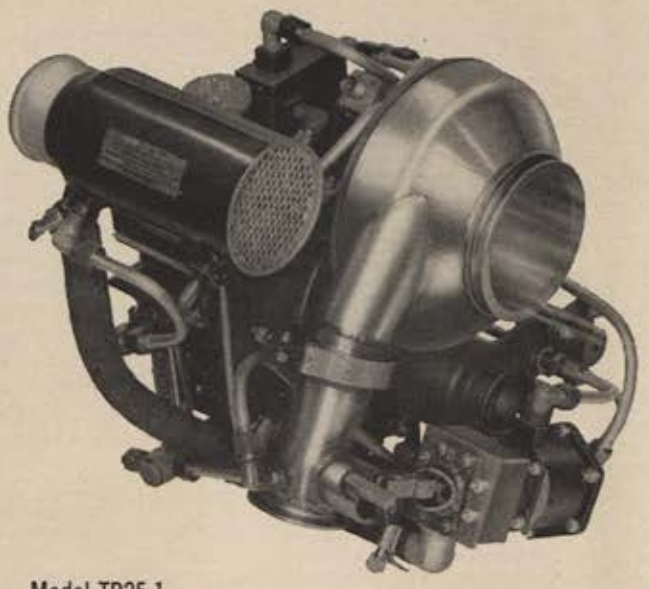

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AIR FORCE
THE MAGAZINE OF AMERICAN AIRPOWER

Volume 39, No. 1 • January 1956

FEATURES

DEPARTMENTS

THE COVER

A near-sighted ornithologist wandering about in the vicinity of Edwards AFB, Calif., might be confused by the many odd-shaped birds flying or nesting there, says Ed Mack Miller in "Strange Birds in the American Desert," on page 33. The "strange bird" on our cover is the Douglas X-3, built to study design characteristics needed for sustained flight at extremely high speeds.

AIR FORCE MAGAZINE STAFF

One screw on a jet bomber costs half a cent if made of steel and $1.36 if made of titanium. But by using titanium screws the aircraft manufacturer lops ninety-nine pounds off the weight of the plane and saves $4,950 in the cost of the aircraft.

° ° °

Trans-World Airlines reports that coast-to-coast tourist travel jumped sixty percent the first two months after the fare was reduced to $80.

° ° °

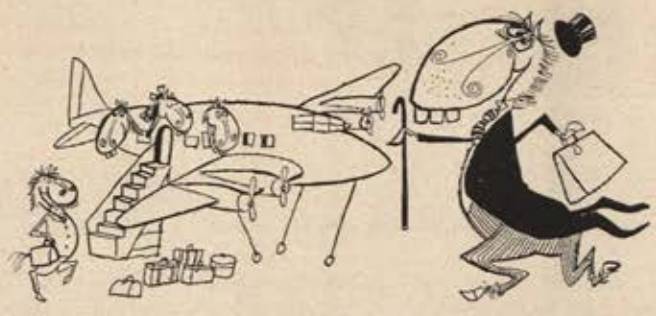
New York Airways will get seven new S-58 Sikorsky helicopters in mid-1956 to make it the largest commercial helicopter operator in the world. The new aircraft will carry twelve passengers at a speed of 105 miles per hour. Helicopter flights to New York airports will be stepped up from hourly to half hour service.

° ° °

Helicopter passenger service has now been inaugurated by Los Angeles Airways from International Airport to the Long Beach Heliport.

° ° °

According to John J. McCabe of Corona, Long Island, who made air reservations for 1,288 race horses last year,



"Some horses are now traveling more air miles than John Foster Dulles."

° ° °

American Airlines plans to inaugurate the first daily transcontinental service by turbojet aircraft when its Boeing 707s go into service on June 15, 1959. Eastbound trips will take four hours and fifteen minutes. The aircraft cost $4,500,000 each.

° ° °

The Boeing 707 will be equipped with "silencers" to reduce jet engine noise and an "air brake" that will provide reverse jet thrust to cut down landing distance.

° ° °

Last summer a large area of the Canadian arctic was mapped by helicopter for the Federal Department of Mines. Geologists and crew slept and cooked meals in the helicopters.

° ° °

The energy potential in a pound of uranium is enough to fly an airplane around the world non-stop 100 times. According to C. R. Smith, president of American Airlines, "We may expect to see this kind of performance during our lifetime."

Pinwheels for Progress

When Dagwood dashes for the morning copter-bus, the postman will be safely buzzing around overhead busily dropping his mail in each house's aerial chute.

Swiftness of the copter-bus will enable the Bumsteads and other American families to enjoy real country living many miles away from the breadwinner's job in the metropolitan and industrial areas.

Today's research in rocket power at RMI is constantly bringing these highly efficient vehicles for private, commercial and military use closer to reality. If you are interested in rocket power applications, write us today.

Higher Payloads

... greater rate of climb ... unheard of altitudes for flying pinwheels through a new power concept – RMI rocket engines. At left is Kellett's KH-15 "Stable Mabel," one-man copter with rotor-mounted RMI hydrogen-peroxide rockets.

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RESEARCH KEEPS **B.F.Goodrich** FIRST IN RUBBER

Low pressure seal prevents high altitude blowouts

FIGHTER PILOTS used to face serious "blowout" trouble in high altitude combat. The severe effect of high pressure inside the canopy, low pressure outside, would pop the inflatable seal between the canopy and fuselage. Because this rubber seal had to stretch like a balloon to make an airtight fit—it couldn't take the strain. Positive pressure without stretch—like blowing up a paper bag—was needed.

B. F. Goodrich engineers developed a patented inflatable band of rubber that seals under low pressure without strain. A special rubber-coated fabric diaphragm is cured to a solid rubber base. When inflated, the rubberized fabric lifts a "sealing bead" against the canopy to make an air-tight seal with no stretching of the rubber.

The new inflatable strip seal works almost instantly. Even at minus 65° it inflates with less pressure than ordinary seals needed at room temperature. There are other advantages. It resists wear and damage better than ordinary seals. It fits complex curves better. It seals and unseals faster. Sliding wear and scuffing are minimized.

The new B. F. Goodrich seal is now in use on more than two dozen makes and models of the latest jet fighters and bombers. The North American FJ-3 Fury, above, is one example. *The B. F. Goodrich Co., Tire and Equipment Div., Aeronautical Sales, Akron, Ohio.*

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Tires, wheels, brakes • De-Icers • Heated rubber • Fuel cells • Avtrim • Pressure Sealing Zippers • Inflatable seals • Rivnuts • Hose, accessories

AIRPOWER IN THE NEWS

■ The head table at the Wright Day Dinner in Washington, D.C., December 17 included Vice President Richard Nixon, British Ambassador Sir Roger Makins, Thomas Lanphier, AFA Director and President of NAA, and Fred Hamlin, president of the Washington (D.C.) Aero Club. They spoke briefly to welcome a crowd of some 1,900 honoring the historic flight of Wilbur and Orville Wright. At the dinner, the Collier Trophy was awarded to Richard T. Whitcomb, a scientist at the transonic wind tunnels section of the NACA's Langley AFB, Va., Aeronautical Laboratory. Whitcomb received the award for his work on the "Area Rule," a new design concept which increases a plane's speed by "pinching in" its waist (see page 50). His discovery, known as the "Coke-Bottle" of "Marilyn-Monroe" shape has already been utilized on the AF's Convair F-102 and the Navy's Grumman F11F-1. The trophy was founded in 1911 by Robert L. Collier, a pioneer sportsman aviator. Among those who have won it previously are: Glenn H. Curtiss, 1911-1912; Orville Wright, 1913; Glenn L. Martin, 1932; and Howard Hughes and Associates, 1938. Also at the dinner the Wright Brothers' Memorial Trophy for 1955, awarded annually for "significant public service of enduring value to aviation," was presented to Dr. Hugh L. Dryden, Director of the National Advisory Committee for Aeronautics. According to the citation, Dr. Dryden was one of the first scientists to investigate problems involving air flow around planes at faster-than-sound speeds. He was cited for his pioneering work on the measurement of turbulence in wind tunnels and on the mechanics of flow within the boundary layer.

■ The Navy's newest jet fighter, the Chance Vought F8U-1 Crusader, reportedly flew more than 1,050 mph recently. Arrangements by the Navy to set up an official try for the Crusader were thwarted by a Defense Department ruling, made earlier in the year and aimed at preventing interservice rivalries, which says that a plane must be in use for a year before it can try for an official record. The official world's record—the first at supersonic speed—is held by AF Col. Horace A. Hanes. He reached a speed of 822 mph last August in a North American F-100C Super Sabre. The Navy has placed a $100 million order with Chance Vought for the F8U-1. It is powered by the Pratt & Whitney J-57 turbojet engine.

■ Gen. Curtis E. LeMay, SAC Commander, in a magazine interview, gave an answer to the Russian proposal for handling disarmament by inspecting military concentration points. When asked if he thought there would be great mobilization of manpower and equipment in case of attack, as in WW II, LeMay said, "I don't look for any great mobilization in a future war. I think it is entirely possible for the decision (to attack) to be rendered before you can mobilize anything in the way of manpower or equipment." On the question of disarmament LeMay said the only way it would work as insurance against future wars is to abolish all weapons, not just some of them.

■ The Russians are building a "formidable striking force" at 360 aircraft factories, *Jane's All The World's Aircraft*, says in its new edition. The authoritative book on the world's aircraft describes some of the latest Soviet jets, including the "Type 37," a four-jet heavy bomber, believed capable of carrying an atom bomb; and a medium twin-jet bomber, "Type 39" (see "ADD Means SAC in Russian," AIR FORCE, May '55). The Type 37 is the Russian equivalent of the Boeing B-52, the USAF's eight-jet, long-range bomber capable of carrying the H-bomb at speeds above 600 mph. The Russian Type 37, according to Jane's, has a speed of 559 mph, a range of 7,100 miles, a bomb load capacity of 9.9 tons, and only four engines to the B-52's eight. Jane's describes the USSR's Type 39—more or less equal to the USAF Boeing B-47 bomber—as having a speed of 559 mph, a range of 4,320 miles, and a 4.9-ton bomb load capacity. The B-47 has a top speed of more than 600 mph and a 10-ton bomb load capacity. Jane's also mentions a new Russian single-jet, single-seat fighter plane, thought to be an improved MIG-17, a big sweptwing bomber with four turboprop engines, and a twin-jet all-weather fighter. According to Jane's the USSR also has a small rocket-propelled interceptor.

■ The Army, in a move to expedite development and production of guided missiles, has assigned one of its top ordnance experts, Maj. Gen. John B. Medaris, to the Redstone Arsenal at Huntsville, Ala. Medaris, described as a top ammunition production specialist, will be working with some former German rocket and missile experts, including Wernher von Braun. Progress on the secret, supersonic Redstone missile (named for the arsenal) evidently prompted the Army to expedite the project at Huntsville. The missile, while reported to have a range of about 200 miles, shows promise of developing into a weapon with a range of 1,000 or more miles, according to some observers. The Birmingham (Ala.) *Post Herald*, commenting on the assignment of Medaris, said the Redstone Arsenal may become "the center of guided missile development for the Army, Navy, and AF in the near future."

Wide World Photos

In December, Vice President Richard Nixon presented the Harmon Awards to Convair pilot James F. Coleman, left, for his flights in the Navy's vertical-rising XFY-1 "Pogo," and to Navy Capt. Marion H. Eppes for commanding a Navy blimp which stayed aloft for eight days in May 1954.

■ The latest H-bomb set off by the Russians may have been as powerful as fifteen megatons (equivalent to fifteen million tons of TNT). This would put the blast in the same category as the most powerful H-bomb exploded by the

(Continued on following page)

US—estimated at between twelve and seventeen megatons. There was much confusion about the strength of the Russian blast when it was first reported. An announcement by the US Atomic Energy Commission, before the official Russian announcement, indicated that it equalled millions of tons of TNT. But, Nikita S. Khrushchev—touring India at the time—said that it "exceeded one million tons of TNT." However, all but one of the Russian newsmen present reported he said "millions of tons" and a mistake was made in translating the speech. In general, observers now feel the Russians played down the strength of their explosion.

■ The first week in December was not a happy one for the Glenn L. Martin Co. On December 5, Glenn L. Martin, 69, founder of the company, died of a heart attack. Two days later, on December 7, Martin's XP6M-1 SeaMaster exploded in the air while on a test flight over the Potomac River in Maryland.

Martin's death brought to an end the career of one of the aircraft industry's pioneer manufacturers. As early as 1907 he was building gliders, and in 1911 he incorporated the Glenn L. Martin Co. in Santa Ana, Calif. He was active with the company, as president and chairman of the board, until he retired in 1949. Since then, he had been a director.

In an old photo, Glenn L. Martin inspects a model of his first airplane. The pioneer manufacturer and founder of the company bearing his name died recently in Baltimore.

Martin's XP6M-1 SeaMaster recently exploded in the air over the Potomac River in Maryland, killing its crew of four. The plane was being flight-tested for the Navy.

◘ In addition to the award that went to AFA's John P. Henebry (see "Airpower in the News," December '55), the British government has honored other USAF airmen for acts of bravery and leadership in the Korean war. Gen. Earle E. Patridge, now commander of Continental Air Defense Command, received an Honorary Knighthood in the Most Excellent Order of the British Empire, for commanding FEAF during Korea. For bravery A/2C Thomas C. McFadzen, now with SAC's 9th Bombardment Wing, Mountain Home AFB, Idaho, received the Distinguished Flying Medal. McFadzen won his award for dangling fifty minutes from a helicopter while putting a rope ladder in the hands of a UN pilot shot down near the mouth of the Yalu River. The British Empire Medal went to M/Sgt. James Covington, now stationed at TAC's Langley AFB, Va., headquarters. Covington received the medal for designing, engineering, and testing an 80mm rocket launcher adapter which allowed B-26 aircraft to fire sixteen rockets. Others honored were Lieutenant Generals Samuel E. Anderson, Frank F. Everest, and Glenn O. Barcus. They were named Honorary Companions of The Most Honorable Order of the Bath. The USAF's Deputy Chief of Staff for Personnel, Lt. Gen. Emmett O'Donnell, was was made an Honorary Member of The Order of The Bath, for organizing and heading the FEAF Bomber Command. Honorary Commanders of The Most Excellent Order of The British Empire are: Maj. Gen. Jacob E. Smart, Brig. Gen. James Ferguson, and Brig. Gen. Albert G. Hewitt. A Bar to the Distinguished Flying Cross he already holds went to Col. Russell A. Berg. Distinguished Flying Crosses from the British government were awarded to Brig. Gen. Richard H. Carmichael, Colonels Maurice F. Casey, Charles E. Jordan, Robert P. Baldwin, and Maj. James W. Jabara.

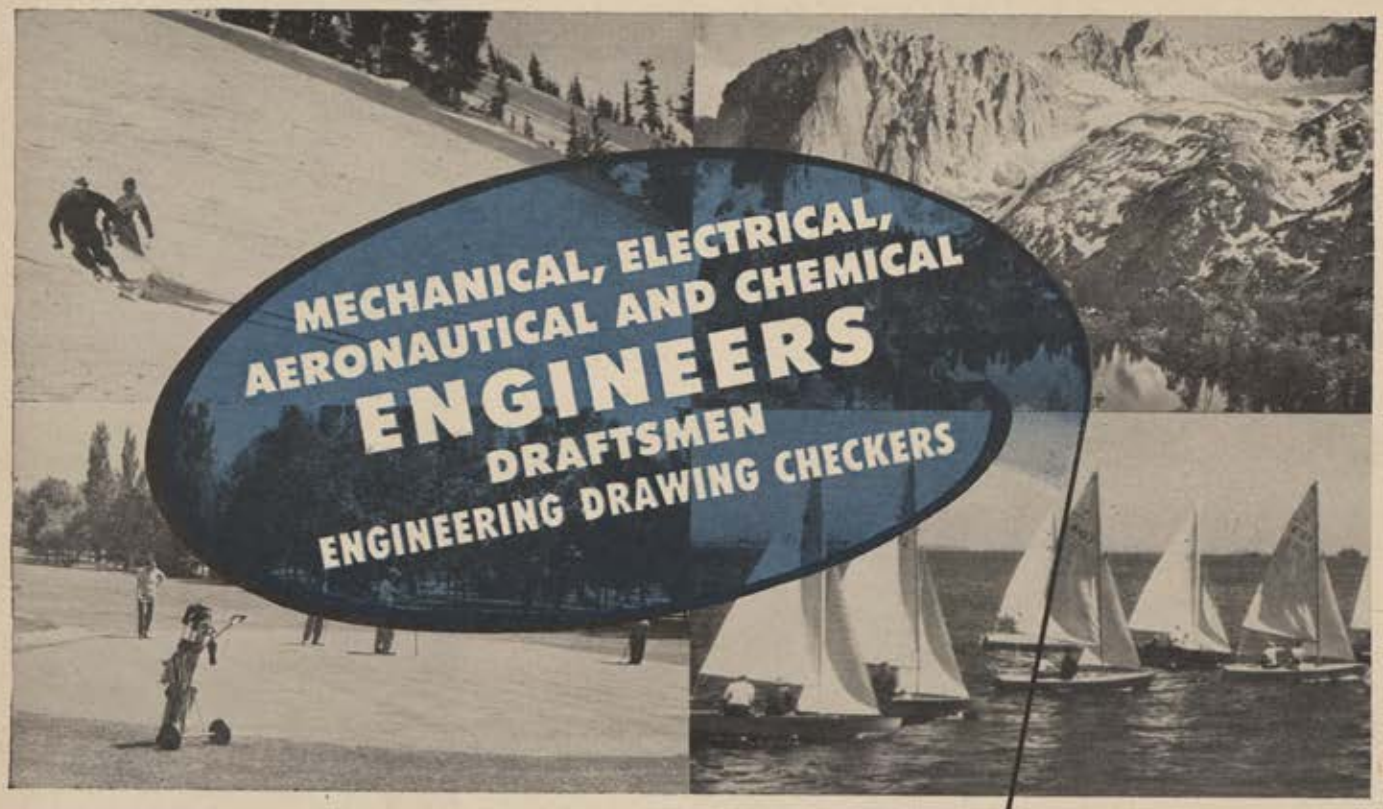
■ "The Air Force Academy should make its chapel as modern as its planes," Walter A. Taylor, research director of the American Institute of Architects told a press conference. The cadets should not use "regurgitated Gothic" for their chapel, he added, pointing out that the trend toward modern churches has been steadily increasing since WW II.

◘ AF Secretary Donald A. Quarles told the National Press Club in Washington that "at the moment we have striking power superior to any nation in the world." He said it is meaningless to compare numbers of H-bombs, since "you cannot, with advantage, blow a man's brains out twice," and that the important thing is to maintain a certain level of capability.

He said he feels that the world may have arrived at an atomic deadlock that will keep the peace, but warned that this did not mean that we could lower our guard if we wanted it to last.

Later, in Los Angeles, Secretary Quarles denied that he advocated an "atomic stalemate," but said that "I do see in atomic airpower such a tremendous deterrent force that I believe we can keep any nation from attacking us." But, he also said that "never before has the US stood in peril that catastrophic damage might occur all across the coun-

(Continued on page 19)



Aerojet-General, America's leader in rocket propulsion, announces the activation of its new Liquid Rocket Plant near Sacramento, California. Devoted to research, design, development and manufacture of large liquid-propellant rocket engines, the new plant is the world's largest industrial establishment of its kind.

Operations are starting now on a permanent basis. Unparalleled "ground-floor" opportunities exist for engineering personnel and draftsmen at all levels of experience.

A subsidiary of The General Tire & Rubber Co., Aerojet combines the stability and resources of a large industrial organization with the vigorous forward thinking of the youthful rocket industry. Nowhere is professional and economic growth so highly assured.

Sacramento, California's capital and one of the West's fastest-growing metropolitan areas, offers the finest in contemporary living, with excellent housing, schools, recreation facilities, and major shopping centers. Superb year-round temperate climate and proximity to the lakes and national forests of the West make it an outdoor man's paradise.

For further information please write or call the *Personnel Department, Liquid Rocket Plant, Aerojet-General Corp., Sacramento, Calif.* Your inquiry will receive immediate, confidential attention.

A *ttractive living*

E *xcellent fringe benefits*

R *elocation expenses*

O *pportunity unlimited*

J *ob security*

E *ngineering challenge*

T OP SALARIES

Start with 28 Sacramento parks and three golf courses, all used year-around. Add the Sacramento and American Rivers for boating, picnicking, and for striped bass, salmon and steelhead fishing. Add two and a half million acres of valley lands teeming with pheasants, ducks, and geese. Then add the foothills of the Sierra, the ghost towns of '49, and the nearby mountain resorts. Ski, if you like, at famous Sugar Bowl and Squaw Valley, from December through May. Hundreds of Sacramento-area residents own summer homes near these resorts and at beautiful Lake Tahoe, or beach homes in the Santa Cruz-Carmel area. From this Heartland area the High Sierras and sunny Pacific beaches are nearly equi-distant. ... trips or weekends!

Aerojet-General CORPORATION

A Subsidiary of The General Tire & Rubber Company

THE GENERAL TIRE

AZUSA, CALIFORNIA

SACRAMENTO, CALIFORNIA

MORE POWER FOR AIR POWER

To see defense jobs through from scratch

The abilities and facilities to take charge from inception to completion—from research through development, engineering and tooling, production, testing, field service and training—qualify Burroughs to assume the complete responsibility for fulfillment of complex defense assignments.

This coordination enables Burroughs to handle, from start to finish, the most important defense projects in the exacting fields of instrumentation, control systems, communications, electronic computation and data processing.

This coordination, too, underlines Burroughs' ability as a prime contractor for assignments of a highly classified nature. Inquiries welcomed. Burroughs Corporation, Detroit 32, Michigan.

1. RESEARCH

2. DEVELOPMENT

3. ENGINEERING & TOOLING

4. PRODUCTION

5. TESTING

6. FIELD SERVICE & TRAINING

Burroughs

BURROUGHS INTEGRATED DEFENSE FACILITIES INCLUDE:
Burroughs Corporation plants in Detroit and Plymouth, Michigan
Burroughs Electronic Instruments Division, Philadelphia, Pa.
Haydu Brothers of New Jersey, Plainfield, New Jersey
Control Instrument Company, Brooklyn, New York
Burroughs Research Center, Paoli, Pa.

Looking to future expansion, Burroughs invites inquiries from qualified engineers.

This AF flag will be placed at the South Pole during the "Operation Deep Freeze" by Maj. Murray A. Weiner, left. AF Vice Chief of Staff Gen. Thomas D. White presents it.

try in one day. Air atomic power in the hands of our potential enemies makes this prospect a harsh possibility."

■ AF Secretary Donald A. Quarles's former job, Assistant Secretary of Defense for Research and Development, has been filled by Dr. Clifford Cook Furnas. At the time of his appointment Dr. Furnas was Chancellor of the University of Buffalo. He is a chemical engineer, a former director of Curtiss-Wright Laboratory in Buffalo and of the Cornell Aeronautical Laboratory. It addition to serving on technical advisory committees for the government, the new Assistant Secretary has also served as a chairman of the Committee on Guided Missiles of the Research and Development Board.

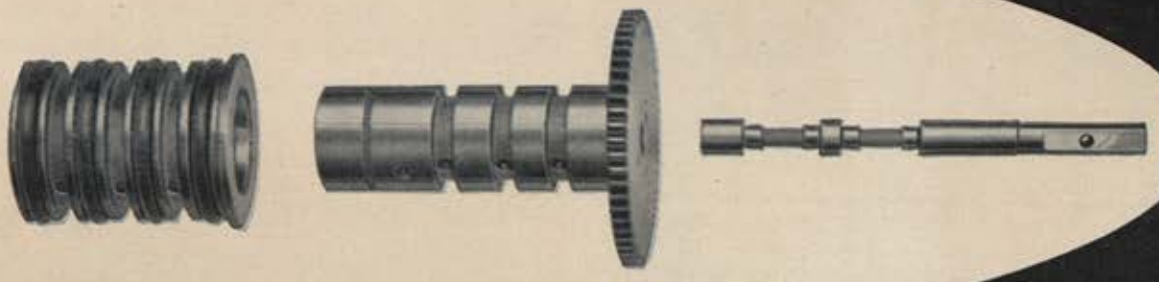
■ Some important AF legislation to come before Congress this session will include: Dependents Medical Care, Survivor Benefits, and Equalization of Retirement benefits. If the Dependents Medical Care bill goes through, families of AF personnel will have an option of using military facilities or being covered by a group insurance plan, the cost to be shared by both the government and the AF personnel. The House has already passed the Survivor Benefits bill, and if the Senate gives its OK, benefits such as increased monthly compensations for dependents of deceased AF personnel and substitution of social security participation for the present free insurance, would become law. The Equalization of Retirement Benefits bill would extend the present bill which expires January 1. This bill allows AF members to be retired in and be paid at the highest temporary grade in which they served at least six months. New legislation which is scheduled to be taken up will involve the budget request for fiscal year 1957, additional family housing and a Doctor's Career Incentive bill. Among the benefits the latter bill carries are lengevity pay credit for postgraduate medical school training, bonuses—at the rate of $600 per year for three-year contracts, $1,200 for six-year contracts and $1,800 for nine-year contracts. A bill to increase Regular officer corps on active duty, is also to be brought up for consideration.

■ Airmen entering the Air Force will now take only six weeks of basic training instead of the normal eleven weeks, if they qualify for technical schools. Airmen who do not attend technical schools will take the full eleven weeks of basic training at Lackland AFB, Tex., Parks AFB, Calif., or Sampson AFB, N. Y. The AF said that this cut in basic training for technicians would put the trained men on the job five weeks sooner and save money in training time and costs.

Col. N. H. Van Sicklen, left, and Capt. Dwight E. Schultz inspect new personal mail boxes at Bolling AFB, Washington, D. C. New system will eliminate the old "Mail Call."

Maj. Gen. Charles F. Born, USAF-Ret., is new Director of Service Engineering of the Apparatus Division of Texas Instruments Inc., Dallas. He was recently CO of CTAF.

■ STAFF Changes. . . . Brig. Gen. Bruce K. Holloway has been appointed Deputy Commander of the Ninth AF, Shaw AFB, S. C. . . . New brigadier generals are William L. Kennedy, Deputy Chief of Staff, Personnel, Hq., TAC, Langley AFB, Va., and George F. McGuire, Commander, 62d Troop Carrier Wing, Eighteenth AF, Donaldson AFB, S. C. . . . Brig. Gen. William S. Stone, has replaced Maj. Gen. Morris J. Lee, as Director of Personnel Planning, DCS/P, Hq., USAF. . . . On the retirement list is Maj. Gen. Leigh Wade whose last assignment was Air Attaché in Brazil.—END



precision

IN VITAL SERVOMECHANISMS

Superiority may *start* with improved design, but it *stops* dead without the ability to produce component parts with extreme accuracy.

This pilot valve, for example, started as an improved design, part of the servomechanisms used in CECO Turbojet Control and Regulation Systems. And in actual production, tolerances between critical mating parts are held to .00008″!

This coordination of theoretical requirement and practical achievement at Chandler-Evans is the result of creative engineering integrated with complete precision manufacturing facilities and know-how . . . a combination that can help win the race for supremacy in the air.

CHANDLER-EVANS

WEST HARTFORD 1, CONN., U.S.A.

PIONEER PRODUCERS OF
JET ENGINE FUEL CONTROLS • AFTERBURNER CONTROLS
PUMPS • SERVOMECHANISMS • CARBURETORS • PROTEK PLUGS

SHOOTING THE BREEZE

WITH JOHN F. LOOSBROCK, MANAGING EDITOR, AIR FORCE MAGAZINE

Army Secretary Wilber M. Brucker said not long ago that "The Army does not seek to create an Army air corps duplicating functions of the Air Force." Quote One.

Quote Two, from an editorial in the *Army Combat Forces Journal*, now rechristened just plain *Army*—"We in the Army should never forget and should constantly reiterate that guided missiles and rockets are artillery, whether anti-tank weapons or short-ranged Honest Johns and Corporals, or longer-ranged ones up to and including ICBMs; whether Nike anti-aircraft weapons or the anti-ICBMs of the future. All of these weapons of the future are launched from the ground and controlled from the ground. If the target is on the ground, they are field artillery. If the target is in the air, they are anti-aircraft artillery. By definition artillery is the missile-throwing arm of an army and mans weapons too heavy to be carried by a single individual or by the gun crew. The missiles may be stones, heavy arrows, grapeshot, shrapnel, high explosives, or warheads of fission or fusion materials.

"As every new development in guided missiles marks the obsolescence of the manned bomber, so also does it mark advances in Army artillery."

Our excuse for Breezecake this month is an announcement by Admiral Corp. of a transistor radio which derives its power from the sun. The seven-cell solar power source is mounted on top of the cabinet and can either run the radio on a sunny day or be used to charge a standby battery for use in instrument weather. It's not for sale, is still experimental. Oh, yes, the model is sunny Pat Lee.

Wailana Manu Kahauolopua, full-blooded Apache Indian, is sworn into the AF in, of all places, Indianapolis!

☆

The Warner Brothers picture "The Court-Martial of Billy Mitchell," with Gary Cooper playing the maligned air general, will hit the nation's theaters early in January. On the same bill in many cases will be the same studio's fine air defense documentary "24-Hour Alert," narrated by "Dragnet's" Jack Webb.

☆

We picked up this one from AFA's Organization Director Gus Duda. Seems that last November the Brookings, S. Dak., AFA Squadron held an Airpower Banquet. Weather was normal for that part of the country—namely snow and lots of it. Somewhere between Brookings and Pierre, the state capital, a lady motorist was stranded—flat tire. A Good Samaritan appeared on the scene in the person of a husky young man who stopped his car and went to work with jack and tire tools. The lady offered to pay the ministering angel and, when he refused, asked for his name and address so she could thank him formally.

"I'm Governor Joe Foss," was the answer. Joe was on his way to the AFA banquet. He's a member of our Air National Guard Council.

☆

Brig. Gen. Thomas R. Phillips, military analyst of the St. Louis *Post-Dispatch* and an old Army man himself, concurred with the view of Field Marshal Montgomery as to the need for true unification of the services. As an example of clinging to obsolete military functions, General Phillips cited the example of cavalry in the Army, saying:

"It took thirty-five years from the beginning of World War I to get rid of cavalry in the United States and British armies.

"Cavalry in the armed services was almost a way of life, a sporting life which not only trained horses for war but

(Continued on page 23)

Artillery Spotting

Communications

Wire Laying

Supply Drops

Army Cessnas=Successful Missions!

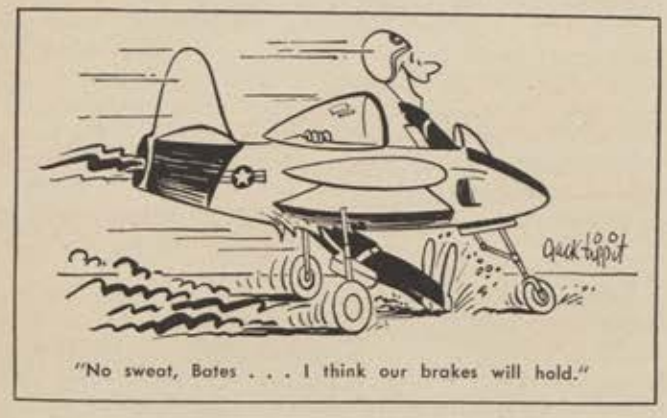
Instrument Trainer

Shown here are just five of the tough military jobs assigned to hard-flying Army aviators in Cessna L-19s. Other jobs: control of military highway traffic, fast transportation for field commanders, evacuating wounded, pilot training, courier work, flare dropping, airborne radio relay, even insect spraying. During civil emergencies, L-19s are also used by Army National Guard units.

How can *one* airplane do so many jobs successfully? L-19s are designed to be versatile! These rugged all-metal airplanes offer 213 h.p. performance, high-wing visibility, short take-offs and landings, outstanding load-carrying and slow-flight characteristics and require less maintenance than any other Army airplane! Cessna has delivered every L-19 to U. S. Armed Forces on schedule since 1951!

Cessna

CESSNA AIRCRAFT COMPANY, WICHITA, KANSAS



"No sweat, Bates . . . I think our brakes will hold."

incidentally trained and used them for polo and hunting. The violence of feeling in the United States cavalry of any hint that it might not be up to charging barbed wire entanglements supported by machine guns cannot be appreciated by anyone who was not involved in the long contest to replace horses with armor."

"There is an even greater emotional involvement," said General Phillips, "in the sea services. Going to sea is a way of life. The Navy will resist change just as violently and as irrationally as did the cavalry."

☆

As is our wont, we spent part of our August vacation reading some fifty manuscripts entered in the annual Air Force-wide short-story contest. We sit on a screening board that weeds out the top fifteen for final selection. This year's winner—Capt. Clifton L. Dance, Jr., USAFE. Second prize went to Capt. William D. Gable, Alaskan Air Command. Remaining prize winners were Maj. Franklin D. Campbell, Jr., Alaskan Air Command; Lt. Frank J. Cuppe, Stead AFB, Nev.; and Maj. Thomas A. Fleek, Headquarters Command, USAF.

☆

This seems as good a time as any to bring up a subject which seems to rankle the souls of some of our readers—a minority of them, we trust. This is the question of why AIR FORCE Magazine carries advertising featuring aircraft used by the other services. Typical of the comment we get is a letter to which was attached pages from our November issue in which naval aviation was featured in ads of the Cline Electric Manufacturing Co.; Stewart-Warner Electric; Chance Vought Aircraft, Inc.; Pratt & Whitney Aircraft; Lockheed, and Sikorsky, while Marine aviation was displayed in a Cessna ad.

The letter read:

"Dear Navy League:

"Congratulations on such a wonderful job of pushing the Navy Air Force, and at such a crucial time. To think you were able to get all this in one issue of AIR FORCE Magazine makes me all warm inside. In fact, it makes me so hot I threw the magazine down in disgust and refused to read it. It seems to me a little common sense and common courtesy between our editors and our so-called "advertising space-buyers" would improve our magazine a great deal.

"My December issue just arrived. I am pleased to see only four such advertisements. We are moving in the right direction now. Keep up the improvement."

It was signed by an Air Force captain whose name we were unable to decipher.

Now let's face the facts of life. Without advertising, AIR FORCE Magazine would not survive very long. Advertising income allows us to furnish our members a magazine for thirty-five cents that in many cases costs close to a dollar to produce. Further, the more advertising we sell, the proportionately bigger the issue and the more pages we can devote to editorial matter. So our advertising income is, in effect, money in our readers' pockets.

Further, without advertising income the Air Force Association would not be in existence today. It was the application of sound business principles to the operation of AIR FORCE Magazine that has, in overwhelming measure, brought the Association from a deficit of $137,000 in November 1947 to a principal of $81,500 as reported at the San Francisco Convention last August. In 1947 our magazine advertising averaged around $2,500 a month. Now it averages $36,000 monthly.

