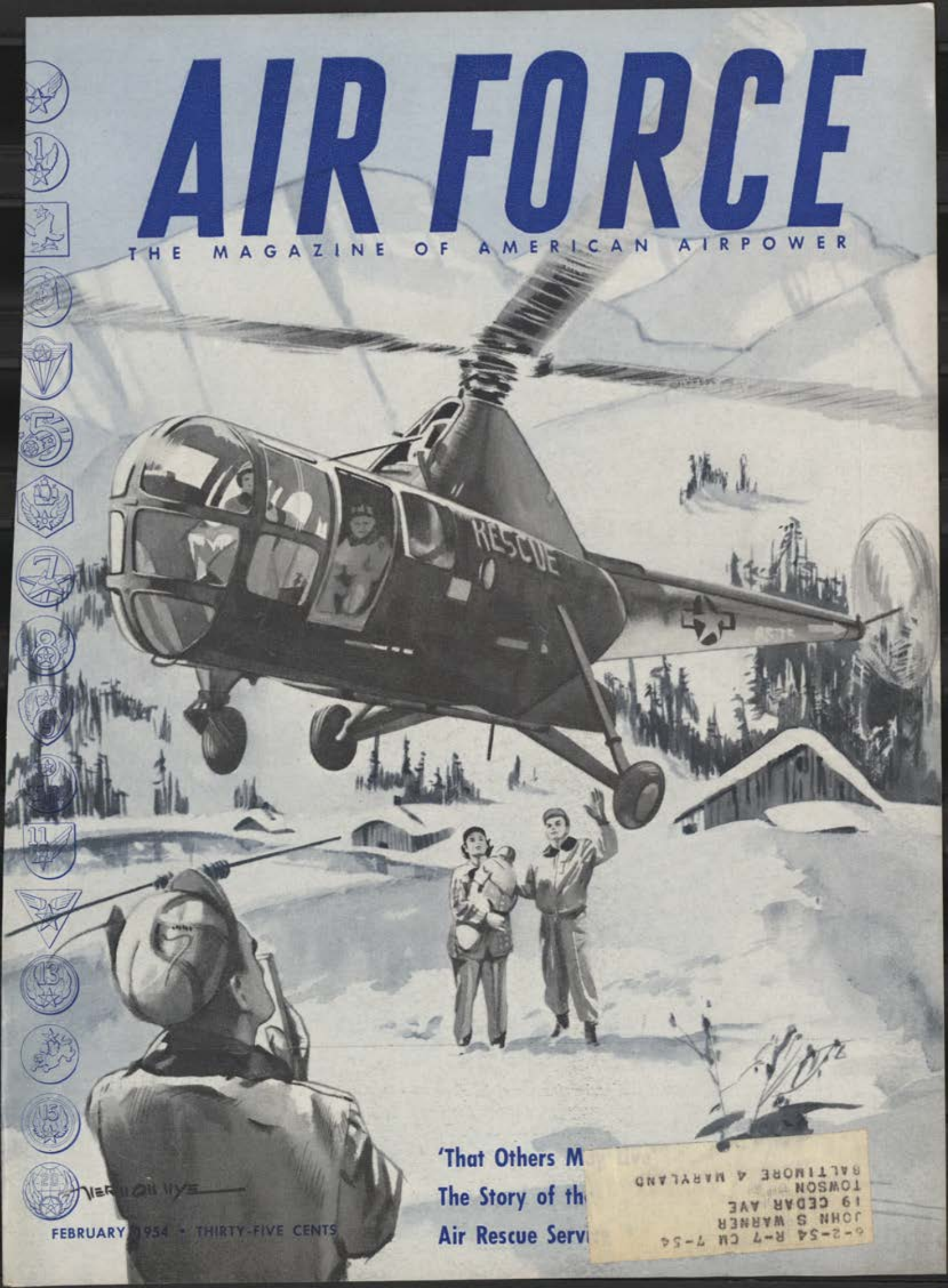
AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER



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Aerial refueling has been described as one of the most significant advances in recent aviation. It progressed another important step forward when a specially fitted Boeing B-47 bomber made the world's first jet-to-jet transfer of fuel aloft—refueling first a jet fighter and later a companion B-47 Stratojet.

The modified Stratojet that acts as tanker in this continuing test program is a 10-mile-a-minute medium bomber fitted with fuel tanks, high-pressure pumps and lines. Designated the KB-47, it is demonstrating the practicability of aerial refueling at the extreme altitudes and high speeds at which modern jet aircraft normally operate.

While Boeing's piston-powered KC-97, the standard Air Force tanker, is admirably suited to the needs of today and the immediate future, tests with the experimental KB-47 prove the feasibility of transferring fuel at jet speeds. These tests also pave the way for the development of a jet-powered tanker large enough to carry ample cargos of fuel, and fast enough to deliver it aloft to jet fighters and jet bombers at the speeds and altitudes at which they function most efficiently.

Such a jet-powered tanker would be capable of accompanying jet aircraft on their missions, and refueling them by one of several proved methods without the necessity of cutting back to lower speeds and dropping down to lower altitudes.

Recognizing the coming need for an advanced jet tanker, Boeing is now constructing a prototype aircraft designed to be adaptable for either military or commercial use. This undertaking, in which Boeing is investing its own funds, grows naturally out of the company's leadership in the field of large, multi-jet aircraft, and out of its unparalleled background of experience designing and building aerial tankers and aerial refueling equipment.

The integrity of Boeing design, research and production is assurance that the coming Boeing jet tanker-transport—like the earlier Flying Fortresses and Superfortresses, and the new B-47 and B-52 jet bombers—will be an aircraft on which America can depend.

This crest is symbolic of the Strategic Air Command's strength and global achievements. It is found on such Boeing planes as the B-29, B-50, KC-97, B-47 and shortly will take its place on the B-52.

BOEING

AIR MAIL

Gettin' Around

Gentlemen: To say that AIR FORCE Magazine has a wide and extensive following among Air Force personnel is putting it rather mildly. This has forcibly been brought to my attention in letters and Christmas cards, and by the verbal comments of the group of Tactical Air Command officers who have just visited Fort Knox for two days, as the guests of The Armored School—a return invitation for the jet orientation ride given Fort Knox personnel last July. I thought you might be interested in the organizations represented by people who have already told me they have read my article ["One Blue Suit," Dec. '53] in your magazine. These organizations are: Headquarters, Tactical Air Command; Joint Tactical Air Support Board; Air Ground Operations School; also, 1st Armored Division; Headquarters, 9th Air Force; 405th Fighter Bomber Wing; 366th Fighter Bomber Wing; many units of the Air University; and from Headquarters USAF itself.

Lt. Col. Howard T. Wright, USAF
Senior Air Force Representative
Fort Knox, Ky.

Laurels for the General

Gentlemen: I have read with interest "The Conscription Fallacy," by Brig. Gen. Bonner Fellers in your December issue, and have clipped the article for future reference.

I fully agree with General Fellers that universal military training will not provide an adequate defense, and hope that some arrangement can be made to reprint this splendid article so that it can be made available for the reading of all. I believe that the defense priorities which the general establishes in the article cannot be seriously challenged.

Congratulations to you on publishing this splendid article, and do make every effort to see that it is widely circulated.

J. H. Gipson
Caldwell, Idaho

Gentlemen: We should have more from General Fellers and others on the subject of UMT.

I find it hard to believe, however, that an enlisted man is just beginning to learn his job after four years of regular service. Something must be wrong either with the man or the training. Perhaps such schedules should be carefully scrutinized for effectiveness and work output. Undoubtedly, there's a lot of wasted time in such a program. Assuredly an outside firm of manpower specialists could do a lot of good. We might then shuck off a bit of the extravagant drum and bugle corps attitudes which persist amongst the brassheads . . . it isn't the hat that's brass, of course!

It is obvious that if, in such times as these, economy is enforced so rigidly on the Air Force we will never get a standing force anywhere near the expectations of General Fellers. Our only hope, come M-Day, is a plan which will not reject football players with trick knees or *anybody* capable of doing a military job, including unmarried women. A slot for everyone sixteen to sixty should be the goal. We can't afford war plant payrolls at today's prices in the long or short run. Total mobilization would relieve the goods makers from the burden of enticing workers and overtime would be a thing of the past.

Keep up the good work. However, nobody expects the magazine to perform miracles. As a member of the advertising art field, though, I would like to see some different treatments a la *Saga* Magazine. Unrelieved photography (my bread and butter and suits and coupes) gets boring.

Edward J. Carlin, Jr.
Philadelphia, Penna.

Tortoise First Again?

Gentlemen: In regard to E. J. Kirschner's "Jet Blast" about the rigid airship, may I add the following few comments:

a. What did the burning of the Hindenburg prove? Merely that hydrogen explodes and burns, as any high school chemistry student can easily demonstrate without the aid of a dirigible.

b. What did the crashes of the Macon and the Akron prove? Merely that tornadoes or violent thunderstorms tear airships apart, whether they be gas-filled lighter-than-air or heavier-than-air, as many an airplane pilot has discovered to his detriment.

c. Speed of movement of supplies is the time from final assembly at the manufacturing plant to delivery to the ultimate consumer. If it takes sixty days by rail and water for such a move and only forty-five days by air, there is a benefit, but a small one. Now, if the rigid airship can load at the manufacturing plant, without requiring extensive runways, and can deliver to the ultimate consumer, again without extensive runways, there is a tremendous potential saving because of the elimination of handling and in-transit storage. Thus, even a 60- to 100-knot speed of flight of an airship may result in an over-all average speed of movement of thirty knots against the 400-knot airplane speed coupled to an over-all average of only fifteen knots. Perhaps the hare and the tortoise game is still with us.

Lt. Col. Preston L. Hill
Dayton, Ohio

It Figures

Gentlemen: "Wing Tips" in your December issue says the world aircraft fleet totals 3,000 planes and 300,000 people are employed to keep them flying, or 1,000 people for every plane. Aviation has changed a lot of things but not basic arithmetic. If the other figures are right, it should be 100 people per plane, not 1,000.

E. E. Henkel
Fairchild Stratos Division
Bay Shore, L. I., N. Y.

● *Mr. Henkel goes to the head of the class—100 is right.*—The Editors.

Won't Join 'Em

Gentlemen: To M/Sgt. Winfield in his "Cause of the Pause" I would say, "why stop so soon?" There is at least one other extremely important factor which rates a top spot on the list against continuing a career in the Air Force.

Why not discontinue completely, with the possible exception of scientific specialties, the commissioning of ROTC college graduates? Take these ROTC graduates into the Air Force as airmen to fulfill their selective service obligation and let them learn to be officers before they actually become an officer. In this way the Air Force could learn beforehand whether or not the individual was officer material. From my experience the non-career-minded ROTC

(Continued on page 7)

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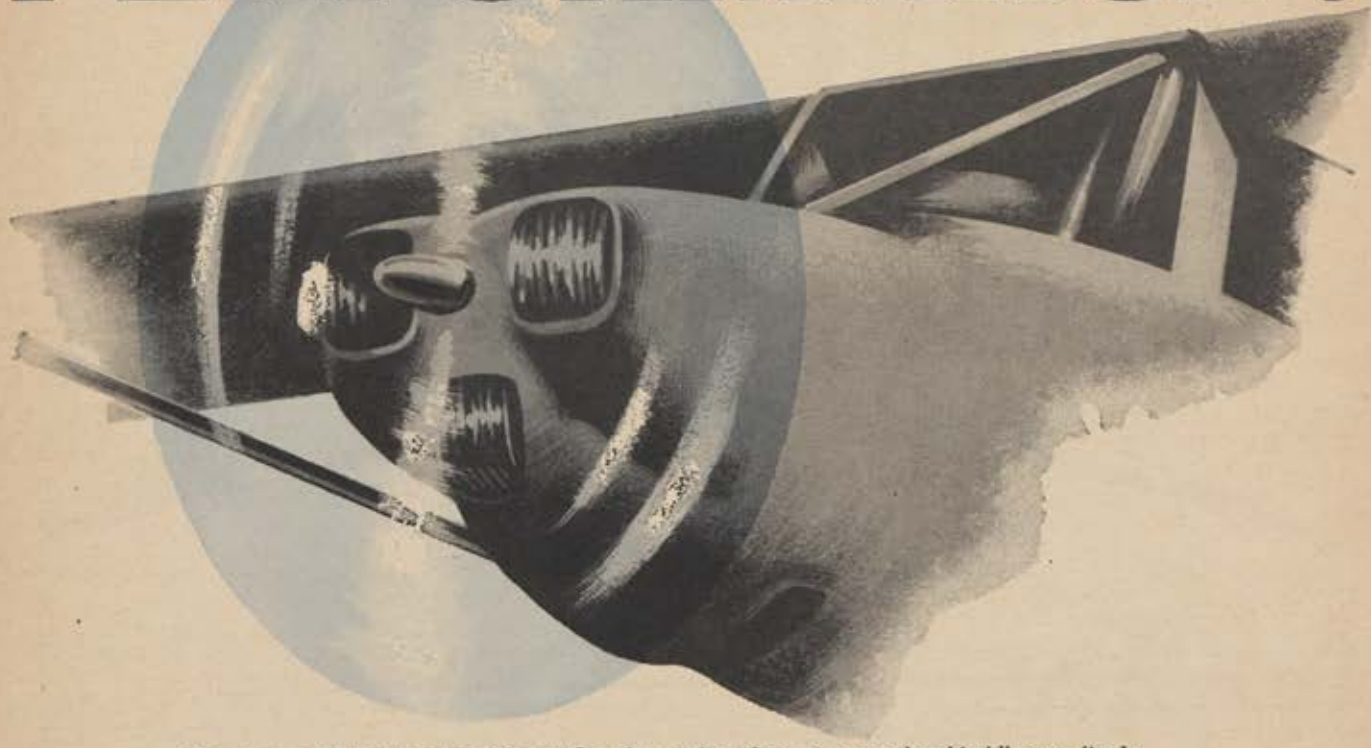
PERFORMANCE !



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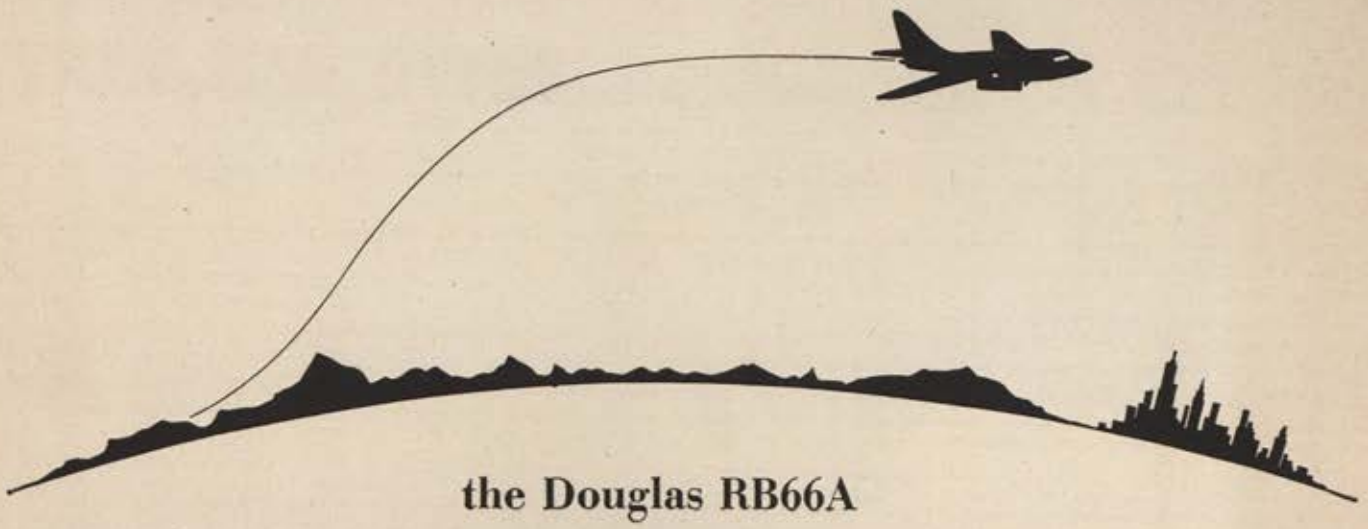
U.S. Air Force's new twin jet
reconnaissance aircraft

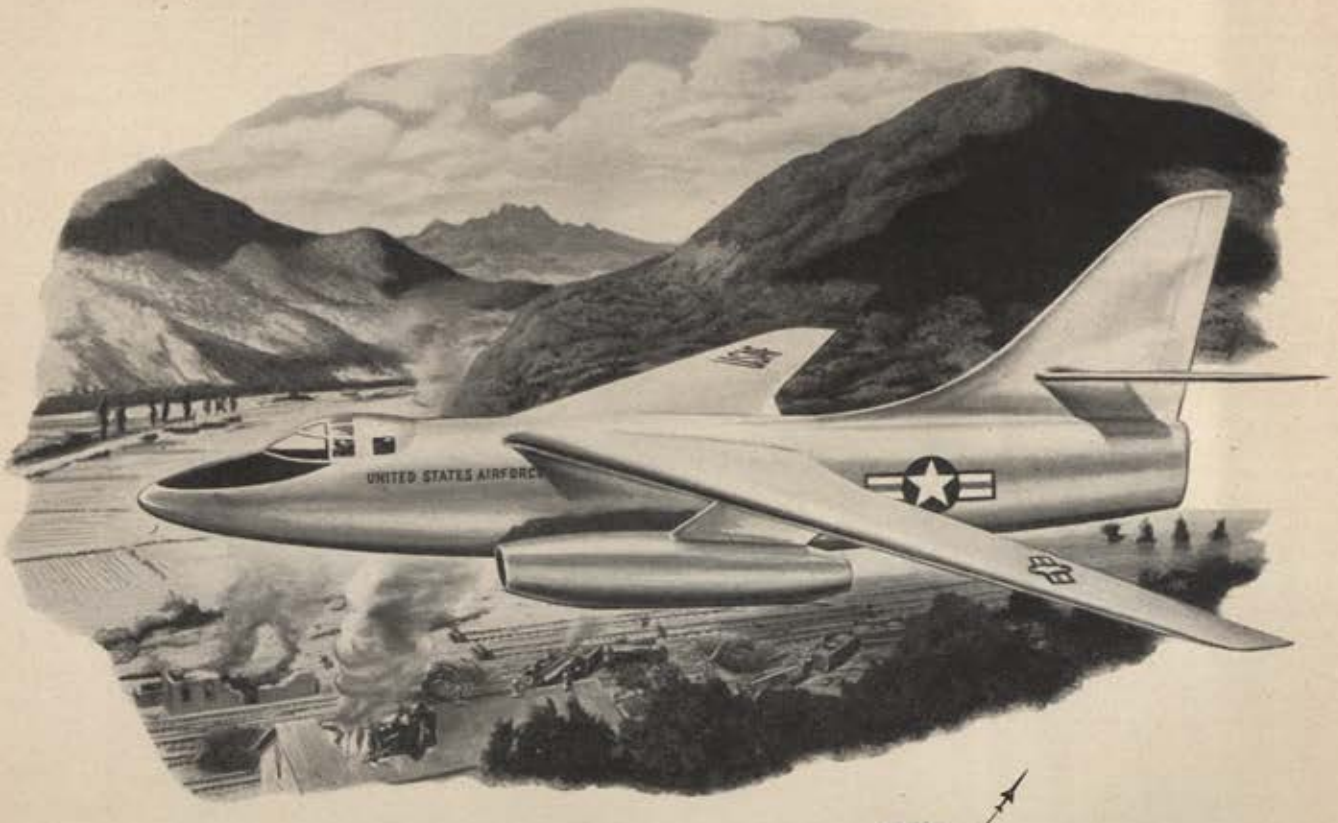


the Douglas RB66A

Built to perform in the stratosphere, or to scrape treetops in low-level missions, the new U.S. Air Force RB66A will be one of the most versatile photo-reconnaissance planes ever designed.