You may say, "If the advertising is selling that well, you can afford to turn down the Navy ads."

But it isn't that simple. For we cannot place ourselves in the position of censoring what appears in our advertising columns. That space is bought and paid for. It doesn't belong to us any more. We have sold it. If the company who had paid for it chooses to utilize its space to advertise services or products which he furnished to the Navy, that's his business. This relationship is basic to the free press as

(Continued on following page)

Double jet ace Col. James K. Johnson wing-talks with prospective AF-ROTC cadets beside Lockhead F-80 spotted on Columbia U. campus.

Daniel Boone, Jr., sixth generation descendant of the woodsman, was one who signed up.

Miss Edna "Susie" Adkins, whose long service to the AF won her a top Civil Service award.

Cadet Richard B. Lindsay, first Air Force Academy cadet to join the Air Force Association

it has developed in this country, a press that is freer than in any nation on the face of the globe.

There is still another side to the coin. If we attempt to tell an advertiser what to say in his advertising, it would be only fair to reciprocate the favor, and allow the advertiser to censor what we say in our editorial columns. If this day arrives, at least one managing editor will turn in his suit.

So resign yourselves to the sight of Navy planes in future issues.

☆

You don't have to wear the blue suit to do a job for airpower. As good as example as we know of is the case of Miss Edna M. "Susie" Adkins, whose official title is administrative advisor in the office of the Chief of Staff. So we were most pleased when her long years of faithful service to the Air Force and the nation were recognized in her selection by the National Civil Service League for one of its first ten annual Career Service Awards. She received the award at a dinner in Washington on December 2.

Susie Adkins has served the Air Force for thirty years, the last twenty-three in the Office of the Chief of Staff through the changing regimes of seven military heads of the Air Force. She's no stranger to AFA, being the first woman to receive one of our Honorary Memberships.

On the night of the award, AFA President Gill Robb Wilson sent her an orchid corsage and the following message:

"On behalf of the entire membership of the Air Force Association, I wish to congratulate you on being elected to receive the National Civil Service League's Award as one of the ten outstanding members of our Federal Civil Service. We in the Air Force Association concur wholeheartedly with the League's selection. We are well acquainted with your unselfish devotion to the United States Air Force and the invaluable service you have performed for your country as an employee of the Air Force. Your continuity of service and performance of duty in behalf of airpower endear you to the hearts of all who know and believe in airpower as the prime medium of national security and world peace. We all love you for it."

And we do.

☆

AFA signed up its first cadet member of the Air Force Academy (see cut) in the person of Cadet Richard B. Lindsay. Lindsay is the son of Maj. Gen. and Mrs. R. C. Lindsay. General Lindsay is on duty in the Pentagon as Director of Plans, in DCS/Operations, Hq, USAF.

☆

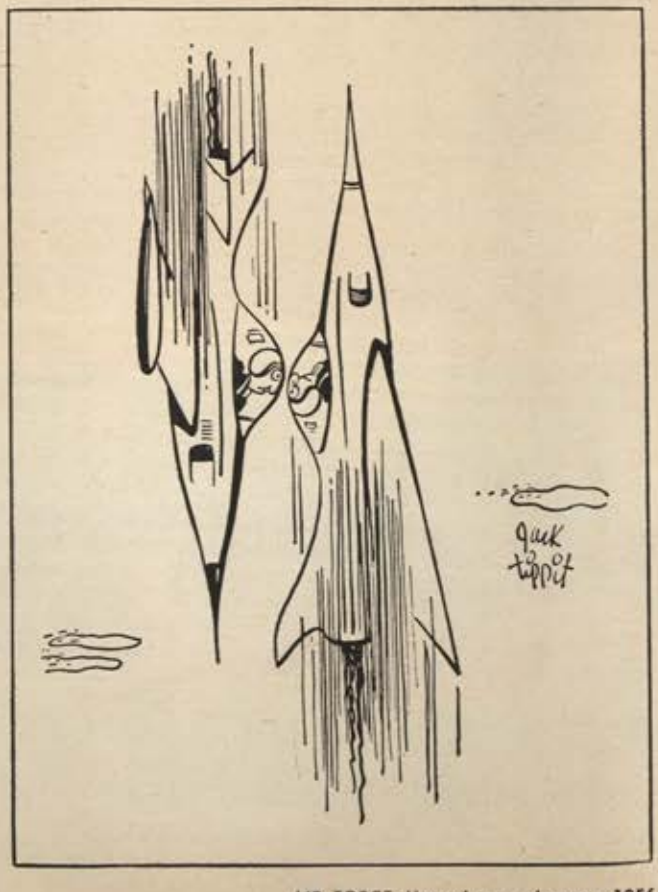
The projected space satellite raises an interesting question of national sovereignty. But the lawyers pretty much agree that a nation's control over its "air space" doesn't apply in the case of the satellite, since it will be orbiting 200 miles above the earth where there's no air.

☆

As we add wings to the growing Air Force the base shortage becomes more critical. In 1950 we had forty-seven wings and 122 bases in the US. In five years we have increased the number of wings by 160 percent, the number of bases by only forty percent.

☆

Federal Civil Defense Administrator Val Peterson admits that we may have to draft civil defense workers. He says it is already being done in Scandinavia.—END



10,000 miles of air frontier —under CONAD's eye...

CONAD—that's Continental Air Defense, responsible for U. S. air defense. On threat of attack, CONAD can muster every weapon of every service to weld a barrier 10,000 miles long, over 10 miles high.

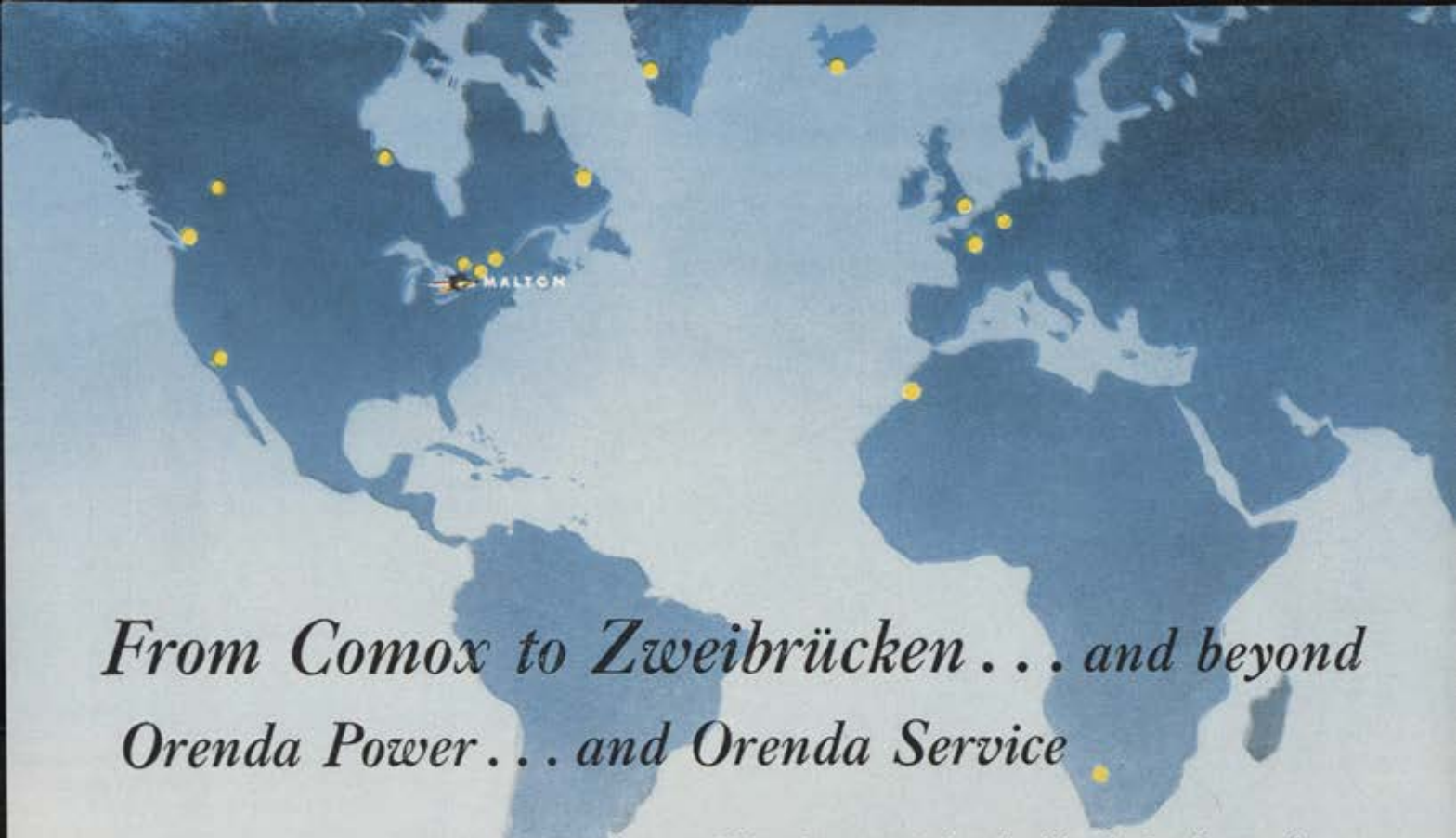
To CONAD's Colorado control center come instantaneous reports on every unidentified aircraft spotted over North America. Positions are plotted on a huge plexiglass screen. Countermeasures are planned and executed in seconds.

A major weapon at CONAD's call is *Nike*, the Army's supersonic rocket, built by the Douglas-Western Electric team, and now guarding key cities. Radar-guided from ground stations, Nike carries a powerful warhead, can track and destroy bombers more than 20 miles off—regardless of evasive action.

Nike Missile—
built by Douglas

Defense is everybody's business. Guided missiles like the Army's Nike are marvels of engineering skill, but they cannot operate without crews of trained personnel. All branches of the Armed Forces depend on young men and women who agree that "defense is everybody's business."

Depend on **DOUGLAS** First in Aviation



From Comox to Zweibrücken . . . and beyond

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AIRMAN'S BOOKSHELF

Emphasis in recent years on professional air education in AF schools has placed a requirement for a wider range of military air books than now exists. The AF Academy, established to train future air commanders, badly needs professional Air Force literature. Then, too, the average citizen has not had access to broad book coverage—in layman's language—of the AF story.

Military subject matter requires official encouragement and support to all military and civilian writers and commercial publishers of books dealing with or related to airpower. In this respect the Air Force has been lagging. Until recently its senior officers have not written for publication as much as their counterparts in the Army and Navy have. USAF headquarters and the Information Services program offered no aggressive encouragement. Several book publishers said they were turned away when they approached the AF several years ago for assistance and cooperation.

Official support for AF literature had got off to a good start in the days before unification. During World War II, for example, Lt. Gen. Ira Eaker brought AF PIO Capt. Elliott Arnold and Dick Threulsen to Italy. Their *Mediterranean Sweep* became a popular historical account of the air war in that theater. Gen. George Kenney, Fifth AF and FEAF wartime commander, later sent Capt. Arnold to the South Pacific, where, in collaboration with PIO Capt. Don Hough, he wrote *Big Distance*—a record of the air war in the SWPA.

Gen. H. H. "Hap" Arnold—a contributor himself (*Global Mission*)—in early 1943 directed the establishment of the Personal Narratives Division, with offices in New York City. Teams of civilian writers and AAF personnel were sent overseas to gather first-hand accounts of air exploits and operations and to research official records. Top-notch professional writers were brought in to handle the composition, names like Jack Kirkland, Lucien Hubbard, Henry F. Pringle, Vilhjalmur Stefansson, Clayton Knight, and Vern Haugland. About two dozen books were planned, and by the end of WW II the projects were well underway. PND converted to civilian status in May 1946, and in September 1947, the post-war meat-axe fell on the Division. A few completed manuscripts found their way to publishers, including the popular *One Damned Island After Another*, and Walter Edmonds' classic *They Fought With What They Had*. But all manuscripts less than ninety-five percent completed were relegated—along with Hap Arnold's plan—to Air Force archives, where they remain today.

Between 1947 and 1954 there were several unsuccessful attempts to revitalize this program. Official PIO emphasis and support, however, was geared almost totally to newspaper and magazine writing, and AF book literature underwent a period of great famine.

In early summer, 1954, the Magazine and Book Branch, OIS, USAF Hq., completed a comparative study of Army, Navy, and Air Force books published during the preceding two years. The study raised alarmed eyebrows around headquarters and generated a plan to establish a sound book program as a permanent part of USAF Info Services. Enjoying full official support from all echelons in AF Hq. and the field, this program, after less than a year, has already netted nine published AF volumes. Eighteen more are under contract.

Next month "Airman's Bookshelf" will describe the objectives and operations of the AF Book Program.—END

An editorial

WHAT PRICE

THERE is an old French adage which says, "The more it changes, the more it's the same." This ancient proverb was not intended for a world of nuclear weapons and jet propulsion, but it is an apt label for the approach this nation's government is taking toward a most pressing problem—provision of a proper defense, not for national security but for national survival.

As this is being written the final touches are being put on the defense budget for Fiscal Year 1957.

There have been no official reports on the over-all amount which is to be requested, nor have there been any official indications of the sums planned for each of the services. The only authoritative statement has been a general comment by Secretary of Defense Charles E. Wilson that the new 1957 budget would be "about the same" as last year and the year before. This very point of "sameness" raises some questions in our minds.

Back in September this magazine discussed how 1956 defense funds already voted by Congress were being "saved" by the simple device of not spending the money—a warning that went unheeded.

Looking back, we can see some reasons for Administration complacency. At that time the Free World was still basking in the warmth of Soviet smiles, and the "Spirit of Geneva" was being acclaimed as a turning point in the cold war. The Kremlin had turned its barred gates into turnstiles, and Congressmen, newsmen, and just plain citizens flowed into the region behind the Iron Curtain.

Soviet farm groups and Soviet press representatives, all smiles and friendliness, were touring the United States—and the appearance of Soviet officials at an Independence Day celebration at the US Embassy in Moscow was hailed as another straw in the balmy wind that was pointing toward more peaceful relationships with the Communists. The shadows that had been cast over Red Square by hordes of new Soviet bombers and fighters, only weeks before, were ignored or forgotten.

Under these conditions it is easy to see why there was no great concern over the fact that defense appropriations were being reduced—after all, wasn't it only a "matter of two or three percent?"

Since that time things have changed. The Spirit of Geneva has become a ghost. The turnstiles have been re-transformed into barred gateways. Verbal belligerence is again the Soviet order of the day. Bulganin and Khrushchev have been swaggering through the Asiatic nations, babbling falsehoods and hurling insults at the West.

The changes amount to more than just words and propaganda. The Communists have leap-frogged the allied bridge in the Middle East and are busily engaged in attempting to turn nations against each other and against the West.

Although the spotlight on the Far East has been dimmed, the Communists are busily at work building forces, airfields, and hate in that region.

Bomb blasts of new Soviet nuclear weapons have been announced to the world. In Germany there are the beginnings of a new Berlin Blockade.

Against this background it is difficult to accept a "more of the same" attitude as a realistic approach to our defense problems.

There is ample evidence of change on the Communists' side—there are indications that they are making progress on many fronts.

We are warned by experts that we are losing the cold war of the classroom, that the Soviets are overtaking us in science and technology. We are cautioned about the ultimate effect of Communist economic and political policies in India, Afghanistan, and Egypt—all important areas in our global attempts to halt the Red flood. On the military side we have had a recent warning from General Twining, Chief of Staff of the USAF, that he is gravely concerned by the future prospects of Communist air strength:

"The Communists have thousands more combat airplanes than we do.

"If being ahead is related to aircraft production, we are again only second best. The Communists are producing far more combat airplanes than we are.

"Even more important, if being ahead is related to rate of progress, we have fallen far behind.

"Eleven years ago we had the world's largest aircraft industry, turning out the world's finest airplanes by the tens of thousands. At that time, what

$URVIVAL?

By John F. Loosbrock
MANAGING EDITOR, AIR FORCE MAGAZINE

was left of the Soviet aircraft industry was rudimentary compared to ours. Yet, in eleven years, Soviet science and industry have provided the Soviet Union with the world's largest air force, equipped with modern, high-performance airplanes."

Of course, we cannot levy judgment on the '57 budget until it has been made public and its provisions and implications have been reviewed by the people's servants—the Congress. But, if it is in fact a "more of the same" budget, we will find it difficult to accept. If it represents a continuation of the fund-cutting that is slowly but surely strangling the effective airpower of this nation, we will find this difficult to accept as well.

Air Force commanders everywhere are feeling the effects of the money pinch. It is showing up in many areas; in the creeping expansion of our base system, in a slowdown of maintenance and operations, in stretch-outs of aircraft procurement, in faltering research and development.

The number of Air Force wings is continually growing but the base system to support them is not. In 1950 we had forty-seven wings and 122 bases in the US. In five years we have increased the number of wings by 160 percent, the number of bases by only forty percent. At a time when the strategic synonym for survival is dispersion, even our SAC striking force is doubling-up in many places. Everywhere our bases are crowded—inviting targets for a surprise attack.

The maintenance problem is far from solved. This magazine reported in September that many of our most modern fighters—F-100s—were standing idle on the ground because of a shortage of trained maintenance personnel. Since then the situation hasn't improved—it's getting worse. Right now almost a third of the whole fighter force of the Tactical Air Command is grounded for lack of adequate maintenance.

The shortage of operating money is hampering readiness training. We are told by a member of the Armed Services Committee of the US Senate that lack of operating money is severely handicapping the combat effectiveness of our air arm units in Korea. He reported that right now in Korea, where our flyers should be ready to go at an instant's notice, the Air Force is so short on operating funds that our pilots can barely maintain proficiency in landings and take-offs. They just don't have the operating funds that would enable them to train for the combat tasks they would have to perform if there should be another sudden attack in that area. Over-all, the Air Force is getting enough money to fly about seventy percent of the hours required to keep the force combat-ready. During the next fiscal year we will go from 119 wings to 127 wings. We wonder if maintenance and operating funds will increase commensurately. On a "more of the same" basis, we doubt it.

Orders for new aircraft have been steadily reduced. In an earlier issue we pointed out the need for annual orders of about 4,000 planes to meet attrition and keep our force modern. For the last three years we have been ordering about half that number. In this context, "more of the same" means we will procure about half of the aircraft we need.

It is clear that we are heading for a decline in quantity of force at a time when the quality of our force seems to be slipping.

Research and development funds also reflect an "about the same" attitude. Yet this is the last area in which a plateau of spending can be safely reached. The very nature of research and development means that a leveling-off of spending is, *ipso facto*, a loss. True, a stepped-up missile program has been announced, but we are curious as to whether this means a cut in aircraft procurement for the force-in-being.

As a taxpayer, an "about the same" program has certain attractions for us. But we would be less concerned if we could be sure that the Communists were putting a lid on their defense spending. However, the record shows they are not. They are apparently willing to spend whatever it takes to surpass us in airpower. The only thing that is "about the same" is the Soviet determination to take over the lead.

We hope that the 1957 defense budget will give us the means to insure they do not succeed. At this moment, we're a bit dubious.—END

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'Our Air Force must be unquestionably superior . . .'

Lagging Research and Development

The Hon. Trevor Gardner
ASSISTANT SECRETARY OF THE AIR FORCE (R&D)

I BELIEVE the threat of global war and our need to prevent it has not seriously diminished during the last year. This means that we are dependent upon our Air Force's being unquestionably superior to any other in the world. I believe that to maintain and improve this Air Force requires an adequate research and development budget through which we must bring to bear the best brains and energies we can muster to work on Air Force problems. It is my opinion that up to now we have not received adequate research and development support.

We must continue with undiminished enthusiasm to build a *modern* force of not less than 137 wings. . . . Perhaps it would be useful to tick off the major accomplishments related to airpower which the Soviet Union has revealed to us during the past year.

First, they have revealed an ever-increasing strength in total airpower.

Second, they have revealed six new types of aircraft which imply six new types of engines, all of an advanced jet or turboprop design. They have revealed these aircraft in quantities which are very substantial and indicative of great production know-how.

Third, they have revealed an airborne radar capability which implies a vast state of the art advancement.

Fourth, their advancement in electronics and radiation fields was corroborated by the quality and quantity of data which they discussed at the Geneva Conference.

Fifth, they have indicated a continuing substantial growth in nuclear weapons capability as revealed by their tests. The most recent test in the current series was in the megaton range.

Sixth, they have indicated during the year an enthusiasm for the development of advanced commercial aircraft, a continuing enthusiasm for the development of guided missiles, and a stated national policy concerning such advanced areas of technology as satellites.

Certainly, there is nothing in this picture which leaves room for complacency since it is clear that the Soviets are leaving no stone unturned to close the gap in this technological race.

Our progress during the past year has also been impressive . . . [in the] build-up and improvement in quality of both the men and the machines involved.

We are moving forward on schedule to our goal of 137 wings by the summer of 1957. We are making appreciable progress in our Century Series of fighter aircraft. The F-100 is in quantity production and operational. We have ordered the F-101 into production. The F-102 is also operational, and we have recently ordered production quantities of the F-104. Other fighter aircraft in the development stage are showing great promise.

The B-52, which Secretary Quarles has described as the most formidable expression of airpower in the world, is going into high-gear production. . . .

Improvements are steadily being made to make the B-57 an ever-more effective tactical bomber, and several wings are now equipped with this aircraft.

Our new B-58 bomber is coming along, and there are others in the works which can make it possible for us to maintain our leadership in strategic and tactical bombing capability.

Our Matador tactical missile has achieved a high degree of reliability during the past year and it is being successfully launched under field conditions by operational units. . . .

We are constantly improving other items in the missiles field—in short-range missiles for our fighters and bombers, supersonic ground-to-air and air-to-ground missiles, and others. . . .

Perhaps in emphasizing the urgency of our needs in the area of the global deterrent force, we tend to convey a feeling of lack of enthusiasm and understanding for the other areas in which airpower can be used to advantage. I can assure you that we are bending every effort in the areas of air defense, in tactical aircraft, and in the development of logistic carriers to take advantage of research and development in these areas as well.

As you know, the Air Force has heavily committed itself to the guided missile field. Guided missile technology is assuming an equal place in the Air Force with aircraft technology. We are assigning large sums from our budget to this field and are attempting to place emphasis on guided missile development by assigning many of our finest officer and civilian personnel to this task. To increase our long-range striking power, we have accelerated the development of long-range, high-altitude, high-velocity pilotless aircraft and ballistics missiles. They have a very high priority in our efforts. . . .

I would like to emphasize that missiles and aircraft are clearly complementary devices and only in certain limited areas will the development of an advanced missile eliminate the need for the development of advanced manned aircraft. Accordingly, you and I as taxpayers are faced with a double burden. As we go forward we must not only remain superior through developments in aircraft technology but we must make huge investments in missile technology and facilities.

It is for this reason that those of us in the research and development end of the business are constantly seeking more funds and resources to apply to our problems. I would imagine that most of you have had the experience of arriving at work some morning to find that a competitor has very simply solved a problem which has perplexed you and your staff for months and perhaps years. Occasionally, such a breakthrough can be disastrous to a business; more normally, the business will have time to recover from its effect. In military research and development, we cannot risk the probability that the enemy will make the breakthrough first nor can we hope that we would have time to catch up if he does.

Our job, through your support with funds and energy, is to prevent this from happening. You all know where we'll be if our Air Force comes off second-best.—END

Condensed from a speech on December 8, 1955, before the National Security Industrial Association, in Washington, D. C.

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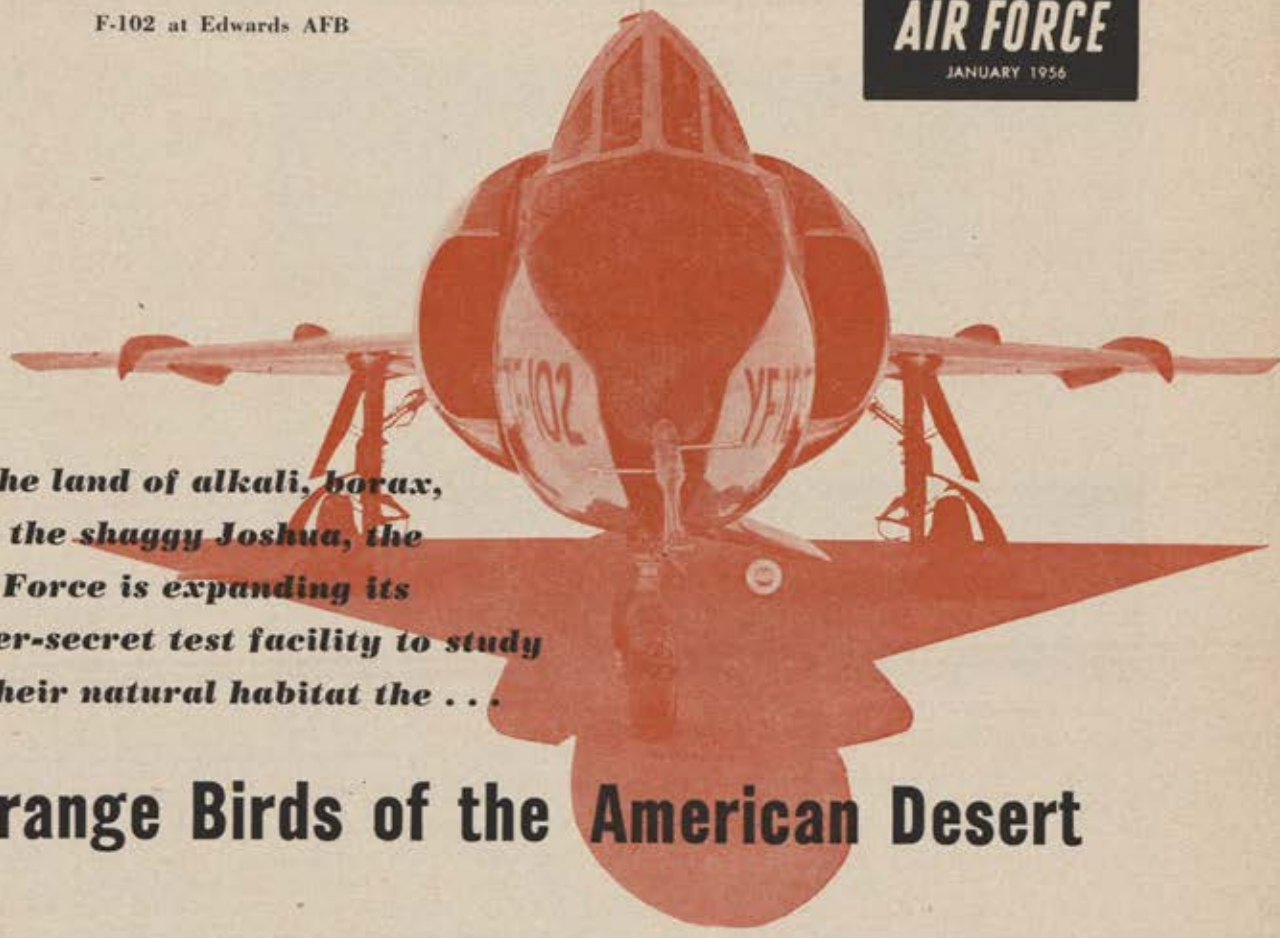
F-102 at Edwards AFB



In the land of alkali, borax, and the shaggy Joshua, the Air Force is expanding its super-secret test facility to study in their natural habitat the . . .

Strange Birds of the American Desert

By Ed Mack Miller

NOT quite 100 miles northeast of Los Angeles in the Mojave sandlot of Kern County, Calif., the Air Force is battling for the domination of the Mojave with the shaggy Joshua tree. The sturdy species is about the only plant with the arrogance to thrive in the land of sun, sand, and lizard.

In its way the angular, unshaven Joshua symbolizes the stubborn courage of the men who have turned the once deserted Mojave into one of the nation's fastest-growing areas.

Leading the parade of prospectors ("There used to be 'glory-hole' gold; who knows, maybe there's a little uranium?"), irrigation farmers, and just plain settlers to the 18,000-square-mile Mojave have been men of the air, who early saw in the parched and sere bowl a likely staging base for the earthling's battle to conquer time and space.

As early as 1924, Sir Hubert Wilkins tested his Lockheed Vega at Muroc Dry Lake, now called Rogers Dry Lake. In the same year Northrop joined Lockheed in using the area for tests.

In recent years the desert—bounded on the south by the San Gabriel and San Bernardino Mountains, on the west by the Sierras, on the north by Death Valley, and on the east by the Colorado River—has become a nearby, yet satisfactorily isolated space platform from which West Coast manufacturers could launch and test their latest "out-of-this-world" devices for the armed services.

In the middle of the borax-and-alkali desert, once an arm of the sea, sits Edwards Air Force Base, where air conditioning is a necessity rather than a luxury and where the airmen wear pith helmets as regulation uniform.

The sun comes flaming up across the black lava beds to the east of Edwards, and for some 350 days a year it dusts the desert with its scorching breath, making for perfect flying (the best conditions of any known base) but leaving the desert-dwellers with faces dark as polished cordovan.

It takes a good man to live and work in the Mojave, a man with the tenacity of an Old Testament Joshua.

And that kind of man Edwards AFB has attracted in abundance.

A near-sighted ornithologist, wandering aimlessly on the desert near Edwards, would surely at first glance think he had stumbled on a unique nest when he saw the odd flying shapes that regularly swoop across the Mojave. Indeed a colorful monograph could be written about "The Strange Birds of the American Desert" that abound in their native habitat on the rim of Rogers Dry Lake.

Since Maj. Charles "Chuck" Yeager made his world-shaking flight on October 14, 1947, in a bright orange bullet called the X-1, twentieth century citizens have watched with interest the probing of the unknown by later X-models.

Douglas test pilots Gene May (a grandfather yet!) and Bill Bridgeman followed Yeager in driving beyond Mach One, with Bridgeman flying the D-558-II to a record speed of 1,238 miles per hour and an altitude of better than 79,000 feet. Into the "thermal barrier" ("It's not a barrier; it's a thicket") went civilian pilot Scott Crossfield, an employe of the National Advisory Committee on Aeronautics

(Continued on following page)

Like a surrealist Cyclops, this specially instrumented F-86 Sabrejet stands poised on a desert runway at Edwards AFB, Calif., ready for another test hop.

(tenants at Edwards), who pushed the speed record to twice the speed of sound. Then it was Yeager again, attaining the tremendous velocity of 1,650 miles an hour in the Bell X-1A, after which Maj. Arthur Murray flew the same plane to an altitude of more than 90,000 feet.

On November 19, 1955, Lt. Col. Frank K. "Pete" Everest, chief of the Flight Test Operations Division at Edwards, made the first powered flight of the Bell X-2, successor to the ill-fated X-1A (jettisoned in August of '55 from the belly of the B-29 "mother" ship when it exploded prior to release for a test flight), pushing the X-2 to "transonic speed." It is expected that the Bell plane, which develops power almost comparable to a navy cruiser with its Curtiss-Wright rocket engine, will soon surpass Yeager's two-and-one-half Mach record and perhaps go even higher above the earth's surface than Major Murray did in his 90,000-foot flight.

Earlier last summer, on August 20, another Edwards pilot, Col. Horace A. Hanes, Director of Flight Test, set the first official supersonic aircraft record over a measured course in the Mojave, flying a North American F-100C Super Sabre 822 miles an hour (the higher speeds clocked by the rocket planes have never been official; it's doubtful that they could be officially timed because of the altitude attained and the parabolic course flown).

After the flight, Colonel Hanes made the point that characterizes this type of endeavor at Edwards; he noted that no special preparations had been made for the speed run, that it was just "business as usual," and that, in fact, he had flown faster some time before in an earlier F-100 and had flown much faster in the X-1B.

This "sophisticated" approach to test flying, as opposed to the old school of "bourbon, blondes, and biplanes," hell-for-leather, seat-of-the-pants approach, carries all the way through the Flight Test Center at Edwards, where, as often as not, the flyer assigned as project pilot is also project engineer. At Edwards the slipstick genius has been wedded to the adventurous aeronaut, and the resultant high-type flying officer is a happy (and extremely valuable) asset to the Air Force and the nation.

The military history of the Edwards-Muroc area began in 1933 when Sgt. Harley Fogelman and a small detachment of men arrived to erect a temporary training base of tents and tar-paper shacks. But it was not until World War II that the site was recognized as a natural spot for an aircraft-center.

In 1941 a phone call from Gen. Henry H. "Hap" Arnold to Larry Bell, president of the Bell Aircraft Company in Buffalo, N. Y., decided the future of the desert real estate for many years to come. General Arnold was triggering one of the hottest projects in the history of US military aviation—our first jet fighter.

Shrouded in secrecy, the new Bell jet, labeled the XP-59, was shipped on three open flat cars under heavy guard to the land of the Joshua tree, and there, on October 1, 1942, Bell's chief test pilot, Robert M. Stanley, flew the Airacomet for the first time. (On the humorous side, the Airacomet had a fake propeller so that prying eyes would see nothing amiss about the plane.)

While the north end of the dry lake was being used for the hush-hush tests, the south end had become an Air Corps training base for P-38, B-24, and B-25 crews, and few men who phased through there will ever forget that big Jap cruiser sitting smack out in the middle of the desert. For the Air Corps, to make South Pacific bombing training more realistic, had built a 650-foot-long, realistic model of a Nipponese cruiser of the *Mogambi* class. The *Mogambi* took a terrific pasting, and became quite a nostalgic landmark for bomber crews who always felt a rather soft spot in their hearts for it—because it never fired back.

At the end of World War II, the north and south bases were consolidated into a single Flight Test Center,

Edwards test pilots are flying scientists—Maj. Robert L. Stephens.

Brig. Gen. J. Stanley Holtoner commands the AF's Flight Test Center.

with the primary mission of Experimental Flight Test and Engineering for the Flight Test Division of the Air Materiel Command (then known as the Air Technical Service Command). The first postwar mission of the field involved further research into jet and rocket flight, and on December 1 of 1946 the X-1 made its first powered flight, reaching a speed of 550 miles an hour.

The future was now a fact for the Land of the Joshua Trees. The quiet of centuries that a war had shattered would not be restored in the foreseeable arch of years. If ever.

The lake was the thing.

"Yucca" was the first name given the little town nearby when the Santa Fe railroad was spiked through in 1882. Later it was renamed "Rogers," then "Rodrigues," and then just plain "Rod."

When, in 1910, Clifford and Ralph Corum homesteaded in the desolate place, the names of both towns and lake were changed to "Muroc"—Corum spelled backward.

But, whatever you called it, the lake was the thing. It was the drainage basin for much of the Mojave, and each winter for two months gentle rains covered it with fifteen to twenty inches of water.