Complete performance data must still remain secret, but the Air Force permits release of the information that the Douglas RB66A will be in the 600 to 700 mph class—with range enough to fly deep into enemy territory, and return. Powered by twin jets, slung in pods below the wing outboard of the fuselage, RB66A will carry the most modern photographic equipment, for accurate reports on operations.

Design of RB66A is another example of Douglas leadership in aviation. Planes that can be produced in quantity to fly *further and faster with a bigger payload* is a basic concept at Douglas.



Depend on *DOUGLAS* First in Aviation

commissioned officer does not care a hoot for the Air Force except as the easiest means of fulfilling his selective service obligations.

Take the career airman, screen him well for leadership capabilities and officer characteristics, then if he qualifies give him the benefit of some of the money wasted on ROTC by educating him in some college, since that college degree seems so all-fired important. I, for one, am dad-burned tired of giving some draft-dodging ROTC graduate the benefit of my experience in the military while he gives nothing. The Air Force wants career people, but how do they expect a person to make a career of the Air Force when there is no possible means of promotion to look for or to work for after attaining the rank of master sergeant.

I am career-minded and ambitious, but where do we go from here? I'd hate to think that there is absolutely no possibility for future promotions, but my thinking on that subject is fast becoming firm. Only a high school graduate, uneducated as I am, I know full well that my fellow senior grade airmen and I would be of a great deal more value to the Air Force as officers than the self-interested ROTC graduates who are going along for the ride. I am fast becoming unpopular for my outspoken beliefs on this subject, but I don't believe in joining 'em if I can't whip 'em.

M/Sgt. Stanley A. Phillips
Canton, Ohio

Dr. Sherwin

Gentlemen: Noted on page 15 of the January issue of AIR FORCE the statement that: "USAF's new Chief Scientist, under Special Assistant to the Chief of Staff, Lt. Gen. James H. Doolittle, is Chalmers W. Sherwin." Would like to correct the statement. The Air Force has been extremely fortunate in obtaining Dr. Sherwin, an outstanding member of the scientific fraternity, as USAF Chief Scientist. While his office in the Pentagon and mine are in immediate proximity and I will, naturally, do everything I possibly can to be of service to him, he is in no sense of the word "under" me. He is directly responsible to the Chief of Staff and is General Twining's principal adviser on scientific matters. He is also available at all times to the Secretary of the Air Force and to members of the senior civilian and military staff.

James H. Doolittle
Washington, D. C.

A Good Man

Gentlemen: It was real good to see Ed Hogan's by-line. Good reading, too!

Ed was one of our top staffers on *Flying Safety* and *Aircraft Maintenance Review* . . . is certainly well qualified to put out the poop on ANG.

Maj. Richard A. Harding, USAF
Directorate of Flight Safety Research
Norton AFB, Calif.

Here, at the Scintilla Division of Bendix, the word SERVICE is much more than the name of a department. It is a vitally important part of our over-all operations. Together with Research, Engineering and Manufacturing—Service might well be termed the fourth dimension of our business.

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Shooting the Breeze

PRESIDENT Eisenhower has some new neighbors. Just down the street from the White House is the new home of AFA Headquarters and the editorial offices of AIR FORCE Magazine. January 15 was M-Day—moving day. Moving was, we judge, as painless as these operations can ever be. We now have the space our growing organization needs, plus an added attraction. That's air condition, a hot weather *must* in Washington, where summer settles like a steamy wet blanket.

AFA's new address is the Mills Building, where 17th Street crosses Pennsylvania Avenue.

Our mimeograph machine disappeared during the move, buried in a welter of cardboard cartons. We're sure it'll turn up. Stranger still were some of the items that *did* turn up as staff members rummaged through desks and files before the moving men arrived. Executive Director Jim Straubel found a pair of swimming trunks (not his) and Helen Whyte's umbrella. Helen Whyte was on the staff of AIR FORCE in 1947 and '48, and presumably has been ducking in and out of doorways during rainstorms ever since.

Packed somewhere and still missing at this writing were two sandwiches and a raincoat belonging to Stockroom Manager Willie Randolph, who was running an errand when the movers moved in. And two bundles of copy for this issue got lost in the shuffle. But out of it all AFA has found a new home.—END

CREDITS

Front cover — Vernon Nye; page 18 (top)—photo by Aycock Brown; page 18 (bottom)—copyright by Jack Williams; page 21—Arlo Greer; page 35—Hugh Brown; page 36—photo by "Tex" Glazier; page 67—Sabena Belgian Airline.

AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

Vol. 37, No. 2 • FEBRUARY 1954

FEATURES

DEPARTMENTS

THE COVER

That's no flight of fancy on our cover this month. The scene is in Idaho's Sawtooth Mountains where a winter or so ago a mother and her sick child were snowbound in an isolated mining community. Word got to the nearest Air Rescue Service unit which promptly dispatched help. A doctor parachuted in, and later a helicopter brought the mother and her little boy out safely. This was just one of the thousands of rescues ARS people have made all over the world. Karl Detzer tells the story, beginning on page 31. The cover artist this month is Vernon Nye.

MEMBERSHIP IN AFA

AIR FORCE Magazine is mailed monthly to all members of the Air Force Association. There are several ways you can become a member. If you were in the Air Force or its predecessor services, you're eligible. The $5 yearly dues include the magazine. Or if now on active duty, you can be a Service Member. Those interested in airpower can become Associate Members for $5 per year. The cost for CAP and AF-ROTC cadets is $3 per year. Details of membership in AFA on page 72.

CUT OUT AND MAIL TODAY

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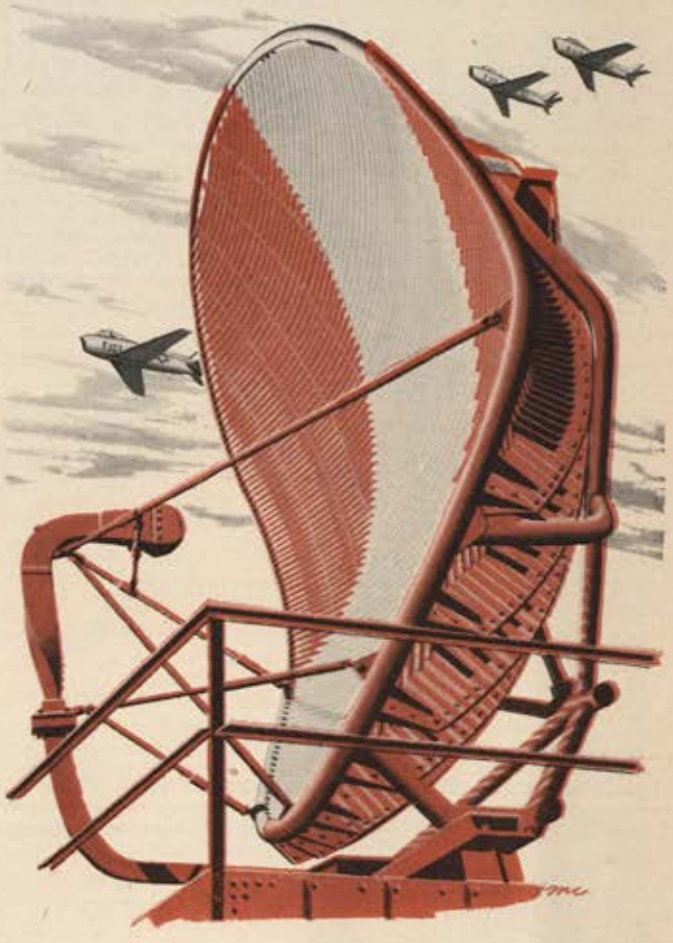
- talking down a transport under a ceiling of 500 feet at a European airbase where cross winds have made the instrument runway unusable



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LOS ANGELES

GCA

AIRPOWER IN THE NEWS — BY JAKE CULPEPPER

STRENGTH — Late figures reveal that AF manpower now totals 923,575.

HUMAN ELEMENT — AF's biggest hangover inherited from 1953 is how to continue meeting personnel procurement objectives on a volunteer basis. Falling behind Army in reaching its reenlistment goals during recent months, AF has asked that its recruiting set-up be separated from the Army. Airmen separations due to end of service during FY '55 are projected at 185,000, after adjustment for early release. Potential non-reenlistees—mostly first-term airmen—are estimated at 124,000 of this figure. To retain these men, thus avoid asking for draftees or lowering enlistment standards, AF is going all-out to sell the Air Force Career. One of the new techniques to be used in the near future will be selective reenlistment through a direct-mail campaign in an attempt to lure back some former non-coms. . . . AF has announced that a serious shortage now exists in both its Aviation Cadet and OCS applicant pools.

AF DOLLARS — A new manpower savings program, which calls for local (native) citizens to replace 35,000 overseas airmen in support-type jobs within next six months, was recently started by AF. About sixty percent of the replacements will be made in Europe, England, and North Africa, and most of the others in the Far East. Replacements on a smaller scale will be made in Alaska and the Caribbean areas.

STAFF — Maj. Gen. Dean C. Strother is Lt. Gen. Laurence S. Kuter's new deputy at the Air University. . . . Maj. Gen. F. E. Glantzberg will become 17th AF's commander. . . . Gen. John K. Cannon, CG of Tactical Air Command, will retire in March. . . . Maj. Gen. August W. Kissner has been appointed chief of MAAG, Spain.

A NEW WING — The 461st Light Bombardment Wing has been activated at Hill AFB, Utah. The new wing, under Tactical Air Command, is temporarily equipped with Douglas B-26 "Night Intruders."

STRANGE THINGS — AF "flying saucer" investigation will be aided by use of diffraction grating cameras which are being distributed to about sixty control towers and fifteen Air Defense sites throughout US. These "Videon" cameras are expected to reveal much about chemical composition of unidentified flying objects. Continuing investigation of "flying saucers" by Air Technical Intelligence Center has not changed earlier AF conclusions. AF denies that it withholds important information on saucer sightings.

SHORT STUFF — Third National Aviation Education Workshop sponsored jointly by CAP and University of Colorado will begin July 22. . . . Nancy Shea, AF's Emily Post and author of "The Air Force Wife," has retired from ATRC and will live in Florida. . . . AF is exchanging officers with the Royal Australian AF for the first time. . . . Air Force Aid Society will try to collect all 1951 loans still outstanding by May 31. . . . A Boeing WB-29 Superfort weather plane at Alaska's Eielson AF Base recently completed the AF's 1,000th Ptarmigan weather flight to within 300 miles of the North Pole. . . . Canadian duty is now considered foreign duty. . . . Navy has a new Public Information Manual, reported to be first such publication to have the force of a directive. . . . AF has reorganized its historical and information activities under one office.

ARNOLD AIR CADETS TALK ROTC PROBLEMS

In an AFA-sponsored conference, honorary group officers meet with Air Force panel in Pentagon

IF YOU want to know how well a customer likes your product, the quickest way to find out is to ask him. You may not agree with all the answers but you're bound to pick up a lot of useful information for future planning.

One of the Air Force's hardest "sells" has been its AF-ROTC program, particularly so since its reorientation last summer to place greater emphasis on flight training. To find out just what cadets thought of this, and of the ROTC program in general, the Air Force late in December invited the regional and national officers of the Arnold Air Society to the Pentagon for a conference. As national sponsor of the Society, Air Force Association helped arrange the conference, and next day met with the cadets to discuss how the two national air organizations could help one another.

The 125,000 AF-ROTC cadets represent the prime source of officers for the future Air Force. Arnold Air Society is the honorary military fraternity of the cadet corps, the largest such organization on the American campus. It has chapters at 161 of the 187 colleges and universities now offering AF-ROTC, although the Society was founded only in 1947.

Seventeen cadets gave up precious days of their Christmas vacations to come to Washington. The morning of December 29 they gathered in a Pentagon briefing room to hear what the Air Force has in store for them and to bring some ROTC problems before the Air Staff. At the morning session they heard Chester D. Seftenberg, Deputy Assistant Secretary of the Air Force for Reserve and ROTC Affairs; Maj. Gen. John H. McCormick, Director of Military Personnel; Maj. Gen. Norris B. Harbold, Director of Training; Maj. Gen. William E. Hall, Assistant Chief of Staff for Reserve Affairs; Brig. Gen. B. K. Holloway, Deputy Director of Requirements; Brig. Gen. Ralph E. Koon, Deputy Director of Operations; and Col. Charles A. Brown of the Office of Public Information. Lt. Col. Merlyn McLaughlin of the ROTC Branch, Hq., USAF, was moderator. Between sessions the cadets were luncheon guests of AF Chief of Staff, Gen. Nathan F. Twining.

In the afternoon the cadets got down to cases in an open discussion of their problems with a panel moderated by Brig. Gen. Matthew K. Deichelmann, AF-ROTC Commandant, and containing representatives of all the major sections of the Air Staff. Foremost on the cadets' minds, as expressed by the National Commander of AAS, Cadet Col. Steve Strickland of the University of Cincinnati, was the feeling that the program's new emphasis on flight training was penalizing the non-flying cadet. Flying status cadets have a definite commission awaiting them upon graduation, said Strickland, whereas the non-flying cadet may spend his four college years in the program and wind up without a commission. The result, according to the cadets, was a reluctance among freshmen to enter the program at all.

In response, General Deichelmann admitted that the current program was not precisely what the Air Force wanted but that it had little choice. To carry out the AF mission of putting firepower on the target, it

(Continued on page 14)

AIR FORCE ASSOCIATION IS NOW IN NEW OFFICES

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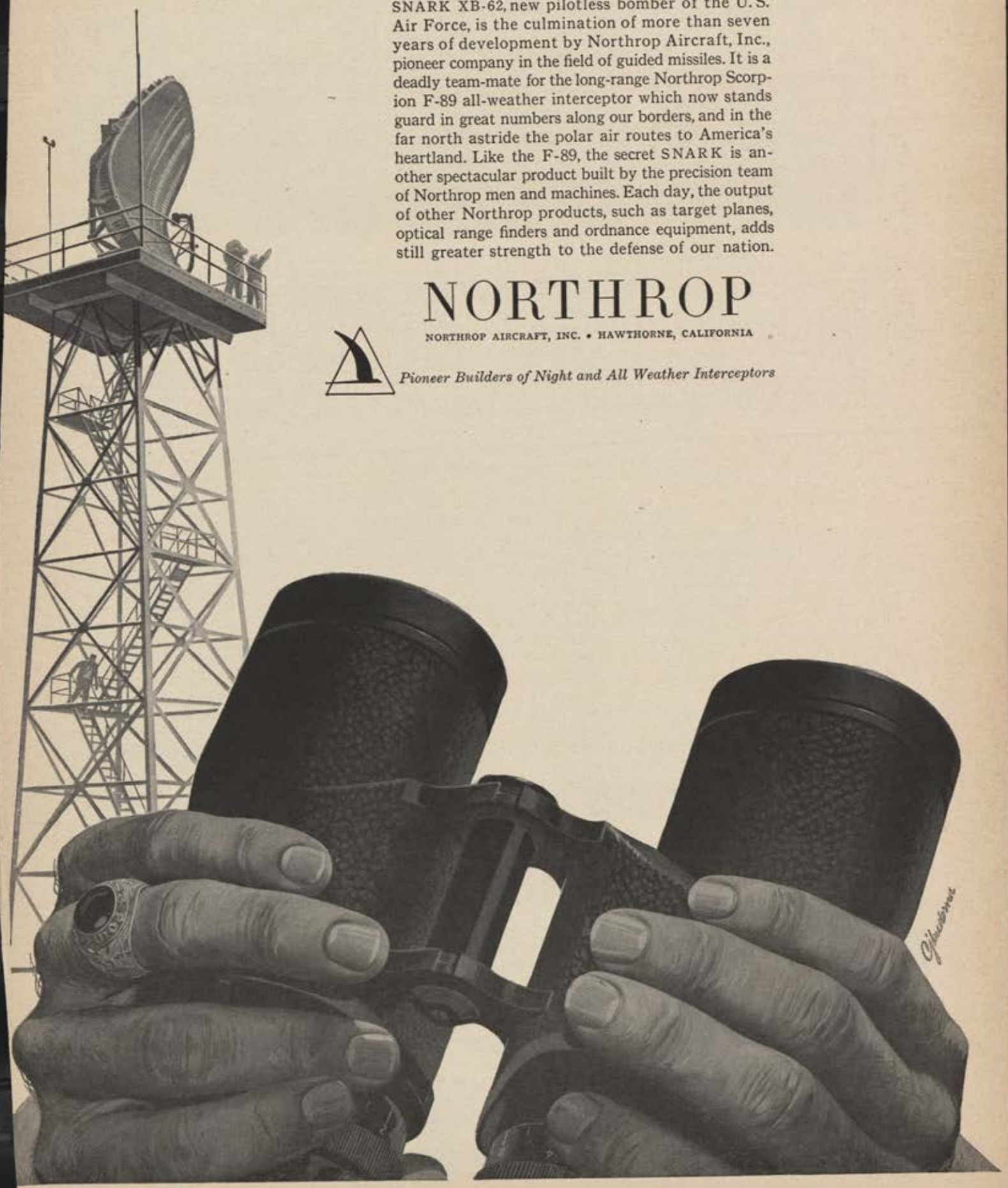


Lunch with the Chief. Guests of AF Chief of Staff, Gen. Nathan F. Twining at the Pentagon during the AFA-sponored briefing for Arnold Air Society cadets were (rear row, from left) Cadet Lt. Col. Theodore G. Poulson, Municipal University of Wichita; Cadet Capt. James H. Heil, New York University; Cadet Maj. John R. Haury, University of Omaha; Cadet Maj. Morris W. Turner, Texas Tech College; Cadet Maj. Edward E. Loewe, University of Cincinnati; Cadet 1st Lt. Duane Post, University of Omaha; Cadet Lt. Col. Gerry Leigh, University of Idaho; Cadet Lt. Col. David R. Fishburn, Pennsylvania State College; Cadet Lt. Col. Lee Webb, Ohio University; Cadet Maj. Jerryl L. Marlatt, University of Cincinnati; Cadet Maj. John M. Barr, University of Cincinnati; Cadet Maj. Charles D. Belinky, University of Cincinnati; and Cadet Lt. Col. Richard D. Anderegg, University of Cincinnati. In the front row are, from left, Cadet Lt. Col. Ronald W. Hill, University of New Hampshire; Cadet Lt. Col. Albert Purcell, Texas Tech College; Capt. Robert Rotstan, USAF, National Advisor to Arnold Air Society and Ass't PAS&T, University of Cincinnati; C. D. Seftenberg, Deputy Assistant Secretary of the Air Force; General Twining; Cadet Col. Stephen S. Strickland, University of Cincinnati; and Cadet Lt. Col. Frank J. Emma, from Loyola University of Los Angeles.

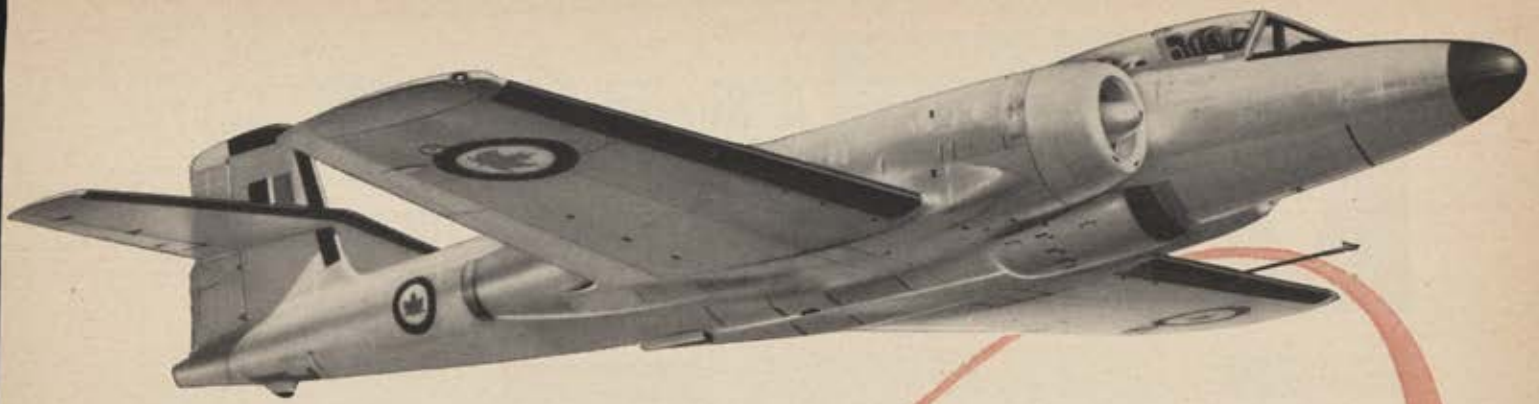
needed air crews. Yet, in the summer of 1952, only 762 cadets out of 6,500 graduates applied for flight training. The Air Force still needs non-rated officers, said Deichelmann, but the ROTC program has been turning out more of them than the AF has spaces for. Hence, the shift in the program.

The cadets agreed with the need for flyers but said they still thought it unjust to change the rules for cadets who are part way through the program.

Other items brought up by the cadets included:

- A need for more information about the ROTC program to reach the individual cadets.
- A proposal that ROTC cadets be issued official personal identification cards.
- A need for more complete briefing on what is expected of them as AF officers when they enter on active duty.
- A desire for more information on the career opportunities available in the active-duty Air Force.

All items on the agenda were discussed openly and frankly. The cadets pulled no punches when they thought criticism was justified. Panel members were equally above board in explaining the AF's reasons for certain actions, or the lack of them. Cadets and panel agreed the discussion was healthy and that most areas of disagreement could be quickly clarified at this kind of conference.—END



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The CF100 with its two ORENDA jets, designed and built by AVRO Canada, is the delight of the men who fly them. While present production of this potent defender is for the R.C.A.F. guarding the North, this versatile aircraft is capable of this variety of tactical assignments:

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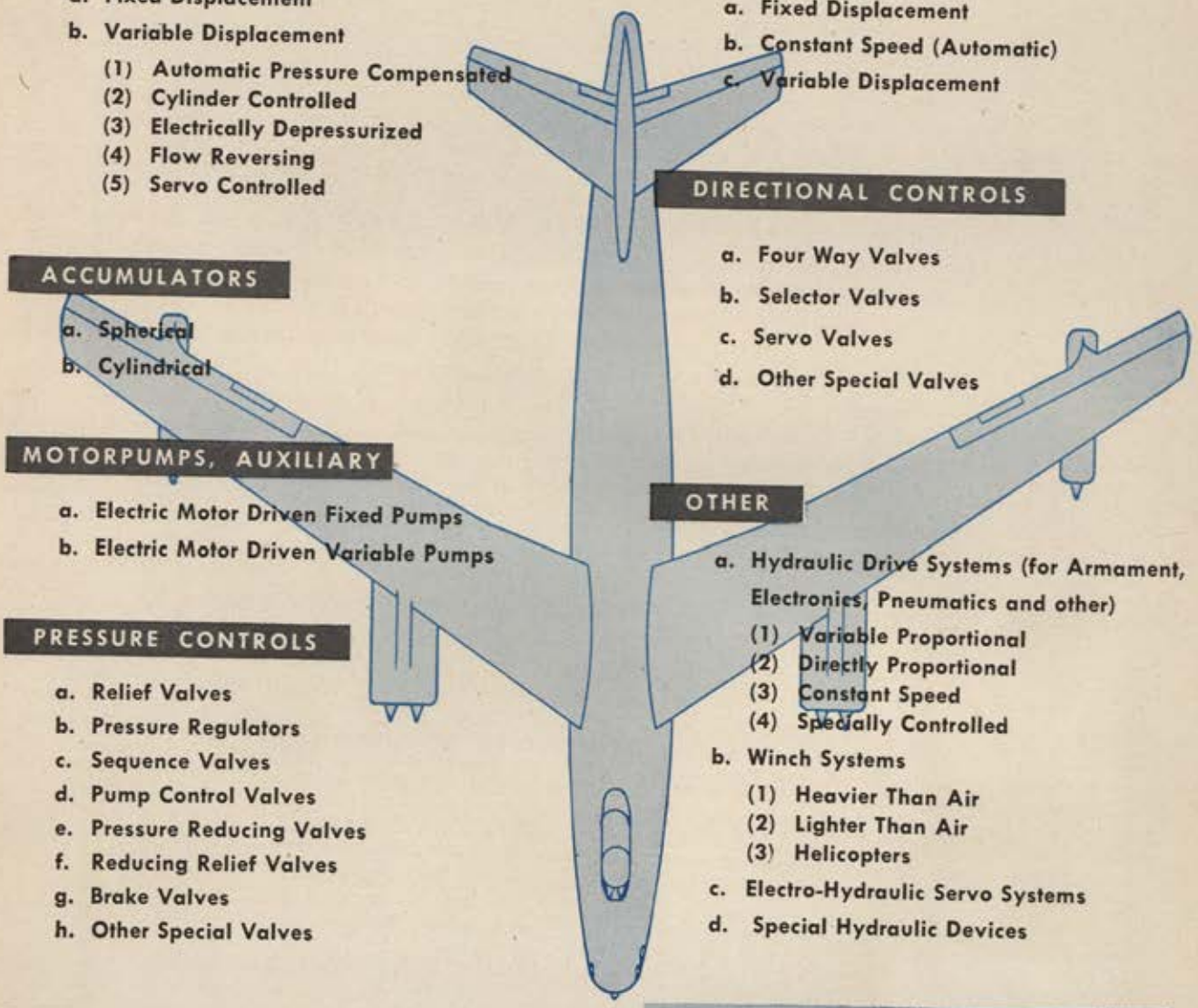

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ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

PEOPLE IN THE AIR NEWS

When he was sixteen, **EARL T. RICKS,** a student at a military academy, decided he'd had enough of higher education. For him it'd be flying. By the time he

Ricks

was nineteen he was barnstorming, piling up the first of his life's total of 16,000 hours. Twelve years later, Ricks, 31, enlisted in the Air Corps. He was a veteran pilot. His rank—private. In 1945, at war's end, he was a full colonel and deputy commander of ATC's South Pacific Wing. After the war he was elected to a term as mayor of Hot Springs, Ark., and became Arkansas' adjutant general in 1949. In 1950 he left Arkansas, went to Washington, D. C., and the National Guard Bureau. Named chief of its Air Force Division in 1950, Ricks received his second star. Last month the veteran pilot and colorful commander received his last assignment. For Maj. Gen. Earl T. Ricks, 45, USAF, died at the Army's Walter Reed Medical Center, in Washington, D. C.

JOE FOSS, USMC, fought many a good battle with Japanese Zeros over the steamy Guadalcanal jungles, bagged twenty-six, won the Medal of Honor. Returning to his native South Dakota, Foss entered a new arena—the political one. Elected to the legislature in 1948, he ran unsuccessfully for governor in '50. He was reelected to the legislature in 1952. This year, Col. Joseph J. Foss (chief of staff of South Dakota's Air National Guard and an AFA director) announced he'd again try to bag the Republican nomination for governor. His prospects, said politicos, are "frankly good."

LEONARD S. HOBBS conceived and directed the designing of Pratt & Whitney's J-57 turbojet engine (10,000-lb. thrust). This achievement won him the coveted Collier Trophy, administered by National Aeronautics Association. The presentation was made in Washington, D. C., at the Wright Memorial dinner by President Dwight D. Eisenhower.

Until recently **LT. COL. PHYLLIS D. S. GRAY** was one of thirty-eight WAF lieutenant colonels. Last month, when she succeeded Col. Mary Shelly as director of Women in the Air Force, she became the WAF's only full colonel. The new director was a Navy intelligence officer in WW II, then became an intelligence analyst for Central Intelligence Agency. She was commissioned a WAF major in 1949. Her predecessor, Colonel Shelly, resigned as WAF director to return to Bennington College, Vt., as assistant to its president.

A distinguished military name popped into print last month. From the Far East Air Forces it was learned that **COL. BENJAMIN O. DAVIS, JR.,** now commands the 51st Fighter-Interceptor Wing, an F-86 Sabrejet outfit. Command is not new to 42-year-old Colonel Davis. He was first CO of the World War II 99th

Col. Gray

Col. Davis

Fighter Squadron, when it was formed at Tuskegee Institute, Ala., in 1942. When the 99th grew into the 332d Group, West Pointer Davis was again picked to lead. Flying P-51s, the group flew long-range cover for the heavies. Last month when retired Brig. Gen. Benjamin Davis, Sr., learned his son was now a Wing Commander, and eligible for general as an Air War College graduate, he said he was "pleased." General Davis, first and only Negro general in the Army's history, has cause. Ben, Jr., would be the USAF's first.

FLIGHT'S BIGGEST BIRTHDAY PARTY

Behind the scenes at Kitty Hawk, N. C.

AT FOUR o'clock, the afternoon of Thursday, December 17, twelve Civil Air Patrol planes dipped their wings over the Wright Monument atop Kill Devil Hill, ringing down the curtain on a four-day celebration at Kitty Hawk, N. C., commemorating the golden anniversary of powered flight. The greatest tribute ever paid Orville and Wilbur Wright came to a close and a wintry silence settled on the historic site.

A four-day celebration, international in scope, had been staged at a place without an airport, fifty-eight miles from the nearest airline, and fifteen miles from the nearest telegraph office. Every telephone call had to be long distance, when the lines worked. The area was a summer resort, but the celebration took place in mid-December, nearly three months after the hotels and restaurants had closed for the season. Only two buses passed the site each day.

In spite of all this, thousands of persons visited the 317-acre memorial park to watch aerial demonstrations by more than 200 planes, hear speeches by scores of aviation leaders, and attend daily memorial services honoring the pioneering Wright Brothers. Millions more had received first-hand accounts of the celebration from eighty-four newsmen and women.

Two events turned back time to the beginnings of aviation. Replicas of the Wright Brothers' 1903 hangar and living quarters were built and furnished in the form of the originals, and on their original location, under the supervision of the National Park Service. And the first flight was re-enacted by a 1912 pusher plane, flown over the original course at the exact fiftieth anniversary moment by Billy Parker of the Phillips Petroleum Company, Bartlesville, Okla.

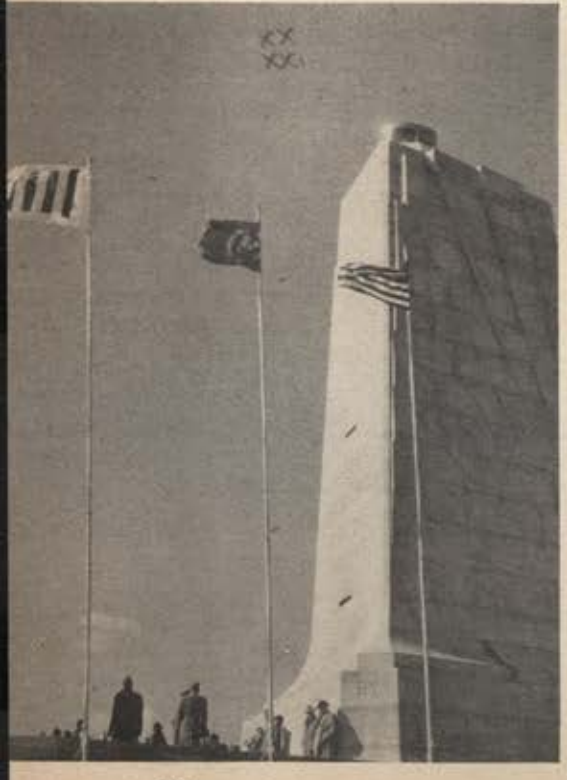
Six F-86 Sabrejets dramatized the progress made in plane speeds by rocking the historic site with sonic booms, as they dived from 43,000 feet. Speed and range of today's planes were demonstrated by the arrival of an RAF Canberra jet bomber, flown by Flight Lieutenants R. L. Burton and D. H. Gannon, fifty seconds ahead of schedule on a flight that left England after breakfast on the morning of December 17 and arrived at Kitty Hawk in time for lunch the same day. A shiny new Douglas DC-7, owned by National Airlines, dipped a wing as it zipped past the reviewing stand at nearly 400 miles an hour. It had set a new transcontinental speed record for airliners the night before.

The flying ability of today's pilots was demonstrated in an almost unbelievable fashion by the US Air Force's aerobatic team, the Thunderbirds. For fifteen minutes, Maj. Dick Catledge, and Captains Bill and Buck Pattillo, and Bob McCormick flew their four F-84 Thunderjets no more than five feet apart as the 10,000 spectators watched in silence.

The peaceful role of the airplane was stressed by displaying three flags —the United States, United Nations, and International Goodwill—from poles atop Kill Devil Hill. The flags had been flown around the world in less than six days, a distance of over 23,000 miles, by Pan American World Airways and Trans World Airlines.

It is impossible to list all of the distinguished guests. Here are a few. First Lady of the celebration was Mrs. H. H. Arnold, widow of the late General "Hap" Arnold. She came all the way from Sonoma, Calif. Brig. Gen. Frank P. Lahm, who was taught to fly by Wilbur Wright in 1909, headed a long list of pioneer flyers. Early flyer Blanche Noyes and aerobatic champion Betty Skelton were among the women flyers who attended. Maj. Al Williams, famous aerobatic and speed pilot, was there to cock a critical eye at the Thunderbirds' precision flying. Mrs. J. H. Jameson of Northfield, Ill., a niece of the Wrights, was the closest relative who attended. Fred C. Kelly, official Wright biographer, was on hand.