The Corum brothers probably wondered what good the lake would ever do anyone. The desert winds would sweep the water back and forth, smoothing and hardening its volcanic ash, clay, and silt base to stone-like solidity. During the ten rainless months it would dry out and crack, and each winter the resurfacing process would begin again—a freak of nature. A curiosity, yes; of practical use, no.

And, the Corums probably lamented the awful waste of earth—sixty-five square miles of surface, with no utility at all.

SAN DIEGO'S AFA SQUADRON SPENDS A DAY AT THE DESERT

Ed Miller's story on Edwards AFB will be pretty much old stuff to members of AFA's San Diego Squadron. As part of the unit's program to keep the public, as well as its own members, abreast of the latest developments in aviation, the Squadron arranged to be given a tour of Edwards. The giant Douglas C-124 provided by AMC from Norton AFB was barely large enough to tote all eighty-five Squadron people and the San Diego citizens who came along as guests. Led by Squadron Commander Jim Snapp, Jr., the group was briefed on the Flight Test Center mission by Lt. Col. Raymond Klein. Afterward, Col. Horace A. Hanes, world's speed record holder, discussed the sonic boom problem with the San Diegans. Above, the group loads aboard the C-124.

You couldn't till it. Cattle couldn't graze on it. There were no valuable minerals sunk in its stone face. Just a big, flat hunk of nothing.

Today at Edwards (renamed again in 1951 to honor the late Capt. Glen W. Edwards, a native of Lincoln, Calif., who was killed in a test flight of the YB-49 "Flying Wing" at the base in 1948), the lake is still the thing.

It's a little more appreciated today, however.

For it has, in the past half dozen years, accommodated hundreds of emergency landings of "hot" aircraft, some of them tremendously valuable because they were the only one of their type—and if they were lost, years of effort and unestimated thousands of dollars would be destroyed with them.

If it had no use in 1910, today it is one of the most valuable properties in the world, because, during most of the year it is the perfect emergency landing field, able to support weights up to 250 pounds per square inch, more than any plane in the foreseeable future will bring to bear on it.

True, it begins to crack up before the rainy season each year, but the washing action of its winter waterfill completely resurfaces it for another year's use.

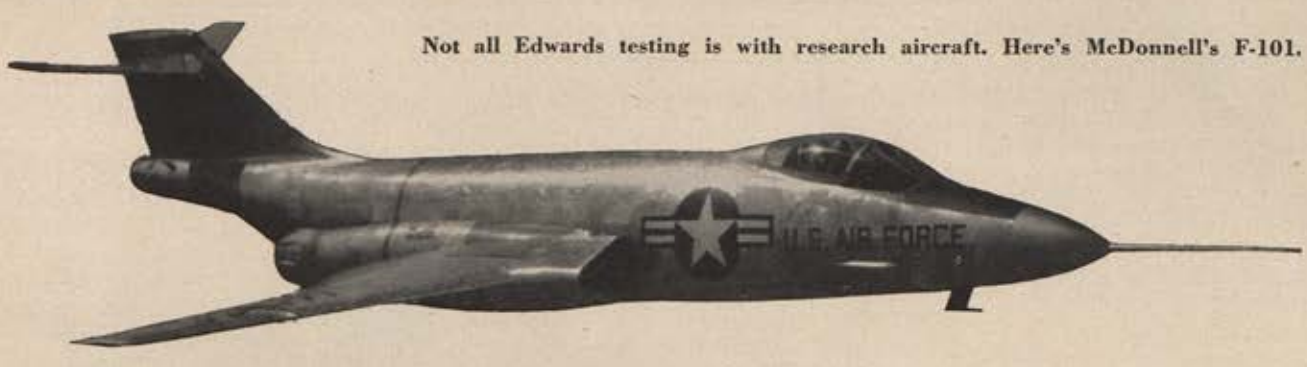
Imagine what it would cost to prepare and maintain a landing mat containing sixty-five square miles of surface?

(Continued on following page)

Maj. Arthur Murray and the Bell X-1A which he took above 90,000 feet.

Lt. Col. Frank "Pete" Everest may go higher and faster than anyone in X-2.

Official speed record of 822 mph was set by Col. A. H. Hanes in F-100C.



Not all Edwards testing is with research aircraft. Here's McDonnell's F-101.

No wonder then that the commander of Edwards Air Force Base says: "Nature is our best contractor."

The commander of the Air Force Flight Test Center is Brig. Gen. J. Stanley Holtoner, who was commissioned in 1932 and who led the 82d Fighter Group during the last months of World War II in Italy, flying forty-two combat missions. A command pilot, he has flown all Air Force fighter types, helicopters, and the X-1 rocket research plane. In 1951 he won the Mackay Trophy for setting the world speed record of 635 miles per hour in an F-86E at the National Air Races.

General Holtoner took over Edwards in 1952, shortly after the base became one of six (later increased to ten) centers in the newly created Air Research and Development Command. (The other installations are: Wright Air Development Center, Wright-Patterson AFB, Ohio; Cambridge Research Center, Cambridge, Mass.; Rome Air Development Center, Griffiss AFB, N. Y.; Missile Test Center, Patrick AFB, Fla.; Holloman Air Development Center, Holloman AFB, N. Mex.; Arnold Engineering Development Center, Tullahoma, Tenn.; Armament Center, Eglin AFB, Fla.; Special Weapons Center, Kirtland AFB, N. Mex.; and Personnel and Training Research Center, Lackland AFB, Tex.)

Because of its remoteness (which lends a natural security for secret testing), its useable area, terrain features, availability of water and power supplies, and good weather, Edwards was chosen as the prime base for the testing of flying characteristics of complete weapons systems. (After Edwards finishes its test, the Eglin base takes over to determine the combat capabilities of the craft.)

Four governmental agencies and more than twenty aircraft contractor agencies work together on Edward's 300,000 acres, testing the latest research and production aircraft. But, as could be surmised, the work of the Flight Test Center involves more than ultra-glamorous test flying. There are scores of general maintenance shops, machine shops, and support facilities, as well as elaborate instrumentation laboratories to calibrate and maintain the precision instruments involved in testing, and to reduce the mountains of figures supplied by these machines to useable charts, graphs, and tables.

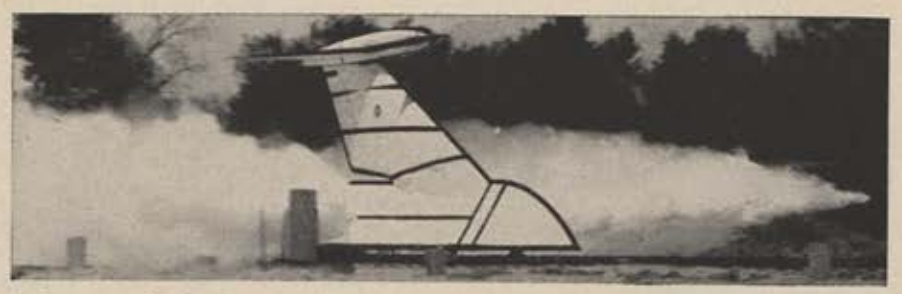
Two of the fastest and straightest railroad tracks in the world are maintained here. One, on the northwest shore of the lake bed, is 2,000 feet long and has a special friction brake located 1,250 feet down the track. Used to simulate deceleration forces received in airplane crashes, the brake clasps two keels on the chassis of a rocket-propelled test sled in tests that have resulted in the redesign of aircraft safety belts and harnesses and have afforded much "stress analysis" information on the human body.

The second track (along which special sleds are shot at speeds up to 1,200 miles an hour with rockets of thrusts up to 110,000 pounds) is used to test seat-injection mechanisms, aircraft tail assemblies, and parachutes.

Twenty miles from the main base is the Rocket Engine Test Laboratory, built on a cliff to permit vertical firing of high-thrust rocket engines on either side of an observation control room. This facility was built for use by civilian companies producing rockets and missiles for the government.

Another facet of the complex operation at Edwards is the Precision Bombing Range, operated by the Aberdeen Bombing Mission of the US Army to compile bomb trajectory data for Air Force bombing tables. Here experiments are run on improved bomb shapes, and optical and electronic in-

Veterans of Flight Test Center—clockwise around the Douglas X-3: Bell X-1A; Douglas D-558-I; Convair XF-92A; Bell X-5; Douglas D-558-II; Northrop X-4.



A Grumman-built sled rockets down the High Speed track Facility at Edwards to test flight characteristics of certain types of aircraft tail assemblies.

The Cook research parachute test sled throws up a cloud of spray as it hits the water brake on the High Speed Track. Rocket-powered sleds top 10,000 mph.

struments are designed and manufactured for the improvement of trajectory observation.

On another track, the Flight Test Center maintains an All-Altitude Speed Course, consisting of three radio beams placed crosswise to the speed track with each beam set to trigger an electronic timing device when the plane crosses it.

Along the same line, a large and expensive installation program is nearing completion which will give the Flight Test Center a high precision Space Position Range to provide exact trajectory data for experimental aircraft. Called an "Askania Theodolite Range," it will be able to monitor planes (or missiles) in an area 125 miles long, forty-five miles wide, and up to an altitude of 200,000 feet. The physical installation consists of a master station and eight field stations dispersed over an area of 450 miles. Each field station contains a highly precise Askania camera mounted on a two-foot, concrete-filled steel pedestal daggered deep into the ground through the center of the building. Because the sun shining on one wall causes a slight roof tilt to any building, and to eliminate wind loading of the building and vibration caused by machinery or even by a person walking near by, the pedestals are structurally separate from the buildings which house them.

A look down one "row of shops" at Edwards is an eye-opener, for there seems to be as many independent research activities going on as there are Joshua trees in the Mojave.

One of the biggest is the Air Force Experimental Test Pilot School (there are only four like it in the world: the Russians have one, as do the French, the British, and the US Navy—the latter at Patuxent, Md.).

Fifteen pilots are selected from the entire Air Force four times each year to take the course. They may rank from lieutenant to major, must be in the 25-30 age bracket, have 1,500 hours of diversified flying time, and possess a knowledge of college algebra, plane geometry, differential calculus, theory of flight, aeronautical mechanics, and aerodynamics.

Each student has a calculating machine on his desk, and in six months he gets the equivalent of what a college engineering student gets in his last two years. In addition, the pilot spends many hours in the latest type airplanes learning the various techniques of flight test so he will be competent to evaluate the performance, stability, and control features of new airplanes. The top graduates are retained at Edwards to "enrich the faculty."

Other places of business on "slipstick row" include:

Flight Test Engineering, where, for every test flying hour put in, many hours are expended in determining the aerial maneuvers the pilot will follow to gain the best evaluation of the new weapons platform.

The Flight Research Branch, where criteria are determined for testing new and unconventional machines, such as the one-man platform helicopter, the "Pogo" vertical riser, etc.

The Instrumentation Branch, which develops, installs, and maintains the elaborate instrumentation needed for flight testing.

The Performance Test Branch, which prepares Phase II (the first Air Force test on a new aircraft; Phase I tests are run by the civilian contractor) flight plans and Phase IV tests, which involves checking performance and stability characteristics of the plane (Phase VI tests are also run at Edwards).

Before they're installed in aircraft or missiles, rocket engines are run in this test stand, which is built on a cliff to permit vertical firing on either side of a control room.

The Flight Development Test

(Continued on following page)

A B-29 crouches over the rocket-powered Bell X-2 like a mother hen over a chick. The giant Boeing bomber will carry the test ship aloft for launching.

Branch handles all Phase VI testing, which simulates operational conditions on night, weather, maximum range, gunnery and other missions.

The Human Factors Branch tests aero-medical problems during Phase II and Phase IV tests, evaluates the personal equipment used by the pilots, and reports on the place of the pilot in each air weapons system.

The Data Reduction Branch transcribes, computes, interprets, and records data for the entire Flight Test Engineering Laboratory.

The Engineering Lab's Powerplant Branch runs static tests of both rocket and jet engines, supplies engineering assistance for experimental flight testing, and recommends overhaul and inspection periods for engines. This branch designs much of its test equipment and is authorized to do major overhaul on all types of engines.

The Maintenance Branch is charged with keeping one of the largest and most varied assortments of aircraft, engines, and avionics equipment in the world in top working shape. It services everything from huge Globemasters to tiny helicopters.

The Photo Branch constantly experiments with new cameras, lenses, and filters (and co-operates on running tests on shinola-black nights of flare-photography for reconnaissance branches of the AF).

The Armament Branch tests out bomb systems, gunsights, and new armament for combat aircraft.

Sometimes a new fighter plane—say the F-100, for instance—looks very neat, symmetrical, and simple from the outside.

They'll clue you at Edwards, brother. It ain't.

By 1946 Edwards was busting out of its britches. Civilian contractor-tenants were using old boiler rooms for office space and the only locker room space for pilots was in old latrines.

The long and short of it — a giant B-52 overshadows the tiny X-4 model.

And so, in 1947, a master plan for a great new permanent base was drawn up. The new base, on the northwest corner of the lake, is now better than three-fourths completed, and features modern, air-conditioned barracks, a large hospital, a modern airman's club (called The Oasis), a big new technical engineering administration building, an engine repair building, and a modern new headquarters building.

The new flight line boasts a tremendous new $8 million hangar (which can house six B-52s), and a 15,000-foot runway that can support 500,000-pound loads. The runway (heading: 4-22) is in line between Rogers and Rosamond Dry Lakes and will be extended on the west end by a twenty-two-mile freeway bulldozed through the desert to Rosamond, eventually giving a straight-away emergency landing area any pilot dreams about (all of the rocket ship landings are "dead stick" and the almost wingless "X-jobs" need all the runway space they can get).

One of the most prodigious tasks involved in the big job of moving Edwards was transporting two big hangars from the old flight line to the new. One hangar is now in place in the new area, and the other has almost completed its cross-field journey—the double "pickup" saving the Air Force something like two million dollars over the construction of new hangars.

Overlooking the new setup is what is believed to be the tallest aircraft control tower in the world (142 feet high).

Many old landmarks have perished in the moving process. Charlie Anderson's general store is gone now, and the old temporary housing area known as "kerosene flats" will be torn down soon.

But living conditions have improved too. In the hills west of the base is a growing Wherry Act housing development, and 100 new air-conditioned homes will be added shortly. A million-dollar shopping center is all but complete, with a large market, a drug store, furniture, clothing, and shoe stores, a restaurant, a variety store, and a beauty parlor.

Of course, a few Joshua trees had to go, too, to make way for this desert spendor—but there are lots more where those came from.

Business-wise, Edwards has plenty on its mind besides moving, too. Testing goes on with the X-planes, and phase tests are being finished up on the McDonnell F-101 Voodoo, the Convair F-102, and the secret-secret Lockheed F-104 (they call it the "Silver Slivver" and the "Gee-Whizzer"). The Douglas RB-66 is about finished, as is testing on the B-52, but there are always more programs coming—parachute tests at Edward's El Centro satellite, ejection-seat improvements at the rocket-rail facility, new speed runs, new weapons systems, and so on, and so on.

Jaundiced old hands at the testing game are never surprised at what comes next. Maybe it will be space ships or maroon balloons. Who can tell?

But one thing is certain: the Air Force Flight Test Center will keep striding, in its seven-league space boots, toward the fringe of the future, remembering its motto: "*Ad Inexplorata*"—Toward the Unknown.—END

Allison Turbines power new Piasecki "Transporter"

The world's largest turbine-powered transport helicopter, the 40-passenger Piasecki YH-16A "Turbo-Transporter" is powered by two Allison T38 engines driving its giant rotors. These two T38 engines, capable of a total of 5300 shaft horsepower, give the 16-ton "Turbo-Transporter" a speed of approximately 150 mph.

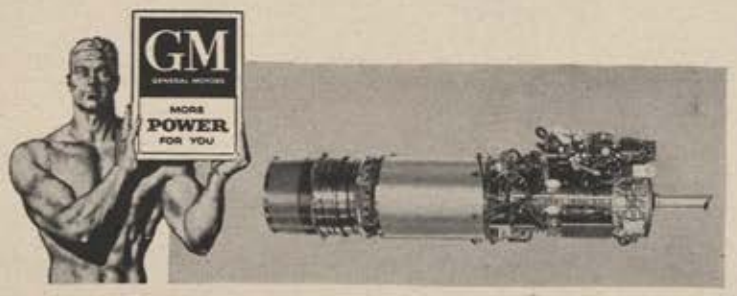
Two Allison T56 engines, capable of a total of 6900 shaft horsepower, will be used in the larger, more powerful production version of the "Turbo-Transporter," the YH-16B, which will carry a greater payload, or 69 passengers, at a higher speed.

Besides being smaller and lighter than piston engines of comparable power, which allows the helicopter to carry more passengers or cargo, gas turbine engines offer several other advantages: they need no extensive ground warm-up, are easier to service and maintain, and provide greater comfort for passengers and crew.

Improved Fuel Economy

With helicopters demanding high power for take-off and hovering for extensive periods of time, the turbine engine operates at its optimum efficiency. With the added advantage of the turbine engine using cheaper fuel, the over-all fuel economy is better than its piston-powered counterpart.

The new era in American air travel offers increasing opportunities for helicopters, and powerful, compact Allison engines ideally meet the requirements of this service. They are backed by more than seven million hours of turbine engine flight time—*experience where it counts most—in the air!*



ALLISON

DIVISION OF GENERAL MOTORS,
Indianapolis, Indiana

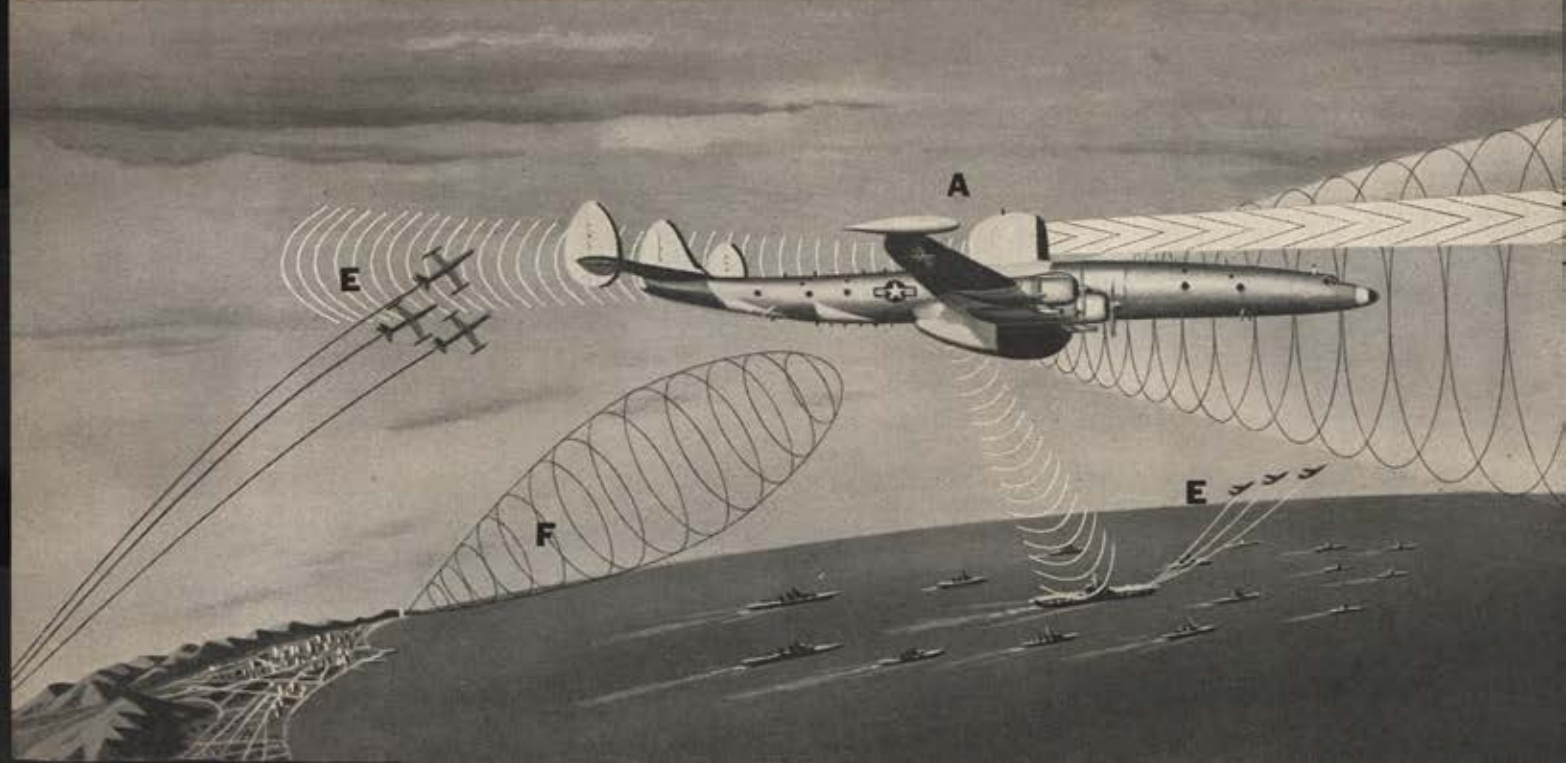
Builder of Turbo-Jet and Turbo-Prop Aircraft Engines

New U.S. Concept for

TOTAL DEFENSE

In this age of awesome airborne nuclear weapons, a vast umbrella of airborne electronics will safeguard our nation against sneak attack

BELOW—A WEAPONS SYSTEM IN ACTION. An electronics-laden Super Constellation early-warning plane (**A**), patrolling our outermost defense perimeter hundreds of miles from our shores and borders, from its high altitude can "see" beyond the horizon and detect both high-flying and low-flying enemy aircraft (**B**). Using its powerful search radar (**C**) and height-finder radar beam (**D**) to pinpoint position of invaders, the patrol plane alerts our interceptors (**E**), which swarm aloft and are radar-guided through fog or darkness to intercept and



LEFT—EARLY-WARNING RADAR PATROL. Designated the WV-2 by U.S. Navy and EC-121 by USAF, these radar-domed Lockheed Super Constellations carry six tons of electronics and a 31-man crew. Super Constellations are ideal for this duty because of their famed all-weather stability and extremely long range.

ABOVE—ROCKET-FIRING STARFIRE INTERCEPTOR. First of the almost-automatic all-weather interceptors, the Lockheed F-94C Starfire is an example of Lockheed's leadership in the design and development of airborne electronics. This deadly defender and other interceptors will soon be supplemented by—

Farsighted Pentagon planning and recent amazing technological developments by U.S. science and industry are rapidly making our nation's TOTAL DEFENSE system the most formidable in all history.

Lockheed's role in implementing our new Weapons System concept and in Systems management, is an important one. Thousands of Lockheed military aircraft, of *nine* widely different types, are already in service. Other advanced planes, missiles and electronic guidance devices are in production, undergoing tests or on the drawing boards at Lockheed. And Lockheed's pioneering leadership in design and development of airborne electronics will continue to contribute heavily to TOTAL DEFENSE.

STILL-SECRET F-104 SUPERSONIC JET FIGHTER. (Photo not yet released.) A high-ranking USAF officer said of the F-104: "This is a fighter pilot's dream. We feel confident that it is the fastest, highest-flying fighter in the air, anywhere."

THREE PHOTOS AT LEFT show crew members of Super Constellation early-warning plane at work. (Top) Navigator plotting a fix; (center) observers at radar consoles plotting altitude, speed and course of unidentified aircraft; (bottom) fighter-director charting position and path of approaching aircraft.

Lockheed

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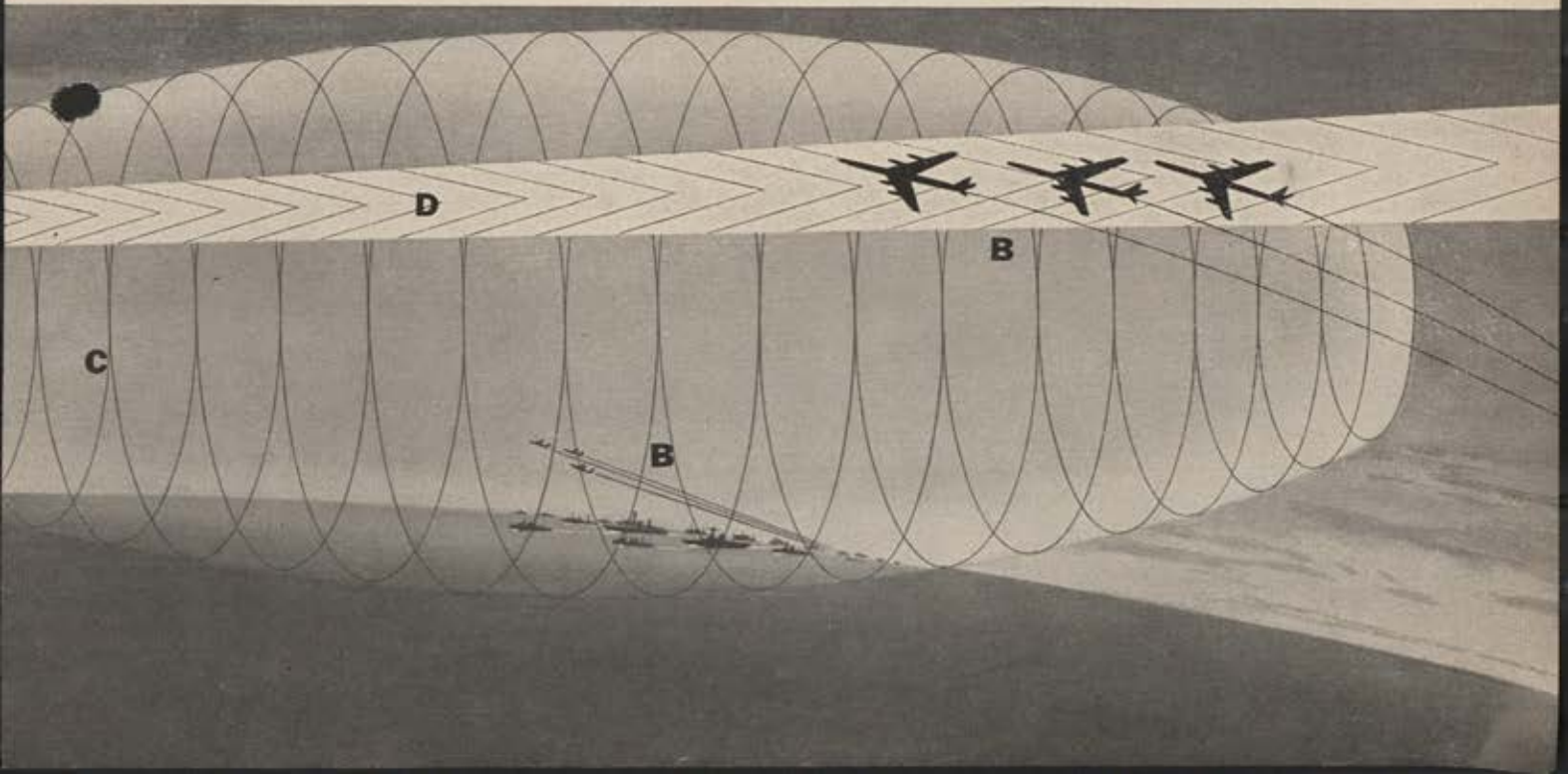
LOOK TO LOCKHEED FOR LEADERSHIP

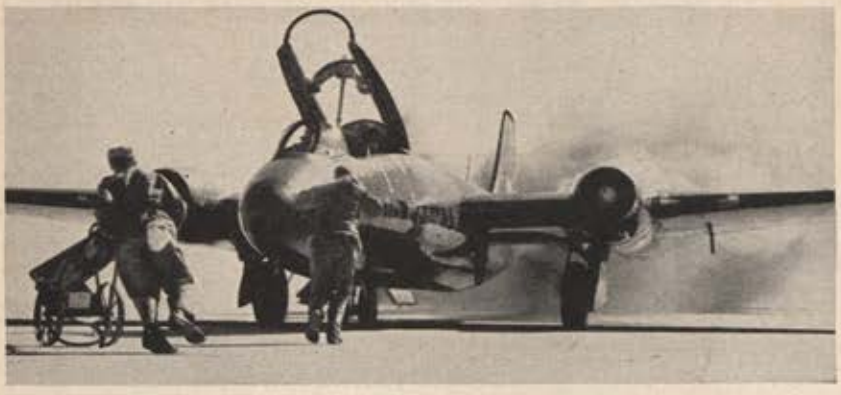
destroy the attackers with high-speed rockets or missiles. Any enemy aircraft penetrating our barrier patrol areas would be detected by shore-based radar stations (F) and Ground Observer Corps outposts continuously manned by patriotic civilians helping to keep our nation free.



Some exposed recon film is unloaded from a Republic RF-84F Thunderflash.

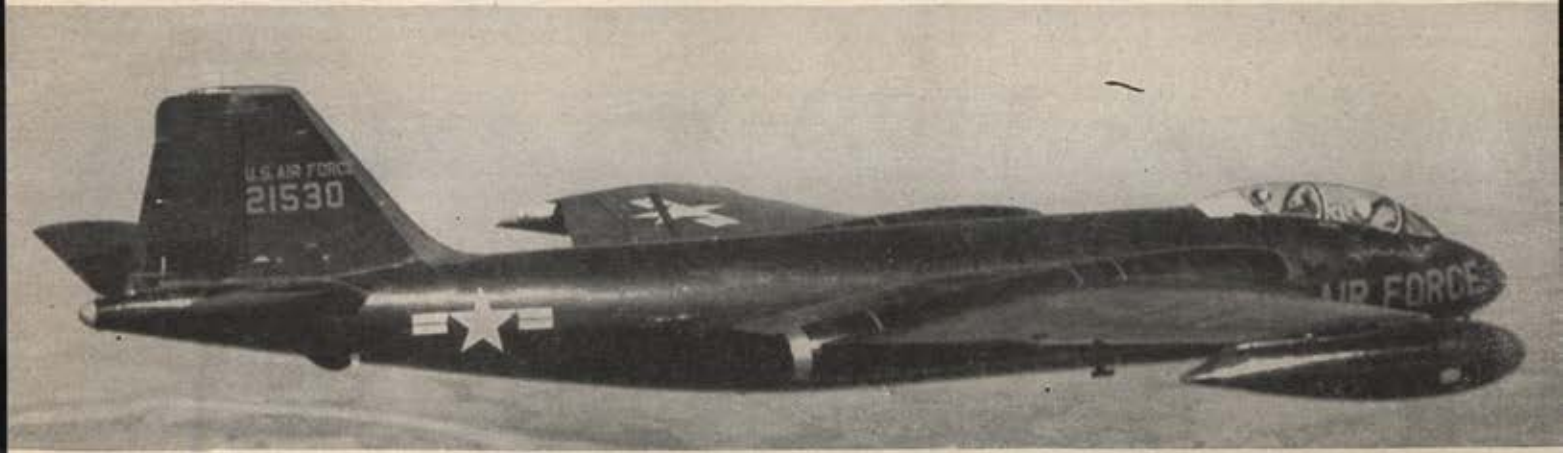
TAC's 11th Tactical Missile Squadron got a workout under field conditions, using its Martin Matadors. This TM-61A is in position on its mobile zero-length launching platform somewhere in Louisiana pine timberlands.

Sagebrush Snapshots

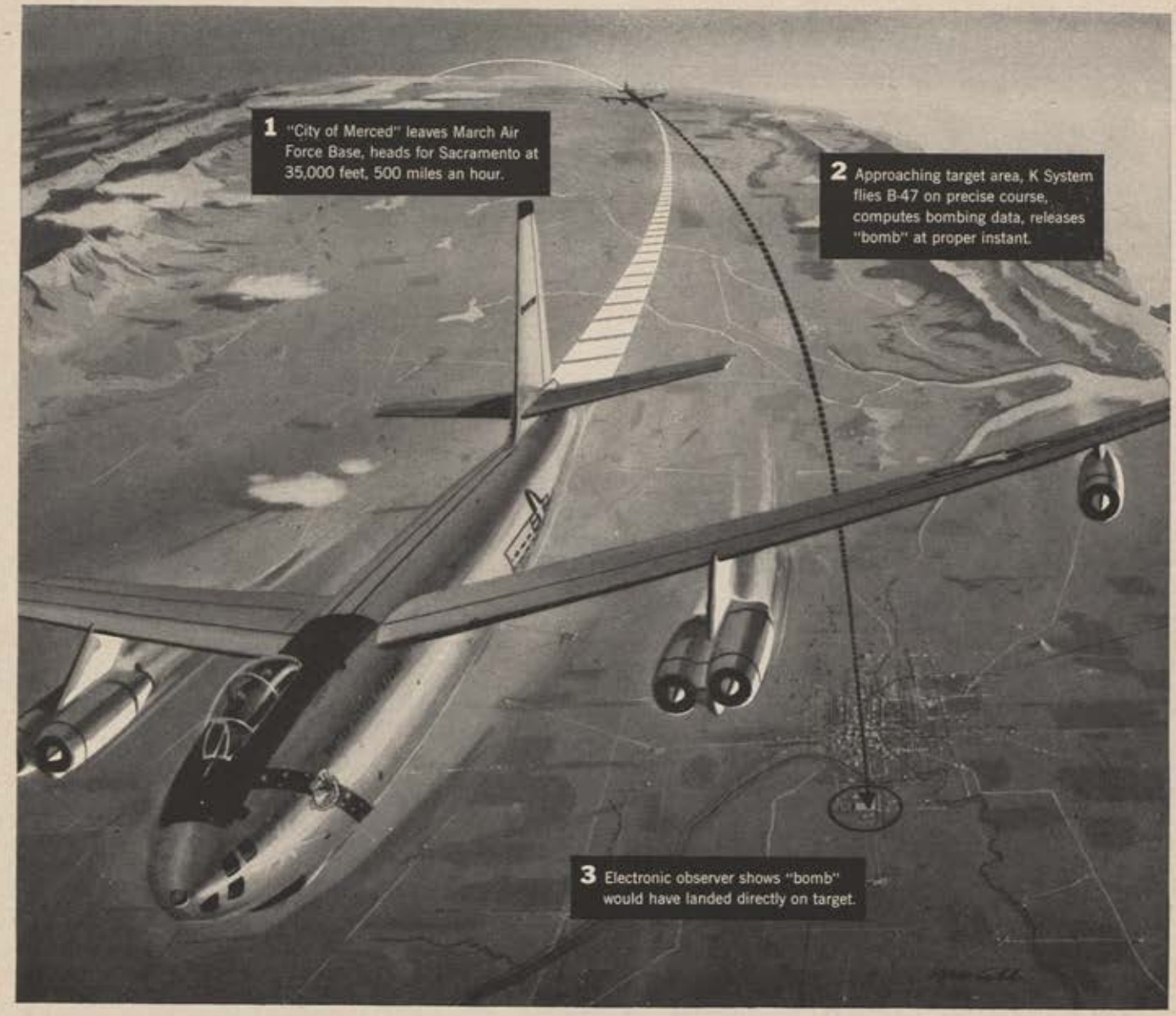


No, the B-57 isn't on fire. The billowing smoke is from the shotgun-type cartridge used to start the jet engines on the Canberra tactical bomber.