James H. Doolittle, Chairman of the National Committee to Observe the Fiftieth Anniversary of Powered Flight, and Representative Carl Hin-



Top, Billy Parker flies his 1912 pusher plane over the Wright's original course. At left, the Thunderbirds, jet aerobatic team, fly over the monument and the three flags.

shaw, Chairman of the Joint Congressional Committee for the Fiftieth Anniversary, headed the speaking program. Other speakers included Alfred L. Wolf, Secretary, Aircraft Owners and Pilots Association; Joseph T. Geuting, Jr., Manager, Utility Airplane Council; Edward O. Rodgers, Assistant to the President, Air Transport Association; Adm. DeWitt C. Ramsey, President, Aircraft Industries Association; George C. Kenney, President, Air Force Association; Donald A. Quarles, Assistant Secretary of Defense; and Conrad L. Wirth, Director, National Park Service. Elbert Cox, Regional Director, National Park Service, dedicated the reconstructed 1903 camp site.

The military services were officially represented by Generals Nathan F. Twining and John K. Cannon, USAF; Lt. Gen. L. L. Lemnitzer, USA; Vice Admirals Ralph A. Ofstie and John J. Ballentine, USN; Maj. Gen. Clayton C. Jerome, USMC; and Rear Adm. R. E. Wood, USCG.

The whole affair began when four groups united under a joint committee to plan, arrange, and stage the celebration. They were the Kill Devil Hills Memorial Society, National Park Service, North Carolina Fiftieth Anniversary Commission, and Air Force Association. Miles L. Clark of Elizabeth City, N. C., chairman of the board of the Memorial Society, headed a five-man steering committee. Other members were S. Wade Marr, representing the Memorial Society; Elbert Cox, Park Service; Carl Goerch, North Carolina Commission; and Ralph V. Whitener, Air Force Association.

Each organization had specific duties and responsibilities. The Memorial Society was responsible for local arrangements and participation. The Park Service was in charge of rebuilding and refurnishing the 1903 Wright camp. The North Carolina Commission was responsible for arrangements and participation by the state. National arrangements and participation, and celebration operations were assigned to the Air Force Association.

Charts were drawn and duties defined. It looked rather simple on paper. It would have been simple almost anywhere except isolated Kitty Hawk.

Events were given priority status, with the reconstruction of the original site at the top of the list. Letters went to 532 individuals and firms across the nation, soliciting contributions to finance the construction. Returns were slow. So the Air Force Association advanced the Park Service $500 to begin collecting the furnishings for the buildings. The first $3,000 collected went for lumber for the sheds. Actual construction didn't begin until late November.

Aircraft were the second priority. Seven meetings were held with representatives of the military services before the final decision was made. USAF's Air Proving Ground Command at Elgin AFB, Fla., was assigned the responsibility for service participation. Also, letters and telephone calls went out to aircraft manufacturers and private flyers to take part in the celebration.

Participating aircraft had to be controlled and visiting planes needed landing and fueling facilities. The USAF 3d AACS Squadron, under Capt. E. J. Lange, built two radio control centers. One was a homing beacon, six miles north of Kill Devil Hill, for last-minute checks on a pilot's course and timing. The other was an aircraft control tower, inside the park.

At Manteo Airport, fifteen miles from Kill Devil Hill, Manager W. M. Henderson prepared his small field for parking more than 100 planes a day. One runway had lights—the only landing aid. W. Robert Elder and other Civil Aeronautics Administration representatives installed and operated a mobile control tower. The US Navy sent a crash truck and crew from Norfolk.

Weather is the chief concern of any flyer. The US Weather Service in Washington furnished two top meteorologists and forecasters. At the Manteo Airport, they installed a teletype machine that clicked off weather information twenty-four hours a day, set up a pilot briefing room, and fed hourly forecasts into the celebration operations office.

Next on the list was a central point from which the entire celebration could be directed. The Carolinian Hotel at Nags Head was selected. A six-room cottage next to the hotel was turned into an operations office. One of the four ground-floor rooms became a committee office for the sponsors, another served as military headquarters, the third became a transportation office, and the fourth was a briefing room for participants. Key personnel slept upstairs.

Activities were now centered in three places—Kill Devil Hill, Manteo Airport, and the Carolinian Hotel. This triple location presented a communications problem. Limited telephone facilities were too uncertain. CAA and the North Carolina Highway Patrol got together. CAA had the Federal Communications Commission clear a radio channel and installed a receiver and transmitter at the Carolinian. A/1C Ray Keeney, from Bolling Air Force Base, operated the equipment. Thus officials could be in radio contact with the Manteo tower, Kitty Hawk Control, and participating aircraft.

The Highway Patrol installed a radio station in Park Superintendent Horace Dough's yard. One patrol car was stationed at the Manteo Airport, another on the roadway circling Kill Devil Hill, and a third outside operations at the Carolinian. Celebration officials then had instant contact with all points of activity.

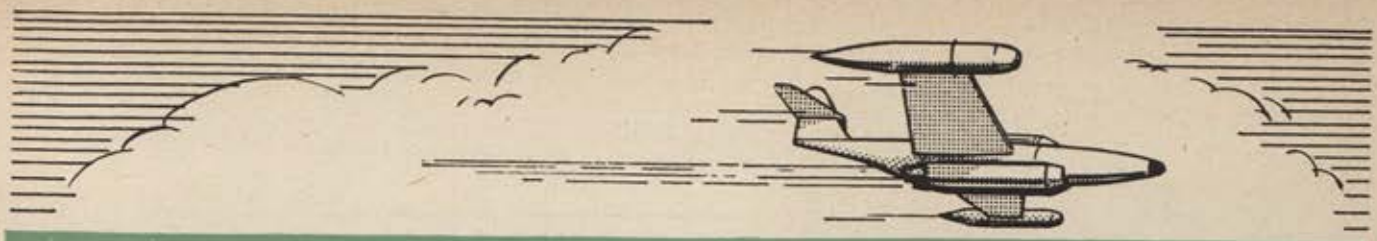
From an operations standpoint, Kitty Hawk was ready for its biggest aviation event since 1903. But there were still more headaches. The biggest show in the world would be a flop without an audience. The population in and around Kitty Hawk could be numbered in the hundreds. Advance news stories were sent to newspapers, radio and television stations across the nation. Interest began to mount. Early predictions set the attendance at as high as 5,000. As attendance predictions mounted, so did the problems. Where would everyone eat and sleep? The Nags Head Chamber of Commerce set up a housing office. Summer hotels and restaurants were asked to re-open. Lloyd Griffin, a professional concessionaire in Goldsboro, agreed to operate a food stand at Kill Devil Hill.

There were two ways to reach Kitty Hawk—by air and automobile. One two-lane highway connects the narrow strip of beach with the mainland. Traffic jams seemed inevitable. Here again, the North Carolina Highway Patrol came to the rescue. Thirty-five hand-picked patrolmen were assigned to the job. Thirty-two acres of parking space were cleared. There were no traffic jams.

How would those who would arrive by air get from the airport, fifteen miles away, to the celebration site? Norman K. Haig of General Motors sent down sixteen new cars from Detroit. Igor Sikorsky sent his personal helicopter. Two buses were chartered. The US Navy and Coast Guard Air Stations at Weeksville and Elizabeth City provided volunteer drivers. David S. Jamieson and Donald Steele, officials of the American Automobile Association in Washington and active members of the Air Force Association, voluntarily took five days off to operate the motor pool.

There was no auditorium or sta-

(Continued on page 42)



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By Wilfred Owen

When Horace Boren of Braniff International Airways went around the world by scheduled airline he was the first to do it in less than 100 hours. Officials at New York International Airport timed him at four days, three hours, and sixteen minutes, or ninety-nine-plus hours. He was two hours off schedule.

• • •

New York state now has a total of nine heliports.

• • •

The US oil industry uses more planes than the nation's scheduled domestic, international, territorial, and local service airlines combined. There are 1,723 aircraft in the oil fleet.

• • •

Air travel has always been too costly for the average fish. Glass or metal tanks filled with water weigh too

much. Now KLM has introduced a one-pound plastic bag that will keep 2,000 air-borne fish happy for fifteen hours at attractive rates.

• • •

The world's airlines carried five million more people last year than they did in 1952.

• • •

Foreign air carriers continue to hold the edge over American flag cargo carriers in the North Atlantic. From 1950 through 1952 the foreign lines accounted for three-fourths of the increased volume of transocean freight.

• • •

Radioactive isotopes traveling long distances from England's atomic energy plants are generally transported by air. The isotope weighs only a few grams but the protective lead case

weighs thirty to forty pounds—so the isotopes are taken from the case with tongs and carried in the plane's wing tips until another lead case claims them on arrival.

• • •

Every day 123,000 passengers travel on the world's airlines. They do about 67,000,000 miles in the course of the day.

• • •

American Airlines reports that on regular flights every day about seven out of every 100 passengers are taking to the air for the first time. On coach flights sixteen passengers out of every hundred are first-flighters.

• • •

In 1929 the round-the-world record belonged to the German Graf Zeppelin, which did it in twenty days; and as recently as 1936 it took record-holder Clara Adams of New York sixteen days and nineteen hours.

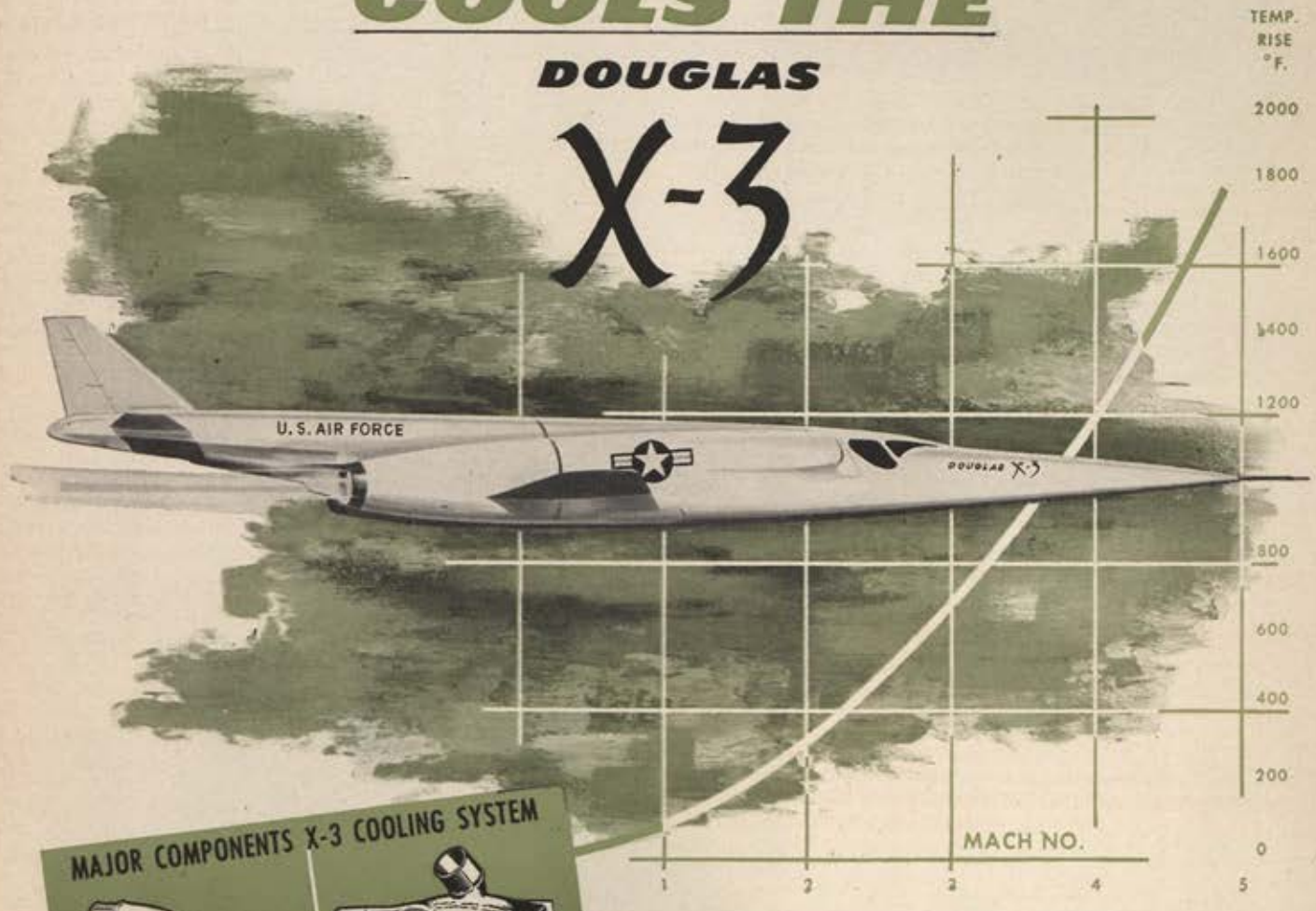
• • •

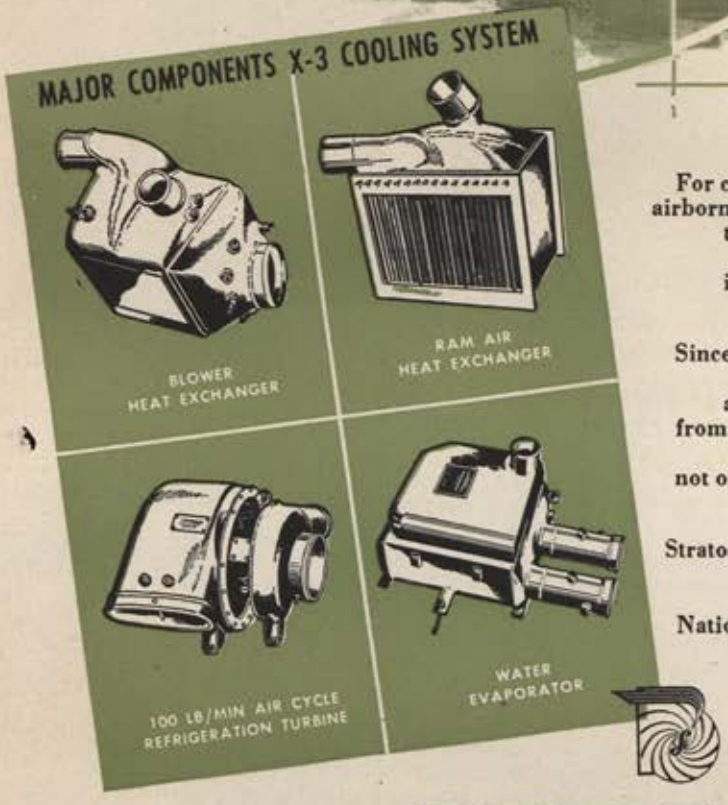
When the Flying Tiger Line flew a two-month-old prize

heifer from Connecticut to California, ranch attendants were waiting at the airport with a cow to provide dinner on arrival.

STRATOS COOLS THE

DOUGLAS X-3





For cooling the Douglas X-3, Stratos built the highest capacity airborne refrigeration system ever made and designed it to meet the severest requirements yet imposed by high speed flight. It is the first to use an evaporator in conjunction with an air cycle refrigeration turbine to create a compact, reliable system.

Since the X-3 flies for sustained periods at high Mach numbers it will be the first to explore problems arising from the high ambient temperatures which result from ram rise. Refrigeration is, therefore, of critical importance. The Stratos system is required to cool not only the pilot but much of the equipment and many of the compartments in this research airplane.

Stratos is proud to have been called on to design and produce equipment for this radical new research airplane built under the joint sponsorship of the Air Force, the National Advisory Committee for Aeronautics and the Navy.

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AIR FORCE
FEBRUARY 1954

Don't Count Your Missiles Before They Are Hatched

Despite published reports, we still don't have the air defense we need

An *AIR FORCE* Magazine Staff Study

A DAY OR SO after Pearl Harbor, a War Department telegram reached the headquarters of the 1st Interceptor Command at Mitchel Field. It ordered that two radar stations be established—one at Montauk Point on Long Island and the other miles away at Charleston, S. C.—to furnish early warning against possible enemy air attack *for the entire eastern seaboard of the United States!*

Such an approach to the air defense problem seems amusingly naive today. Even more so, if you realize that in 1941 the effective range of search radar was about fifty miles. But this is illustrative of an American tendency to place almost childlike confidence in the effectiveness of new, strange, and unproven scientific devices.

We have learned a lot about radar since then. But we still like to tie up our puzzling defense dilemmas in neat scientific packages and tuck them away in our mental files under "Problems Solved." As an example, just recently a respected national magazine—*U. S. News & World Report*—published an article entitled "Atom Bomb Can Be Stopped." The gist of it was that combinations of radar and guided missiles – ground-to-air and air-to-air – were making American cities invulnerable to atomic attack from the air. "America's missile program," *U. S. News* flatly stated, "is geared to stop an atomic attack now with missiles in production and to meet a future threat of improved offensive weapons with more complex missiles now being worked out and tested." Such an unwarranted and impossibly optimistic conclusion is both discouraging and frightening—discouraging because it isn't true; frightening because many will believe it, because they hope that it is so.

Let it be made clear at the outset that the editors of AIR FORCE Magazine have never been found among the detractors of the future capabilities of guided missiles.

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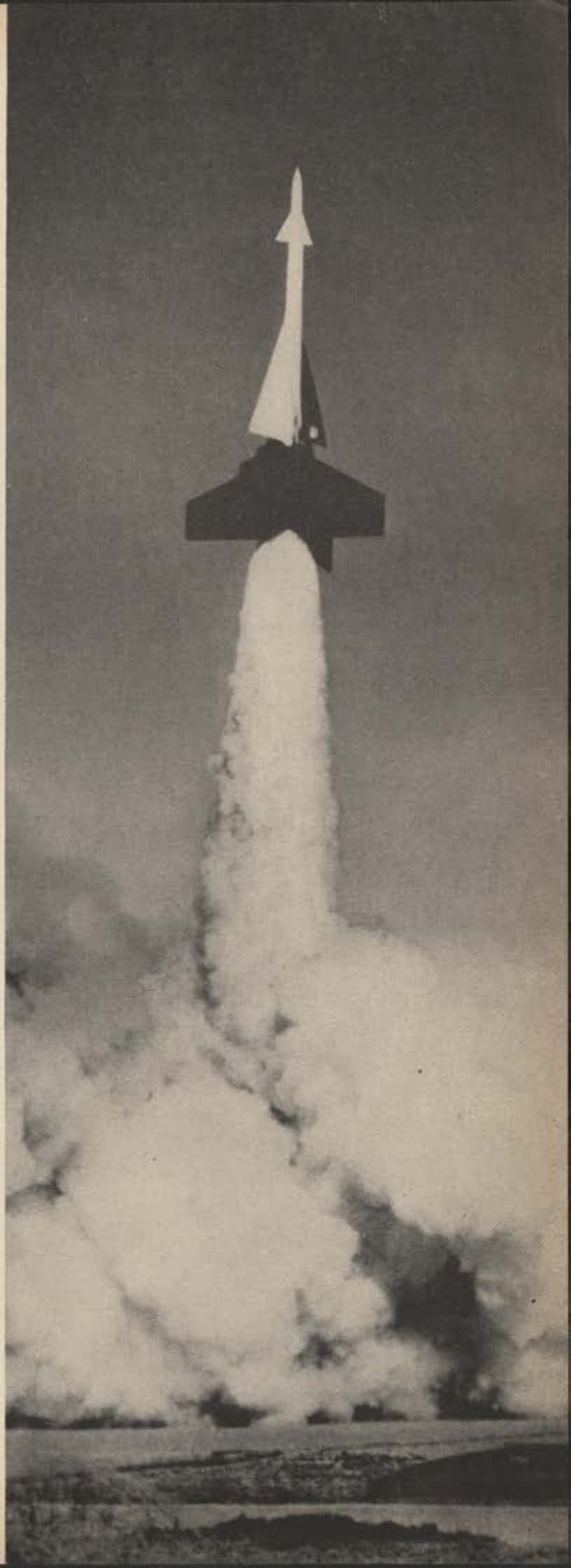


Nike. Operational battalions are still many months away.

DON'T COUNT YOUR MISSILES—CONTINUED

Over the years we have constantly emphasized their importance in the shape of things to come to a point where we have been taken to task for appearing to neglect the role of the pilot. We have consistently advocated greater emphasis—in time, talent, and money—on a guided missile program that would meet the requirements of future war.

Furthermore, we feel that the success of our democratic system depends on intelligent action by a well-informed citizenry and that responsible reporting in an area as vital as national defense must meet the standards of objectivity, authoritativeness within security limits, and courage to face unpalatable facts. The public must not be aroused against nonexistent threats. Neither must it be lulled into a sense of false security by talk about fantastic new weapons which are neither fantastic nor available yet for combat.

In this frame of reference, let's take a look at the story that a combination of radar and missiles "now in production" has rendered our cities invulnerable.

Take radar. The fifty-mile range of Pearl Harbor time had about quadrupled by 1945, although the curve since then has flattened out. And radar is still beset by most of the limitations and difficulties with which it started.

- Radar waves still travel in a straight line, like light and TV waves.
- Radar can't "see" through a solid object, such as a mountain.
- Weather and ground echoes still play hob with radar information.
- By itself, radar cannot identify a target as friend or foe.
- Radar can be jammed.
- A large radar system depends on a multiplicity of skilled operators, maintenance men, and communications lines, all vulnerable to failure, fatigue, and sabotage. The system can never be 100 percent perfect.
- In defending an area as large as North America, a radar system must be able continuously to track enemy planes from the point of detection and identification until the defensive weapons can shoot them down. The size of the area, the number of attractive targets, the enemy's freedom of maneuver, and his freedom to concentrate in time and space combine to reduce our chances of providing good tracking data.

But, for the sake of argument, let's assume that the radar detection, identification, and tracking system is foolproof. Could missile-carrying interceptors and ground-to-air missiles get a good proportion of enemy bombers before they reached the target areas? Presumably they could—as soon as we get them in operationally significant quantities. But none of these is yet flying, except experimentally.

To be sure, the Hughes Falcon missile which will arm Convair's F-102 interceptor, is in advanced development and limited pilot production. But the advent of the air-to-air guided missile (as opposed to the aimed rockets with which our current all-weather fighters are armed) brings us into a wholly new era of weapon technology. To fire them, the launching plane needs fantastically complicated gear. The missile itself is packed full of electronics, miniature gyroscopes, an autopilot, a hydraulic steering system—to mention only a few major components. In the present state of development it is naive to expect that every missile would be successfully launched and begin to home on a target. Even then, it could be thrown off course by one of a variety of countermeasures. Or a delicate component could fail, the missile could exceed its maneuver limit, or such unpredictable phenomena as radar "glint" could cause a miss.

The foregoing presumes that the interceptor is in the right spot from which to launch its missiles in the first place. It has to be directed to the target by ground control based on radar information, which, as we've discussed, involves certain limitations. We've already discussed these limitations. It has to take off, climb, and fly to the point of intercept—perhaps several hundred miles. This requires ample early warning, positive identification, accurate computation of target speed, course, and intercept points, reliable and instantaneous communications, and proper decisions by the ground controller who guides the whole operation. Without detracting from the efficiency of any one of these links in the defense chain, you have to admit that they do reduce the hit probability considerably below 100 percent.

The ground-to-air, target-seeking, guided missile has most of the same problems. Admittedly the Army's Nike missile tests have been most encouraging. But no Nike battalions are yet operational and probably won't be for many months to come. And, if a determined atomic raid gets within the twenty-mile effective radius of a Nike installation, damage to us will still be heavy unless all of the bombers are shot down—a virtual impossibility when you consider the number of targets to be defended and the difficulty of defending against heavy raids.

The cost of enough Nike installations to defend even key targets will be extremely high. And it is nonsense to say—as reported—that they can be carted from threatened city to threatened city—by truck or by air—in the amount of time the best early warning system could provide. And even if there were several days' warning, who would decide what targets to protect?

A Nike-type point defense is indeed cheaper—per kill—than conventional anti-aircraft artillery. This is true largely because conventional AA artillery doesn't shoot down many planes. And Nike stations are extremely expensive in terms of their ability to engage multiple raids, since each guidance station is obviously limited as to the number of missiles it can handle.

Matador. Two squadrons will be stationed in West Germany this year.

These then, are some of the problems we face in stopping a determined attack by conventional, subsonic, large bombers. There are other attack techniques available to the Russians, the threat of which *U. S. News* chooses to minimize. In the light of what is known of Russian technology, it would seem more than foolhardy to assume that the Soviets do not, or cannot, possess them. As examples of what we are doing along alternate lines, the Air Force has disclosed a technique called Ficon, whereby atom-bomb-carrying Republic F-84s can be launched and recovered in flight by Convair B-36s. A further refinement could permit air-to-ground guided missiles to be used in an attack. Our Navy has a guided missile, the Regulus, which has a range of 500 miles and can be launched from a submarine. And the Air Force recently announced that two squadrons of Matador B-61 pilotless bombers will be stationed in West Germany this year.

The assumption that Russia does not have these things because "Americans are smarter than anybody" is shockingly shortsighted, especially after our serious underestimation of Soviet competence in the nuclear weapon field. We do know that the Reds took over highly competent German missile and submarine development groups virtually intact in 1945. They have had seven years to work out the kinks in systems that nine years ago were in advance of anything we had in the mill. And they are able even in peacetime to concentrate the bulk of the resources of a police state economy on weapons development. The mere fact that they exploded an H-bomb as quickly as they did is a yardstick by which to measure their degree of scientific competence and progress. Most frightening of all is the prospect that the Russians may well have bypassed many of these intermediate steps in nuclear weapon *delivery*. The development of the intercontinental ballistic missile would render any conventional system almost wholly obsolete. Let's see what James H. Doolittle thinks of the Russian work in this field, as outlined in a recent speech before the Jewish War Veterans.

"Although piloted aircraft will be with us—and will shape our plans for defense—for some years to come," Mr. Doolittle said, "the development of, first the supersonic, and then the hypersonic, intercontinental, ballistic missile is assured. Problems to be solved in the development of the ballistic missile—range, guidance, accuracy, materials, cooling, cost—are formidable, but we must solve them, and soon. Defense against the ballistic missile, or so-called 'ultimate weapon,' appears very difficult. *We do not know how to accomplish it at this time.* . . . As a result of their own intensive effort, together with what they took from the Germans, who, during World War II, led in this field, *it is extremely likely that the Soviets are ahead of us in the development of the long-range ballistic missile.*"

Thus, in view of this responsible estimate of the Soviet capability, it scarcely seems in the public interest to encourage the complacent belief that we can stop an atomic attack.

More reliable reporting has been done on air defense in the past two years than perhaps upon any other subject. Yet the tendency to spread alluring misconceptions continues, as the foregoing discussion points up. The blunt truth is today, as it was a year ago, that this country is tragically unprepared to ward off a full-scale atomic attack, although our air defense is steadily improving. In the firm belief that it is morally wrong to tell America that she can be defended today when tomorrow millions of Americans may perish in an atomic holocaust, AIR FORCE Magazine has constantly entered the air defense debate to reiterate the publishable facts. We will continue to do so as often as it seems necessary, even at the risk of repetition.

We agree wholeheartedly with two of the nation's leading scientists working in the air defense field. Writing in the November issue of *The Atlantic Monthly*, Dr. James Killian, Jr., and Dr. Albert Hill, President of the Massachusetts Institute of Technology and Director of the LINCOLN Air Defense Laboratories, respectively, said,

"As we in the United States examine the issues inherent in the air defense debate, we need above all to have more facts. We need more quantitative information about the threat we face. We need to have placed before us the qualitative considerations which affect our policy-making. . . . The time has come for boldness and plain-speaking. The American public is not well-served by withholding facts that are vital to the decision-making of a democracy and its self-preservation."

But the facts are hard to find amidst the drum-beating and ax-grinding. One minute you are safe from attack. The next day you are threatened with extinction. Hence we feel it our duty to reexamine the problem anew. And we can think of no better way than to reiterate some

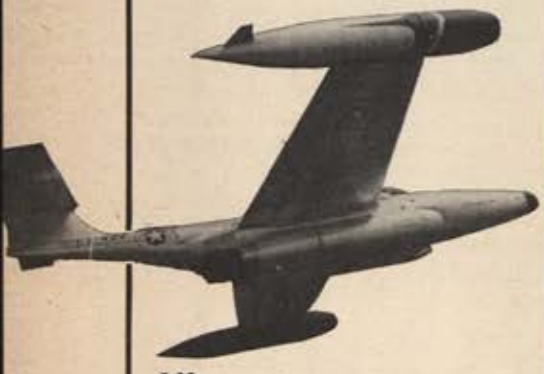
(Continued on page 27)

Regulus. The Navy's guided missile can be launched from submarines.

WHAT CAN WE DO TODAY?

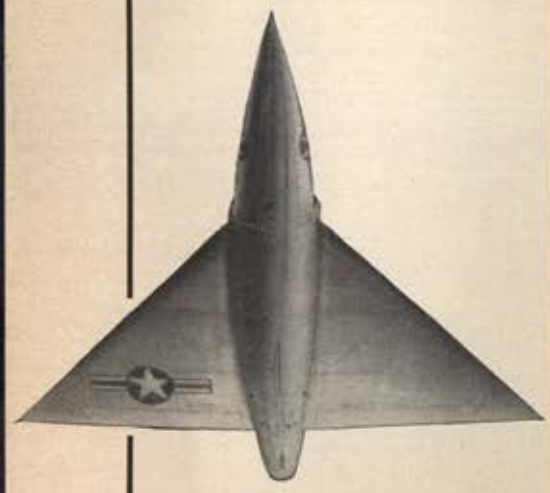
For several years to come, the manned, all-weather interceptor will be our prime defensive weapon

F-86D



F-89

F-94C



F-102 (sketch)

GIVEN the piloted interceptor and the defense-in-depth concept, what are the most suitable tactics for securing a high kill ratio against a bomber force?

First, it goes without saying that a large percentage of our defensive fighters must be all-weather interceptors such as the Northrop F-89.

Further, for a defense in depth, a high proportion of these interceptors must be capable of long-range flights. By basing long-range, all-weather interceptors in Greenland and Alaska, *it is possible to deepen the defense line to the extent that enemy bomber groups can be attacked thousands of miles away from important US targets, and kept continuously under attack throughout their approach.* With other factors constant—such as bomber flight and defense capabilities, interceptor flight, firepower and fire control capabilities, and GCI vectoring capabilities—it is the time of exposure of the bomber to the interceptor's attack that determines the over-all kill probability.

The concept of time of exposure is firmly wedded to defense in depth. Long-range interceptors initially vectored to the target by picket plane, picket ship, or outlying GCI stations can employ wolf-pack tactics to fly and fight an enemy bomber force over hundreds of miles of sky. Search and fire-control radar, heavy firepower, and the ability to make repeated firing passes give us the type of airborne weapon needed.

Let us look at the tactics that could be followed in perimeter defense against air attack. A fleet of bombers coming down from Siberia is picked up by ground radar in Alaska, or by radar picket ships or airplanes. While point and area defenses closer to the target go on the alert, interceptors take off from Alaskan bases and keep the bomber force under continuous attack. The running fights may cover several hundred miles.

On the other side of the continent the same tactics can be used. Interceptors can take off from Iceland, harass and fight the bombers to Bluie West 1 or Bluie West 8 in Greenland, then land there. They could even continue on to bases in Labrador or Newfoundland, land, rearm, refuel, and fight some more. From Thule long-range fighters could fly and fight their way south to places like Churchill, Canada, or even under good conditions to bases in the Northern United States.

If a bomber loses an engine or suffers other major damage while still 1,500 miles from its destination, chances are it will never get there. On the other hand, a bomber damaged close to the target, if manned by a determined crew, may press on the few remaining miles.

Interceptor attacks at or near the continental perimeter would certainly eliminate some of the commanders of the attack. Command aircraft eliminated before an enemy force reaches its point of dispersal for several coordinated attacks would cost the enemy heavily.

Even after having exhausted its ammunition, the long-range interceptor can continue to be of immeasurable value. Trailing the enemy force by sight or radar at a safe distance, the interceptor can keep the bombers under continuous surveillance. Exact location fixes and details of deployment can be radioed to bases closer in on the target area.

The picture of our air defense problem is bleak enough at best. And we must make the best possible use of our *available* air weapons, not waiting for super-weapons. Placing currently available long-range all-weather interceptors at bases on our continental perimeter, placing them there in strength, employing defense-in-depth tactics to ensure the greatest possible time of exposure of enemy air assault forces to intercepting attack, we can at the very least take the main striking edge off any assault long before it reaches our borders, and soften it up for our area and point defense weapons.—END

By W. W. Kratz

fundamental considerations on air defense and survival in the nuclear age.

What kind of air defense do we need? Briefly, the air defense system must provide adequate emphasis on careful time-phasing of the following elements:

- An early warning and tracking net, coupled with all-weather fighters armed with air-to-air guided missiles.
- Northward and sideward extension of the early warning line, to give several hours' warning, so that SAC will have time to get its retaliatory missions off the ground, so that close-in defensive installations can be alerted, so that civilians in target areas can seek shelter, so that civil defense organizations can mobilize, and so on.
- Such a distant warning line is meaningful only if it is backed by armed patrol. Otherwise we could be kept in a continual state of false alert. This kind of armed patrol will cost a great deal of money but, since it will be over unpopulated Arctic wastes and over the ocean, its missiles could carry atomic warheads (AIR FORCE, July 1953) and thus attain a high kill potential.
- Close-in, "last-ditch" defenses using Nike-type guided missile batteries and possibly ramming interceptor tactics (AIR FORCE, October 1952.) These would help protect vital cities like New York, Washington, and Los Angeles, SAC bases, atomic energy plants, defense industries, and the like.

This is the kind of air defense we are working on. Assistant Secretary of Defense Donald A. Quarles described it in a recent speech: "We had a very substantial continental defense program before the events of the late summer [the Russian H-bomb.—The Editors.] which dramatized the need for such a program to the public. Moreover, this was backed up by a very substantial research and development program that frankly recognized the technical difficulties in the way of achieving an airtight defense. Any concept that this country was caught napping is wholly unfounded. We must recognize, however, that the technological race we are in has some of the aspects of a chess game in which each player makes his moves and countermoves to dispose his forces to maximum advantage. There is no end to such moves, no ultimate answer. In a technical sense, to each move there is always a counter-move, although it may be difficult and costly."

The trouble is that in this gigantic chess game the advantage will inherently lie with the offense. Here's why.

- Nuclear weapons mean the defense now must aim at annihilation, not attrition. A six percent kill ratio, good enough in World War II, no longer has any meaning. Neither, against a nuclear attack, does fifteen percent, or twenty-five, or even fifty.
- The offense has the initiative. A single bomber force is a threat to every target within its range. And it can choose the ones it wants to hit. The defense must be prepared to defend them all.
- The offense can capitalize more quickly on technological improvements. Herein lies the grave risk that, by the time we get an air defense system that can effectively cope with piloted bombers, or even air-breathing missiles, the era of the ballistic missile will be upon us.
- Any air defense system can be saturated by sheer weight of numbers. And it's well to remember that only a fraction of the attackers need be carrying atomic weapons. The others can be cheap, unarmed dummies. Radar, unfortunately, can't tell the difference.

So in a situation where we must assume the enemy would be the aggressor we must first of all gear our air defense effort to the magnitude of the threat. Only last summer two highly competent, independent advisory committees — one headed by Dr. Mervin Kelly, president of Bell Laboratories, the other by Army Lt. Gen. Harold Bull — concluded that Soviet air offensive strength was growing rapidly enough to indicate a rising capability to deliver nuclear weapons on United States targets. And these conclusions were reached *before* the Soviet H-bomb was officially announced in August 1953. (The probability of a Russian H-bomb was discussed in AIR FORCE Magazine as long ago as June 1952.)

Yet, in light of the inherent advantages that accrue to the offense, we must also carefully tailor our air defense program in proportion to our offensive strength. It will avail us little to survive the initial attack if we cannot retaliate promptly and overwhelmingly. Otherwise we can be hit again and again. This retaliatory strength must be considered as part and parcel of our air defense effort. They cannot be considered separately.