Before take-off, North American F-100 pilots are briefed by flight leader.



The jet-powered B-57 Canberra proved itself a worthy successor to the Douglas B-26 on night intruder missions.



"CITY OF MERCED" CREW WINS SAC COMPETITION

B-47 Team Pinpoints Sacramento "Target"

THE STORY BEHIND THE STORY:

■ It made September headlines when a most important "Series" was won by a three-man team, a Boeing B-47 bomber and its precision electronic equipment. The "Series" in this case was the annual competition to test the effectiveness of bombing and navigation by our Strategic Air Command. Top-flight crews from SAC bases each flew 9000 miles on simulated missions, demonstrating the extreme accuracy of our strategic bombers.

■ Piling up more points than any other team in the contest, the men of the "City of Merced" earned the title of "the world's deadliest bomber crew." On one of their runs the target was the northeast corner of an industrial plant in Sacramento. Flying nearly seven miles above the earth and at a speed of nearly 500 miles an hour, the "City of Merced" dropped its "bomb" within a stone's throw of the designated target.

■ Working all the way for the Navigator-Bombardier-Observer was the K Bombing Navigation System. This system, developed for the Air Force by Sperry, first sighted the target by radar. With the Observer keeping the cross-hairs directly over the target on the radar scope, the K System automatically navigated, flew the plane, compensated for the effects of speed, altitude and wind on the "bomb" to be dropped, and then released the "bomb" at the exact instant required to assure the direct hit.

■ SAC's rigid competition is dramatic proof of what the Air Force is doing to discourage possible aggressors—by making certain an aggressor nation will be hit surely and swiftly should it take belligerent action. And the K Bombing and Navigation System is another example of Sperry's ability to produce equipment which helps assure the success of military missions.

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Great Neck, New York
DIVISION OF SPERRY RAND CORPORATION

UNLIMITED HORIZONS

THE NEW LIGHTWEIGHT U.S.A.F. J4 COMPASS SYSTEM PERMITS PRECISE FIGHTER NAVIGATION AT ALL LATITUDES

ANOTHER MAJOR GYRO PROBLEM SOLVED BY WEAPONS GUIDANCE LAB. U.S.A.F. AND KEARFOTT

This miniature Kearfott Directional Gyro is the heart of the U.S.A.F. J4 Compass System. The System provides both latitude corrected and magnetic slaved directional gyro heading information. Suitable output transmitters are incorporated to supply compass data to autopilots, course indicators, and other systems requiring this information. This system provides all the functions of the Kearfott designed U.S.A.F. N1 Compass System with little loss in accuracy despite a 66% reduction in weight. The J4 Compass System as designed by Kearfott was selected by the Air Force ". . . due to its adaptability to product improvement and Kearfott's ability to meet the urgent requirements of the Air Force."

U.S.A.F. J4 Directional Gyro
Random drift rate 3° per hour max.
Weight 7½ lbs.

OTHER KEARFOTT GYROS IN PRODUCTION

VERTICAL GYROS: Precise verticals with 2 mins. vertical accuracy (Bench) weigh 7 pounds and measure 5⅛" diam. x 6⅜" high. Miniature verticals with 15 mins. vertical accuracy weigh 3.5 pounds and measure 3" x 3" x 4" approx.

FREE GYROS: Designed specifically for missile applications with 1° per minute drift. Under 2000 cps vibration at 3G drift will not exceed 5°/ min. The gyro withstands 60G shock.

FLOATED RATE INTEGRATING GYROS: Designs include 2.5 x 10^6, 2 x 10^4 and 6 x 10^6 wheels. Representative random drift rate .25°/ hour on day-to-day basis. Standard deviation for one day run .05°/ hour.

STABLE PLATFORMS: 3 gyro, 3 and 4 gimbal designs now in development, flight test or production are suitable for primary gyro reference or for inertial applications.

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A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION

Pull-Out is being handled by Col. T. L. Mosely, CO of the Fifth AF 314th Air Division.

ROK Air Force leaders are apprehensive over American air policy in Korea. They feel that US air strength is being pulled out of their country too rapidly, considering the mounting Red threat

miles of the 140-mile front. The 60,000 American troops that remain are responsible only for twenty miles of front—in the strategic sector north of Seoul.

In air defense, the Koreans are not so well off. And yet only one wing of American F-86 interceptors remains in South Korea. This has a woefully puny look when compared with what the Communists have in North Korea.

Specific data on what the Reds have accumulated in the north is hard to come by. For American consumption, the ROK figures are usually exaggerated. After extensive questioning of all the anonymous, informed observers that could be found, however, this correspondent arrived at a formula for estimating North Korean strengths—take the South Korean figures and cut them in half.

On this basis the North Korean Air Force has five divisions, three of them of MIG-15s, one of IL-28 twin jet bombers, and the fifth of both MIG-15s and conventional fighters. Among these five divisions there are probably somewhere between 150 and 200 MIGs and fifty to seventy-five IL-28s. Another bomber division is training inside Manchuria, the Koreans report.

These planes are scattered around ten jet fields—not all of them in continuous operation. Another fourteen conventional air bases have been constructed since the armistice was signed in late July 1953. At Pukchong in North Korea the Communists are reported to have built underground hangars which can accommodate up to one division.

They are reported to have trained nearly 2,000 pilots in the last three years. South Korea, meanwhile, has only 300 combat pilots, fifty of them jet qualified. The South Koreans are now trying desperately to catch up. They have around 700 men—pilots and ground crews—training with our 314th Division in Korea, and hope to raise that number to nearly 1,200 next year. Another 1,300 pilots and ground crew personnel are training in the United States or are in the process of going there. It will take a crash program of sorts to catch up with the North Koreans, however, because that training program continues to expand without letup.

The key comparative statistics, of course, are pilots and bases. While the South Koreans have only three presently operable bases to the North Koreans' ten, several other wartime jet bases are available for American jets to move back into if any new trouble starts. This high mobility of jet aircraft thus makes daily nose-counts less significant.

On the Communist side, for instance, there are some 7,000 or 8,000 Red aircraft in Asia, 3,000 of them jets. The United States has nothing to com-

(Continued on following page)

This is a wartime scene, but it's typical of the floor shows still held twice a week in the officers', non-coms' and enlisted men's clubs to help brighten the nights.

There is still plenty of game in Korea and hunting is a favorite form of recreation for our troops there.

Mail, as always, is a big factor in keeping the spirits up. This airman takes advantage of a spare moment to write the folks back home.

A group of spirited kids can do wonders in lifting sagging morale. This Korean miss is obviously tickled over her treat.

OPERATION PULL-OUT — CONTINUED

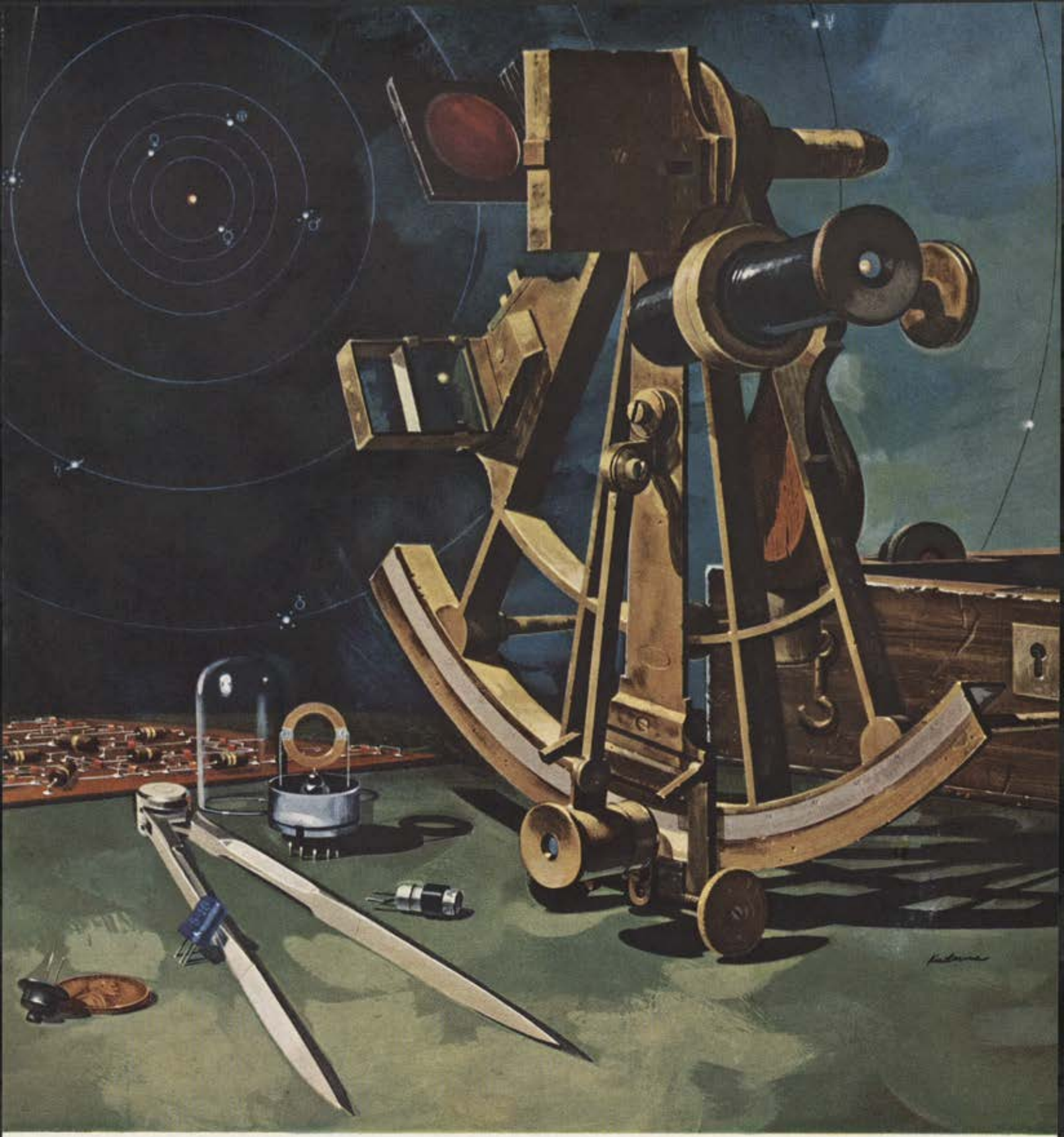
pare with this in Japan or Okinawa, but it does have A-bomb-carrying F-84Gs available, which could presumably make quick work of the bases out of which Red jets would have to operate. In a few days, too, the United States could move large numbers of jet fighters to the Far East from the Zone of Interior.

Meanwhile, the vital daily air patrols and round-the-clock early warning radar missions—including the one at Pengyang island off the west coast of North Korea—are still manned by American personnel. It is the United States' intention to turn these posts over to the Koreans, too, as fast as they can be trained.

Col. T. L. Mosely, commander of the Fifth Air Force's 314th Air Division in Korea, in telling how he must supply some of his remote radar installations by air-drop, is just as impatient as the Koreans. "We're trying to give away those rugged mountain stations," he says, "just as soon as the ROKs are ready. This is their country and they are better adjusted to spending those cold winters on the tops of windy mountains."

Operation Pull-Out is one of Colonel Mosely's main missions. The other is to keep the American outfits in Korea up to battle readiness. His two principal combat outfits are the 58th

(Continued on page 63)



ON COURSE—Unceasingly, Northrop directs its progress toward development and production of the most effective weapons for national defense. Notable achievements by Northrop include Scorpion F-89 interceptors; unmanned, far-ranging Snark SM-62 A-bomb carriers; and Radioplane Company's pilotless drones and missiles. New horizons in a multitude of fields are continuously scanned by Northrop engineers and scientists, years in advance of charted goals. Working in close coordination is the well-balanced Northrop production force, thus insuring efficient, economical output. Already, the course is set by Northrop for new weapons of tomorrow, their successful production and prompt delivery assured by this coordinated effort.

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Today, working to brilliantly foresighted military specifications, Lycoming is adding to its already announced 825-horsepower T-53 gas turbine, a second gas turbine, which delivers substantially greater horsepower. The Lycoming industrial engine family, offering dependable power to construction and agriculture, is being enlarged. Lycoming super-charged engines are driving private aircraft higher and faster than ever. New power sources are being explored by Lycoming scientists. As America's power needs grow, Lycoming science and its vast supporting production facilities are growing to meet them . . . working to *keep* America singing.

If your plans are linked to power, find out how Lycoming's capabilities and knowledge can be brought to bear on your specific problems. Wire, phone or write to Avco's Lycoming Division, Stratford, Conn.

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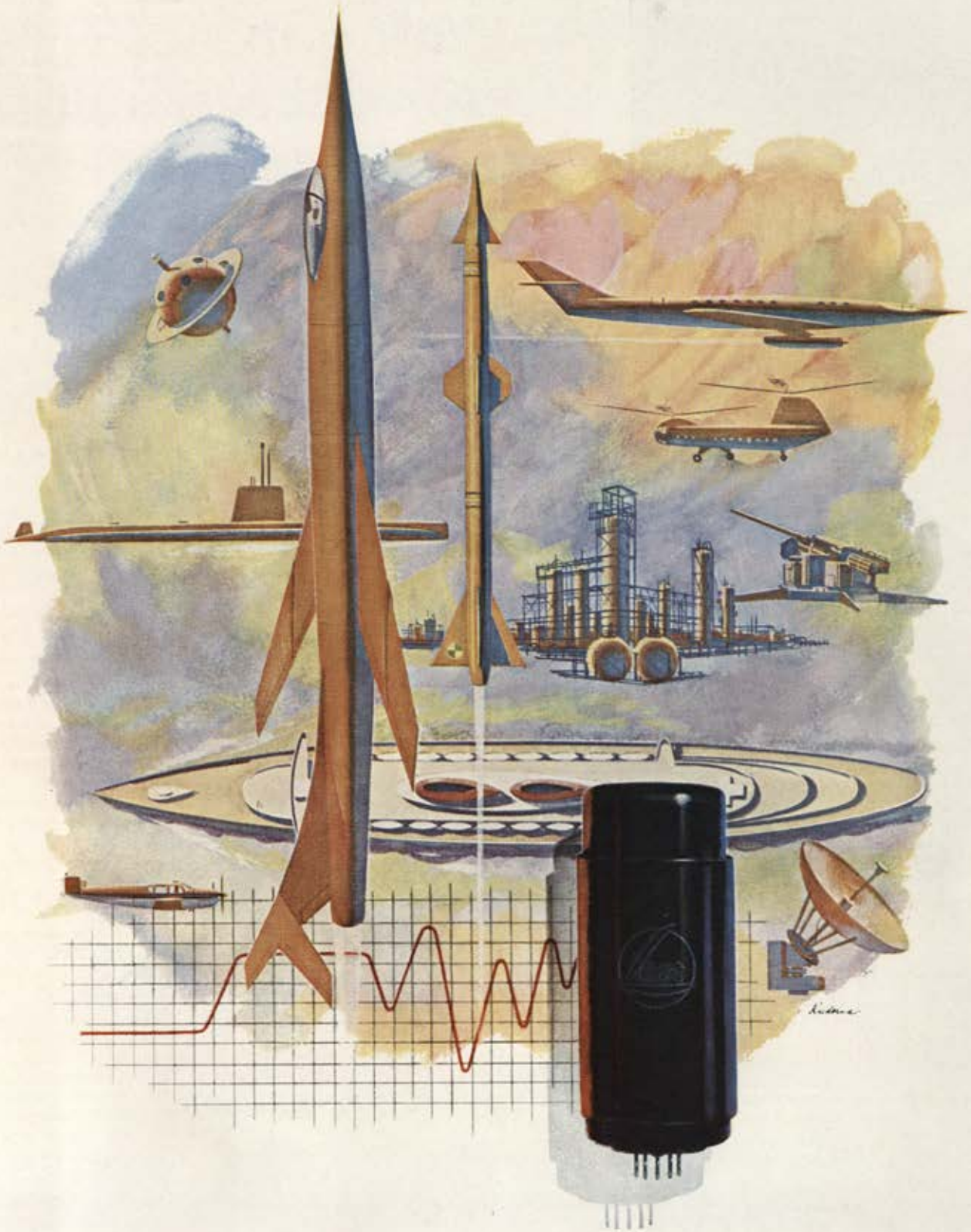
Avco Defense and Industrial Products combine the scientific and engineering skills, and production facilities of three great divisions of Avco Manufacturing Corp.: Lycoming; Avco Advanced Development; Crosley—to produce power plants, electronics, airframe components, and precision parts at installations located as follows: Boston, Mass.; Cincinnati, Ohio; Dayton, Ohio; Everett, Mass.; Los Angeles, Calif.; Nashville, Tenn.; Richmond, Ind.; Stratford, Conn.; Washington, D. C.; Williamsport, Pa.

TODAY'S MILITARY SERVICES, WITH THEIR TREMENDOUS TECHNOLOGICAL ADVANCES MADE POSSIBLE THROUGH SCIENCE, OFFER A VITAL REWARDING CAREER



AN INSPIRING ADVANCE IN MINIATURE RATE GYRO DESIGN

LEAR

Fighter-Bomber Wing, commanded by Col. Neil A. Newman, and the 58th Attack Bomber Group, under Lt. Col. E. M. Sliney.

Colonel Mosely's retrenchment program is a "tough assignment," mainly because the men who must do the job lose interest in such a dying enterprise long before the work is finished.

"I've had more glamorous jobs in Alaska and Panama," Colonel Mosely sighs sadly as he peers out his office window at shaky "temporary" barracks in which his airmen and officers are spending their fourth winter. When the shanties were built they were supposed to last only two years, but by laying in a good supply of scotch tape, weather stripping, stoves, and POL drums, the 314th is reasonably sure it can make do for another year at least. Since American forces are pulling out, no new building on any grand scale is contemplated.

What little construction that goes on—and it is mighty little—is in the hands of the Koreans themselves, who will eventually inherit all the American installations. United States airmen occasionally participate in construction projects, but only through AFAK (Armed Forces Aid in Korea), a movement in which American boys contribute dollars out of their pay to buy lumber, cement, bricks, and mortar, then help to build schools and churches for the Korean civilian population.

The 314th's pilots and ground crews have been training Koreans in jet flying, combat tactics, and even some C-46 transport flying during the past year.

All American military men—in both ground and air forces—have nothing but praise for the Koreans' ability to master the complicated tools of modern warfare.

Colonel Mosely says they are adapting themselves extremely well. They are a remarkable people.

"We sent thirty ROKs to the United States for advanced pilot training not long ago. They were clean and well disciplined. More important, they didn't scratch a single airplane all the while they were gone. . . .

"Another thing, those ROK mechanics are good. The few planes that they have they keep flying all the time. I don't know how they do it."

The main bottleneck is money—Korean money—not absorptive capacity. The US Congress has laid down certain ground rules for dispensing aid. One of these is that the beneficiary country must pay the salaries and local expenses in making use of the aid provided.

For a poor country like the Republic of Korea, this can be a back-breaking job, even though its military forces are woefully underpaid. A Korean airman gets his "room and board" from the government. This costs the ROK budget only thirty-seven *hwan* per man each day, or around seventy cents at the official rate of exchange. In addition, the airman gets a monthly "pay" of thirty *hwan*, another sixty cents, which he tries to stretch to cover such incidentals as toilet articles, writing paper, and cigarettes.

Even taking into account the much lower standard of living, sixty cents a month isn't nearly enough. The Korean airman is forced into the black market, or worse, if he is going to live. American airmen, for instance, carry their stainless steel spoons around in their pockets. Otherwise the spoons show up as wrist-watch bands and other such items in the Korean economy.

Salaries of officers are equally inadequate. Four-star generals get only $28 a month at the official rate of exchange, second lieutenants around $1. They, too, get room and board, and several other amenities "in kind," but even so they could not live without a combination of help from relatives and the elaborate system of bribes and rake-offs that is part of the pattern of Oriental society.

The Minister of Defense, former Admiral Il Wan Sohn, has a remedy for this situation, but it has little chance of success because it involves more American dollars. He estimates it will take another $100 million a year in military aid to settle his *hwan* accounts to hold up the Korean end of the military aid program.

The first batch of ROK pilot instructors is already teaching other Koreans how to fly jets and how to keep the jets operable.

Perhaps the principal reason that the Koreans make such good airmen is that they love their work. Mechanics are out on the line all hours of the day and night. If they have nothing else to do, the mere polishing—perhaps fondling would be a better word—of the aircraft gives them pleasure.

One of the most difficult phases of the pull-out will be in communications and weather installations. It takes longer to train Korean radio and radar technicians and weather observers, because fewer of them got their basic training during the war. The equipment was too delicate, and scarce, for much of it to be turned over to the Koreans to practice on. The Koreans

(Continued on following page)

themselves, however, are just as eager to learn this complicated work as they are to master the more spectacular and glamorous art of flying.

Morale, in fact, is not a problem for the Korean commanders. It is, however, for the American commanders.

Colonel Mosely at the 314th spends almost half his time seeing to it his men are kept as happy as can reasonably be expected, and as combat-ready as possible.

Over the Christmas and New Year's Day holidays, Fifth Air Force wives in Japan undertook to provide each individual airman and officer with his own box of traditional Yuletide sweets. There were home-baked fruit cakes, pfeffernuesse, ginger snaps, butter cookies, assorted nuts—the works, all home-prepared.

Colonel Mosely's year-round policy of getting the best food for the farthest out on the supply line—to the farthest outposts—applied especially during the holiday season.

Base exchanges were stocked early with articles suitable for Christmas gifts, both to be sent home and to be exchanged among the airmen.

One of the hottest items in the BXs this fall and winter has been hunting guns. There is plenty of game wandering around Korea, despite the war devastations. Before World War II, old Japan hands used to make regular excursions to Korea to hunt for bear, boar, deer, pheasants, ducks—and even tiger. Engineers have helped remove the principal hazard for hunters—mines left over from the war.

Next to hunting, the most popular extracurricular activity is photography.

Korea is a picturesque country. The rich greens and blues of the mountainsides contrast with the patchwork of yellows and browns in the rice paddies to produce handsome scenes. Sales of color film and Japanese cameras are booming in the base exchange.

Airmen often knock off early to go on picture-taking expeditions. Jeeps and pickup trucks are provided by Air Force special services to carry the photographers to scenic spots. Dark rooms on the base give the more advanced photography bugs a chance to do their own developing and printing.

There are floor shows twice a week and movies every night for the non-outdoors types at the officers', non-coms' and enlisted men's clubs. Usually the live entertainment is Korean—a couple of dancers trying to look like they just stepped out of an American night club, a juggler who is usually the equal of anything on Broadway, and a Korean band struggling heroically to master the subtle styles of American jazz. Occasionally servicemen's shows drop in for one- or two-night stands.

One evening a week the boys at K-55 gather round for a healthy evening of bingo. The prizes aren't as fabulous as they used to be in the overcrowded days of the Japanese occupation, but they are substantial enough to overcome most young soldiers' misgivings about the manliness of sitting at a table pushing corn kernels around on a card.

For the more delicate in spirit there are the Sunday night charades at the Double Five Service Club at the same base. Mondays the old-timers come around for the regular weekly pinochle tournament.

There are even dancing lessons and piano instruction for the culturally-inclined.

Among Americans in Korea one of the finest postwar developments has been the burgeoning popularity of arts and crafts. Boys in their teens build model airplanes, stagecoaches, pistols, ships, and railroad cars to send back home. Others work in leathercraft, metal foil, copper tooling, engraving, and associated arts, usually with a girl friend or mother in mind.

Those who seek further schooling have the usual opportunity to get it in their off hours. The University of California offers three subjects at K-55: business law, algebra, and accounting. In addition, the Education Center conducts courses of its own in spoken Japanese, advanced German, criminology, real estate, journalism, and radio theory.

Radio is almost as good in Korea as it is stateside. Radio Station Comet at K-55 is typical. On a Sunday evening, for instance, you can start out with "People Are Funny" at 7 o'clock; tune in on "Our Miss Brooks" at 7:30; spend Sunday with Garroway at 8; pick up world news at 9 o'clock; get "Truth or Consequences" at 9:30; and finish off with some dance music. For the lonely radar crews on the mountain tops, such entertainment is vastly appreciated.

While the extracurricular activities are made to resemble home as much as possible, training is actually an improvement on the kind available in the old country.

Every now and then an American F-86 on patrol is likely to find a MIG on its tail. The possibility that one of these set-tos may drop some American into the East China Sea adds just the touch of realism needed to keep Colonel Mosely's pilots on the ball.

The 314th Division also has a golden opportunity to work with Army troops in joint operations. Fighter pilots are vectored to simulated trouble spots from a twenty-four-hour-a-day JOC (Joint Operations Center), just as in war time. Fighters can practice air interceptions and attack-bombers can brush up on tactical support in a realistic setting that is hard to duplicate once you get out of sight of enemy territory.

[However, training in Korea is threatened by shortages in maintenance and operating funds. These have been restricted to a point where, in one outfit at least training has been curtailed to include only practice landings and take-offs.—The Editors.]

Pilots just out of American flight schools get excellent training under conditions which are strikingly close to the real thing. Not all the realism is in the Korean air, either. Some of it is on the ground. Pilots used to long concrete runways, easy-to-find airstrips, letter-perfect air communications systems, and night flying in the electric-power-rich United States get a chance to test their ingenuity now and then. Sometimes they have to find home all by themselves.

While the morale among American airmen is high considering everything, and while the training is realistic, nevertheless most will secretly applaud the eager men of the ROK Air Force when they talk impatiently of taking over the whole show.

But until this day arrives, the American forces in Korea sit it out, keep their powder dry, make all preparations to use it if need be, try to be philosophical about their fate, and dream of the day they can turn over their own little individual corners of Korea to others.—End

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ABOUT THE AUTHOR

Earl Voss recently returned from a month's tour of the Far East. While there, he interviewed Syngman Rhee, President of the Republic of Korea, and inspected military installations in Korea and Japan. He first went to the Far East in 1945 as a civilian public relations man for Gen. Douglas MacArthur. Since 1951 he has been with the Washington (D.C.) Evening Star *and was their Far East correspondent during the Korean war. He has written two other articles for* Air Force. *His most recent—"Morale Begins at Home"—appeared in our September 1955 issue.*

RAYTHEON RADAR AT THE ARCTIC CIRCLE HELPS GUARD US

In the still, snow-shrouded world of the northern lights, strange black domes perch along the barren rim of North America.

Inside these giant inflated "radomes" spin radar antennas probing the skies for intruders. Skilled operators examine glowing radar screens, alert for pips that could mean unidentified aircraft.

Contacts picked up by these DEW line (Distant Early Warning) radars are flashed to Air Defense Command centers.

The U. S. Air Force and Western Electric, contractor for the DEW line, selected Raytheon to develop radar for these critical Arctic stations. We are proud of this choice and of our opportunity, as the world's largest producer of search radar, to contribute to the protection of our hemisphere.

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HELICOPTER MEDICAL MISSION CROSSES AFRICA—Crossing African jungles and bushland from Leopoldville, Belgian Congo, to Nairobi, Kenya, the Lederle-Sikorsky Medical Expedition flew 2800 miles in a Sikorsky S-55, distributing drugs and surveying health conditions. The expedition again showed the significant role of the helicopter in public health work in Africa. For several years Sikorsky helicopters have been used there in spraying operations to control the tsetse fly, carrier of sleeping sickness, and for other vital health missions. The helicopter's ability to reach inaccessible areas opens new possibilities for the development of equatorial Africa.

AROUND THE WORLD WITH SIKORSKY HELICOPTERS

TO THE ANTARCTIC—Landing on the Coast Guard icebreaker *Eastwind*, a Navy Sikorsky HO4S helicopter joins Operation Deepfreeze, the U. S. antarctic expedition. The *Eastwind* sailed from Boston in November. The HO4S is a Navy version of the famed S-55 which serves in quantity in each of the U. S. armed services and is the standby in commercial and military operations all over the free world.

S-58s FOR COMMERCIAL SERVICE—To enter airline service in the U. S. and Europe in 1956, the Sikorsky S-58 is the largest helicopter made available for commercial service. New York Airways plans to buy 7, Sabena Belgian World Airlines 8, all to be delivered starting in the spring. Both airlines currently use S-55s. The new S-58 will carry 12 passengers and will cruise at more than 100 m.p.h. against the earlier model's 85 m.p.h.

THE MARINES HAVE LANDED—this time, by helicopter, landing on a submarine. And the situation is well in hand, with this unique operation again demonstrating the helicopter's versatility, offering new methods of evacuation for the sick and wounded and new possibilities for emergency supply, as well as new battle capabilities. Photo shows a Sikorsky HRS-1 transport helicopter landing aboard the USS *Sea Lion* during exercises off North Carolina. The HRS-1 is the Marine Corps version of the Sikorsky S-55 helicopter, which is also operated by the other armed forces.

HELICOPTER HISTORY

FIRST SHIPBOARD LANDING

In May, 1943, Capt. (now Brig. Gen.) H. Franklin Gregory landed a Sikorsky XR-4 on the deck of the tanker S.S. *Bunker Hill*, in a successful demonstration of a helicopter's ability to operate from the small deck of a merchant vessel. The demonstration took place on Long Island Sound off Connecticut.

Basic doctrine provides the best definition of the AF job. It's all found in the . . .

Little Book With a BIG WALLOP

The story behind AFM 1-2—"USAF Basic Doctrine"—the book that spells out what the Air Force believes in

By Col. Jerry D. Page and Col. Royal H. Roussel

IF YOU are a member of the Air Force, you are one of the most important individuals in the world.

This isn't bragging. It's a statement of fact. Because whatever happens to civilization in the nuclear future—be it good or bad—will depend in great measure on what happens to the Air Force. And whatever happened to the Air Force will depend in great measure on how well the people in it understand the job that the Air Force has done, the job that it is doing now, and the job that it intends to do in the future.

The most authoritative definition of the Air Force job is quite naturally to be found in basic doctrine. It is the highest statement of Air Force beliefs about how it should be used. You'll find it in a little book called AFM 1-2 (see page 72).

In appearance AFM 1-2 is not especially imposing. It is brief, only about 4,100 words. It weighs a scant ounce and a half. You can read it in about twenty minutes. But, brief as it is, AFM 1-2 is packed to the brim with significant meaning; and to understand what it means you will have to supplement your reading time with a great deal of "thinking" time. But you will be richly rewarded with knowledge and understanding. For if you will learn to apply the doctrine in AFM 1-2 to the day-by-day realities of the cold war world, you will learn, with great clarity, the indispensable role of our Air Force in all forms of international relations. And if it happens that you have not paid much attention to doctrine in the past, it is likely also that your own job—if you are in the Air Force—will assume a new importance. Then, if you're not proud to wear the Air Force uniform, something is very wrong.

The all-important basic doctrine identifies the job of the Air Force as "control of the air," saying, "*United States air forces are employed to gain and exploit a dominant position in the air. The desired dominant position is control of the air.*" It is a temptation to assume that "control of the air" is just another way of saying "air superiority." But there is a difference. And much more than a question of semantics. It is a significant difference, because it concerns the manner in which air forces are used, and the times and places at which they are used.

Air superiority was a concept that emerged from the employment of air forces during war for the purpose of gaining superiority over opposing air forces by direct combat. It was a limited concept. To begin with, it had meaning only during wartime. Moreover, it denoted a certain physical condition that existed in a limited geo-

graphical area. Additionally, the degree of air superiority which was gained was judged in the main by a condition which permitted certain actions to be performed on the ground or sea. If we had a high degree of air superiority, surface forces could operate. If surface forces could not operate because enemy air was too strong in the area, then we had a low degree of air superiority.

In control of the air the concept of dominance has been lifted, broadened, and expressed in the context of air capabilities.

It is not concerned altogether with a physical condition in a specific geographical area. Control of the air is a global influence.

Control of the air is not a wartime condition only. It is a peacetime condition also. Or a cold war condition. It's something we can use every day.

Control of the air has evolved from the across-the-board capabilities of air forces—it is a product of their demonstrated capabilities in total war, their demonstrated capabilities in limited wars of all kinds, their demonstrated capabilities in cold war and uncertain peace, and of their capabilities as a successful instrument of national policy in total peace.

"How do we expect to control the air in peace?" you may ask. "Do we expect to fly over Moscow in peacetime?"

The answer is that control of the air does not necessarily mean that we must fly over Moscow or any other nation's sovereign territory. But we must be able to influence other nations, as we shall see.

AFM 1-2 says: *"Control of the air is achieved when air forces, in peace or war, can affect the desired degrees of influence over other specific nations. Control of the air is gained and held by the appropriate employment of the nation's air potential."*

Now, what do we mean by "employment"? When "employment of air forces" is mentioned, too many people think immediately of air forces in a kill-and-destroy role—that is, dropping bombs and firing bullets. They think in war-only terms, as if air forces could do nothing but kill and destroy.

AFM 1-2 uses the term "employment" differently. In AFM 1-2, "employment" encompasses the flexibility of air forces, their ability to do many different kinds of jobs. The doctrine makes plain that these different kinds of jobs include fighting and winning limited wars—including the so-called brush-fire wars—if necessary. In fact, the doctrine is manifested strongly today in the ability of the Air Force to perform a variety of tasks on short notice, anywhere required, with an appropriate degree of force. Mission directives call for the capability to deploy mobile strike forces rapidly to any area where peace is threatened or where military aggression has been initiated. The air war in Korea was an example of this capability. The day that it was announced that United States forces would go into Korea, our fighter-bombers left Japan for the combat zone. They were immediately ready. And the air war was won.

Air forces are employed in many ways; and not always in war. We also employ them in peace—and in other conditions that are neither peace nor war. Our doctrine states, in effect, that control of the air can be exploited continuously, day and night, seven days a week, 365 days a year, under any conditions.

This can be so because control of the air does not denote a continuous physical action against something. Actually control of the air means having the ability to influence. That is the key to understanding our doctrine. An

(Continued on following page)

Col. Jerry D. Page

About the Authors

Col. Royal H. Roussel

Col. Jerry D. Page and Col. Royal H. Roussel were a team in the Doctrine Division, Evaluation Staff, Air War College, Maxwell AFB, Ala., for two years prior to August 1955. Colonel Page was Chief of the Doctrine Division and Colonel Roussel was his principal assistant. During this period, Colonel Page and Colonel Roussel were project officers on the current AFM1-2, "United States Air Force Basic Doctrine" (see page 72 for full text of this manual), and for various other doctrinal manuals and studies.

Colonel Page reported to the Air War College staff from Norway, where he had been Deputy Chief of Staff, Plans, Headquarters Allied Forces for Northern Europe. His earlier service included duty as A-3 (Operations) of the Thirteenth Fighter Command in the Pacific theater during World War II; Air Force member in the Secretary of Defense's office; Executive to the Deputy Chief of Staff for Operations at USAF Headquarters; NATO Plans Officer, London. From the Air War College, Evaluation Staff, he was sent to his present assignment at the National War College, Fort Leslie J. McNair, Washington, D.C.

Colonel Roussel reported to the Air War College staff from the Office of the Secretary of the Air Force, where he had been Deputy Executive Assistant. He is still assigned to the Staff of the Air War College. His earlier service included an assignment as Assistant S-2, Europe; A-2 of the Ninth Bombardment Division, Europe; and Project Officer in War Plans Division, USAF Headquarters. His initial military experience was in 1918, when he enlisted and was assigned to the 70th Aero Squadron. In civil life he was the associate editor of the Houston, Tex., Press.

Colonels Page and Roussel began collaborating in Air Force projects when they were both on duty in the Pentagon, in 1948 to 1950.

influence is an expression of a type of power which is not limited by geography, or time, or distance. It is a medium through which the initiative can be applied. It can be as big—or as little—as we make it. Influence can be continuous. Therefore, control of the air can be continuous.

Next, AFM 1-2 says: *"Sometimes a dominant position can be obtained through the mere presence and passive use of air forces."*

What do we mean by "passive use of air forces"?

You will recall Sir Winston Churchill's statement that, if it had not been for the restaining influence that United States airpower exerted, Europe would have been overrun by the Soviets. Churchill was speaking of the "presence and passive use of air forces."

The development of NATO also shows how "presence and passive use air forces" may be a source of encouragement to friendly nations and their people. NATO, bolstered by the "presence and passive use of air forces" from the very beginning, has rallied the strength of Europe. Without the strength that the influence of available airpower gave to NATO at the outset, it is doubtful if it could have reached the high point at which it is today.

Or we may turn to Korea for another example.

Our air forces in Korea were dropping bombs, fighting MIGs, attacking troops and gun positions, and a great number of other things *actively*. But these were not "separate" air forces fighting a "separate" war. They were a part of our global air entity, and standing with them—although not used *actively* in Korea—was the tremendous additional power of this global entity.

We must assume that much of the impact of our airpower in Korea—much of its influence—came from air forces that never dropped a bomb or fired a bullet in Korea.

Reviewing Korea we see many evidences of the tremendous restraining force that global air capabilities exerted upon the Communists. At times our ports were jammed with shipping; our airfields were crowded with aircraft; or troops and supplies were bunched and exposed. Sometimes all of these conditions existed at once. The Communists generally had enough air strength—numerically, that is—to attack these lucrative targets. But they were not able to attack. And the reason was not altogether because the Communists were afraid of the air forces that were operating directly against them. They had to consider more than that. They had to consider that if they started flying across the Yalu and hitting us, they would bring down upon themselves the full weight of global airpower. And it is plain that this unwelcome prospect influenced the Communists. It convinced them that they stood to lose much more than they could gain. The doctrine concerning the passive use of air forces was applied successfully.

In AFM 1-2 the doctrine goes on to say: *"At other times control of the air may require the active use of air forces to attain the desired dominant position."*

It is especially pertinent to note that "the active use of air forces" does not refer only to conditions of war. There is a wide range of opportunity for the active use of air forces in other than wartime roles. The Berlin Airlift was an active use of air forces. We used them to sustain the life and enterprise of the city in direct opposition to the Soviets. But it was done without resorting to combat operations. We made the Berlin Airlift a success by exploiting the inherent flexibility of air forces. It was control of the air in action.

In AFM 1-2 the control of the air doctrine continues: *"There will be occasions when a combination of passive-type dominance and active-type dominance may serve best in support of the national objectives."*

To illustrate this statement we can turn again to the Berlin Airlift. For there we used air forces actively and passively in combination.

While our C-54s were flying the corridors, supplying Berlin with food and fuel, there is no doubt that the Soviets had enough airpower close by to disrupt those active operations. But —as in the case of Korea—we had other strength. Concurrently we were using other elements of our national airpower passively; using global airpower to exert influence on the Soviets; using it to keep the MIGs from bothering us. Our dominant position in the air—control of the air—was exploited without fighting a shooting war.

At this a challenging question arises, which goes something like this: Do we want to use our airpower to affect adversaries only? Is that all that air forces are good for? Or are they bigger, better, and more meaningful than that?

A great part of the significance of the doctrine is that air forces are not solely an instrument of destruction, that they can be employed constructively as well as destructively, that they can be employed to make something desirable happen as well as to prevent something undesirable from happening. AFM 1-2 states, in substance, that air forces can build as well as destroy; can save as well as kill. It reminds all of us that air forces are a positive force as well as a negative force, and that in either role they may be a *decisive* force.

The negative role of air forces—the deterrent role—is well known. But the other side of the coin—the positive role of air forces—is not quite so familiar.

What does our doctrine mean when it speaks of the positive role of air forces?

There are more examples than we have the time or space to record. Pakistan offers a typical example.

In the summer of 1954 Pakistan was struck by floods that reached the proportions of a national calamity. Pakistan, through our ambassador, appealed to the United States for help. What happened thereafter is a record of a global air operation in the positive, constructive sense. Our ambassador telephoned Washington. Action came quickly. Supplies and skilled personnel were made available. And in a matter of hours Air Force airplanes were on the way to Pakistan from bases in the United States, the United Kingdom, and the Pacific. Truly, this was a global air operation with a humanitarian objective of saving. It was a living example of active use of air forces to build confidence in the strength and peaceful intentions of the United States. It was the doctrine of AFM 1-2 in action.

Another example?

Take the MATS Air Weather Service.

The latest available report of the AWS revealed that during 1954 its reconnaissance aircraft spent the equivalent of six and a half years in the air. They flew a total of 57,573 hours, tracking and reporting weather conditions from Bermuda to north of Alaska, and in the United States, Europe, and Asia.

Bear in mind that in addition to increasing the combat effectiveness of our air forces, this work provided information on storms and other weather conditions which saved lives, protected property, aided farmers, and had other beneficial results.

Another example?

The Kinderlift.

Last summer, for the third consecutive summer, the Air Force flew hundreds of underprivileged children out of West Berlin, across the encircling Communist zone, to Frankfort, Hamburg, Munich, Cologne, and other

cities for vacations with American and German families in West Germany. It gave these children a broader view of freedom; introduced many of them to the world beyond the Communist curtains for the first time.

Is the Kinderlift a mere stunt—a flashy way of getting publicity for the Air Force—or has it a deeper meaning?

It is no stunt. Kinderlift is doctrine. It is the living doctrine of the Air Force's belief that air forces have a constructive function as an instrument to be used for the benefit of mankind. The doctrine states that the effects of air operations *"may occur in forms that are political, economic, military, or psycho-social."*

To illustrate the meaning of that part of the doctrine we again may use the Berlin Airlift as an example.

The principal impact of the airlift was not military. More important was the political impact and the psychological impact. Moreover, the Soviets were by no means the only ones who were affected. The entire world watched our government employing its air forces in an unprecedented manner.

From a tactical viewpoint the airlift was a victory because the Soviets were forced to abandon the blockade, and the Communist curtain did not envelope West Berlin. From a long-range strategic standpoint there is no way of assessing the extent of the victory. But it is logical to assume that if there had been no airlift in 1948—if doctrine had prevented employment of air forces in other than wartime roles—it is doubtful if there would be a West German Republic aligned with the West today.

Or consider Pakistan.

In October 1954, the United States ambassador to Pakistan, Mr. Horace A. Hildreth, was able to report, according to the Public Service Division of the Department of State, that Pakistan had cast its lot with the West.

It is entirely possible, of course, that this would have occurred if the flood relief operations had never been performed. But logic is heavily on the side of the assumption that the flood relief operations exerted a strong psychological effect which in turn was reflected to a degree in the conditions upon which the ambassador based his report. So, for the purposes of this discussion, we may consider that the Pakistan operations represented active use of air forces for a positive effect.

In AFM 1-2 the control of the air concept is set out in five paragraphs containing about 235 words. Thus far in this discussion we have covered some of the meanings projected by four of these paragraphs. The fifth and final paragraph says:

"A nation's influence in international negotiations is strengthened or weakened by the state of its air forces. The capabilities of powerful air forces for achieving decision in major war are thus translated into a capacity for the maintenance of world peace."

Here the doctrine in AFM 1-2 reflects the principle that is at the core of our national policy—that we will always use our strength to advance the cause of just peace; never to provoke war. We always will do our best to translate our capabilities for war into the realities of a secure peace.

To comprehend the full meaning of this statement of doctrine you must realize that to place faith in the peace potential of air forces is not to subtract from their war potential. Air forces are a tremendously flexible instrument. To fail to employ them for the purposes of peace—to relegate them only to the purposes of war—would impose unnecessary and invalid limitations upon them. They are bigger, better, and more meaningful than a one-purpose, war-only instrument.

As for the authors of this article, our own experiences in the doctrinal field lead us to believe that the total war capabilities of air forces—their capability to destroy in total war—are the most clearly understood of all their capabilities. Their great potential in times other than war is less clearly understood. They are known more familiarly as a negative force than as a positive force.

This is well as far as it goes because the predominant emphasis should be on our ready total war capability. It is our survival insurance. But this emphasis must not be preclusive because, as essential as the war capability is, it is still less than the whole of the great total that air forces are inherently capable of performing. And we must always make the most of the rest. That is the meaning of the statement in AFM 1-2 to the effect that our war strength must be translated into peace strength.

We have only to examine the outlines of our national objectives to see the extent of the opportunities to translate the capabilities of air forces into a powerful force for peace. They are limited only by the imagination applied to their use.

And if our government succeeds in denying the Communists the ability to use war as a means of gaining their aim of world domination, the Communists will be forced to pursue their goals through the political, economic and psycho-social fields. In those fields the advantages would appear to be on the side of the Free World. There we will have the ability to make the Communists meet us on *our* chosen battlefield. There we will have great opportunities to exercise the initiative.

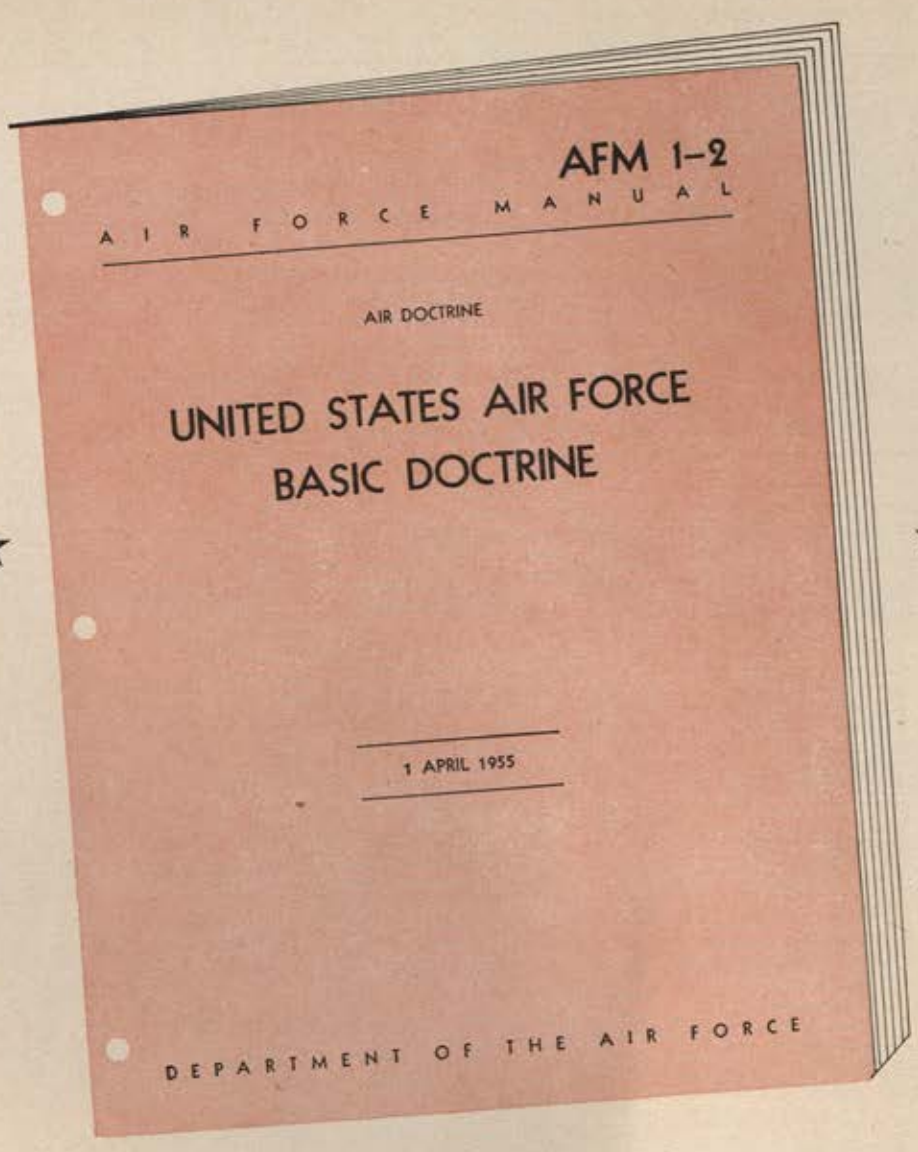
Viewed against a background of national policy, air forces are going to be concerned more directly with the job of influencing people than with the job of killing people; perhaps even concerned as actively with the application of the social sciences as with the application of the sciences of warfare. Because if we retain our total war capability, if we continue to deny the Communists the use of war as an instrument of expansion, if we therefore are not required to fight for the traditional goals of war, then the prizes for which we fight will be the minds of men—the attitudes of nations and their people. In the final analysis the fate of the entire world will be decided in a great measure by the attitudes which are taken by the nations and people who are not now associated directly with either the Communists or the free world. The final victory may be won by *influence*, with a war of death and destruction never having been fought.

It is generally agreed that at Geneva last July the initiative for peace passed to the US, at least temporarily.

It would be unreasonable in the extreme to say that airpower made it possible for our government to make this forward step at Geneva. But it would be just as unreasonable to say that the progress could have been made if the Air Force had *not* been employed effectively over a long period of time. It is reasonable to ask questions such as these.

- If the Soviets had succeeded in the Berlin blockade—if the airlift had not been successful—would there have been a Geneva at all?
- If NATO had not been formed, on a foundation of air forces in being, would there have been any meeting ground with the Soviets?
- If the Communists had succeeded in Korea, would there have been a Geneva?
- If the Communists had bluffed us out of Formosa, would there have been a Geneva?

And today our air forces may be employed to exploit the advantages accruing to us from Geneva without the addition of a single new word to our doctrine for guidance. In other words, the doctrine of the Air Force is up-to-date, as it should be.—END



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Here's the full text of the "Little Book with the Big Wallop," Air Force Manual 1-2

What the Air Force Believes In

Brief and weighing only an ounce and a half, it can be read in twenty minutes. But it's one of the most important books in the world

International Conflict and the Instruments of National Policy

ALL nations have continuing national objectives. In striving to attain their objectives, nations evolve policies which become the guiding principles for their actions. Their military policies derive from and support their national objectives. The national objectives generally include economic well being, political stability, social and industrial progress, and security from encroachment or attack by another nation.

As nations endeavor to gain their objectives they come into conflict with other nations. This conflict is continuous as each nation seeks to further its interests by applying its instruments of policy.

The nature of conflict varies greatly. It may range all the way from a routine exchange of diplomatic notes conducted in a friendly atmosphere of peace to armed hostilities conducted in a major war. Between these two extremes a nation may be involved in international tension

in many forms—including limited wars—and possibly for long periods.

Because differences generally exist in some form, nations must try continually to resolve conflict, or to gain advantageous position. And because the conflicts are not always the same, the actions that are involved in these efforts alter with the changing circumstances. But whatever the nature of conflict, any element of a nation's power, or all elements, may be used, as required, to gain its desired ends through courses of action which are consistent with its national policies.

The groupings of power elements that comprise the instruments of national policy are:

The psycho-social instrument—which includes the moral strength of a nation as manifested in its internal stability, unity, national will, and ability to influence other nations.

The political instrument—which includes a nation's system for internal direction and control, and its governmental organization for dealing with other nations.

The economic instrument—which includes the industrial, technological, commercial, and fiscal structure of a nation.

The military instrument—which includes the total military capacity of a nation.

In any specific phase of conflict a nation employs its instruments of power to gain the results which it considers to be the most acceptable.

The extent to which a nation applies its instruments of power and the manner in which it applies them is determined by the following considerations: (1) its objectives and policies; (2) the status of the specific nation or nations involved—that is, the object nations; (3) the objectives and policies of those nations; (4) the attitude of the international community; (5) the urgency of the circumstances.

In pursuing its objectives a nation may be confronted with the risk of war. In such instances, the nation concerned must either accept that risk or modify its objective.

To appraise these risks accurately, those who are party to the necessary decisions must have the benefit of current and valid information about the other nation or nations which are involved. When this information is not available, the possibility of gross mistakes and miscalculations is dangerously high.

The Military Instrument of National Policy

The military instrument of the United States is employed for the fundamental purpose of advancing the nation toward its objectives. Therefore, the military strategy of the United States always should be integrated with the government's other courses of action. The forces which comprise the military instrument of policy must be appraised collectively and individually on the basis of their relation to the whole pattern of national aspirations.

Factors other than destruction or the physical domination of an adversary also must be considered in measuring the success of military operations. In any type of conflict the paramount purpose for employing the military instrument of policy will be ultimately to bring about a desired condition. In this sense victory in a military operation is not an end in itself; it is a means to an end. The ultimate objective always must reach beyond the victory itself to the securing of a desired condition resulting from the victory. Therefore, success can be measured only by the attainment of specific military objectives which support the national policy. There are five fundamental effects which each military force of a nation is able to produce upon another nation in varying degrees—depending upon the inherent capabilities of the force in question, the medium in which it operates (land, sea, or air), and how and when it is used. The five effects are: persuasion, neutralization, denial, destruction, and capture.

Destruction and domination might or might not be specified military objectives. In fact, such an objective might call for military operations in which destruction and physical domination of an opponent through capture and occupation of territory are expressly excluded. In some instances—even during wartime operations—circumstances could occur in which these two undertakings would be irrelevant in the establishment of the desired conditions, and other effects upon an adversary would be more advantageous.

The military forces of the United States may conduct operations separately or jointly. When operations are undertaken with the forces of a single military service, the command arrangements for their control and direction are determined by that service. However, when the forces of two or more services are combined in a specific undertaking, that component whose forces are most capable of conducting decisive operations must have the primary role. The centralized control of the forces combined in that undertaking must be vested in its commander.

Command arrangements for such operations must be based upon a comprehension of the objectives and circumstances which are involved, upon an understanding of the capabilities and limitations of the forces affected, and upon mutual confidence.

Proper command arrangements are essential in attaining unity of effort. The guiding principle for command arrangements is that control should always be placed at the level which is fully able to employ the capabilities of the forces which are involved.

Forces with missions which are limited in scope, and types of forces whose characteristics restrict them to operations in relatively limited areas, may operate effectively within a command system that reflects comparable limits. Other forces which are not thus limited, either by missions or capabilities, must be under the control and direction of appropriate higher authority so that their potentialities will be employed fully.

The most effective military forces are those which are products of a common philosophy of planning. The primary purpose of planning is to insure that the national resources available for the military instrument of policy at any time are used to provide the types of forces, and the quantities of forces, which will prove most effective in all aspects of international conflict. In the division of resources among forces of different types, the priorities must be established so as to insure allocations which provide the maximum return in military capabilities. The capabilities must be related to the forms of conflict and the threats projected by those forms of conflict, with emphasis in the allocation of resources being placed at all times on the provision of the means to meet the primary threat.

Constant evaluation of military forces must be conducted as a precaution against the wasteful use of national resources or costly errors of judgment, either of which might prejudice the welfare of the nation. The positive results of the evaluation must be reflected in the kinds of forces that are provided for the military instrument in being. The results must be reflected also in other forces which are authorized for future production and employment, and in the nature and priorities of research and development programs bearing on forces and weapons systems. These processes are necessary for the nation to produce forces which will meet the time, type, and quality requirements of the strategy.

(Continued on following page)

An essential requirement for these necessary evaluations again is current and accurate information concerning those nations and peoples whose ideals, objectives, policies, and military capabilities are significant in relation to the continued security and welfare of the United States. As weapons systems acquire greater speed, range, firepower, and variety, the need for information indicating the intentions and capabilities of such nations and peoples becomes increasingly acute. Therefore, a nation must be prepared to accept great risks to obtain the necessary information when the risks of not having it are considered greater.

The military forces of the United States can perform their greatest and most economical service in any form of international conflict by providing circumstances in which the United States can exercise a compelling initiative in international affairs.

When the initiative is held, the opportunities are at their best to gain and maintain security—by assisting the preservation of a felicitous peace, by averting threatened war under acceptable conditions, or, if necessary, by winning a decision in war.

Characteristics of Air Forces and Principles for Their Employment

The predominant characteristics of air forces are:

Range—which accords them the capability to fly to any point on the globe and return to any desired location.

Speed—which is such that in the employment of modern air forces no two points on the earth's surface are more than a few hours apart.

Mobility—which is such that air forces can have an independent capability sufficient to establish themselves at new bases of operation on short notice.

Flexibility—which is such that air forces can be adapted quickly to various requirements for performance and firepower. They can be diverted rapidly from one type of operation to another at a given location. They can shift the performance of a designated task from one locality to another with a minimum of delay in operations. They provide a capability to deliver a variety of fire power ranging in form and force from bullets to hydrogen bombs. They can be employed to deliver ideas and cargo, as well as weapons. They can be used to procure information.

Penetrative ability—which accrues from the medium of space in which air forces operate, and from the relatively small size of air vehicles, their ability to fly at high speeds and selected altitudes, and their ability to employ a wide variety of tactics.

Air forces exert a dynamic impact in all forms of international relations. Operating in the medium of space, unrestricted by the definitive boundaries of land or sea, air forces are inherently capable of operating anywhere and at any time. This potential exposes the entire structure of other nations—both the material and social components—to the influence of air operations. However, this inherent capability always is subject to limitations imposed by strategy, policy, or by various other circumstances.

The proper employment of air forces requires recognition of their versatility as a component of the military instrument of national policy.

There are established principles for the successful employment of air forces. Adherence to these principles has proved successful and disregarding them involves a high degree of risk and possible failure. They follow:

• Air forces are an entity.

The medium in which air forces operate—space—is an indivisible field of activity. This medium, in combination with the characteristics of air vehicles, invests air forces with the great flexibility that is the basis of their strength. For this flexibility to be exploited fully, the air forces must be responsive at all levels of operation to employment as a single, aggregate instrument.

All command arrangements must be in accord with the precept that neither air forces nor their field of activity can be segmented and partitioned among different interests. Because air forces possess the inherent ability to concentrate effort at decisive times and places, they can be employed in a variety of tasks for the purpose of accomplishing a variety of effects. They can perform the tasks simultaneously or in rapid sequence, with all supporting a common objective. However, the versatility that makes this wide variety of employment possible also could lead to demands of a divisive nature which, if met, would have the effect of segmenting the forces concerned and diffusing their effort in unrelated, infeasible, or excessively costly undertakings. Under such employment the full advantages of flexibility would be lost, the unity of the air forces involved would be destroyed, and their strength would be dissipated in piecemeal effort.

Command arrangements at all levels must be adequate to preclude such wastage, which could be disastrous. In all air efforts—regardless of their nature or scope—segmentation must be avoided by centralizing control of the air forces that are allocated and employed. Control must be placed under an air commander at a level high enough to exploit the air forces fully toward attainment of the specific objective involved.

The purpose of centralized control is to provide a command capability for the employment of air forces as an entity, either on a global scale or on a lesser scale—but to provide the capability in each instance for employment of the air forces involved as a single instrument.

• Air forces are employed for the attainment of a common objective.

The selection of the objective and adherence to it is another of the established principles for the successful employment of air forces. The objective must be defined in terms of the conditions that are desired as a result of the operations in question. The strategy to accomplish the objective must be as simple and as direct as possible. Every plan must be tested constantly for the extent to which it facilitates attainment of the over-all objective. All levels of command must be certain that their expenditure of effort contributes directly to the common objective.

• The initiative must be exercised to the greatest possible extent.

By their versatility air forces provide the means of exercising the initiative in many different conditions of international relations. Regardless of the type of conflict involved, it is essential to take advantage of different opportunities as they occur, and also to create opportunities for the utilization of air forces. The principle that the initiative must be exercised to the greatest degree possible applies to all air operations.

In wartime operations the initiative must be manifested in the offense, for victory is not possible without offensive action. Air forces alone have the power to carry out operations immediately against an enemy at any desired point in time or space. Therefore, they must be employed on the offense at the very outset of hostilities.

• Air forces must exploit the principle of surprise whenever appropriate.

Surprise may be exploited to attain both military and psychological advantages. It can be achieved through speed, deception, audacity, originality, and concentration. In air operations, it is a powerful determinant and every effort must be made to attain it. The results which are gained through surprise may be out of all proportion to the effort expended.

• **Air effort must be properly concentrated.**

The dominant characteristics of air forces coupled with the continuity of the medium of space lead to the ability to concentrate effort in both time and space. Air vehicles and new weapons have provided air forces with the ability to concentrate enormous decisive striking power upon selected targets. This ability is available to provide the optimum amount of effort to accomplish a required task anywhere on the globe. Because of the facility with which concentration can be accomplished, care must be exercised to avoid application of surplus effort which would be a needless dissipation of resources, and may under certain circumstances lead to negative effects. Conversely, time, forces, and opportunity may be wasted if, because of vacillating pressure, the effort falls short of its goal by even a relatively small margin. Therefore, employment of air forces must be undertaken with the expectation of sustaining the operation until the desired effect is accomplished.

• **Security is a constant consideration.**

Measures to maintain or strengthen the security of available forces against all forms of action which would reduce, neutralize, or destroy their capabilities are necessarily continuous. Appraisal of the nature, extent, and urgency of conditions which threaten the security of the forces must be made regularly upon the basis of the most timely, reliable, and complete intelligence information that can be obtained.

• **Air operations must be carefully coordinated through proper control.**

In its broadest sense, this principle includes the cooperation necessary for mutual confidence among the components of the military instrument of policy, and between the military and civilian components of government. Control consists of an organization of command that clearly assigns responsibility, establishes authority commensurate therewith, and insures the prompt transmission of such assignments.

Employment of Air Forces in Peace and War

United States air forces are employed to gain and exploit a dominant position in the air both in peace and in war. The desired dominant position is control of the air. Control of the air is achieved when air forces, in peace or in war, can effect the desired degrees of influence over other specific nations. Control of the air is gained and held by the appropriate employment of the nation's air potential. It can be exploited continuously through a resultant ability to exert desired influence on the actions or attitudes of a nation or nations in peace or in war.

Sometimes a dominant position can be attained through the mere presence and passive use of air forces. At other times control of the air may require the active use of air forces to attain the desired dominant position. There will be occasions when a combination of "passive-type dominance" and "active-type dominance" may serve best in support of the national objectives.

The passive use of air forces generally is confined to circumstances short of armed conflict. The potential of this use of air forces must not be underestimated as allies, adversaries, and neutrals are subject to profound effects. These effects may be either in the nature of an incentive or in the nature of a deterrent. They may occur in forms that are political, economic, military, or psycho-social. They may be manifested, identified, and exploited in all types and gradations of conflict between nations.

A nation's influence in international negotiations is strengthened or weakened by the state of its air forces. The capabilities of powerful air forces for achieving decision in major war are thus translated into a capacity for the maintenance of world peace.

The striking capacity of enemy air forces must be minimized as a primary consideration in war. If war is forced upon the United States, its air forces must be initially committed to the extent required to eliminate or reduce the enemy's air threat. Because of the decisive potential of air weapons, the survival of the nation in total war demands that a favorable decision must be attained against an enemy's long range air forces. In all forms of hostilities (total war or limited war) action must be taken to minimize the striking power of other air forces of the enemy which threaten the success of friendly operations by action against the friendly forces concerned.

In military air operations, the attacker holds decided advantages over the defender. The attacker is able to exercise the initiative as to time, place, strength, and method of attack. The defender is forced to prepare for all eventualities. Because of the advantages held by air forces employed offensively—and further because air forces are most vulnerable while on the ground—one of the fundamental means of providing security from air attack is through destruction of an enemy's air forces while they are on their bases. This principle holds true regardless of whether the bases in question are the enemy's homeland bases or are bases elsewhere which are being used by deployed portions of the enemy's air forces.

For a nation such as the United States, having a highly organized industrial society and many great population centers, the implications of a surprise air attack by an aggressor having weapons of devastating power are critical. Air forces provide forces and measures for air security to assist in preserving the nation's vital resources.

In war the primary objective of air defense is to insure national survival. However, purely defensive measures have limitations which make them incapable of insuring immunity from air attack. The military policy for the security of the United States recognizes that in the event of war air defense measures coupled with strong air counterblows against the sources of the enemy's strength will provide the best security.

When air forces win a dominant position in wartime operations and thus establish conditions for control of the air, other types of forces may exploit the advantages as their individual capabilities permit. Control of the air that is provided in such cases is a relative condition, and the advantages will vary for air forces, ground forces, and sea forces. The commanders concerned in each instance must analyze the opportunities that such employment of air forces affords to them and exploit them according to the capabilities and limitations of their own force.

Control of the air can affect the fundamental elements of an object nation's strength. The manner in which air forces are employed will depend primarily upon the following factors: (1) the status of the object nation (allied, enemy, or neutral); (2) the nature of the specific result that is desired; (3) the timing of the operations which are undertaken (during war or during forms of conflict not involving war). So, the employment of air forces may at any time individually affect an object nation's political, economic, military, or social structure, or it may affect all of them.

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The basic decisions as to the selection of any type of objective for the employment of air forces require a continuity of information about the object nation. These decisions can be made only after available intelligence information has been examined. Depending upon the timing of the operations and the state of relations between the nations involved, these considerations may include information of the object nation such as: public and political attitudes; economic conditions; weapons systems; research and development activities; the ability to convert from civilian enterprise to war effort; the flow of material from neutral countries; the attitudes of satellites or treaty allies; the extent of strategic stockpiles; the capacity for recuperability; the availability and capability of military forces. The absence of comprehensive information in categories such as these will impose false limitations upon air forces, and will act to compromise opportunities to exploit control of the air.

Air forces have the capability to conduct wartime operations directly against all components of an enemy's strength. The components include military forces and their installations and facilities, the organizations and systems for civil enterprise and control—including major cities—and populations, in which rest the national ability and will to conduct war. However, the provision by the United States of air capabilities sufficient for attacks upon all of these components never implies that attacks upon all of them are indispensable to success. The essentially basic determinant of the success of air operations is not the weight of effort involved, or the extent of destruction that is imposed upon an enemy and its people. It is the extent to which the operations contribute to attainment of the condition which the government considers to be necessary for the war to be concluded successfully. Mass destruction is only one of many effects possible in air operations.

Modern implements of war and the nature of international conflict require global air planning. Air operations of all types are integral parts of the same common strategy. So, all air operations are interrelated. Air forces of all types are interdependent in terms of the effects which they can produce. They must be employed accordingly.

Air operations may be conducted within an enemy's sovereign territory, or in peripheral localities, or in segregated areas. Air forces, by virtue of their capability to penetrate to the central sources of an enemy nation's strength, may be employed against selected objectives to reduce the enemy's will and capacity to resist or to pursue a war objective. Air operations also can be conducted to neutralize aspects of power that radiate outward from an object nation's central sources to peripheral localities, satellite states, or to segregated or proxy areas of conflict. Also, air forces, if necessary, can conduct specialized operations in warfare that is limited by geographic or political boundaries, in which they need not penetrate a major opponent's sovereign territory to achieve acceptable results. The effects of air operations in any of these conditions can be of decisive proportions.

Air effort must be allocated carefully among the various types of operations. The proportion of effort to be devoted to operations of any specific type, in any specific locality, and at any specific time must be determined judiciously. The requirements of the over-all objective exercise the predominant influence in decisions.

As conditions change, the strategic importance of the many elements that make up an object nation's strength will alter. So, the priorities accorded to the various elements as air objectives will change. Air forces must be employed to counter the forces or conditions which pose the greatest and most immediate threats. Considering the implications of modern conflict, this priority employment is dictated by survival.

Air reconnaissance is one of the major sources of information requisite to successful military operations. When data obtainable through air reconnaissance, mapping and charting operations, and specialized undertakings, is correlated with information from other sources, a comprehensive catalogue of knowledge is accumulated. This knowledge will supply indications of courses of action which other nations will pursue, and their capabilities for such undertakings.

Logistics provide the means for the conduct of air operations. Encompassed by logistics are the tasks for determining support requirements, procurement and maintenance, and distribution. The importance of logistics is such that it often may be the difference between success and failure in an undertaking. So, there must be close and constant coordination in all types of planning.

Airpower and National Security

The term "airpower" embraces the entire aviation capacity of the United States. Active military forces, reserve air forces and their supporting facilities comprise a major component of airpower. Total airpower also includes the entire civil aviation enterprise; the whole system for research, development, and production; and the trained personnel, military and civilian, in both an active and reserve capacity. These resources together with a national understanding of airpower, are the nation's air strength.

War has been characterized in the past by a general pattern of events in which military forces were engaged in an extended struggle of attrition in surface battles. With air forces and modern weapons systems available, it no longer is necessary to defeat opposing armed forces as a prerequisite to conducting major operations directly against an opponent either in his sovereign territory or in any other locality. Measured in terms of destruction, war may become more sudden and total.