This philosophy now appears to be firmly accepted at the highest levels of government. As outlined recently by Secretary of State John Foster Dulles, it follows these broad lines:

"Local defense will always be important," said Secretary Dulles, "but there is no local defense which alone will contain the mighty land power of the Communist world. Local defenses must be reinforced by the further deterrent of massive retaliatory power. A potential aggressor must know that he cannot always prescribe battle conditions that suit him. Otherwise, for example, a potential aggressor, who is glutted with manpower, might be tempted to attack in confidence that resistance would be confined to manpower. He might be tempted to attack in places where his superiority was decisive. . . ."

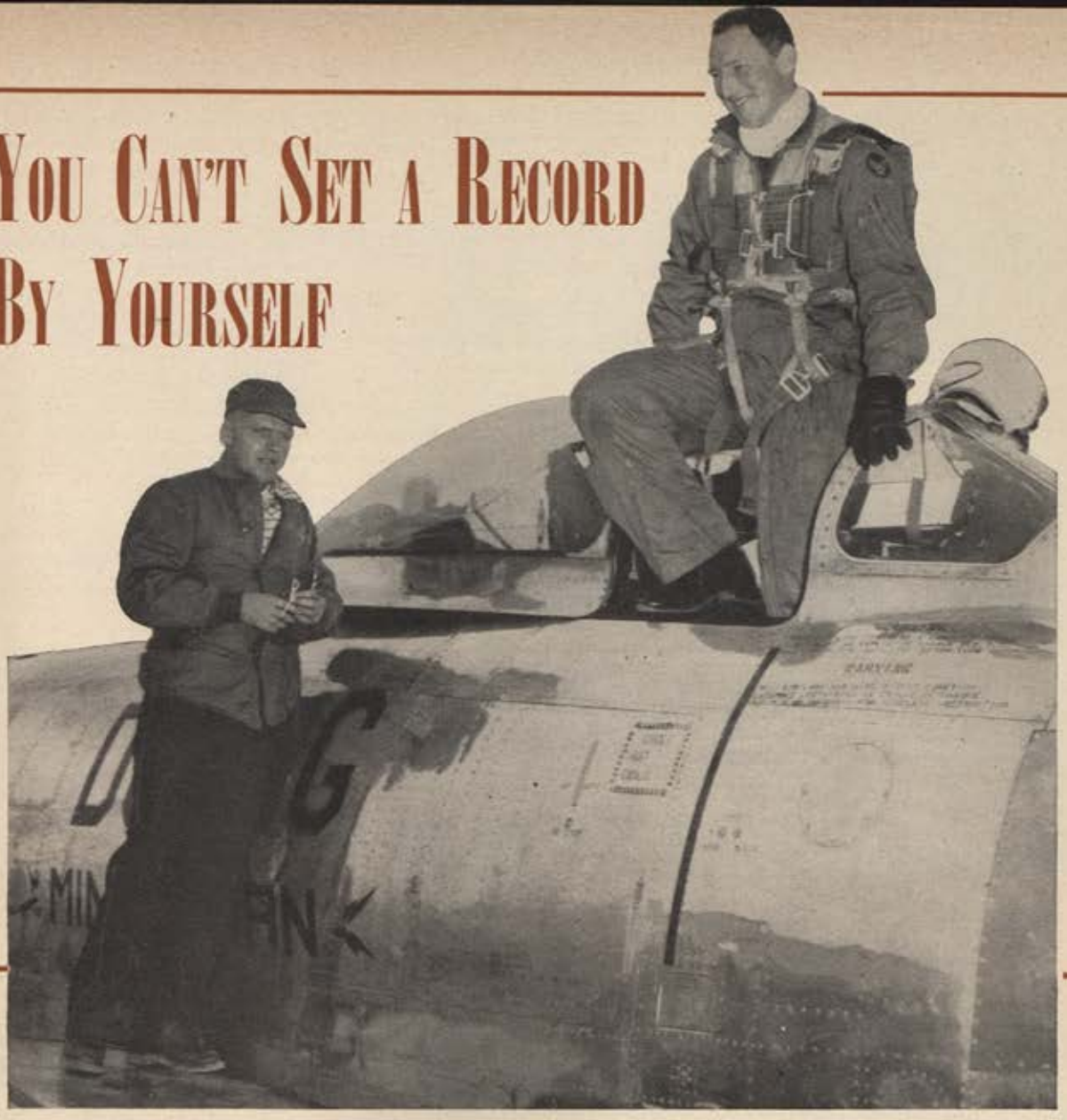
So, according to Mr. Dulles, the President and the National Security Council have made some basic policy decisions. "The basic decision," he said, "was to depend primarily upon a great capacity to retaliate, instantly, by means and at places of our own choosing. Now, the Department of Defense and the Joint Chiefs of Staff can shape our military establishment to fit what is our policy, instead of having to try to be ready to meet the enemy's choices. That permits of a selection of military means instead of a multiplicity of means. As a result, it is now possible to get, and share, more security at less cost."

President Eisenhower himself, speaking on the occasion of the fiftieth anniversary of powered flight, posed the problem in a different way when he said, "The power of the surprise attack grows too great, and with every further step in the perfection of the airplane, with the terrifying increase in the power of bombs, we get to the point where the side that denies the moral and spiritual values in life preserves over people who live as we do such a terrifying advantage that something must be done about it."

The philosophy embodied in these statements, we submit, places air defense and all our military requirements in proper perspective. We applaud it. As to whether it is being, or will be, carried out to a degree consonant with national security we reserve judgment.

Meanwhile, we are completely unreserved in our judgment of press reports which lead our citizens to believe they are being protected against atomic disaster by new defensive weapons. This breed of irresponsible reporting must be countered head-on and debunked—or else it will sabotage our most priceless national asset, the American public's sense of urgency.—END

You Can't Set a Record By Yourself



You need months of planning and lots of help, says the man who jockeyed a Sabrejet cross-country in record time

By Col. Willard W. Millikan

ON JANUARY 2 of this year I flew a North American F-86F from Los Angeles to New York in four hours, eight minutes, and five seconds to kick off a nation-wide Air National Guard recruiting campaign. The time shaved five minutes and twenty-one seconds from the mark set in January 1946, by Air Force Col. Bill Councill. I've been asked countless times how it feels to cross the country in a shade over four hours. It feels fine. But there's a lot more to it than just stepping into the cockpit, firing up, and driving full bore across the continent.

This kind of operation requires a lot of people and time. And my list of "the author is indebted to" must be a block long. Headquarters USAF, SAC, ADC, CAA, Air Weather Service, the National Guard Bureau, North American Aviation, General Electric, Air Force Association, and my own wonderful people in the D. C. Air Guard's 113th Fighter-Bomber Wing pitched into make it come off. Being strictly a so-called "weekend warrior," I owe a special debt to my employer, the Goodyear Tire and Rubber Co., which gave me the time to make the flight. It was no one-man show.

We started planning last May. Our job was to get the green light in the Pentagon. I honestly believe I walked around that building as far as I flew on January 2, trying to get the okay. Once Air Force granted its blessing, we went into high gear.

The '86 came out of the Eastern Air Defense Force's 47th Fighter Squadron at Niagara Falls, N. Y. ADC agreed to let me have it from December 15 until January 15. This was fine because we knew the flight would have to come off early in January. From June until the day I made the run, Lt. William Smith of my wing had closeted himself with weather charts and Air Weather Service people. He said I'd get the best winds soon after the New Year.

After some discussion, Air Force agreed to let me drop my tip tanks, provided ADC could monitor the drops by radar. Lt. Col. Gilbert L. Gilliland, the senior USAF instructor for the D. C. Air Guard, worked out the details with the ADC people. And let me say here that Air Force cooperation was wonderful. At Omaha, for example, where I refueled, SAC virtually turned over all of Offutt AFB to our people.

At top of page, Millikan and M/Sgt. Cliff Evenden, who directed the ground crew that refueled the '86 in Omaha.

I had insisted from the beginning that, operationally, the project had to be 100 percent Air Guard. Weeks before I picked up the '86 at Niagara Falls and flew it to our location at Andrews AFB, near Washington, we had acquired 200-gallon tip tanks. A hand-picked crew of Air Guardsmen from our wing, under M/Sgt. Cliff Evenden, trained daily on handling the tanks. The practice paid off in Omaha. We had been told that it would take at least fifteen minutes to hang the tanks and refuel. Actually the tank-hanging and refueling required just a little over four minutes, although it was six minutes and twenty-six seconds from touchdown to take-off. The two-plus minutes were used up in landing roll and taxiing, due to change in landing and take-off direction.

And then, after we had spent months working out all details, the flight very nearly didn't come off. About two weeks before Christmas it was ordered canceled. We spent four days getting it back on the track.

I picked up the airplane on the fifteenth and the following day ran into difficulty. Serious hydraulic trouble developed and five precious days went by—days in which I had planned to check performance, fuel consumption, and the like—before we were able to get it back in commission. In times like these you learn to appreciate the volunteer character of the Air Guard. Our people threw away the time clock and worked a tremendous number of hours to get that airplane into the air. They produced because they wanted to—not because they had to. It makes a difference.

On the basis of Lieutenant Smith's information, the flight initially was set up for January 4, or the first good day thereafter. We couldn't fix a firm date because we needed a day on which both terminals—Omaha and New York—would be open. On December 29, Smitty telephoned me and said January 2 was it. On December 30 I flew out to Los Angeles and the following day, Col. John Lerom, who commands the Maintenance and Supply Group in our wing, took the refueling crew to Offutt in our C-47.

A 1,000-foot ceiling and approximately one-mile visibility greeted me at Los Angeles International Airport the morning of January 2. This called for a time-consuming change in plan. Instead of taking off to the west, turning and getting a flying start past the official timer in the tower, I had to start the clock with a rolling start.

There's more truth than poetry in that old quotation about the best laid plans. As I neared what should have been the 90-degree position on Las Vegas radio, I called the GCI station and asked for a check on my position. With almost no hesitation, GCI reported, "You are twenty miles south of Needles." I almost jumped then. I should have been thirty miles north of Needles. I was getting a whiplash effect from a jet stream at the 40,000-foot level. I was hitting a quartering head wind and not even getting a quartering tail wind, which would have helped.

But the wind was not as critical as the fuel problem. On the trip from Washington to Los Angeles, I was using about 2,000 pounds of fuel per hour. Consumption on the flight shot up to 2,500 pounds per hour at 40,000 feet at a 100 percent power setting.

About forty minutes out of Los Angeles, my cockpit heat went out, fuel totalizer, and fuel flow indicator went out and, although I didn't know it at that time, my IFF set also had gone out.

All of the beautiful plans seemed to be dissipating. At the rate I was using fuel, it seemed improbable that I'd even make Omaha. What should have been a routine cross-country with plenty of fuel suddenly became a real project.

There were a few moments when I thought seriously of scrapping the venture. But I thought of the recruiting drive and all the people who had worked so hard to make it possible. Just the day before, Capt. Henry Combs and Sgt. Dick Baltrosky of our wing and I had telephoned from Los Angeles all over the country settling the final details.

Back at Andrews, Lt. Col. Joseph P. Myers, my wing exec, was coordinating the flight plans from his end. Capt. Jim Cuddihee of the New Hampshire Air Guard was in the tower at Floyd Bennett Field in New York. Colonel Lerom, Sergeant Evenden, and the refueling crew were waiting at Omaha. Utah and Wisconsin National Guard units were

(Continued on following page)

These are the "weekend warriors" who, told it'd take ten minutes to refuel an '86, did it in just over four.

standing by to sweep the drop tank areas. Lt. Gen. Leon Johnson, the CG of ConAC; Maj. Gen. William H. Abendroth, the commanding general of the District of Columbia National Guard, and a host of Air Force and Air Guard people were at Mitchel AFB along with newspapermen, photographers, and others who would publicize the start of the recruiting drive.

The fat was definitely in the fire. So I climbed to 45,000 feet and hoped for the best. At North Platte, with 207 nautical miles to Omaha ahead of me, I was down to 800 pounds of fuel. The aircraft seemed to be crawling through the air. At Grand Island I had 500 pounds with thirteen minutes to go. At Lincoln I was down to 150 pounds with forty-one miles to Omaha. I throttled back to idle, contacted the tower and reported that I might land in a flamed-out condition, and started my let-down.

Originally I had planned to land, roll to the end of the runway, refuel, and take off downwind. But the surface winds at Omaha had risen to about thirty knots and Colonel

Practice pays off. After months of rehearsal, ground crew "speedily and flawlessly" refuels Millikan's '86 at Omaha.

Lerom, shortly before I landed, made a rapid—and very wise—decision. He moved the refueling equipment to the opposite end of the runway. As a result I landed, rolled, turned around, and came back to the refueling point. This took time but I'd never have made it had we followed the original plan. As it was, I took almost 6,000 feet to get off.

From the very beginning, all of us concerned had agreed that success would hinge on the refueling operation. Our boys had dreamed up a variety of ideas for expediting the tip tank installation. They had worked out the procedures with diagrams and practiced hours on end.

At Omaha the refueling came off without a hitch. You'd think they did this sort of thing every day. I was not only impressed but convinced that our boys had come up with a technique that could be applied to the rapid shuttling of fighter aircraft whenever the need might arise.

From Omaha to New York I had real help from the winds. I did the Omaha-Chicago leg two minutes under my estimated time for the distance but I was still twelve minutes behind schedule. Approximately forty-two minutes after take-off, GCI called for the tip tanks to be dropped in Lake Michigan. I hated to see them go. There were about 420 pounds of fuel in the tanks but I had to drop them to get the speed I wanted. Since I had been shorted 500 pounds internally at Offutt due to an airlock in the internal tanks, fuel was really critical. I ultimately wound up 920 pounds short. But speed was more important than fuel at this critical point since I could beat the record only with speed. If I couldn't beat the record there wasn't much point in finishing the flight. After dropping the tanks I got the aircraft on a new step. With the tanks I had cruised at Mach .88 and .89. Without them I was able to cruise at about Mach .93 and .94. At the latter Mach, I hit Battle Creek, Toledo, and Youngstown on time. Then I realized that I had only 1,000 pounds of fuel remaining for 316 nautical miles.

Between Toledo and Youngstown the aircraft was really moving. My ground speed moved up to about 760 mph. At Youngstown I eased the throttle back to ninety-six percent. At Allentown I was down to 150 pounds of fuel and still had seventy-one miles to go. I pulled the throttle back to idle, put the airplane in a gentle, gliding dive and called Jim Cuddihee in Floyd Bennett tower with the news that I was seven minutes out with six minutes of fuel remaining.

It was a good thing Cuddihee was in the tower. Jim instructed me to make my pass at the tower, where the official timer waited, from west to east. This way, I did not have to alter course and use up precious fuel. With Cuddihee's guidance, I came by the tower at 500 feet at around 540 knots. When he called confirming that I had been officially clocked I pulled up.

As I climbed gradually, I opened the throttle and got to ninety-four percent when it flamed out at about 5,000 feet, indicating 340 knots. Although I was scheduled to continue on to Mitchel, I had to make a dead-stick landing at Idlewild, ten miles closer to Floyd Bennett than Mitchel.

I set course for Idlewild and planned to land on Runway 22 but a commercial airliner getting ready for take-off caused me to switch to Runway 19 at the last minute.

There was no panic connected with the landing, since there was plenty of time to get ready for it. Psychologically, I had three and a half hours to prepare, because all across the country I knew I would be short on fuel, and the possibility of flame-out landings was present all the time.

When I got to Mitchel, after taking fuel aboard at Idlewild, newspapermen asked a lot of questions about the flight. One concerned the top speed I hit. I replied that 760 statute miles per hour ground speed was the high point. This later came out as 850 mph—how I'll never know.

Chopping only five minutes off an eight-year-old record may not seem important but Colonel Councill set a tough record to beat. True, his F-80 carried no armament and had special fuel tanks. He had a tremendous tail wind and flew non-stop. Landing en route for fuel really complicates a record attempt since your average speed takes such a beating. But consider that he accomplished the feat when jets were comparatively new. To my mind, he did a magnificent job.

My flight, I believe, served several useful purposes. In the first place it did call attention to the ANG recruiting campaign and, after all, we are trying to get up to programmed strength ahead of schedule. I think it helped to point out that, given first-line equipment, the Air Guard can serve as an extremely valuable adjunct to the Regular Air Force. Certainly, the refueling operation at Omaha showed that our Air Guardsmen are skilled performers.

There was a tremendous amount of coordination and teamwork required to make the operation a success. Personally, I wish we could have cut much more than five minutes off the old record after all of the effort that went into the flight. But we did make it and that was the whole idea from the very beginning.

You can't fly across the country alone. You need what I had—the Air Force and the Air National Guard, working together as the team they are.—END

ARS "choppers" more than earned their keep in Korean rescues.

'THAT OTHERS MAY LIVE'

In airplanes, helicopters, boats, jeeps, and on snow shoes, the Air Rescue Service has saved 15,000 lives in seven years

AN AMERICAN Air Force sergeant, on duty in a hut on the bleak and lonely coast of Greenland one fall morning, suddenly snatched off his radio headphones. "Distress call!" he yelled.

Fifty pilots, navigators, engineers, radio operators, and survival experts went into action. A fishing boat in trouble in the Arctic had asked for aid, and these members of the US Air Force, living just a short hop from the Pole, were ready to risk their own lives to save the crew.

That same week another American radio operator, sweating it out at an Air Rescue Service post on a blistering Arabian desert, picked up a faint signal which told him that a small plane had cracked up less than 100 miles away. He sounded the alarm. Within minutes a search plane took off, followed by a helicopter. The plane spotted the wreck, gave its location to the helicopter. With an Air Rescue doctor aboard, the helicopter picked up the injured British pilot from beside his crashed plane and flew him to the nearest hospital.

Every day, somewhere around the world, these highly skilled, well-organized life savers of the air are going about their delicate and dangerous errands of mercy. The forty-six units, called Squadrons, are divided among eleven Groups scattered from the tropics to the polar seas, from the Persian Gulf to Alaska. Wherever they are, they are ready, every hour of the day or night, to help men, planes, or ships in trouble.