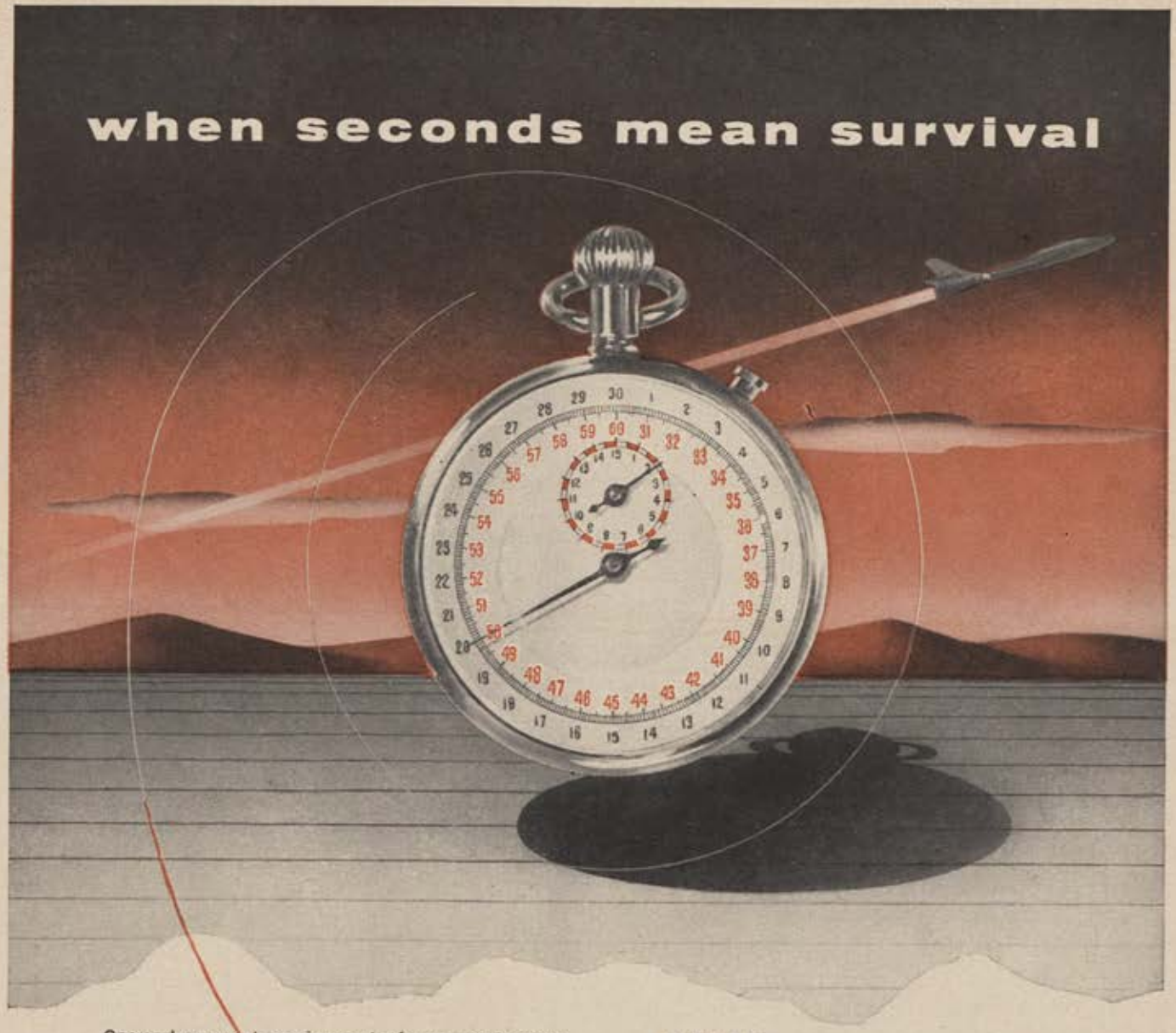
Airpower also has radically changed the basic conditions of security.

Because of national vulnerabilities consistent security demands military programs which reflect appraisals on the basis of national survival and ultimate success. The conventional build-up phase subsequent to the initiation of hostilities and preparatory to taking the offensive may no longer be necessary, and, in any event, can no longer be insured. Immediate, effective reaction to threats to national security in all forms of international conflict is a matter of primary importance. Forces in being must be provided and maintained for this purpose. The speed with which the forces can execute the required tasks may well determine the course of conflict.

Of the various types of military forces, those which conduct air operations are most capable of decisive results. This preeminence accrues to them because of their versatility—with or without armed conflict—and because their capabilities permit them to be employed wherever necessary. They provide the dominant military means of exercising the initiative and gaining decisions in all forms of international relations, including full peace, cold war, limited wars of all types, and total war.

The paramount consideration for the security and well being of the United States is the timely provision of adequate airpower.—END

when seconds mean survival



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Art of Common-Sense Management

One bright sunny day in mid-July 1949, I reported to a Strategic Air Command unit in one of our southern states. I had just completed a year at a civilian college, in grade, as part of the Air Force undergraduate training program. I had my degree. My little head was filled with knowledge and enthusiasm for my new assignment. There was just one thing wrong —I had, for all practical purposes, been away from the Air Force for a full twelve months, and I had no idea what SAC was or what its mission was. Now, you may think that this was a piece of abysmal ignorance, and so it was, but at any rate those are the facts. I was assigned to Group Operations and reported to the group operations officer immediately. He told me, "Major, we need a ground training officer. We will try to have a desk moved in for you in a day or so. In the meantime, try to find out all you can." Now, I'm sure that none of you who may be fortunate enough to read this have ever had this happen to you, and furthermore, if you have I suppose that you immediately took hold and had your shop running smoothly within forty-eight hours. It took me two months before I found out exactly what I was supposed to do. Through the application of good management practices the Strategic Air Command has, to a large degree, eliminated the causes which result in leaving an officer or airman to flounder about without adequate supervision for any period of time. It would effect great savings in money, manhours, and in the mental tranquility of its officer personnel if throughout the Air Force the practice could be instituted whereby an officer, when assigned to a unit, would be subjected to a program of orientation in which he would be told exactly:

What his responsibilities are;

What his authority is;

What tools he has to work with—be they people, machines, buildings, or a combination of the three;

Who the people are that can be of assistance to him in the carrying out of his assignment and where they can be located.

You may say that these things are done everywhere in the Air Force today, but I say in turn that too many officers flounder about in new assignments for weeks without producing ten-cents-worth of anything for the simple reason that their superiors haven't started them off with adequate instructions.

I know that somewhere in the mass of manuals, pamphlets, letters, directives, and regulations that have been published there are instructions which cover every conceivable job assignment any officer might have, but if I hired a man to cut my lawn I could not afford to wait until he read through the *Encyclopaedica Britannica* trying to find out how to do it. Neither can the Air Force afford to allow any officer to grope about in unproductive frustration for the lack of an adequate briefing of what is expected of him.

The finest commander I have ever served under approached the subject of management from the point of view that all of our Air Force people are good; since they are good it follows that they want to do what is right, and therefore, in order for them to do what is right they must be told. He set up the following procedure for newly assigned officers to his personal and operating staff and for squadron commanders: when an officer arrived he was scheduled for a briefing by the commander. At this briefing he was told exactly what his new job was, what he was to be held responsible for, what his facilities were, a general conception of the commander's ideas on management, and a statement of the commander's policies with regard to his area of responsibility. Following this briefing a schedule was arranged so that the newly assigned officer received a briefing from the staff member or squadron commander on his particular field of operation and then was shown how its services or facilities might be of use to him in his new job. After the orientation was completed to the satisfaction of the *newly assigned officer*, then and only then did he take over his new responsibilities. The greatest compliment which can be paid this system is that it works. I contend that no more valuable use can be made of a commander's time than that it be spent in properly indoctrinating subordinates. In the final analysis, a well briefed subordinate is a commander's most valuable asset.

The proper orientation of commanders and supervisors is only one application of common-sense management principles. In a large, complex organization there must be a great deal of standardization. Our precise technical orders have pointed the way, standard operating procedures have brought about further improvements, and the Strategic Air Command has almost approached perfection with its habit of writing everything down that is to be done. Air Force personnel are constantly changing either as a result of rotation or discharge. This situation is not new nor is it a problem with which only the Air Force is concerned. North American Aviation has faced the problem of rapid personnel turnover for years in its Columbus, Ohio, plant. Their solution has been to insist upon precise, formalized procedures for the accomplishment of every single job regardless of its simplicity or complexity. Written procedures are particularly applicable to an air base group which is primarily a service organization in support of a combat wing or group. One SAC commander applied this idea to great advantage. As the first step in his management program he identified his supervisors. The criterion used was: Does the individual accomplish all of the functions of management? Namely, organize, plan, coordinate, supervise, and control. If so, he is a supervisor. Procedures were then developed for every department and section which, if followed exactly, would obtain any air base group service for any interested individual or operating section on the entire base. Each of these procedures was signed by the commander, and all of them were collected into one

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book called *The Standard Operating Manual of External Procedures.* Copies of this manual were distributed to every department, section, squardron, and agency throughout the base. The sole purpose of the manual was to establish procedures whereby any air base group service might be obtained with no loss of time. Procedures were then developed for every job within the air base group. No job was omitted. The morning report clerk, the supply technician, the jet mechanic, the hospital orderly, each had a procedure which told him how to do his job. These procedures were collected into books called *The Standard Operating Manual of Internal Procedures.* Copies of this book were maintained in the sections and departments to which the procedures applied. Every new man was obliged to read the procedure which covered his job before he went to work.

The two manuals, one for external procedures and one for internal procedures, accomplished several things, all good from the standpoint of management. The first provided in one volume information for obtaining any air base group service and spelled out the method to follow, who to call, the correct telephone number, and the building in which the serving agency was located. The second told every man how to do his job. Here again, the greatest compliment that can be paid the system is that it worked.

I do not contend that text-book management is the answer to all Air Force problems, nor do I maintain that management will ever replace the command leadership, which is absolutely essential to a first-rate fighting force, but I do say that if we apply practical, managerial techniques to those areas of our Air Force in which common sense and experience have shown them to be of great value then and only then will we be well on the way toward an economical, efficient, and businesslike operation.

Lt. Col. Jasper L. Godwin, Jr.

The Trouble with Efficiency Reports

Several years ago, a renowned and lovely opera star was scheduled to give a concert in a certain Southern city. In order to get on the bandwagon for some worthwhile publicity, the public information officer of the local Air Force installation came up with an idea.

The gimmick was to honor the svelte soprano as the base's "singing sweetheart" and present her with a suitable scroll on the evening of the concert. The commander okayed the stunt and so did the diva, who, in addition to being flattered, thought how nice the story would look in her scrapbook. When the commander's wife heard of the project, she decided to take charge.

She had the information officer canvass home furnishings stores for samples of wallpaper patterns. It was the lady's belief that an unusual design would make for a scroll that would be novel. The commander's wife opinionated that an inscription lettered by an airman artist, then the whole thing shellacked, would make the scroll look like parchment and the opera star would treasure it. The commander's wife had a couple from China and they were "out-of-this-world."

Muttering under his breath that that is where they should remain, the information officer forced a gracious grin and promised to follow through.

The most vile-looking swatch of wallpaper was selected and approved by madame and the scroll was accomplished under her close supervision. It got its bath of shellac and allowed to dry. The finished product looked like someone had spilled some smorgasbord over it. The information officer, an accessory to the crime, shuddered but had no alternative.

The day of the concert rolled around. The commander requested his staff to come bow-tied, along with the ladies in evening dress, for the momentous occasion. At the commander's call, the information officer dispatched the piece of parchment with one of his writers to the other side of the field where the old man and his wife resided.

While getting out of his jeep, the airman scribe accidentally creased the scroll. The shellac peeled like a ripe banana. It hung in chunks and so did the airman's insides. He looked for a convenient hole to crawl into, but the commander's wife was waiting.

When she saw the ghastly goo, she was tempted to make the shivering airman eat it. Following some exceedingly unkind remarks, along with the commander's ulcers acting up, the old man's aide-de-camp ordered the information officer over on-the-double. The poor guy got a royal chewing and was told to have a replacement available withing a couple of hours. Or else!

Chewing his cuticles down to the second joints of his fingers, he managed to get the airman artist to work out another scroll on sensible and dignified drawing paper. The result was exactly one hundred percent improved over the original. The commander's wife was mightily displeased with the substitute, however, and the commander reflected her scorn by tongue-lashing the poor public information officer.

The old man gave the opera star the scroll, anyway, and the presentation went off well enough—but the information officer did not. The incident resulted in his getting a sorry efficiency rating, believe it or don't.

What recourse did the guy have? Was it Air Force Regulation 31-11, which states that a Review Board will check a legitimate complaint by an officer who feels he has received an unfair efficiency report? The reg specifically states: "Any Air Force officer who believes that any part of his personnel record is inaccurate, unjust, or unfairly prejudicial to his career may submit application for review. . . ."

A fine kettle of flounders, indeed! The fellow had as much chance of negating that rating as I have in pitching in the World Series. The reg goes on to say that he had to have "substantial support to receive favorable consideration." What was the unhappy and disillusioned character going to submit—a review of the incident along with the cracked shellac?

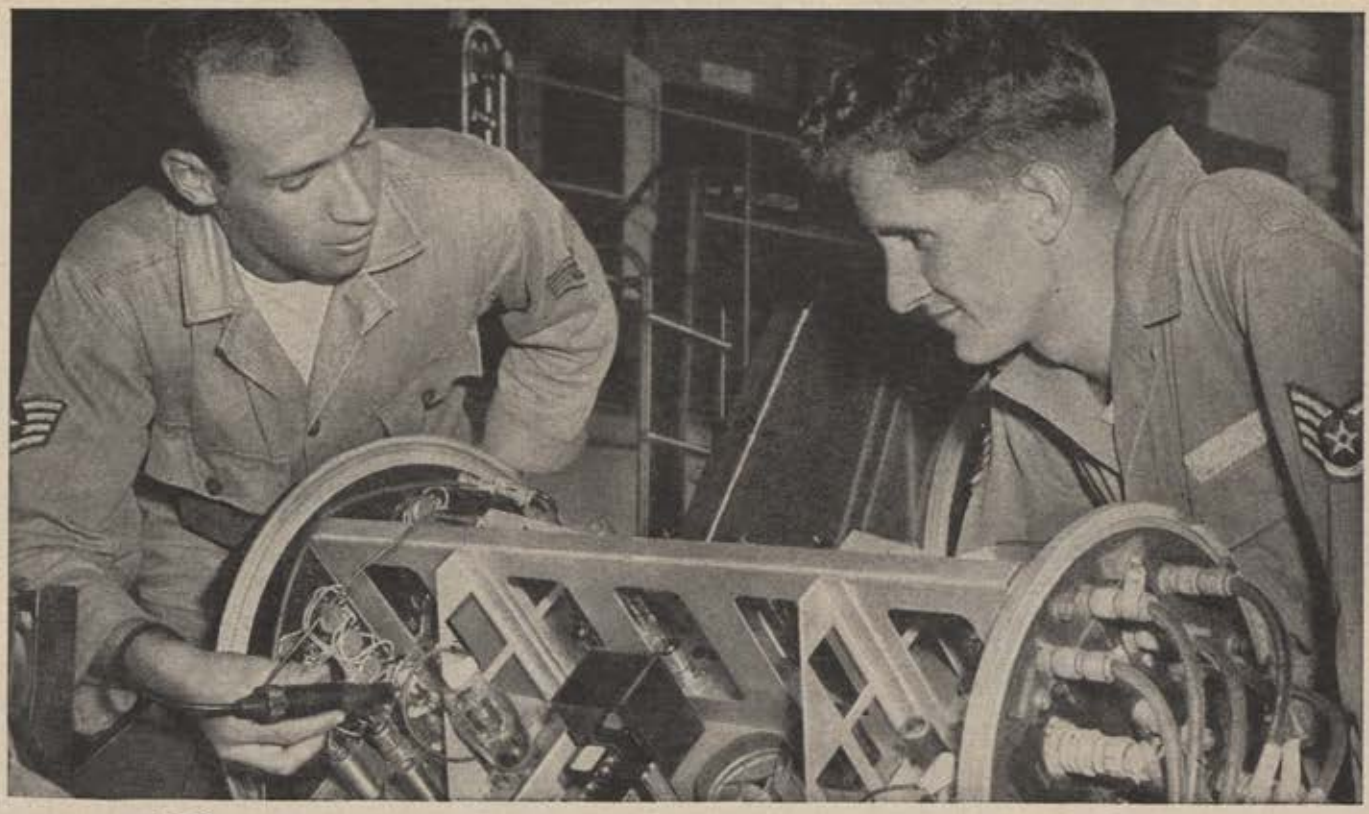
His application had to be accompanied by "reasons, documents, statements, or other evidence in support of the application."

Although the injustice rankled deep inside, there was nothing the information officer could do. Not only couldn't he provide the necessary supporting documents and statements, he was an ethical guy. He couldn't begin to consider an appeal to the Review Board without compromising the commander's wife and subjecting all concerned to much embarrassment.

For the benefit of the skeptics, I swear a solemn oath that the incident occurred. Furthermore, chitchat with other officer personnel in my career field during my fifteen Air Force years has revealed several other episodes resulting in shameful efficiency ratings to personnel who didn't deserve them. And, for the same personal reasons, could not offer vital documents to support their appeals.

Multiply the more than few such ratings in my information career field by the many other career fields and you may get a vague idea of the hex rearing its ugly head.

(Continued on page 83)



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Rather than leave you with the scroll story as one isolated example, let's switch to an Air Force base overseas. A new athletic field was constructed and the commander posed swinging a tennis racket over the new net. He wore a gaudy sport shirt for the dedication. When shown the glossy photograph, he approved it for publication. After it appeared in the local gazette, his friends good-naturedly ridiculed his shirt, his form, and his leering expression.

The commander couldn't take the ribbing and blistered his public information officer for not advising against publishing the picture. Result: another sad ER.

At another command, the public information officer was given a number of additional assignments: two speeches to get out in a hurry; form an essential committee; head a couple of fund-raising drives, etc. An unruffled chap, he shoved the lot of it into the lap of his junior officer, a willing and energetic lieutenant already up to his dandruff in work.

The junior officer shrugged philosophically and pitched in, but he was bowled over by the many details and leg work. He worked hard and long as his boss gave him smiling approval. After several days, the lieutenant's nerves and digestion boomeranged and he begged for some assistance. Although there were a couple of competent airmen in the shop, the public information officer decreed that the Indians couldn't do the work.

When the junior officer flatly stated that he couldn't complete his various projects satisfactorily, the public information officer blew his stack. You guessed it—our disillusioned lieutenant got his unsanitary efficiency rating.

What tangible documents could he provide for appeal? Since he had to live with his superior, why risk further complications? Did he dare buck his boss or would it be like trying to pull up a Pullman window? The window would remain stuck—and so would he.

When it is realized that an individual can get passed up promotionally because of an undeserved bad rating—perhaps even get bounced out of the Air Force, eventually—then there's something radically out of focus.

I'll be the first to admit that efficiency ratings ordinarily are the best means of judging a man's performance of duty. Selection boards must depend on them to weigh the relative and respective merits of the personnel whose fates they hold at these solemn conclaves.

What, then, is the answer to low ratings, considered unfair by conscientious officers receiving them? If completely guiltless, due to a chain of circumstances which they cannot appeal, what can these officers look forward to other than disillusionment?

There *is* a remedy. The current regulation regarding review of officers' personnel records reads fine, but I would add the following:

An amendment to AFR 31-11 which will permit an officer who feels he has been unjustly rated and cannot fight that rating for personal reasons, to be granted a *confidential, personal hearing* by the Review Board.

So that these face-to-face appeals can be held to a minimum, only those officers with consistently good ratings may be heard. That should be the yardstick of demarcation. An officer may have a batch of proud ratings for years, yet one or two bad ones crop up—ratings he knows he can't do a thing about because of personal reasons and a burning conviction.

After all, a selection board sees only a cold, written report on an individual. This selection board cannot be blamed for passing up the man with a lukewarm rating. A Review Board, however, listening to this officer in confidence, will know the deep satisfaction of having left no stone unturned in determining his future and seeing justice done.

Further, the Review Board is composed of mature officers. They can readily spot a faker standing before them. Not only would a personal appeal, when justified, provide confidence and deserved compensation to the individual unjustly rated, but it would gratify the Review Board itself.

It works both ways.

Maj. Luke Warm

Does This Mean Curtains for the Army?

It has become clear that the Army is now an auxiliary service. The nation's leaders are sentimentalists, however, and their memories of the ancient days of the Revolutionary and Korean wars have prompted them to keep a token force of about a million men for ceremonial purposes while the Air Force girds its loins to fight our wars.

But we Army officers cannot afford to be sentimental. We have been accused too often of looking backwards instead of forwards and preparing for the last war instead of the next. If the Army is no longer needed it should bow out gracefully, and not hang on for the sake of tradition, the chance of getting into the few piddling ground actions that World War III might provide, and for an occupation that could easily be handled by a few Marines temporarily detached from guard duty on an aircraft carrier.

Of course everyone admits that ground forces are still needed. But that is no reason to keep a large organization that is clearly obsolete. Why not make the Army a branch of the Air Force? The blue uniforms will solve our vexed problems of morale, and the several thousand square miles of arable land now occupied by Army posts can profitably be used for growing soy beans or fruit.

It has been pointed out by the Army men who have never piloted a jet that in war it is necessary to take and hold ground. They forget that two-thirds of the earth's surface is water and that everything above it is air. That doesn't leave much else, and if men were needed to fight on it they could be relieved from their regular duties of servicing planes and cooking Air Force chow and assigned to this task for as long as it takes.

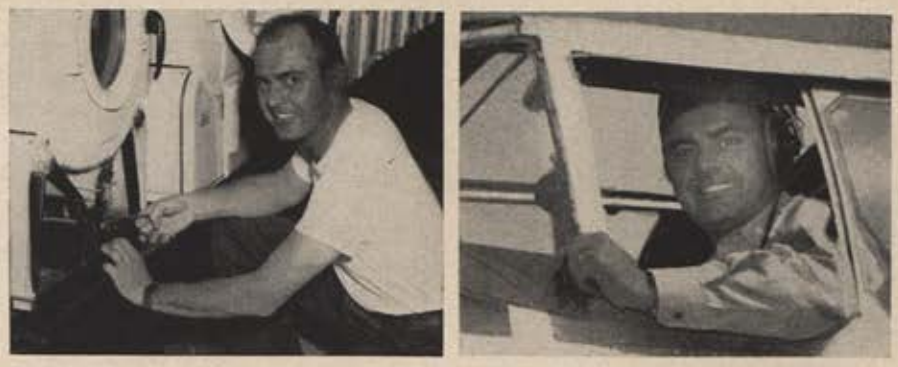
The merger holds many delightful prospects for Army men. They would no longer be involved in inter-service rivalry, which could be fought exclusively between the Navy and the Air Force. The problems of strategy and tactics would be handled by men who have a bird's-eye view of the terrain. The Air Force would probably allow them to wear a distinctive branch insignia on their lapels—perhaps a symbolic glob of mud.

This suggestion is perhaps too revolutionary to be accepted at the present time, for military men are traditionally conservative. But when its newness has worn off it is hoped that many officers will begin to be attracted by the glamor of being associated with the Air Force and the honor that the nation will accord us for closing up an unmodern and expensive service.

Requiescat in pace.

Major Forward

Reprinted with permission from The Army Combat Forces Journal, *August 1955 issue.*



Dual role—in civilian life, Maj. Richard B. Tuttle manages his own laundry. In the AF Reserve at McConnell AFB, Kans., he is an operations officer.

WHY A READY RESERVE?

By Edmund F. Hogan
RESERVE AFFAIRS EDITOR

JUST ONE year ago Gen. Nathan F. Twining, Air Force Chief of Staff, issued a memorandum in which he announced for the first time that current war planning had established a "firm mobilization requirement" for fifty-one tactical wings in the Air Reserve Forces.

The requirement having been established, General Twining then directed the Air Staff to turn its attentions to equipping Reserve units with aircraft capable of carrying out the D-Day mission; providing facilities and full unit equipment; and supervising and inspecting training programs to the end that the Reserve forces would reach an acceptable degree of combat capability as soon as possible.

This was a tall order, and the Chief of Staff realized it could not be accomplished with a mere memorandum. "To insure that this objective shall be met," he said, "it is necessary that all plans, policies, and programs pertaining to tactical and support units of the Air Reserve Forces be thoroughly re-examined."

The Twining directive was the signal for a program of streamlining that was aimed at creating a truly Ready Reserve. The key to the Twining order lay in the three words "current war planning." The Chief of Staff was letting it be known that the new national strategic concept envisioned an early decisive phase in any future war with the decision being reached in the air. This concept foresees no long mobilization period. Therefore, the Air National Guard and Air Force Reserve must be ready to perform assigned missions without notice.

In the streamlining processes required to produce a real Ready Reserve, it was inevitable that large areas of disagreement would appear.

One of the first actions taken to trim the fat was the now famous "option letter." Last April about 80,000 letters were mailed out to officers who had not met their 1954 training requirements. They were asked to indicate whether they wished to remain active, transfer to the Retired Reserve, or resign. One-third resigned, but the two-thirds who remained became eager to participate.

The Air Force felt it had gained in the transaction but all Reservists did not agree. Many who had held commissions for years complained bitterly that they would be available for service immediately in the event of emergency, even if they were unable to take part in the Reserve program. One disgruntled Reservist wrote that "it seems the Air Force is doing everything it can to destroy the Reserve program."

Despite protests such as these, Air Force held the line and moved on toward its goal of an over-all Ready Reserve strength of 349,000 officers and airmen. One step toward this objective was the adoption of the detached squadron concept, which has proved so successful in the Air Guard program. Another was a mammoth screening program to eliminate those whose civilian employment made the possibility of their being recalled suspect.

Included in this group were a number of Civilian Aeronautics Administration controllers. Many of these men, because of their keen interest in airpower, had been the backbone of the Reserve program in the lean years. But, in the event of war, no group would be more needed in place than these controllers.

This screening process stemmed in large part from the grim experiences encountered at the time of the Korean recall. The Air Force found itself with a mass of inaccurate information. Critical civilian employment led to a high attrition rate and units were badly depleted. The waters were further muddied by the fact that thousands of Reservists in non-pay status were ordered up because they had specialties the Air Force needed, and many of their brethren in pay status stayed home because their skills were not required.

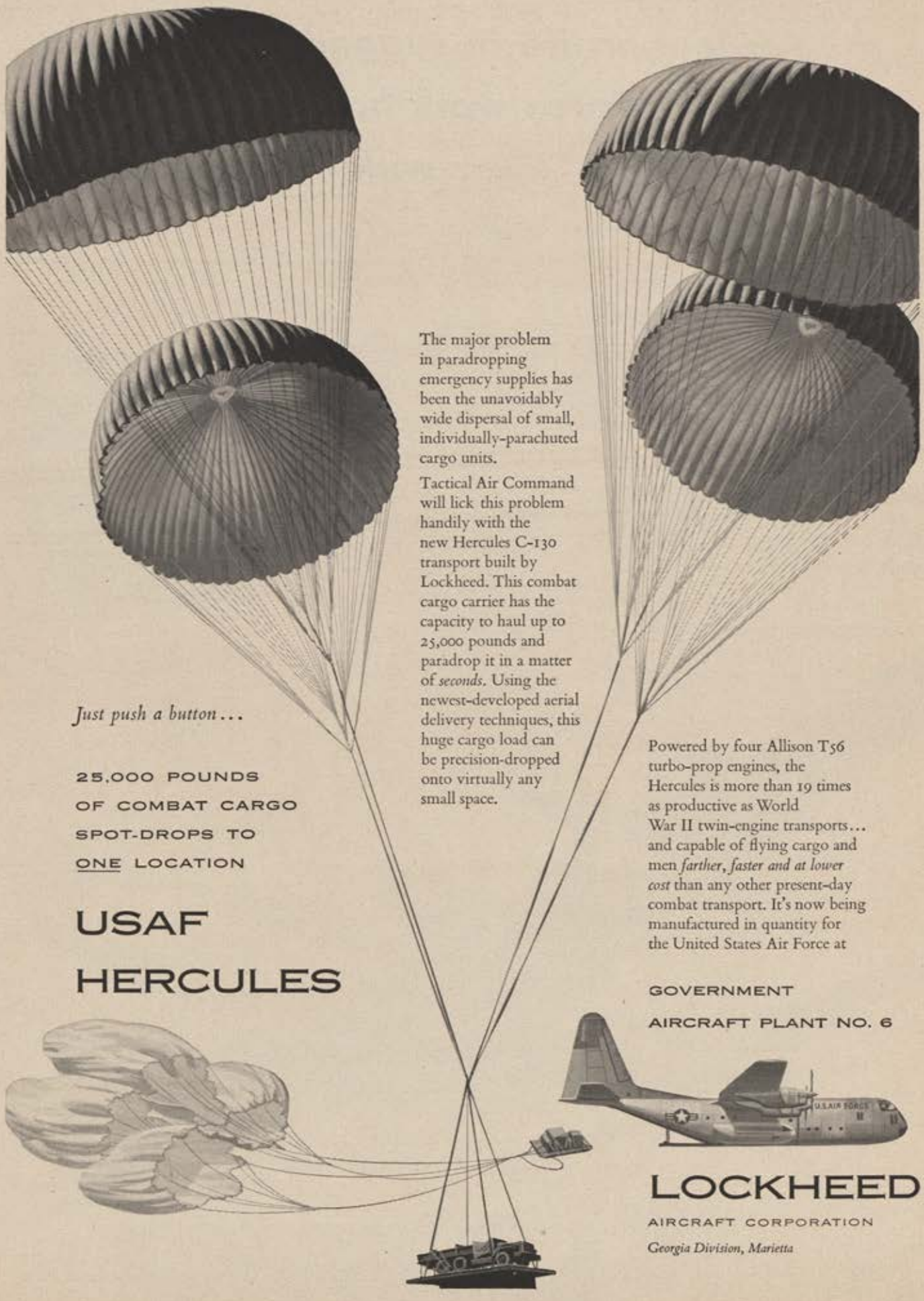
Situations such as these cannot occur again, the Air Force believes, if a real Ready Reserve is achieved. For one thing, personnel records will be up-to-date. For another, those who are participating will be called, not those who are merely names in a card file.

A real Ready Reserve fits neatly into the current strategic concept. Recently, Air Force Secretary Donald A. Quarles expressed these views:

"We are all coming to realize that security is increasingly a security of instant readiness, a powerful retaliatory force, and a security of deterrents.

"Deterrents mean force in being and readiness. One might think that concept is not really consistent with the concept of a Reserve force. I would put it the other way around. I would say that what we are doing is to make

(Continued on page 87)



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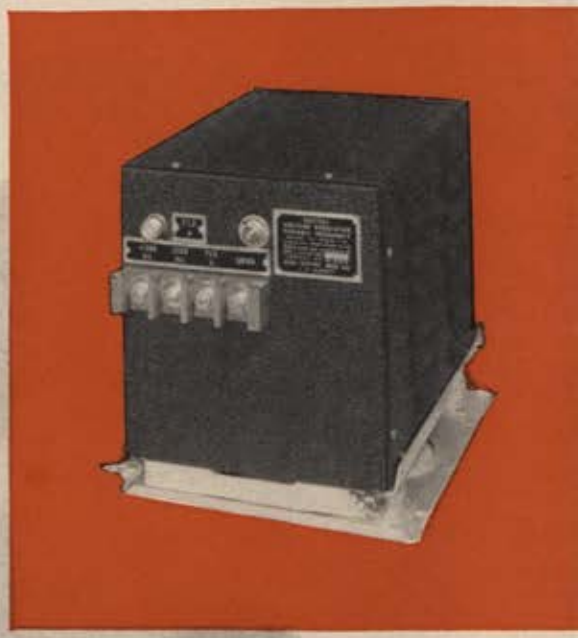

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the Reserve a ready force in being and actually constituting a part of our over-all airpower deterrent strength."

In line with this thinking, the Air Force has received Department of Defense approval for forty-eight paid drills for mobilization assignees who occupy rated positions. It also has received conditional approval for twenty-four paid drills for other than rated mobilization assignees. This group previously was authorized only twelve paid drills a year.

At a time when much concern is being expressed publicly over the status of the country's Reserve program, it should be noted that the Air Force program for its Reserve forces is not lagging, as is the Army's program.

Under the National Reserve Plan, which became law last year, the Army had counted on enlisting 10,000 young men per month for six months of active-duty training. So far, it has come nowhere near meeting this goal.

The Air Force never favored the program and does not plan to make use of its provisions. Instead, the Air Force proposes to fill its enlisted ranks in the Reserve program with airmen coming off four years of active duty who have an obligation to serve in the Reserve.

These are airmen who come within the provisions of a law passed in 1951 which required an eight-year total military obligation of the nation's youth. This law permitted young men to reduce the amount of time they must spend in the active Reserve by lengthening their period of active duty. In the case of the youth who enlisted for four years in the Air Force, his Reserve obligation can be met with one year's service in the active Reserve.

Over the next few years about 100,000 in this category will be released from active duty with the Air Force. In the six months since last July 1, more than 8,000 of these men have been selectively assigned to the Reserve program.

It is no secret that the Air Force Reserve is still handicapped by a shortage of airmen. But the selective assignment system is helping to overcome the handicap and many believe that once it gets into high gear, enough recently discharged airmen will participate to satisfy Reserve mobilization needs.

If the selective assignment program should fail to provide the number of airmen the Reserve needs, the Air Force could, if it wished, take advantage of the compulsory participation feature of the National Reserve Plan. This feature permits the services to force participation by Reservists who have a ready obligation. The Air Force has shown no inclination to use this provision, primarily because its Reserve manning progress in the last year has moved ahead rapidly. Paid participation, for example, has more than doubled.

Lt. Col. Earl M. Knighton, an oil operator and geologist in civilian life, has a Mobilization Day assignment in the personnel section at McConnell. During World War II, he was graduated from the Air Command and Staff School.

Capt. Richard M. Ash has a Mobilization Day assignment in the Office of Information Services at McConnell AFB, Kans. A bombardier in the Pacific during World War II, he now works for New England Mutual Life Insurance Co.

Along with the increase in people has gone an increase in the number of facilities available to the Reserve. Last year saw some $28 million made available for construction at sixteen flying fields and of two permanent Air Reserve Center buildings. The current fiscal year contemplates the expenditure of some $31 million for construction at eighteen flying locations and the building of an additional twenty-five Air Reserve Centers.

In all, there is a requirement for sixty-one Air Reserve flying centers. Twenty-four of these are wing-type bases and thirty-seven are single squadron installations to carry out the mission requirements of the deployed squadron concept. The program calls for thirty-seven bases in this fiscal year, a total of forty-two by the end of Fiscal Year 1957 and the sixty-one by the end of Fiscal Year 1958.

As of this writing, the schedule probably cannot be met. The $31 million contemplated for construction of the new flying locations and centers was to have been obligated by Continental Air Command. To date, $2.7 million have been released to ConAC for the flying centers and not a penny for the Reserve Centers. In all, ConAC is short some $28.3 million in its program to provide facilities, and it will take heavy pressure on the Department of Defense and Bureau of Budget to get the money turned loose, despite the fact that Congress has already appropriated it.

Proper facilities are an important element in the program to provide a truly Ready Reserve. It is necessary to have facilities before aircraft can be assigned. The right facilities attract the right people. Yet it is in this area that the most severe financial pruning has taken place.

In this last year of startling development of the Reserve program, the Air Force broached a bold scheme to increase the combat capability of its twenty-four flying wings. This plan is similar to the Air Guard technician plan and calls for replacing permanent party people with federal civilian employees who are members of the units they train.

If adopted, it would mean that the skilled technicians who handle administrative and maintenance duties in the flying unit would go on active duty with the units in the event of recall. Under the present system a skilled mechanic, employed as a civilian, is lost to the unit upon mobilization.

The plan was received with little enthusiasm by the Civil Service Commission, the commission holding that it would make military service a prerequisite for federal employment. The Guard escapes any such complication because its technicians are state employees.

The Air Force, however, pursued its proposal and after

(Continued on following page)

READY RESERVE — CONTINUED

numerous conversations with the Civil Service Commission succeeded in getting the commission's approval, subject to the endorsement of the Secretary of Defense.

If the technician plan clears the Department of Defense, it will mean that some 7,000 Air Force officers and airmen now assigned as permanent party people to train and administer the Reserve will be released for assignment elsewhere in the Air Force. According to preliminary estimates, the plan would save about $2.5 million per year.

Since the plan would definitely make for a more combat-capable Ready Reserve and, in so doing, cost less money, it is difficult to understand why it has not been adopted before this. One person who has worked on the program since its inception may have put his finger on the difficulty when he observed that the reason the plan had not been approved stems from the fact that "no reviewing agency has been able to find anything wrong with it."

Within the framework of the Twining directive, prime consideration in planning was given to the unit structure of the Reserve Forces—twenty-seven wings in the Air Guard and twenty-four wings in the Air Force Reserve. But the Reserve—as differentiated from the Guard—also has a major requirement to provide the Air Force with individuals on D-Day.

This individual requirement is spelled out in a document which requires that the Reserve "provide the USAF with a personnel augmentation for a limited or full-scale war." This requires that Air Force Reserve officers and airmen be procured, identified by command wartime requirements and trained in a specific Air Force specialty.

Current plans call for about 114,000 of these individuals. The balance of the 349,000 Ready Reserve force are assigned to units.

These individuals are to be found, for the most part, training in Air Reserve Centers. In the last year the Air Force has stepped up its specialized and general training, realigning programs to meet the anticipated wartime requirement. In the year gone by, nineteen new centers have been activated, bringing the total to seventy-nine throughout the country.

Keeping in mind that the object is a Reserve that must be ready on D-Day, the Air Force has also taken another long look at its ROTC program. For a long time there has been concern that perhaps too many ROTC graduates are being produced—both for the active establishment and the Reserve.

It is safe to assume that this program will be cut back considerably this year. And the ROTC program will take on more the flavor of a training ground for future Air Force and Reserve pilots.

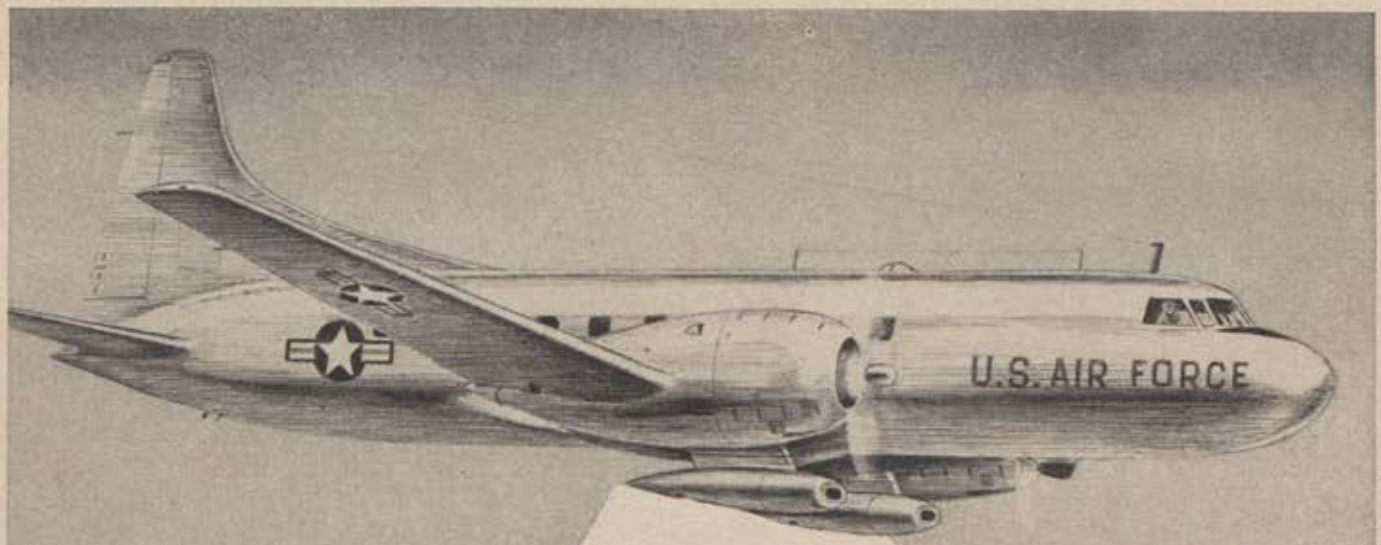
Against this backdrop of progress for the Reserve, it is hard to understand the reasoning that prompted one Reserve officer to declare publicly that officers in the standby Reserve who cannot be called to duty without authorization by Congress are in a better position to serve their country than those who attend weekly meetings.

It is hard to dispute the reasoning that the Air Force must have a Ready Reserve. Modern weapons and modern techniques of warfare place a premium on readiness and speak volumes in favor of a force that is truly in being.

Why a Ready Reserve? The answer seems so obvious that the question should never have been posed in the first place.

General Twining saw the need as a result of "current war planning." Secretary Quarles saw the need in the context of a "security of instant readiness."

The country sees the need as a prerequisite to its own survival.—END



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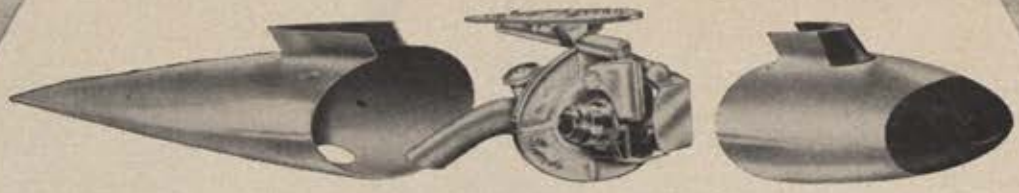

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Only a few days before, another American ship had accidentally fired at the *Texas*. Philip had responded by signalling: "Thanks, good line, but a little over."

Now enemy shells were whistling over his head from desperate vessels doomed to destruction. As the *Texas* raced past the flaming, riddled *Vizcaya*, that Spanish battleship exploded.

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RENDEZVOUS

Where the Gang gets together

COL. JIM: Does anyone know the present address of Col. James Pettis, or Pettus, who was head of the 43d Heavy Bomb Group, 5th Air Force, in World War II? *Donald B. Cole, Rich Poster Adv. Co., 314 Wall St., Port Huron, Mich.*

EX-92D GROUP MEMBER: As a former member of the 92d Bomb Group the article on the SAC World Series was of much interest. Wonder if there is someone who could tell me if there are any of my World War II buddies still with this Group. I was with the 326th Sqdn. at the time it was organized at MacDill in 1942. *Joseph Alusich, 317—44th St., Union City, N. J.*

NEEDS AFFIDAVITS: I enlisted in the AF before World War II. Around November 1942 I was sent to Casper, Wyo., as a spare gunner in the 463d Bomb Sqdn. (H). In December 1942 I was assigned to the 461st Bomb Sqdn. (H) as an active gunner on a B-17. In January 1943 we were transferred to Salina, Kans., to await overseas shipment. While there I took out $10,000 worth of Government insurance. The middle of February our crew (No. 19) was sent to Oklahoma City Air Depot to form the nucleus of the 8th Processing Group. A plane mishap in June '43 hospitalized me and I was given an honorable medical discharge. Now my problem is that I have never received my insurance nor were any deductions ever made. I was probably hospitalized before they had time to process the application. I was told that my only chance to receive anything on this insurance was through affidavits. My travel orders from Salina to Oklahoma City was recently discovered, containing the names of my fellow crew members. Perhaps some of these fellows can be located and will send me affidavits. They were: 2d Lt. Robert R. Hangen, First Pilot; 2d Lt. Lewis W. Beurman, Co-Pilot; 2d Lt. Jack T. Richardson, Navigator; 2d Lt. Carl N. Krawiec, Bombardier; S/Sgt. Donald Bumgarner, Engineer; and Sgt. Ralph B. Barrett, Asst. Radio Operator. *A. C. Craft, 4120 Balsam St., Wheat Ridge, Colo.*

We must have "Rendezvous" items six weeks before publication.—The Ed.

The READY ROOM

RESERVE AND AIR GUARD NEWS

The 9215th Air Reserve Squadron of New York City has pioneered a program that could serve to raise the level of Air Force information throughout the country.

Last month, in the first effort of its kind, the squadron called on some thirty-two editors, radio and TV executives, newsreel producers, and industrial public relations men to serve as a faculty for a two-day public information seminar. More than 100 Air Force information services officers on active duty across the country checked into New York City as students.

With New York's Mayor Robert F. Wagner, a Reserve lieutenant colonel and member of the squadron, setting the stage, the seminar covered the needs of the information media in formal presentations and in question-and-answer periods.

A panel of four experts handled each class of media. The format consisted of opening talks by each panel member, followed by panel discussion, and concluding with a minimum question period of twenty minutes.

At DFC presentation to Tennessee ANG pilot 1st Lt. William Breen are (from left) Col. King Matthews, Col. John Gibson, Breen, and Maj. Gen. Joe Henry, Jr. In Korea, Breen drew Reds' fire as a 'copter saved a downed flyer.

Col. Herbert Newstrom (center), Senior Air Advisor to Indiana ANG for last three years, who is retiring after 30 years of active duty, accepts letter of appreciation being presented by Col. William Sefton, Det. Cmdr. at Baer Field.

The first panel—on daily newspapers—included Luke Carroll, news editor of the New York *Herald Tribune;* Paul Schoenstein, city editor of the New York *Journal-American;* Bob Conway, New York *Daily News* reporter; and Al Skea, aviation editor of the Newark *Evening News.* The panel was moderated by Prof. John Hohenberg of Columbia University's Graduate School of Journalism.

The wire service and news magazine panel included Philip Reed of International News; Alfred King of Reuters; J. N. Leonard of *Time;* and John McAllister of *Newsweek.* This panel's moderator was Earl J. Johnson, general news manager of United Press.

The magazine panel consisted of Bob Elson of *Life;* Wes Price of *Saturday Evening Post;* and Jack Stewart of the Sunday supplement, *This Week.* The moderator was AFA's President and editor of *Flying* Magazine, Gill Robb Wilson.

The radio panel included Frank McCarthy of Mutual; Walter Kiernan of NBC's "Monitor" program; Bob Leder of New York's WINS; and Julian Schwartz of WSTC in Stamford, Conn. The TV panel brought together Jerry Greene, producer of NBC's "Today"; Ted Yates, manager of New York's WABD; and Walt Engels of WPIX. Moderator was Irving Gitlin, Director of Public Affairs for CBS.

The concluding panel—on newsreels—was made up of Burt Reinhardt, news editor of Fox Movietone; Frank Donghi, assistant assignment editor of CBS-TV; and Bill Montague, production editor of Telenews. This panel was moderated by Jack LeVieh, news editor of Pathé News.

The Vice President in charge of Public Relations for Eastern Air Lines, William A. VanDusen, climaxed the opening day's program with a discussion of industry public relations, and Bert Goss, President of Hill and Knowlton, reported on public relations agency operations to bring the formal part of the seminar to a close.

The program climaxed months of planning by the squadron, which is composed entirely of Air Reservists connected professionally with the information field. The seminar chairman, Robert P. Keim, who directed the efforts of more than eighty squadron members required to put the program together, projected its value in a statement that "this may well be a forerunner of other similar programs."

Speaking at the dinner which climaxed the two-day event, Col. Maurice Casey, Air Force Deputy Director of Information Services, expressed the official Air Force position when he said the seminar represented "an outstanding example of the way in which Air Reservists can help the active-duty Air Force."

* * *

The Deputy Assistant Secretary of the Air Force for Reserve and ROTC Affairs, John I. Lerom, resigned last month to enter private industry.

A member of AFA's Air Reserve Council, Lerom had served as the civilian member of the Air Force secretariat most responsible for the Reserve and Guard program for more than eighteen months. In that time he played a leading part in the development of the Reserve program from an organization of loosely knit units and individuals into a force that now has a definite mission in the country's war plan.

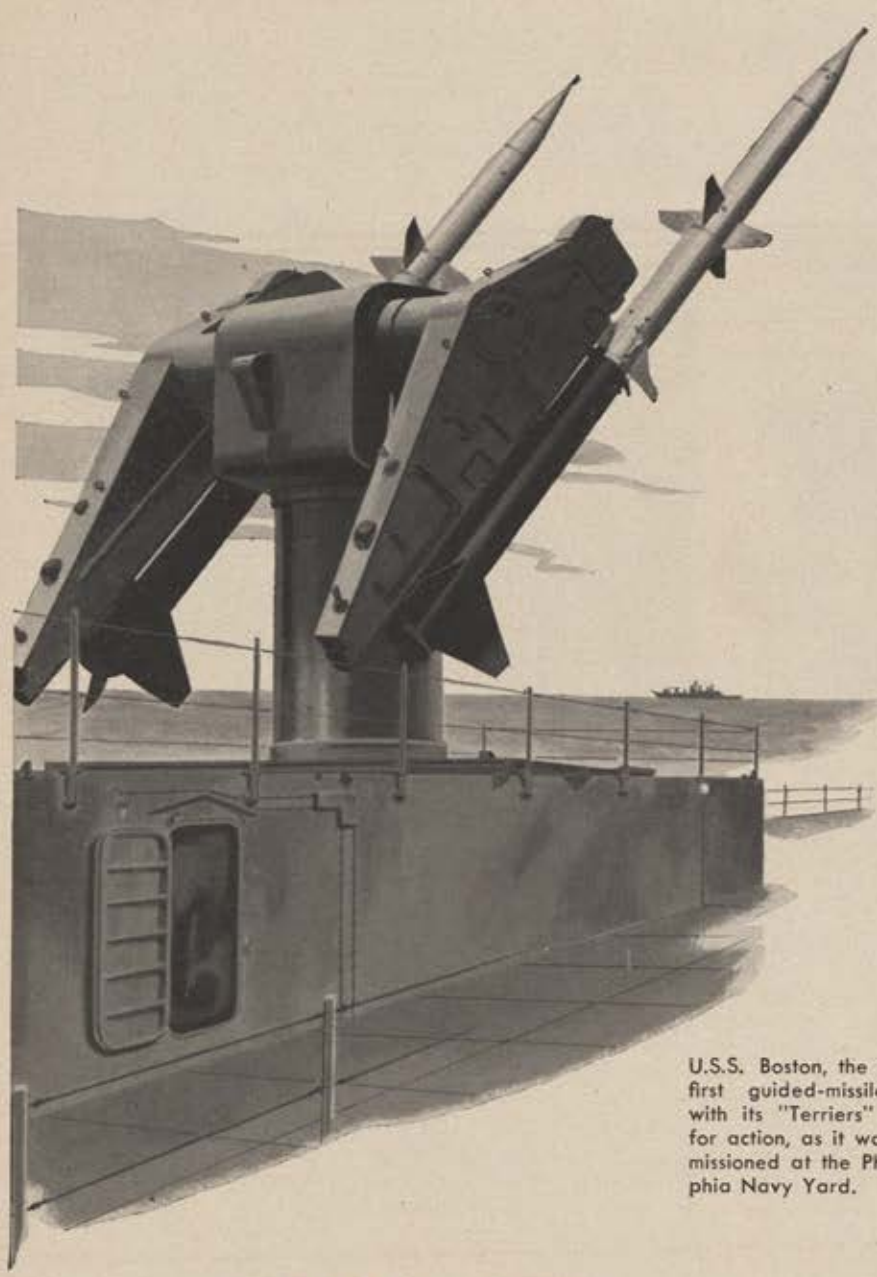
A native of North Dakota, Lerom has been connected with aviation since his graduation from the University of North Dakota's Law School. Prior to accepting the Air Force position, he had served with the Civil Aeronautics Administration and as a member of the State Department's Aviation Policy staff.

During World War II, Lerom rose from the rank of first lieutenant to colonel. He has maintained an active interest in the Reserve program since his release from service in 1947 to the present time, in both the Reserve and ANG.

Lerom will continue to participate actively in the Reserve program and a member of the AFA's Council.

(Continued on following page)

"TERRIERS"
-ready for action!



U.S.S. Boston, the Navy's first guided-missile ship with its "Terriers" ready for action, as it was commissioned at the Philadelphia Navy Yard.

ONE OF THE MOST potent defense weapons now in use by our Navy is a supersonic, rocket-propelled, guided-missile called the "Terrier". Well named, the job of this electronically-controlled "watchdog" is to track down an enemy and put him out of action *before* he can strike.

Working in close cooperation with the Armed Services on this guided-missile, Philco research, engineering and production have made important contributions to its development. This has been particularly true in connection with the proximity fuse, the mechanism which extends the effective target range and enables the "Terrier" to demolish an aircraft the moment it gets in the *vicinity* of the marauder.

From the first sketch to the final, super-accurate mechanism, Philco pioneered and completed this assignment in cooperation with the Navy. Philco's world famous scientific knowledge and skill is a continuing factor in the development of tomorrow's defense for your protection . . . tomorrow's quality products for better peacetime living throughout the world.

PHILCO CORPORATION

A major roadblock to the development of Reserve training has been eliminated by a recent Department of Defense ruling. Henceforth, Defense has ruled, space required for Reserve training will be considered special purpose space.

In the past, space needed for Reserve training—such as Centers—was considered general purpose space and was procured through General Services Administration. In the context of general purpose space, requirements were filled by whatever space GSA had on hand or could acquire at the lowest cost. As a result, Air Force found itself in the position of establishing Reserve Centers in abandoned warehouses or in out-of-the-way locations Reservists could hardly find. Often, the cost of rehabilitating these places far exceeded what the Air Force would have had to pay had it been able to choose more desirable locations.

Air Force still must work through GSA when it desires to locate an Air Reserve Center. But GSA must come up with space that meets Air Force criteria. Failing this, Air Force can negotiate for its own space.

The decision should help establishment of future Centers that are centrally located and capable of accommodating required training aids.

° ° °

Front Royal is a Virginia community of some 8,000 persons about sixty miles west of Washington, D. C. Five years ago a dozen former Air Force officers and airmen, who had remained active in the Reserve program, made a round trip of forty miles each week in order to receive one point toward promotion and retirement.

These hardy Reservists thought then that Front Royal should have its own unit. Not only would it cut down their own traveling, they reasoned, but a unit in the community would attract other Reservists who were staying away because of the distance required to attend meetings.

After more than four years of trying, Front Royal has its own unit (see cuts), the 9206th Air Reserve Squadron. The manner in which this came about is a story of determination, coupled with community support.

The twelve original Reservists made a systematic canvass of the city and outlying districts. Recruiting was successful, but the men had no place to meet until a beer distributor offered the first floor of a building he owned, light and heat free. The local Textile Workers Union pitched in with additional space. A lumber company provided material for three large road signs, and a local sign painter lettered in the recruiting legends. The Front Royal radio station offered its best time for programs designed to attract Reservists, and a local doctor gave physical examinations at no charge.

From the humble beginning of seven officers and five airmen, the Front Royal Reserve participation has grown into a squadron of more than 100 officers and airmen and continues to expand.

Recently, formal activation orders were presented by Brig. Gen. Paul Zuckerman, who holds a mobilization assignment as vice commander of First Air Force, to Maj. Carl Miller, with the congratulations of the Air Force for completing a job that many would have said five years ago couldn't be done.

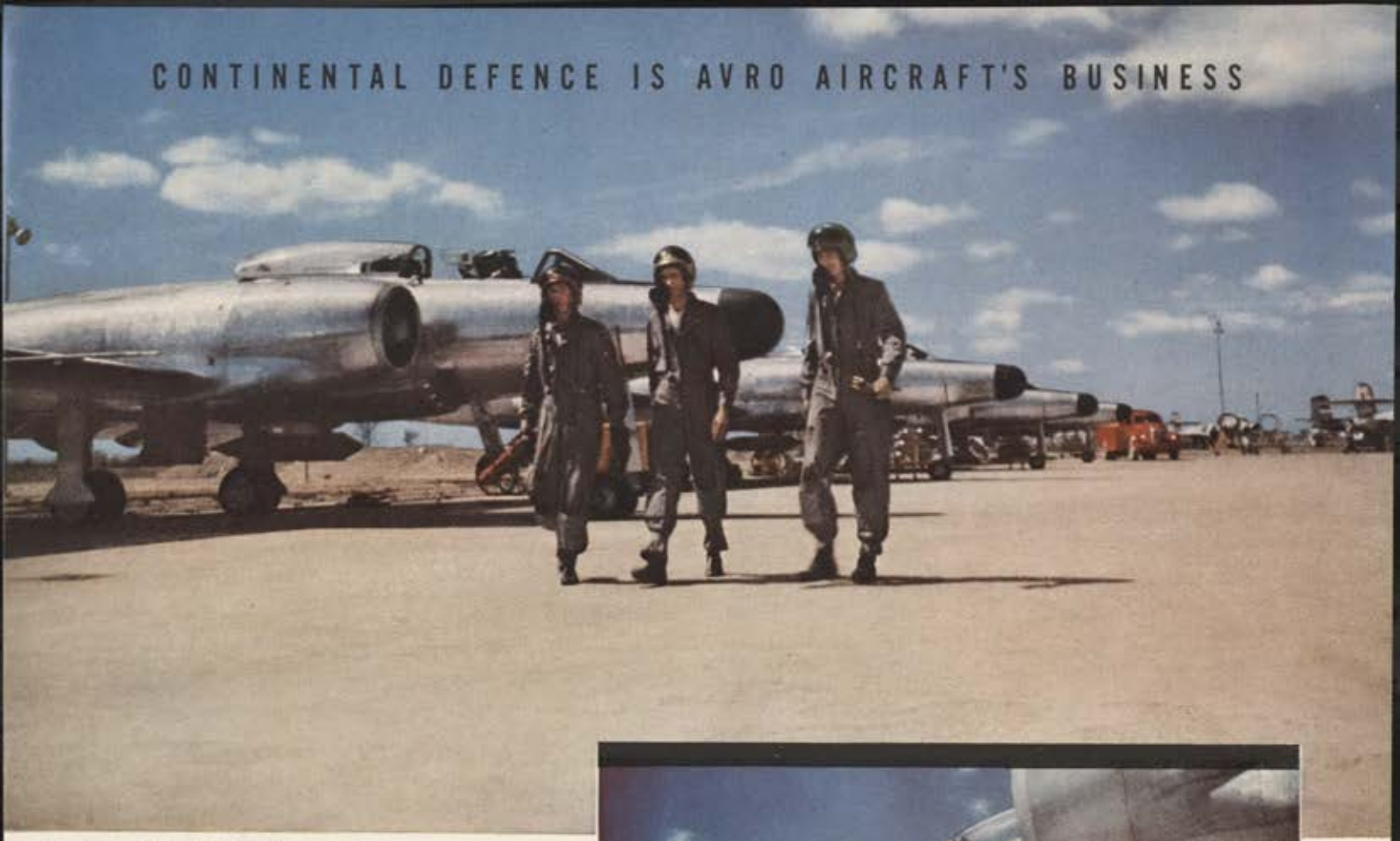
° ° °

Notes of the back of a Form 175. . . . Mark down another change of address for an ANG unit. West Virginia's fighter squadron is being moved from Charleston to Martinsburg. About 200 Martinsburg residents put up $164,000 to buy land required for extending the runway to 9,000 feet. When the new runway is in, West Virginia will get out of F-51s and into jets. . . . M/Sgt. William F. Armocida of Pennsylvania's 112th Air Base Group has written a song entitled "House of Sam." The song refers to the 147th Fighter Squadron, ANG, based at Greater Pitt Airport. It has been recorded by the Delmonaco quartette and is being played widely by disc jockeys in the Pittsburgh area. . . . USAF has waived requirements for inspection for federal recognition of ANG replacement training squadrons. National Guard Bureau can grant recognition upon certification by the air advisor that both the tactical squadron and replacement training squadron have the officer and airmen strengths required. . . . The former flight surgeon of Alabama's 117th Guard Tactical Reconnaisance Wing, Col. Paul Goodwin, is on active duty and serving as Assistant for Reserve Affairs to USAF's Surgeon General. . . . USAF's Fighter Weapons School has undertaken publication of a quarterly newsletter. Each ANG fighter-interceptor squadron is scheduled to receive ten copies. . . . The new ICAO phonetic alphabet will be used by ANG pilots effective next March 1.—End

Members of the newly organized 9206th Air Reserve Squadron, Front Royal, Va., line up in front of local schoolhouse before marching to the Court House for activation ceremony. The unit now numbers more than 100 Reservists.

Front Royal's Mayor William C. Demming (left) gives key to the city to Brig. Gen. Paul Zuckerman, who had given activation orders to the new Reserve unit (see text). At right, 1st AF's Col. Robert Hall and Maj. Margaret Berry.

CONTINENTAL DEFENCE IS AVRO AIRCRAFT'S BUSINESS



Squadrons of RCAF CF-100s manned by keen, alert pilots and navigators guard Canada's northern approaches on a 'round-the-clock alert.

During 1956 NATO will begin adding squadrons of CF-100s, manned by RCAF air crews, to its Air Division in Western Europe.

FLIGHT OVER: INTERROGATION TO COME

There's something about the bearing of these men of the RCAF . . . something in their confident stride as they return from an interception exercise . . . that speaks of a job well done. For many months they received intensive training to prepare them for exercises like this . . . and for the dark day when enemy aircraft may actually appear in the skies over Canada. And what of the planes they fly? Avro Aircraft's CF-100 all-weather night interceptors have greater range, more power and more striking force than any all-weather night interceptor in service anywhere. Newer and more powerful flight projects are constantly underway in Avro Aircraft's extensive engineering division, staffed by the most outstanding research, design and development engineers in the aeronautical industry.

AVRO AIRCRAFT

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NOW . . . a powerful electric STARTER FOR MIDGET TURBOJETS

Starting a lightweight turbojet engine, such as the 1000-pound thrust Fairchild J44, is never a problem with the rugged Model D62 starter developed by Jack & Heintz. This starter is an electric, direct cranking unit which has substantially bettered the starting time limitations established by the engine manufacturer.

Field Proven

The D62 starter is establishing an enviable operational record on the small J44 turbojet engines being used as wing-tip thrust assist power plants on Fairchild's C-123B Assault Transport. Modifications of the D62 are in use on other specialized applications including Solar's gas turbine driven a-c power pod installations on the Convair C-131B. In addition, a new higher speed starter extremely light in weight for small turboprop engines has been developed and is being engine tested.

Special Features

Features of the J&H Model D62 include: grounded, irreversible, series-wound, interpole-type motor; planetary reduction gearing with multiple disc torque limiter; and an automatic jaw meshing mechanism, providing quick-acting positive engagement.

This small power package or a modification of it engineered to your particular application may be the answer to your starting problem. Send for complete data including performance curves and dimensional drawings. Write Jack & Heintz, Inc., 17640 Broadway, Cleveland 1, Ohio. Export Dept.: 13 E. 40th St., New York 16, N.Y.

CHARACTERISTICS

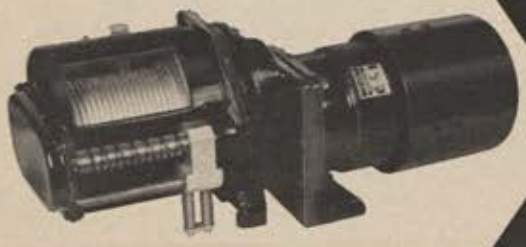
Engine Mounting Pad	AND20002, Type XII-S (except opposite rotation)
Starter Input:	
Voltage, d-c	22-28
Current, amp (max)	450
Starter Output	30 lb-ft @ 800 rpm, 24 v
Gear Reduction	7:1
Torque Limiter:	
Breakaway Torque, lb-ft (max)	80
Slipping Torque, lb-ft (max)	65
Slipping Torque, lb-ft (min)	55
Jaw Teeth, number	3
Rotation, viewed from anti-drive end	Counterclockwise
Weight, lb (approx net)	25

OPPORTUNITIES FOR ENGINEERS

There's a promising future for electrical and mechanical engineers at Jack & Heintz. Write Manager of Technical and Professional Placement, today, for illustrated, descriptive booklet.

JACK & HEINTZ *Rotomotive* AIRCRAFT EQUIPMENT

Versatile WESTERN GEAR Hoist



selected for new Bell anti-submarine helicopter!

When Bell Aircraft Corporation developed its new HSL-1 helicopter for Navy anti-submarine detection and rescue work, it selected Western Gear to design and manufacture the airborne hoist aboard the unique twin rotor aircraft. This Western Gear hoist lifts 800 lbs. at 50′ per minute. The hoist shown in inset above, weighing 28 lbs. and similar in design to that selected by Bell, can lift 400 lbs. at 100′ per minute, spooling more than 100′ of 3/16″ cable. By modifying the gear train it can lift up to 1600 lbs. at 25′ per minute. A level wind assures accurate spooling and the motor is equipped with radio noise filter to comply with AN specifications.

Western Gear's more than 40 years of experience supplying important components for aircraft of practically every description was a major factor in its selection by Bell to design and manufacture this vital hoist for airborne use. Knowledge obtained since 1888 enables Western Gear to provide a speedy, economical solution to any problem involving the mechanical transmission of motion or torque. Why not avail yourself of this experience to solve your problem? Western Gear engineers will be glad to offer their help and recommendations from your blueprints or specifications. Address General Offices, Western Gear, P.O. Box 182, Lynwood, California.

"The difference is reliability" ★ Since 1888

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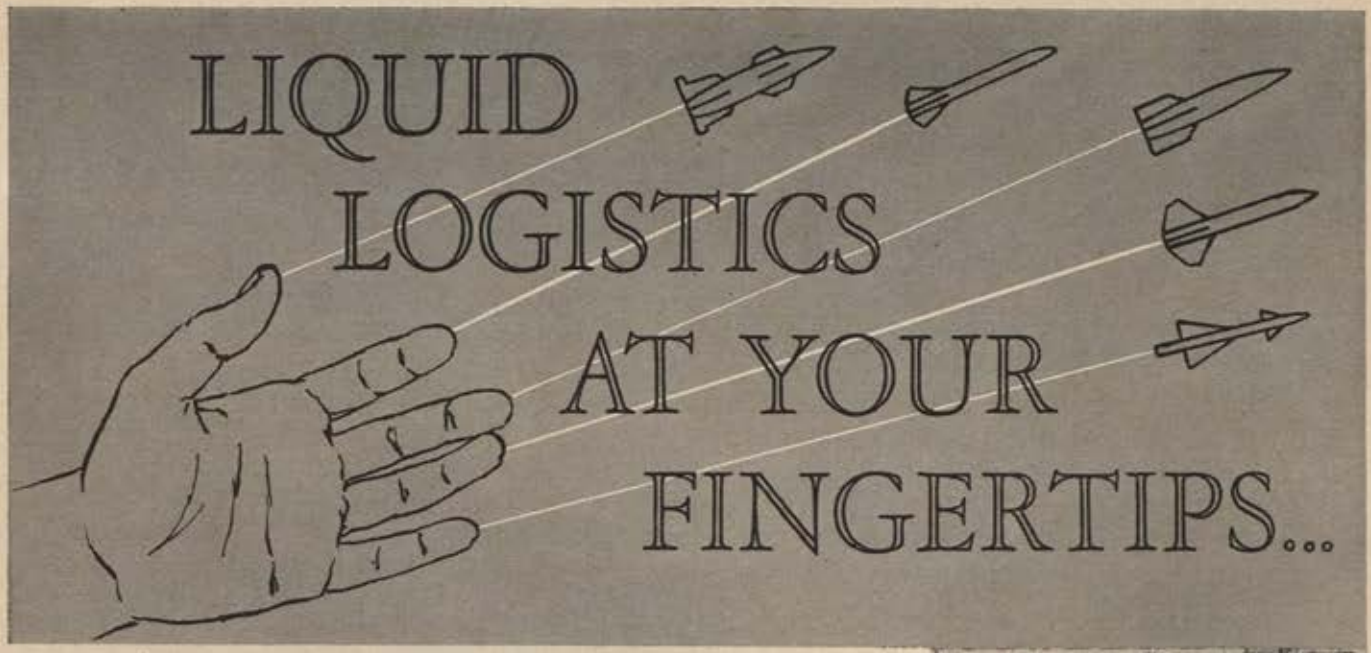
Plants at Lynwood, Pasadena, Belmont, San Francisco (Calif.)
Seattle and Houston — Representatives in principal cities

WESTERN GEAR
ENGINEERS AND MANUFACTURERS



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Aniline, Hydrogen Peroxide, Fuming Nitric Acid, Liquid Oxygen — or any hard-to-handle propellant liquid is available "ON TAP" in a complete range of performance-proved mobile containers by Cambridge Corporation.

CAMBRIDGE offers a production-built line of high vacuum insulated containers, no-leak, high pressure, welded aluminum spheres and non-corrosive tanks which meets the full range of liquid propellant handling problems. The liquid logistics of storage, transport or flight line operations are best supported by service-proved containers by CAMBRIDGE CORPORATION.

250 GALLON ANILINE B TANKS

61ST6 AL. FUMING NITRIC ACID CONTAINER

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4000 GALLON TRANSPORT DEWAR

A PRODUCTION SERVICE TO INDUSTRY

Tech Talk

By Lee Klein

The **first AF twin-jet basic instrument trainer,** developed by **ARDC** and manufactured by **Link Aviation, Inc.,** has been delivered to Tyndall AFB, Fla. (see cut). The new trainer has **side-by-side seats,** permitting the instructor to sit beside the student in the cockpit. There he can observe the student's reaction to various problem situations and can also introduce trouble through a miniature trouble control panel. **Engine, air and wheel sounds, and rough air** can be simulated and the trainer will also pitch and roll in response to control pressures.