By Karl Detzer

More interested in action than in statistics, the Air Rescue Service has not kept track of the exact number of lives it has saved since it was organized in 1947. A conservative estimate would be 15,000, and the figure grows day by day. Of these, nearly 10,000 were in or near Korea. There the rescue planes and helicopters evacuated the more seriously wounded from the front, pulled UN air crew men out of the sea, and under enemy fire snatched to safety nearly a thousand allied fighting men trapped behind enemy lines.

[For such "distinguished service to airpower in the field of flight," the

(Continued on following page)

Air Force Association, at its last Convention in Washington, D. C., presented its annual Flight Award for 1953 to the men of the Third Air Rescue Group. In the Korean war this unit flew more than 16,000 sorties and became the most highly decorated air unit of the war.—The Editors.]

The 6,000 daring, ingenious youngsters who make up the Air Rescue Service, together with veteran pilots and medical parachutists, have undergone rigorous training in survival schools that teach them how to live through extremes of weather and exertion, how to conquer fire and flood, how to overcome deep snow, pack ice, hurricane winds, the desert sun, thirst, starvation—and Communists. They are an elite corps, each man picked for stamina, alertness, and agility. Above the door of every headquarters shack in all the far-flung outposts, is their slogan: "That Others May Live."

The exact number of airplanes and helicopters, boats and land vehicles used in these benevolent operations is a military secret. Of planes and helicopters, there are more than 300 used in rescue work. They range in size from small search planes able to climb in and out of narrow valleys, to huge bomber types with thirty-foot lifeboats clinging to their bellies, ready to be launched by immense parachutes. The larger helicopters may carry a dozen men.

The parachute boats are of metal or plywood, with engines that drive them up to nine miles an hour. Some boats have a cruising range of 500 miles. Depending on their size they can carry fifteen to thirty survivors, are stocked with kits that de-salt sea water, food to last up to 360 man-days, blankets, first aid chests, radios, maps, heavy weather clothing, fishing tackle, and Bibles.

Among the ground crews are experienced mountain climbers, "desert rats," men accustomed to the jungle and the Arctic. With jeeps and amphibious vehicles, and sometimes afoot, they travel overland to points no airplane or helicopter can reach. But before a ground crew gets to the scene of a disaster, Air Rescue Service medical service corps experts and technicians, with blankets, water, food, surgical and medical supplies, often have parachuted to the exact spot where they are needed.

Some of the most daring exploits of the Korean war were performed by Air Rescue Service men. Typical is the story of Capt. John J. Najarian, a black-eyed, 29-year-old Californian, and his four-man crew one dark evening in June 1951. They were the alert crew and were eating supper when the alarm sounded.

Capt. Kenneth Stewart, a fighter pilot from Covington, Ky., had abandoned his damaged plane and parachuted into the Taedong River, behind enemy lines. Other pilots had seen him splash into the water and inflate his life raft. Communist troops opened fire on him from both banks. He ducked under the raft and darkness closed down on the water.

Back at the Air Rescue station, Najarian and his co-pilot, navigator, radio operator, and engineer raced to their big twin-engined amphibian and roared into the air. They found Stewart's buddies still circling their planes over the dark Taedong, trying to break up Communist ground fire from the river bank. One of the circling fighters turned on his landing lights and dived toward the place Stewart had last been seen. Najarian followed him down. When the fighter swung back, several hundred feet above the water, the Rescue ship continued to nose down and splashed into the river.

The enemy responded with even heavier fire. Stewart abandoned his raft and, signaling with his tiny pencil flashlight, swam toward the amphibian. Najarian raced his plane to meet him. The crew dragged the weary, waterlogged flyer aboard, Najarian gunned his engines and the big ship took off. It was a Grumman SA-16 Albatross, a fourteen-ton flying boat with a hull sixty-two feet long and a wing-spread of eighty feet. The water was only six feet deep, with many sandbars, and the hull of the plane drew five and a half feet. Moreover, the river lay at the bottom of a valley ordinarily too narrow to maneuver a plane of this size. But skill and luck got it out of the valley and it sped for home with flak breaking all around, above, and below it.

An ARS team parachuted in to save Mrs. Gene Jack and her baby, snowbound in an Idaho mountain pass.

Back at headquarters, Najarian nonchalantly chalked up another "routine mission" on the blackboard and finished his supper. Less than a month earlier he had landed and taken off among seven-foot waves in the sea north of Japan to rescue the crew of a plane that had crashed into the ocean.

The Air Rescue Service went into fast action in 1951 when the Kaw and Missouri Rivers flooded and isolated thousands of Kansas farmers and villagers. Crews, planes, and equipment were rushed from California, Colorado, Washington, Massachusetts, Texas, Alabama, and Michigan. The surface was full of floating debris but big converted bombers dropped lifeboats and a score of liferafts. In only one of the boats did anyone take time to count the number of rescues: this boat saved 439 persons, mostly women and children. Slower moving helicopters followed the planes into the flood area, and windmilling their way across the wide waters picked survivors off roofs and the tops of trucks and cars. Cargo planes parachuted

Rescue planes rushed to aid victims of the 1951 Kansas floods. At right, a Grumman SA-16 dropped supplies and rafts.

200 tons of food, blankets, and medical supplies to isolated high points where victims huddled above the flood.

The life savers of the Rescue Service have gone to the aid of sailors, soldiers, airmen, and civilians of more than a dozen nations. Even the Iron Curtain does not halt their mercy flights. Last year when a Czech airliner was overdue on a hop from Rome to Athens, American Rescue planes took off from both Germany and Africa to assist in the search. It was an American crew that found the wreckage on a Greek mountainside, but no survivors.

In April 1950, in the Atlantic forty miles north of Kingston, Jamaica, an Air Rescue Service plane discovered four Jamaicans on a rubber raft, tossed by giant seas. Unable to land on the stormy surface, the plane called for help and directed a surface vessel to the spot. The Rescue crew circled over the raft, homing the naval vessel in, until the last survivor was safe aboard.

Early in 1952 a Dutch KLM airliner with sixty-six persons aboard crash-landed in the desert twenty miles from the air base at Dhahran, Saudi Arabia, near the Persian Gulf. Twenty minutes later an Air Rescue team parachuted to the hot sand close to the plane, bringing first-aid equipment. In ten more minutes a doctor stepped out of a helicopter, carrying blood plasma and his surgical kit. Ambulance jeeps came next, with Air Rescue and other Air Force ground teams. None of the passengers had been seriously injured and all were on their way to Dhahran within two hours.

One of the most difficult and dangerous tasks ever undertaken by the Service ended happily in September 1952 off the northern end of the Greenland ice cap. A British RAF Hastings bomber had flown up over the ice cap to drop supplies to a scientific expedition. From a distance the waiting scientists saw the bomber crash and radioed for help.

The Air Rescue Service squadron based at Thule, northernmost US Air Base, picked up the distress call but due to frightful Arctic weather could not respond for two days. Snow-laden gales kept the planes on the ground. Meanwhile the scientists made their way across the ice to the wreck, found the crew of eight still alive but all hurt, some of them critically. They could not be moved, so the smashed airplane was converted into a first-aid station and victims and rescuers waited for help.

At the first break in weather, supply planes took off from Thule and dropped medical equipment, blankets, and food by parachute. These planes were not equipped for snow landing. Close behind them came a rescue triphibian equipped with keel skid and skis and four JATO bottles to aid in take-off. It landed on the snow-covered ice cap, took aboard the three most seriously injured, two British and one American, and flew them to the hospital at Thule. Two days later, good weather permitting, a C-47 on skis landed and took off the remaining survivors.

Sikorsky H-19 helicopters also figure in Air Rescue operations. In 1952 two spanned the Atlantic. They hedge-hopped from Westover AFB, Mass., the 3,000 miles to Wiesbaden, Germany. Above "Hopalong" and "Whirlaway" warm up in Greenland before a 770-mile, over-water leg of their record journey.

The Rescue medical hero of heroes in the Korean zone was Lt. Col. John C. Shumate, a parachuting Medical Service Corps officer from Little Rock, Ark. On the front and behind the enemy's front, this cool-headed, clear-eyed medical man repeatedly landed by helicopter, and, with Communist bullets kicking up the earth around his feet, saved the lives of United Nations soldiers.

When a British fighter pilot crashed 125 miles north of the front one afternoon in 1950, Shumate took off in a helicopter with Capt. David C. McDaniels as pilot. For more than an hour and a half they windmilled their way over enemy territory, drawing occasional hostile fire, until they spotted the crashed plane.

"Let's get down there," Shumate said and the pilot brought his ungainly ship to earth beside the broken fighter. Shumate jumped out, with Communist slugs snapping past his head, lifted the injured Englishman out of his plane, carried him to the helicopter. As they took off, Shumate went to work on the badly hurt pilot. Flak bloomed in black puffs around the "chopper" as it made its way back to the American lines, with the "doctor" administering blood plasma and ignoring enemy fire. The downed pilot lived. This was only one of the scores of daring, lifesaving excursions made by the "doctor" from Little Rock.

Another medical officer, nameless in the records at Washington headquarters, fought and won a desperate battle against time, immense snowdrifts, high winds, and cold in Idaho's Sawtooth Mountains in January 1951. Word came to the 43d Air Rescue Squadron, at McChord AFB, Tacoma, that a woman and child, both critically ill, were marooned alone in a snowbound cabin far up an Idaho mountain pass. A gale was blowing and snow falling so fast that no airplane dared take off to search for the lonely cabin. So a ground team was organized and started its climb within the hour. It carried a portable radio as well as food and medical supplies. After a few miles it sent back word that it was floundering in shoulder-deep drifts, would never make the cabin.

Just then the snow clouds parted and the doctor at the airbase called for volunteers. In a few minutes a

(Continued on page 44)

EDUCATION—BULWARK FOR PEACE AND WAR

At Maxwell Field's Air University the Air Force trains its junior and senior officers for the conflict that it hopes will never come

By Everett E. Dodd

"QUIET," said the colonel. "They can hear us on the other side. They'll know they're being watched."

The "other side" was a brilliantly lighted room, bare of furniture except for an oblong table, the kind found in a board of directors' conference room. On one wall was a huge mirror.

In the room a well-built man, wearing only a pair of shorts, stood on tiptoe, about three feet from the wall. His arms were outstretched behind him. His fingertips just touched the wall.

"He's a captain," said the colonel.

There were four other men in the room. Their uniforms looked Russian, shoulder boards and all. Among themselves they spoke Russian or Polish. To the captain they used English.

One strutted over to the captain, puffing a huge cigar. He blew the smoke into the captain's face. Suddenly he screamed, "Where was your first contact? Get back on those toes. Higher. H-I-G-H-E-R, I said, H-I-G-H-E-R! How many men in your crew? What was your position?"

Inquisitor followed inquisitor. The tactic changed but the harrowing continued. "Lie down!" The captain's perspiring body quivered as it touched the cold concrete. "Put your arms flat against your sides. Now roll over." It's a good trick. Try it.

Back and forth across the floor, five, ten, twenty times, and more, they forced him to roll. Finally they ordered a guard to "take him out and run him awhile. Then maybe he'll talk."

"A couple of days ago one of 'em collapsed," said the colonel.

Only the thickness of the one-way mirror, the one on the wall of the brilliantly lighted room, separated us from the perspiring captain and his questioners.

"Don't light a cigarette," a sergeant warned us. "They'll see the glare."

It was like a scene from Koestler's *Darkness at Noon*. This was one phase of the Squadron Officer Course (SOC) conducted at the Air Force's Air University at Maxwell Air Force Base, Ala. It was the windup to Tiger-trek. The captain being questioned had been "captured" earlier in the evening and was now enduring the first of many hours of interrogation.

Through the one-way mirror we could see everything, much as an interne follows an operation from a hospital's operating room gallery. Only these interrogators were operating on human emotions, frailties, and fears. They were experts—an Air Defense Command interrogating unit from Lowry AFB, Colo.

This was a partial answer to a question raised in AIR FORCE Magazine in November 1953:

"Any steps toward solving the intrinsic problem of behavior after capture will be a big contribution to the over-all combat efficiency of the Air Force. It is understood that such steps are being taken. . . ."

"Behavior after capture" is only one of the "steps being taken" by the Air University to better train the Air Force's young officers. And the training is not limited solely to squadron officers, for the Air University also conducts a Field Officers' Course, the Air War College, the USAF School of Aviation Medicine, USAF Institute of Technology, USAF Extension Course Institute, and the Air Force Reserve Officers Training Corps. And there are other facets to AU's complex curricula: specialized staff courses in logistics, communications-electronics, comptroller, judge advocate, academic instructor, intelligence, air weapons, and air weapons orientation.

The Air University was established in March of 1946 with the late Gen. Muir S. Fairchild as commanding general. Since then, AU—one of the world's largest universities—has graduated nearly 20,000 students. Counting its AF-ROTC program, extension programs, and classes conducted at its various schools, AU will come in contact with more than 200,000 students this year.

Air University trains officers, not for tomorrow's war, but the day after tomorrow's. In the words of Lt. Gen. Laurence S. Kuter, commander of AU, "we are developing officers here for the war of 1967." When asked, "But what if war comes this year, or next?", Kuter points out that "by and large the formula for war in the near future has already been determined."

General Kuter realizes the tremendous responsibility that falls on him and his subordinates. The Air Force cannot afford to leave a thing to chance. And Kuter isn't the type to chance errors.

In a small room on the second floor of the Kuters' quarters is a table. On it is an impressive array of firearms—rifles, shotguns, pistols.

A sign on the table says: "These guns are loaded."

"Are they really?", a visitor once asked.

"I really don't know," Mrs. Kuter replied. "But I do know I never touch them. Not even to dust them. Larry says that every gun should be treated as if it were loaded."

The every-gun-is-loaded philosophy motivates a large part of AU's thinking. And that there is "need for plenty of heavy thinking within the Air Force" is an opinion registered by retired USAF Chief of Staff Hoyt S. Vandenberg. At the same time General Van said AU is about the only place "where serious thinking can be done without continuous interruptions."

As originally set up in 1946, AU wasn't meant to fill the Air Force's need for a separate academy, like West Point or Annapolis. That need still exists. Rather, the Air University is a graduate school. Unlike the two service academies, the students at AU, with the exception of AF-ROTC cadets, are already officers. Many of them do not have college degrees. For example, in the Field Officer Course (FOC) of the Air Command

(Continued on page 36)

The AIR UNIVERSITY

HEADQUARTERS
Maxwell AFB, Ala.

1 
Commander
Lt. Gen. Laurence S. Kuter

2 
Deputy Commander
Maj. Gen.
Dean C. Strother

3 
Inspector General
Lt. Col.
Robert N. Wilkinson

4 
Judge Advocate
Col. Wendell C. Dreier

5 
Surgeon
Col. Frederick J. Freze, Jr.

6 
Chaplain
Col. Robert P. Taylor

7 
Chief, Office of Information Service
Lt. Col.
William B. Abbott, Jr.

8 
Educational Advisor
Dr. James C. Shelburne

9 
State Department
Theodore J. Hadraba, Esq.

10 
Chief,
Army Advisory Group
Col. Miller O. Perry

11 
Chief,
Naval Advisory Group
Capt. Kenneth Craig

12 
Royal Air Force
Liaison Officer
Group Capt.
M. W. S. Robinson

STAFF POSITIONS

13 
Director of Administration
Col. Clinton W. Davies

14 
Director of Education
Brig. Gen.
Dale O. Smith

15 
Chief of Staff
Col.
Ladson G. Eskridge, Jr.

16 
Adjutant
Lt. Col.
Thomas R. Saunders

17 
Commander,
Hq. Sq. Sect.
Maj. William H. Solomon

18 
Air University Secretary
Col.
William H. Frederick, Jr.

19 
Deputy C/S —
Comptroller
Col. George E. Brown

20 
Deputy C/S —
Personnel
Col. Kenneth K. Golledge

21 
Deputy C/S —
Plans & Operations
Col.
Theodore R. Aylesworth

22 
Deputy C/S —
Materiel
Col. John N. Reynolds

23 
Commandant,
Air War College
Maj. Gen.
Roscoe C. Wilson

24 
Commandant,
Air Command
& Staff School
Brig. Gen.
Lloyd P. Hopwood

25 
Commandant,
USAF School
of Aviation Medicine
Brig. Gen.
Edward J. Kendricks

26 
Commandant,
USAF Institute
of Technology
Maj. Gen.
Ralph P. Swofford, Jr.

27 
Commandant,
Air Force ROTC
Brig. Gen.
Matthew K. Deichelmann

28 
Commandant,
USAF Extension
Course Institute
Col. Merrill A. Kempton

29 
Director,
Research Studies Institute
Col. Wilfred J. Paul

30 
Director,
Air University Library
Dr. Jerrold Orne

31 
Commander,
3800th A. U. Wing
Col. James G. Pratt

32 
Commander,
3894th School Group
Col.
Charles W. Johnstone

An ***AIR FORCE*** Magazine Chart
(Corrected as of January 20, 1954)

and Staff School (ACSS) less than twenty-five percent of a recent class—ranking from major to colonel—held baccalaureate degrees.

In many respects AU is balm to the growing pains the Air Force suffered during and after WW II. Many officers then commissioned had little or no undergraduate education. Yet many were rapidly promoted. AU is one of AF's attempts to bridge this educational gap.

It is unique among educational institutions. As Dr. James C. Shelburne, AU's Educational Director (see chart), points out, "for the first time in military history, a major military entity was created and given sole responsibility for the professional education of officers and with no diverting tasks." AU has no counterpart in the other branches of the military service, and none in the air forces of major foreign countries.

Montgomery, Ala., site of the headquarters of Air University, was the home of the AF's pre-World War II Air Corps Tactical School. From ACTS, AU inherited its present motto: "We Progress Unhindered by Tradition."

Even so, tradition plays an important role in the ten-week Squadron Officer Course, the successor to the old Tactical School. This course for junior officers—lieutenants and captains—has as one of its most vociferous patrons Col. Russell V. Ritchey.