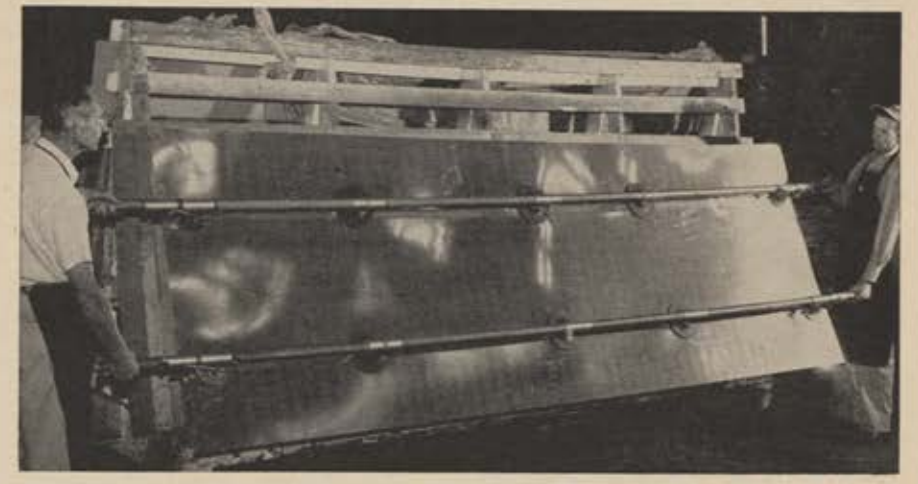
Link has also developed the **first simulator for guided missile crew training.** Already delivered to Patrick AFB, Fla., the device generates **simulated radar signals** which take the place of those relayed from an actual missile. It was designed to train crews in guidance and control of the **Martin TM-61 Matador.** The simulator is on wheels, as are the other units—the radar station and the missile controller's station—used with it. By putting the units on trailers, the AF can conduct training at **any time or place,** even in combat areas.

The AF's new Link twin-jet basic instrument trainer, the ME-1, developed by ARDC, permits the instructor to sit side-by-side with the student pilot.

At Fort Worth, mock-up of new Bell 'copter (minus rotors) shows the XH-40's low silhouette. The Army plane will have a Lycoming XT-53 turbine engine.

In air evac duty, XH-40s will carry two litter cases plus an attendant.

Bell Aircraft Corp. recently previewed the **XH-40,** winner of the **Army's utility helicopter** design competition, with a full-scale mock-up at their Fort Worth, Tex., plant (see cut). Designed for **frontline service,** the helicopter is powered by the **Lycoming XT-53 turbine engine** and is said to be capable of a fast, **1,900 feet-per-minute vertical climb** rate from sea level. In one of the design improvements, the XH-40 pilot will be able to **trim the rotor blades** for smoother flight while in the air. In present helicopters, mechanical adjustments for trim are required on the ground. Experience gained during the Korean war dictated many design improvements in the new model.



In new material-handling process in use at Convair's Fort Worth plant, vacuum cups and overhead vacuum lifts move aluminum sheet stock safely.

The AF's newest fighter-bomber of the supersonic "Century Series," the **Republic F-105A,** is now undergoing **flight tests at Edwards AFB, Calif.** In its first flight, with Republic's chief experimental test pilot, **Russell M. (Rusty) Roth** at the controls, the new plane **exceeded the speed of sound.** It is equipped with a **Pratt & Whitney J-57** engine, has short, very thin swept-

(Continued on following page)

Half of a Piasecki H-21 helicopter is loaded aboard a Douglas C-124 Globemaster. At destination, it will be reassembled for flight by ground crew.

ABOVE—Pitot heads for engine pressure-ratio indicating system are seen in the intakes of a B-52's Pratt & Whitney J-57 engines. Pressure ratio systems measure ratio between pressure at air intake and turbine exhaust.

AT RIGHT—Components of Boeing's new pressure-ratio system. Shown is the instrument which is installed on the pilot's instrument panel and the "black box" which determines the ratio between the different pressures.

back wings, a long cylindrical fuselage, wing root air-intake ducts and a needle nose. Unusual features include a **one-piece flying tail** ("stabilator") and a **ventral fin** on the bottom of the aft section of the fuselage. It was designed to carry **nuclear weapons** as well as conventional bombs and rockets. The AF has also announced an RF **photo-reconnaissance version** of the plane.

We had our first look at a giant helicopter—**Piasecki's YH-16A** Turbo-Transporter—the other day. Only nine feet shorter than the C-119 Flying Boxcar, the helicopter is powered by **two Allison gas turbine engines,** weighs over **sixteen tons,** and can carry forty passengers at a top speed of 150 mph. Its two rotors, each with three blades, measure eighty-two feet in diameter. During flight tests, the aircraft was able to maintain altitude with a normal load with one of its two engines shut off. The craft is similar in size and appearance to its predecessor, the piston-engined YH-16, but is faster and can carry a bigger payload. A third transport helicopter, the **YH-16B** is expected to be the production version of the "Turbo-Transporter." The B model will have more powerful turbine engines, will be faster, and will be designed to carry fifty-four troops.

The 516th Troop Carrier Group at Sewart AFB, Tenn., has been experimenting with the **aerial ferrying** of **Piasecki H-21B helicopters** (see cut). The helicopter can be dismantled in a few hours and stowed in a **Douglas C-124 Globemaster.** In one recent test, a dismantled helicopter was in the air aboard a Globemaster only five hours after an alert, and was flying eight hours after it reached its destination.

Thrust-measuring instruments (see cut), giving pilots a ready indication of the thrust being developed by their engines, are being installed on **Boeing B-52** bombers now in production. The instruments measure the ratio of engine turbine exhaust total pressure to engine inlet total pressure. This ratio can then be related mathematically to both engine and airplane performance. On earlier engines, a **combination of tachometer and tailpipe temperature readings** was used to give an indication of thrust, but on the twin-spool Pratt & Whitney J-57 engines, which power the B-52, a very **small variation in compressor speed** —measured by the tachometer—results in a **large variation in thrust** in important power ranges. The new instruments were **developed by Boeing engineers** as a solution to the thrust measurement problem. The systems, one installed in each engine, take pressures at the front of the engine and in the engine's turbine exhaust. Both are fed to a "black box" where the ratio is computed and transmitted electrically to an indicator in the cockpit.

Noise speeds up your "internal clock" to the point where your estimate of ten minutes averages about seven minutes of actual time according to preliminary experiments at ARDC's **Wright Air Development Center.** The findings, reported to the American Psychological Association convention, indicated that there may be a **connection in the nervous system** between **judgment of time** and the **mechanisms of hearing.** Dr. Harry J. Jerison, a project engineer in the Aero Medical Laboratory's Psychology Branch, subjected fourteen students to high levels of sound and had them perform a complicated task. He also gave them the task in comparative quiet. During the quieter periods, the students estimated that ten minutes had passed after an average of nine minutes, but under noise conditions, they thought that ten minutes had passed after an average of only seven minutes.—END

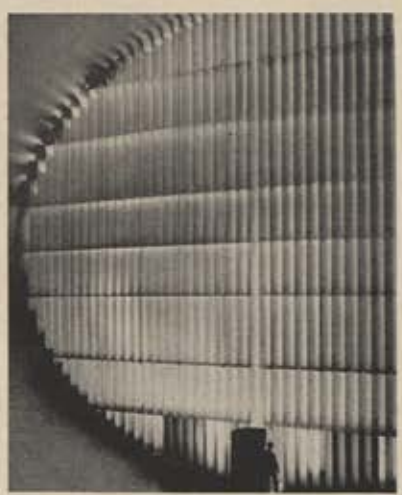
AEDC. The Engine Test Facility is at the upper right, the Propulsion Wind Tunnel at the upper left, and the Gas Dynamics Facility in the foreground.

Part of the power to the Ramjet Addition will be supplied by this motor.

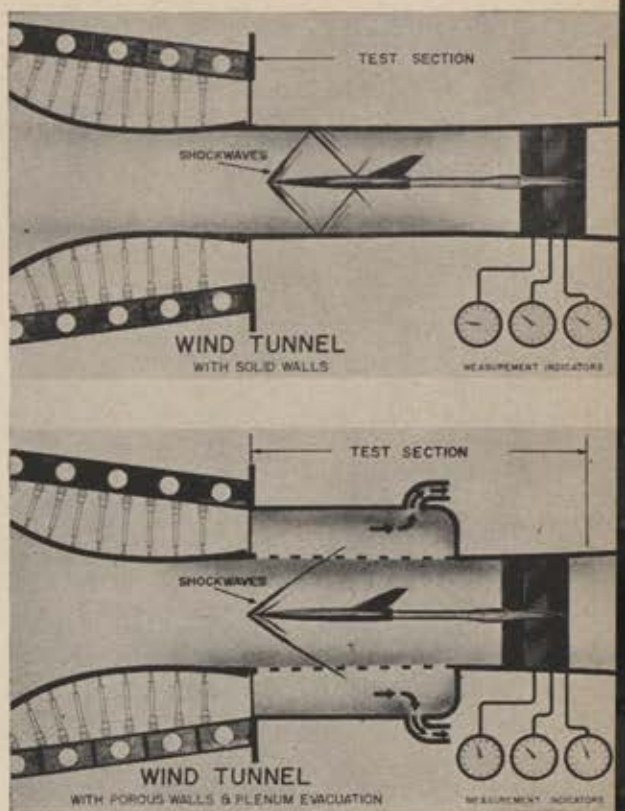
'Tornado Town,' Tenn.

ARDC's Arnold Engineering Development Center at Tullahoma, Tenn., exists "for the development and evaluation of aircraft, propulsion systems, and guided missiles through a wide range of simulated speeds, altitudes, and flight conditions." The AF recently invited us down to see how they carry out this mission.

AEDC, operated for the AF by ARO, Inc., has three major laboratories: The Engine Test Facility (ETF) and its Ramjet Addition (RJA), the Propulsion Wind Tunnel (PWT), and the Gas Dynamics Facility (GDF). The ETF, for testing all types of jet engines, has been in operation for more than nineteen months and is capable of simulating conditions ranging from temperatures of —120 degrees F. to 650 degrees F., altitudes up to 80,000 feet and speeds between Mach two and three. The RJA, to start testing in 1957, will test the largest jet engines now contemplated, at speeds up to Mach four. In late 1956, the PWT will start testing full-scale engine installations and large model, or full-size, missiles at altitudes as high as 100,000 feet and speeds up to Mach five. Speeds as high as Mach ten will be attained in one of the GDF tunnels beginning in 1956. When completed, GDF will have six tunnels—from twelve to fifty inches in diameter—and will test aerodynamic scale models of aircraft and missiles, projectiles and some full-scale parts of missiles.—End



Giant vanes direct the air around a corner in Propulsion Wind Tunnel.



Shock waves reflected from solid walls, top, result in inaccurate measurements. New perforated walls in the Propulsion Wind Tunnel, bottom, absorb the waves.

A giant Allis-Chalmers 1,000,000 cfm axial compressor rotor, viewed from underneath. It is part of the Ramjet Addition to the Engine Test Facility.

American inaugurates

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Now fly between Chicago and San Francisco aboard the world's fastest and finest airliners—American's celebrated DC•7 Flagships. You can take your ease in a special club-chair seat or enjoy the pleasant diversion of the spacious rear lounge. The service is particularly attentive and the menu especially appetizing. For reservations, see your travel agent or call your nearest American Airlines ticket office.

		Westbound
Lv. Chicago	*12:30 pm*	*5:00 pm*
Ar. Oakland	—	*9:45 pm*
Ar. San Francisco	*5:15 pm*	*10:15 pm*
		Eastbound
Lv. San Francisco	*9:00 am*	*10:20 pm*
Lv. Oakland	—	*11:00 pm*
Ar. Chicago	*4:40 pm*	*6:40 am*

AMERICAN AIRLINES

America's Leading Airline

Baltimore's Role in Air Education

FIFTEEN-WEEK WORKSHOP CO-SPONSORED BY THE BALTIMORE SQUADRON GETS UNDER WAY

AFA's **Baltimore Squadron,** in conjunction with the Maryland Wing of the Civil Air Patrol, the USAF Reserve, and various other Baltimore aviation interests, are **co-sponsoring** a fifteen-week **Aviation Education Workshop** that will run through May 24, 1956. The first program was held October 13.

Meir Wilensky is chairman of the committee staffed by AFA leaders Bill Reber, Squadron Commander, Gil Spicer, John Horkan, Henry Rosendale, and others.

Reservations were accepted for **191 public school teachers** from the Baltimore area. These teachers will meet the second and fourth Thursday of each month until May 24.

About ninety percent of the teachers had never ridden in an airplane. Flights were arranged for the teachers as part of their course in Aviation Education.

Dr. Harry Bard, of the Baltimore Public Schools Curriculum Bureau, and **Lt. Col. M. A. Gleason,** 2611th Air Reserve Center Commander, are contributing to the program, along with members of the "faculty," who represent the area aviation interest.

For its work on this program, the Baltimore Squadron is named **"Squadron of the Month"** for January.

The **San Francisco Squadron**—recipient of the first President's Trophy as "AFA Squadron of the Year"—has embarked on a new series of **meetings and programming ideas.** The Squadron no longer holds monthly evening business meetings. Instead, the **Squadron Council,** now enlarged to **fifteen men,** transacts all internal business in the name of the Squadron at Council Meetings. The general membership meets for **luncheon once a month** at the Sheraton-Palace Hotel, where last year's National Convention Airpower Banquet was held. An outstanding airpower figure addresses the audience at these meetings, discussing current topics of aviation development.

The guest speaker at the October meeting was **Dr. Smith J. DeFrance,** Director of the Ames Aeronautical Laboratory, Moffett Field, Calif. **Maj. Gen. James W. Spry,** Commander of Parks AFB, Calif., spoke at the November meeting.

Congressman Paul J. Kilday (D-Tex.), was scheduled to receive an **AFA Citation of Honor** at the 1955 National Convention, but was unable to attend the San Francisco meeting. In a belated but impressive presentation, the **San Antonio Squadron** gave him his award during a dinner meeting October 21.

Bill Bellamy, Squadron Commander, was in charge of local arrangements, assisted by Joe Draper, Stan Ellis, and Jack Conrads. **Maj. Gen. Clements McMullen** (USAF, Ret.), AFA's Regional Vice President, served as Toastmaster.

James H. Straubel, AFA Executive Director, was a guest at the dinner. He traveled to San Antonio from New Orleans, where he had attended the National Guard Association Convention. While in New Orleans Mr. Straubel made some of the arrangements for the 1956 AFA National Convention to be held in that city.

Hagerstown, one of the fastest growing AFA Squadrons, held its formal **Charter presentation dinner-meeting** on December 2. Commander **Charles F. Barclay** was Toastmaster for the banquet and welcomed the 350 guests. AFA President **Gill Robb Wilson** delivered the principal address.

Head table guests included Squadron officers, Mayor Winslow F. Burhans, Fairchild General Manager W. L. Landers, Gus Duda from AFA headquarters, Capital Squadron Commander Don Steele, Regional Vice President Charles W. Purcell, Wing Commander John Warner, and the heads of leading civic organizations.

In presenting the Charter, President Wilson charged the Squadron with the responsibility of **leading the community** in educating the public about aviation. He stressed the tremendous need for pilots and technicians and underscored his remarks with statistics dramatizing the **lack of aviation training in schools today.**

The **Ute Squadron,** first unit formed in the Utah Wing, recently sponsored a unique **community relations program.** The program was billed as **"Stag Sportsman's Round-up,"** and paid tribute to all area individuals who are prominent in sports. Honored guests

(Continued on following page)

SQUADRON OF THE MONTH

Baltimore Squadron Number 1
Baltimore, Md.

CITED FOR

excellent programming in the field of aviation education. The Squadron's Aviation Education Workshop could well serve as a national model for this type of event.

The San Francisco Squadron's new program is billed as "Airpower in Action." Dr. Smith J. DeFrance, center, spoke at the first meeting. He is shown with Thomas F. Stack, left, and Robert Begley, the Squadron Commander.

AFA Executive Director James H. Straubel, Regional V-P Clements McMullen, Congressman Paul J. Kilday, and San Antonio Sqdn. Cmdr. Bill Bellamy at Squadron dinner meeting at which Mr. Kilday received AFA Citation of Honor.

of the evening were ten prominent sportsmen representing seven different sports.

Don Hartley, Squadron Commander, reported that the program was such a success that plans have been made to honor area sports figures annually. More than 150 people attended the dinner.

Maj. Gen. Manning A. Tillery, Commander of the Ogden Air Materiel Area, was official host for the dinner which was held at the Hill AFB Officers' Club. **Paul Simmons** and **Cliff Carmody** headed the committee which organized the program.

Many major sports were represented at the Ute Squadron's "Sports Night." Among those in the front row who planned the event are Sqdn. Cmdr. Don Hartley; Col. L. L. Kunish, Deputy Cmdr., Ogden Air Materiel Area; Maj. Gen. M. A. Tillery, Cmdr., OAMA; and Utah Wing Cmdr. George Van Leeuwen.

At California's Mid-Year Conference, Maj. Alexander P. de Seversky is greeted by, from left, Blanche S. Scott, first American woman to solo; James W. "Dad" Montee, one of the oldest pilots still active in the US; and AFA Board Chairman John R. Alison. Major de Seversky was the main speaker at the meeting.

Charles O. Morgan, Jr., California Wing Commander, presented three Charters to new Squadrons at the November Mid-Year Conference of his Wing in Riverside, Calif. Receiving them, from left, are James Griffin, Eldorado Squadron; Melvin Hedgpeth, Riverside Squadron; and John Kiatt, Covina Valley Squadron.

Maj. Alexander P. de Seversky attaches his wings to the "Wall of Fame" at the Mission Inn, Riverside, California.

Most AFA Wings hold regular Wing-level conferences—usually quarterly or semi-annually. The **California Wing Mid-Year Conference** is one of the biggest events of the year on the West Coast. It was held this year at the **Mission Inn in Riverside** and featured an Awards Luncheon, a banquet, all-day business sessions, and a dance.

Maj. Alexander P. de Seversky, internationally known aviation consultant and a contributor to AIR FORCE, delivered the principal address. Later he nailed his wings to the "Wall of Fame" at the Inn, joining the long list of other aviation personalities who have been similarly immortalized.

Jim McDivitt, California Organizational Director, was in charge of the program planning. The presiding officer at the sessions was **Wing Commander Charles O. Morgan, Jr.,** of San Francisco. AFA Board Chairman **John R. Alison** and Executive Director **James H. Straubel** were among the honored guests, along with **Vince Barnett,** well-known Hollywood comedian. **Joe E. Brown** acted as Toastmaster.

Three Charters were presented to **new Squadrons** in Riverside – the **Riverside, Eldorado,** and **Covina Valley Squadrons.** This brings the total number of Squadrons in the Wing to nineteen.

With the addition of **three new Squadrons** and **500 new members,** the **Georgia Wing** has become one of the most active in the AFA organization. This growth took place over a **twelve-month period.** The new Squadrons are **Marietta, Atlanta, and Savannah.**

Lt. Gov. Ernest Vandiver, Wing Commander, has made such ambitious and enthusiastic plans for the future that other wings will be hard put to top his unit. More than 250 people turned out for the October

Charter presentation meeting in Savannah. New officers were installed by **William H. Kelly,** who has been instrumental in organizing the Squadron.

Andrew Swain, 1931 Grove St., Savannah, is the Commander. The other officers are **Jack Scognier** and **George Adams,** Vice Commanders; **Charles Williams, Jr.,** Secretary; and **John Bergman,** Treasurer. **Frank Skeffington** and **Bill Hearn** serve as Public Relations Officer and Sergeant at Arms, respectively. The Council includes **Frank O'D. Hunter, Kelly, Don Miller, and Creighton Rhodes.** During its period of organization, the Savannah Squadron obtained more than 200 new members, and seems well on its way to becoming one of the most active Squadrons in AFA.

The **Lansing, Mich., AFA Squadron** took part in the dedication ceremonies of the **Lansing Veterans' Memorial Center.** Squadron members were available at the new Center for a week after the dedication to answer questions about the Association and to talk about airpower. The Squadron's Commander, **Dick Taylor,** reports that the Squadron received favorable publicity for their part in the dedication ceremonies and for dispensing information about AFA.

AFA's President **Gill Robb Wilson** continues the pace that has carried him into some **twenty-five cities** in **twelve states** since his election in August. He has also made numerous appearances for other organizations.

During November President Wilson spoke to a group of **700 aviation-minded people in Tulsa** at a meeting highlighting **Oklahoma Aviation Day,** sponsored by the Chamber of Commerce. **Russell Hunt,** long-time AFA member, is Chairman of the Aviation Committee of the Chamber.

Following his address in Tulsa, Wilson flew to **Oklahoma City** for a dinner meeting sponsored by the Oklahoma City AFA Squadron. **Mace Spangler** is the Commander. **Maj. Gen. William O. Senter,** Commander of the Oklahoma City Air Materiel Area, was his host while Mr. Wilson was in the city.

Louisiana, site of the 1956 AFA National Convention, has a new Squadron. It is located in **Baton Rouge. George B. Dean,** 2109 Lee Drive, is the new Commander. Other officers are **Bryan Clemmons,** Vice Commander, **Ray Estess,** Secretary, and **Samuel Bacot,** Treasurer. Councilmen are

The head table at the Savannah, Ga., Squadron's Charter Night Dinner was an impressive one. Above, William H. Kelly, chairman, greets the guests. The Squadron, one of AFA's most active, already numbers more than 200 members.

The Lansing, Mich., Squadron's booth at the Civic Center dedication ceremonies is inspected by, from left, Richard Taylor, Sqdn. Cmdr.; Robert Emerson, Past Michigan Wing Commander; and Donald Rawson, of the Lansing unit.

Shown at LA Group meeting are AFA Board Chairman John Alison; former Group CO Ray Scherer; Johnny Grant, Radio Station KMPC; Miss Marian Wagstaff; Editor-Publisher Virgil Pinkley; and Wing CO Charles Morgan.

Manch Cadwallader, Jules Roux, Jesse Sheppard, and **Bateman Hutchinson.**

At a November evening program billed as **"The Air Force in the Community,"** AFA's **Syracuse, N. Y., Squadron** rallied aviation interests in the area for a discussion of current aviation problems.

Squadron Commander **William Lowenstein** was chairman of the program. He introduced as speakers and panel members for the evening: **Col. William Hoy,** Commandant, AF-ROTC Detachment, Syracuse University; **Brig. Gen. Robert Israel,** Commander, 32d Air Division; **Lt. Col. Wallis Seymour,** Commandant, Air Reserve Center; **Col. L. J. Dissette,** Commander, 107th Fighter Group, New York ANG; and **Lt. Col. Victor E. Hall,** Commander, Syracuse CAP Group. Each of these men outlined

(Continued on following page)

the mission of his particular agency and answered questions about its program.

AFA's **Massachusetts Wing** held its December meeting in the new clubhouse of the **Taunton Squadron. Phillipe Coury**, Wing Commander, was in charge of the sessions, which included discussions of the new Squadron programming and the initial planning for the 1956 Wing Convention. Gus Duda, AFA Organization Director, attended the meeting.

On the same day, the **Pennsylvania Wing** held its annual year-end meeting in the Officers' Club at **Olmsted AFB, Harrisburg.** Following the afternoon discussion of Wing, Squadron, and Auxiliary problems, a color film was shown of the **Aviation Education Workship,** co-sponsored by the Wing in State College last summer. Dinner and a social affair concluded the program. Squadron Commander **Leonard Work** was in charge.

Nine aviation organizations in Washington state have pooled their resources along with **Boeing Airplane Company** and the **Mountain Rescue Council,** in a campaign for **aviation safety.**

The state-wide Flying Safety council is headed by **Winfield G. Young,** a Regional Vice President of AFA. Other organizations in the new group are the Ninety-Nines, Civil Aeronautics Association, Aircraft Owners and Pilots Association, the Washington Aviation Commission, Flying Farmers, and the Civil Air Patrol.

First item of business for the new organization is **marking the roofs of prominent buildings** throughout the state with the name of the town, altitude at that point, and an arrow pointing in the direction of the nearest airport.

CROSS COUNTRY . . . New Squadrons are being formed in **Niagara Falls,** N. Y., and **Fort Worth,** Tex. . . . The **Georgia Wing** plans a Wing Convention in early spring, probably in Atlanta. . . . **Tom Stack,** "Mister AFA" in San Francisco, has announced his plans to desert the ranks of bachelorhood. The future Mrs. Stack is **Miss Penelope Boden.** . . . **Ray Scherer** has made plans to organize a Squadron in **Olney, Ill.,** where the Scherers have moved from Los Angeles. . . . **San Fernando Valley,** AFA's "Squadron of the Year" for 1955, exhibited its trophies at the last meeting. The Squadron and Auxiliary's Wing "Awards of the Year," and the national trophy were shown.—END

AFA's 1956 National Convention AND Airpower Panorama

Canal Street in New Orleans, home of the Mardi Gras.

Your New Year's resolution . . . to be in New Orleans August 1-5

YES, the best way to start off the New Year is to plan to be in New Orleans August 1-5, the dates of the Air Force Association's tenth annual National Convention. For five days, AFA will enjoy real southern hospitality as only New Orleans can extend it. No more appropriate setting could be found for AFA's tenth birthday party. AFA has come a long way since its first convention in Columbus, Ohio, in 1947. That was a two-day event. Now it takes five crowded days for AFA to stage the score of meetings, luncheons, dinners, and reunion parties that make up its Convention program. The Roosevelt and Jung Hotels will be co-headquarters for the Convention, with major AFA activities at the Roosevelt and the Auxiliary at the Jung.

Next August may seem a long time way, but not for your planning to attend the AFA Convention. This is the time of year when many of us have to tell the boss when we would like to take our summer vacation. Can you think of a better place to take the family than to New Orleans, say around August 1st? Everybody in New Orleans says that it is the best convention city in the country and that the record will verify it. They claim that more wives attend conventions in New Orleans than any other place. Why not make your plans now to go to New Orleans for the AFA Convention, and take the family? The combination of New Orleans hospitality and the Convention program make a mighty attractive vacation package.

HOTEL RESERVATIONS

The four New Orleans hotels listed below have reserved 1,500 rooms for the Air Force Association's 1956 Convention and Airpower Panorama. A special housing office has been established at the New Orleans Convention Bureau to handle hotel reservations for the Convention. All reservation requests MUST be sent to the AFA Housing Office, not to AFA in Washington or directly to the hotels. All four hotels are air conditioned. No advance deposits are required.

ROOM RATES

HOTEL	SINGLE	DOUBLE	TWIN
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HOTEL ....
First Choice Second Choice

....
Type Room Desired Rate

ARRIVAL DATE & HOUR .....

DEPARTURE DATE .....

OTHERS IN ROOM .....

It was a big day when the first transcontinental air-mail plane reached Curtiss Field, N. Y., on August 22, 1923.

Flying the mail—from the days of DH-4s to DC-7s

Pony Express with Wings

A first-hand account of a precarious flight over the air-mail system of 1924—from New York to Frisco and back in three weeks . . . and three planes

By Samuel Taylor Moore

INAUGURATION of coast-to-coast air mail more than thirty years ago was not greeted, I suppose, with anything resembling the public celebration that attended the completion of the laying of the Atlantic cable (I wasn't around then). But the general interest certainly compared favorably with the excitement produced by the opening of direct transcontinental telephone service (which I do remember). I recall that one joker pasted himself all over with air-mail stamps—at twenty-four cents an ounce—and presented himself as a parcel post shipment. Even if the rules had permitted, passengers could not have been carried because the rear seat in the Liberty-powered DH-4s had been converted into mail compartments.

At the time I was doing free-lance magazine writing, and this was something right up my alley. There was no chance of flying over the system in a mail plane, so I finagled an Army DH through Capt. St. Clair Street, then aide to Maj. Gen. Mason M. Patrick, Chief of Air Corps. Lt. Jasper Kemper McDuffie was assigned as chief pilot.

A run-down of just how much (or how little) system there was in the air-mail "system" of 1924 may be enlightening and may also provide a bit of background for the flight itself. The most elemental radio aids were, of course, lacking. The only instruments available were a highly unreliable compass, an altimeter, and a tachom-

Air-mail service became a reality on May 15, 1918, when Maj. Reuben H. Fleet flew from Philadelphia to Washington, D. C. On arrival, he was greeted by (left) Post Office Department officials and President Woodrow Wilson. The President congratulated Major Fleet (lower left) before the mail plane was reloaded (center, below) for the return trip. Thirty years later, the event was commemorated (below) when Postmaster General Donaldson gave special mail to AF Capt. Vermont Garrison who flew it from Washington to New York City in an F-80. At right, then Maj. Gen. Lawrence S. Kuter, now four-star FEAF Cmdr.

Today, air-mail service is taken for granted. The scene of mail sacks being loaded aboard a huge American Airlines DC-7 at Washington's National Airport is typical of the operation.

eter. The smart pilot waited out weather.

Fourteen airfields, separated by varying distances, comprised the system. The 115-mile relay between Rock Springs, Wyoming, and Salt Lake City was the shortest. Most relays were 200 or more miles apart; none exceeded 300 miles. Plush fields had cinder runways, the others dirt or grass. Not all of the fields were relay terminals. Most of them were necessary for refueling, because if the pilot was bucking strong head winds, or got off course, the fuel supply quickly became marginal.

The original system was based on nine official relays, and every pilot knew intimately only the terrain of his own particular relay. Occasionally a pilot was shifted from one relay to another, thereby broadening his education. Few pilots, however, had ever flown all nine relays. One, Paul Collins, never made a complete trip in ten years of jockeying mail planes.

For night flying, 900 miles of the route, from Cleveland to Rock Springs, was marked by visual aids—rotating beacon lights every twenty-five miles, with fixed blinker lights on the ground between at eight-mile intervals. In mountainous terrain the beacons were hard to find. Fog, rain, and snow often blanketed the blinkers and, only less often, the beacon flashes. So-called emergency strips along the airway were represented by some fairly flat pieces of farmland where crops or tall grass might or might not be growing. Farmer caretakers, equipped with red railroad flares or with standby bonfires ready for the match, were supposed to keep an eye on the local weather in order to signal down the pilot when the skies gave portent of trouble, or when the caretaker's rheumatism began acting up. Few of these watchers had telephones, in the event that a plane dispatcher at a relay point wanted to intercept a flight because of a sudden storm warning.

The eastern terminus of the system was Hazelhurst Field, Long Island. (Later, as Roosevelt Field, it became the starting point of most of the early transatlantic attempts, successful and unsuccessful.) The first field westward was at Bellefonte, Penna., where a tiny grass strip nestled in a fold in the Alleghenies. A cinder runway in the shadow of the smokestack of the original Glenn Martin plant served Cleveland. The next field was at Bryan, Ohio, close to the Indiana line, but if head winds were only moderate the Cleveland-Chicago relay could be flown non-stop. Maywood, with a ramshackle hangar and another cinder strip, was then the busiest airfield in the Chicago area.

The first leg of McDuffie's and my flight—in September 1924— was what might be called uneventful. The events

(Continued on page 115)

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cies. The "wild pilot" tradition persisted for years. Most pilots were hard-working, conscientious, proud of their work and determined to make the system a success. But there was also the occasional flying Lothario who would set his plane down in a field to woo the farmer's daughter. And there was the pursuer of the fast buck who would land at one of the more populous centers on his relay, unload his mail temporarily, and take up a local boy eager to tell his neighbors that he had ridden in an airplane (it didn't matter that he could see nothing with the cover of the mail compartment down).

The first experimental transcontinental mail flight of 1921 was one-way only—San Francisco to New York. It was accomplished in thirty-four hours with only bonfires on the ground to guide the pilot, Jack Knight, on the legs flown in darkness. Two years later a four-day test flight in both directions reflected improved techniques. One east-bound flight, favored by tailwinds, was clocked in twenty-six hours, fourteen minutes. The time compared favorably with that of the Kelly-MacReady non-stop westward flight in an Army Fokker that same year.

Then, in 1924, the transcontinental service was established on regular schedule, in celebration of which I made my pioneer coast-to-coast flight with Lieutenant McDuffie. Special stamps reappeared, this time to stay. You paid only eight cents within any one of the three postal zones, twenty-four cents for the full treatment. The service was still far from dependable, and once the novelty had worn off, air-mail bags were light for several years. Diffidence on the part of prospective patrons was made more acute by the fulsome press handling of the rather frequent crack-ups of mail planes. The customers didn't want their letters burned up.

In 1926 the Post Office Department, through the channels of competitive bidding, turned over sections of the transcontinental system and new and projected feeder routes to civilian contractors. At first cargo was scarce, and since the contractors were paid by weight of mail, some of them shipped and reshipped mail-order catalogues back and forth to boost their take. But the spark of free enterprise, however it may have been temporarily tarnished by such shenanigans, had been struck. A few of the mail contractors began carrying passengers; the de luxe carrier of the day was the old Ford "tin goose," whose luxury passengers didn't mind being deafened by the clangor inside the metal fuselage.

Then, in 1927, a young Army-trained air-mail pilot (who incidentally held the service record of three forced bail-outs) soloed from New York to Paris, and air-mail volume soared. More important for commercial aviation was the fact that Lindbergh's great feat opened the purses of American investors. If the sketchy air-mail routes then in operation had not existed, and been capable of serving as the pattern on which broadened operations could be effected, a distressing and embarrassing situation would have arisen: both the contractors and the industry would have had more money at their disposal than they would have been prepared to use.

Sound-proofed Boeing and Douglas transports, bulwarked by advanced navigation aids, were carrying passengers as well as mails over an ever-panding network when, in February 1934, President Roosevelt canceled all domestic air-mail contracts and turned the job of flying the mails over to the Army Air Corps. The weather was far worse than average, and the planes available were ill-suited to the task, but the basic reason for the poor performance was best expressed by one airlines president: "The Air Corps is just about as mobile as the coast artillery." But the disastrous experiment paid long-term dividends.

Up to 1934 the Army General Staff had dictated top-level air policy. The small air establishment enjoyed a minimum of autonomy under the commanding generals of the Army Corps Areas where air bases happened to be located. Fuel restrictions handicapped cross-country training. Air leaders who watched with keen and doleful interest the progress made by civilian airline operators in radio and other communication aids had been denied funds to keep abreast of these developments.

The over-all poor performance in flying the mails, however, convinced the Army General Staff that the air chiefs had been right. It also loosened the purse-strings. From the air-mail "bungle" of 1934 sprang the Army General Staff authorization for the first step in Air Corps autonomy, the GHQ Air Force, support for the Flying Fortress program, the end of the pants-seat era of flying—in fact, the start of all the advances which, despite frequent setbacks, eventually made possible the accomplishment of the Army Air Forces in World War II and the existence of the Air Force itself as an independent arm.—END

THIS IS AFA

The Air Force Association is an independent, non-profit, airpower organization with no personal, political or commercial axes to grind; established January 26, 1946; incorporated February 4, 1946.

OBJECTIVES

• To assist in obtaining and maintaining adequate airpower for national security and world peace. • To keep AFA members and the public abreast of developments in the field of aviation. • To preserve and foster the spirit of fellowship among former and present personnel of the United States Air Force.

MEMBERSHIP

Active Members: Individuals honorably discharged or retired from military service who have been members of, or either assigned or attached to the USAF or its predecessor services, or who are currently enrolled in the Air Force Reserve or the Air National Guard. $5.00 per year.

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