"I have to watch myself when I visit the SOC area," says even General Kuter. "The enthusiasm there is so contagious I'm liable to lose my perspective."

Ritchey, a cherubic-looking Scotsman, has been with SOC since its inception in 1950. Currently he is assistant commandant of Air Command and Staff School.

An unabashed admirer of British staff methods and military traditions (he was USAF liaison instructor to the RAF Staff College, 1949-50), Ritchey believes that much of the morale problem in junior officers could be solved if an officer could identify himself with a specific unit. SOC is steeping its students with the idea of stressing unit identification.

"What is probably needed in the long run," says Ritchey, "is a new numbering system for Air Force units. Then we should rigidly adhere to that system, so that units can maintain their integrity."

During the year 2,800 junior officers will graduate from the Squadron Officer Course. They represent every major Air Force command plus the North Atlantic Treaty Organization countries. Unlike the Field Officer Course, the Squadron Officer Course stresses physical conditioning along with its academic courses. Its physical training and field courses emphasize teamwork. Each instructor is a member of his section's team. In touch football he must play at least half of each game, the better to evaluate his students for leadership.

Each of the sixty-eight sections in a SOC class has twelve students. Each section instructor becomes an ex-officio student in his section. To foster pride in unit, all members work as a team. In class and out, for the two and one-half months of their course, they are closely associated. In competition with other sections, whether in academics or team sports—touch football, soccer, pushball, softball—aggressive spirit is the keynote.

SOC students even maintain their own officers club, apart from the main club. Women aren't allowed. "After all," said one officer, "if the boys want to use some juicy language after a galling day, they shouldn't have to look over their shoulders."

There are also the "Dining Ins." These are formal dinners, patterned after the traditional "Dining Ins" of the more famous British regiments. They are held at the main club; students and SOC staff officers come formal. Toasts are drunk—each has his personal silver drinking cup, engraved with name and class number—to the United States, its President, and honored guests.

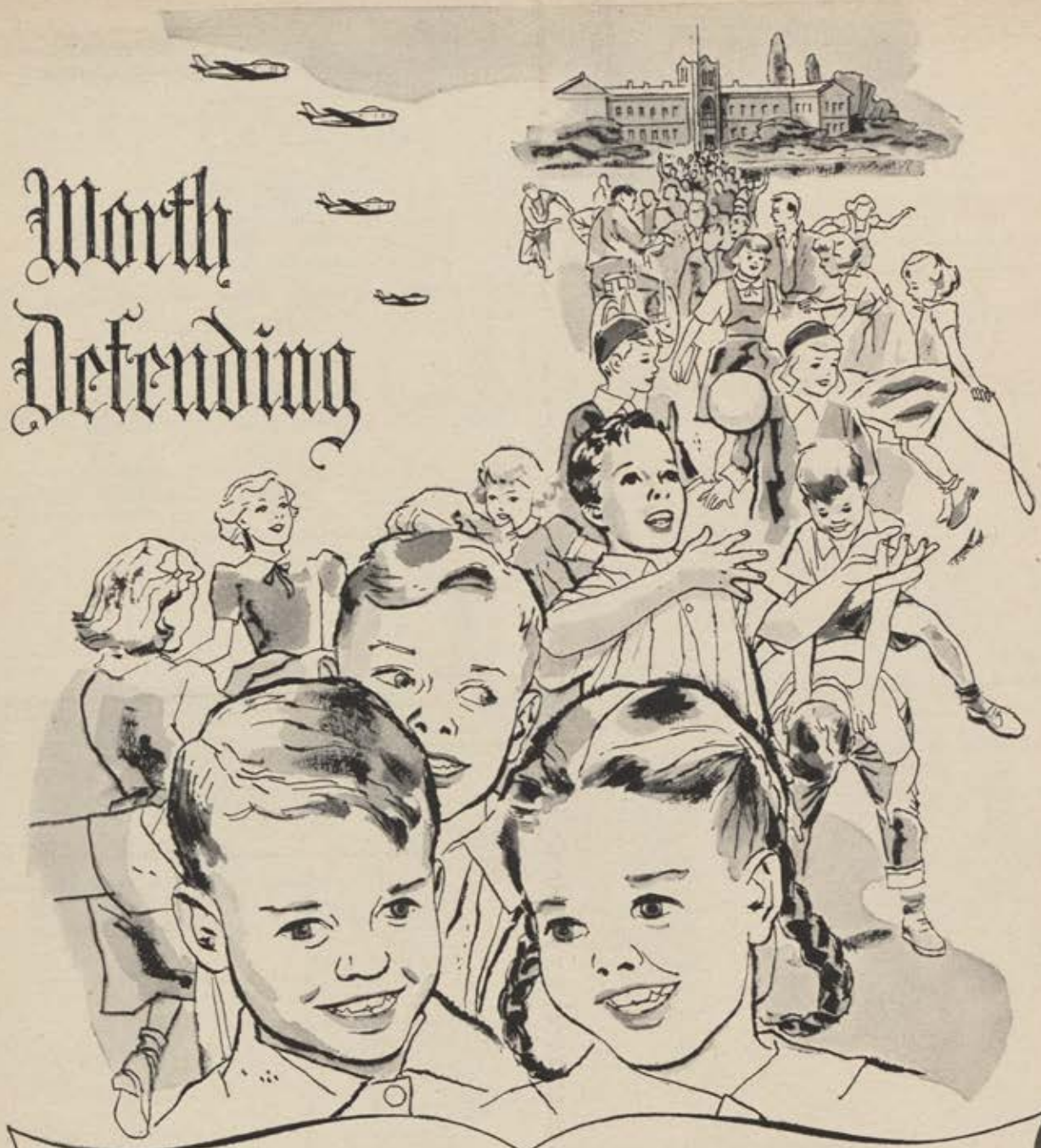
The kind of esprit de corps developed within the student sections is most manifest on Tiger-trek.

Dropped off on the outskirts of Maxwell, students are told to find their way to "safety." It's presumed they're in enemy territory and underground methods are used. Contacts and passwords are given. They must find their way over ten miles of Alabama countryside, eluding alerted MPs and student search parties. If captured, they're returned for the rigorous interrogation.

It is a point of pride not to betray

(Continued on page 39)

At the Arlington graveside of Gen. Muir S. Fairchild, first commandant of the Air University, Lt. Gen. L. S. Kuter, present commander, pauses reflectively. Kuter's command, although seeded in the past, has its eyes on the future.



THE LIVES OF OUR CHILDREN . . .

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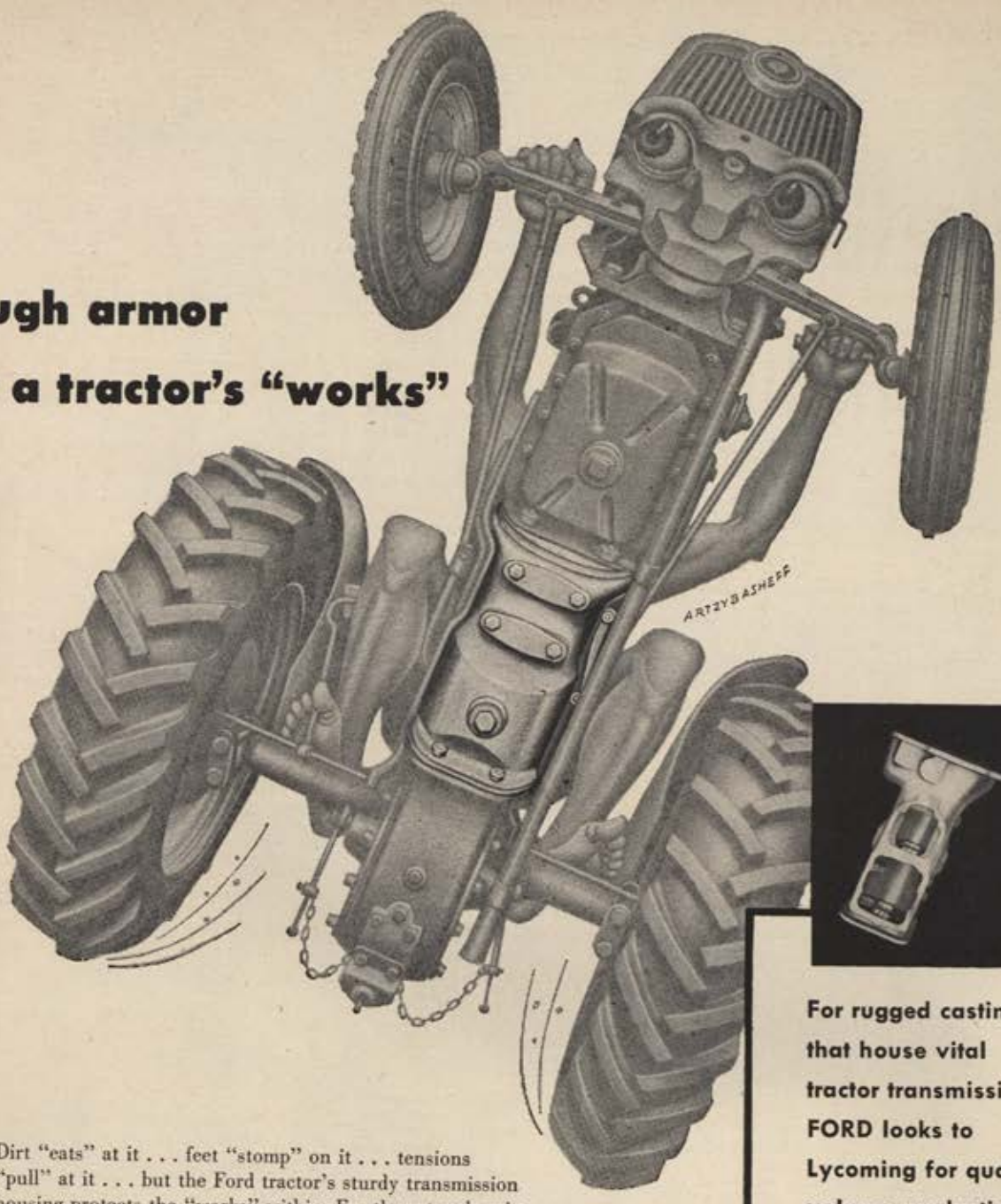

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your comrades during interrogation. The interrogation team doesn't know the escape plan. Like the students, they are performing an exercise, one that might someday be the real McCoy if Red Air Force crews ever parachute into this country.

Col. Jack Jenkins, a World War II P-38 pilot and commandant of the Squadron Officer Course, says "no holds are barred except, of course, physical contact." Jenkins knows a little about interrogation himself. He was shot down over Germany and questioned by the Luftwaffe.

"Does the interrogation team ever find out the escape plan?" Jenkins was asked.

"They never miss. They'll piece the bits of information together like a jigsaw puzzle, until the picture falls together."

The grueling examinations are realistic, even though Tiger-trek captives know they're among friends. Some break under the questioning. "I'll never know what happened," said one "captive" who "confessed."

In fairness to the interrogation unit, it must be explained that their bullying tactics are for the students' benefit. Their questionings are rough. But the USAF isn't resorting to MVD or Gestapo methods. One interrogator, 1st Lt. Gretl Jacobs, and a student of SOC, summed it up this way, "you don't get intelligence from a dead man."

And Lieutenant Jacobs is a veteran of interrogations. A member of the Vienna underground, she was arrested by the Gestapo and spent more than a year in a concentration camp. She came to the US in 1948 and taught language at Boston University prior to enlisting in the WAF.

The climate that pervades the Field Officer Course, the senior school of Brig. Gen. Lloyd P. Hopwood's Air Command and Staff School, is startlingly different. The sandy-haired, freckled commandant of AACS would be the first to admit it. The exhuberance of the junior officers is understandably missing.

SOC takes its students—already officers from the academies, AF-ROTC, OCS, and the aviation cadets—and kneads them more into the officers' mold. FOC takes them and molds them to be commanders. Whereas approximately eighty-five percent of SOC's students are Reservists, more than fifty percent of those attending FOC are Regulars.

Twice a year the twenty-two-week course is conducted. At FOC majors, lieutenant colonels, and colonels spend their academic hours dissecting problems of higher echelon staff work. Their work, unlike SOC, deals with units rather than individuals.

To attend the Field Officers' Course, an officer must have at least ten years of service and be under thirty-eight years old. Classes are separated into wings, groups, and sections. Each section corresponds closely with a wing staff. Students are given simulated staff problems and told to solve them. Each takes his turn at serving in different capacities—commander, intelligence, operations, supply, and personnel.

The senior school of the Air University, and the USAF, is the Air War College. Its students are senior officers of fifteen to eighteen years' service in the lieutenant colonel or colonel ranks. Commandant of the Air War College is Maj. Gen. Roscoe C. Wilson.

The War College course is ten months long, and is largely conducted by lecturers invited in from the business, educational, or professional world. Its students concern themselves with formulating, compiling, and recommending airpower doctrine.

Like the lower courses, the Air War College draws its students from all branches of the defense establishment—Army, Navy, and Marine Corps—plus representatives from the State Department, CIA, the RAF, and the RCAF.

Just a few minutes ride, but fifteen to eighteen years away from the Air War College, is AF-ROTC headquarters. It is the largest division of AU, and affects, this year, approximately 125,000 college students in 188 colleges, plus a unit in Hawaii and another in Puerto Rico. From AF-ROTC's advanced program will graduate future students of the Air War College.

AF-ROTC, under the command of Brig. Gen. Matthew K. Deichelmann, colors the future USAF. In Deichelmann's words:

"The urgent need of the USAF for top quality young men . . . can be met only through its officer training program. Of these, eighty percent are planned to be furnished through AF-ROTC beginning in 1955."

After only seven years of operation AF-ROTC is now a mature, accepted part of college campus life. Dr. Harry D. Gideonse, president of Brooklyn College and unaccustomed to paying lip service, told General Deichelmann, "The results achieved by our AF-ROTC in [two years] are

(Continued on following page)

AIR UNIVERSITY—CONTINUED

a real credit to all those responsible. . . . I think, however, that of even greater significance is the attitude of responsible citizenship on the part of AF-ROTC cadets that is affecting most favorably the whole campus community."

Although it has headquarters at Maxwell, AU has educational tendons at Wright-Patterson AFB, Dayton, Ohio; Randolph Field, San Antonio, Texas; and Gunter AFB.

Gunter, just across the city of Montgomery from Maxwell, is headquarters of USAF's Extension Course Institute and administers the AU's correspondence courses. It provides correspondence instruction to more than 70,000 AF personnel throughout the world.

At Randolph AFB, Tex., is the USAF School of Aviation Medicine. From Air Force bases all over the world come flight surgeons and nurses to study at the school of medicine.

Experiments at the school of medicine probe into man's reactions to high altitude, into how environmental conditions affect a man's usefulness to the AF, and other problems of psycho-medical origin that are forever arising in the vast complex that is the USAF.

The USAF Institute of Technology at Wright-Patterson AFB, Ohio, conducts graduate courses in aeronautical, armament, electrical, and nuclear engineering. Courses are also held in industrial and engineering administration. In addition, it administers the Civilian Institute Program, which sends more than 2,000 officers to various universities throughout the country to study in fields of learning required to operate the vast USAF.

"Military education, formal military education," says Brig. Gen. Dale O. Smith, director of education at AU, "has always had tough sledding. . . . The profession of arms is the last that has succumbed to the classroom. Yet, the absence of military education seems to correlate with national disintegration and chaos."

That AU is trying to prevent this national "disintegration and chaos" is obvious. After talking with its administrators, instructors, and students, one realizes that perhaps Gen. Hoyt S. Vandenberg's words to educators at an AF-ROTC conference are not so wild a dream: "We seek two kinds of men, or better still, several kinds of men wrapped up in one —another Oliver Wendell Holmes, Jr., another Winston Churchill."—END

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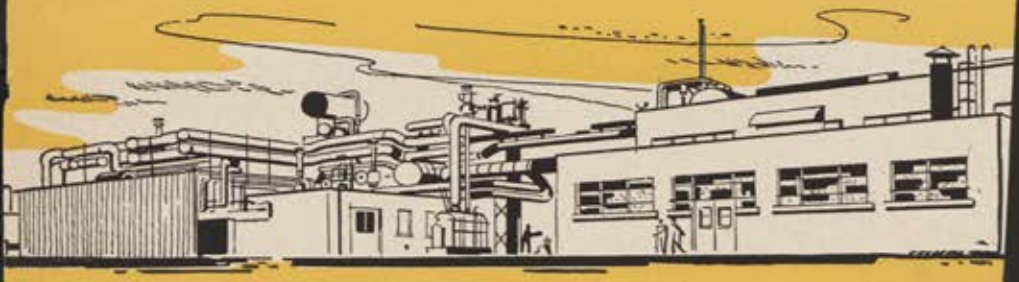

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dium at Kill Devil Hill—only sand and grass-covered hills. The National Seating Co. brought 1,800 bleacher seats from Washington to Kitty Hawk. Even so, 13,000 visitors had to stand on the final day.

So the crowds could hear the speakers the Taylor Radio and Electrical Co. blanketed the area with microphones and speaker horns. The spectators could even hear pilots talking from eight miles up.

The rest of the world had to be reached through newspapers, newsreels, radio, and television stations.

A news room was set up in the Carolinian Hotel. A. W. Drinkwater, famous telegrapher of early news stories about the Wright flights, and Aycock Brown, free-lance newsman and manager of the Dare County Tourist Bureau, asked Western Union for equipment. Two machines were installed and a four-man Western Union team, headed by District Manager E. A. Stroupe, filed copy. Stroupe's official report said that the newsmen filed 75,609 words during the four days.

A Civil Air Patrol plane flew newsreel and television film footage to Norfolk, Va., daily, connecting with National Airlines' New York flight. On the final day, a special plane flew film non-stop from Kitty Hawk to New York's LaGuardia Field, in time to hit the weekly newsreel make-up and six p.m. TV newscasts.

In adding up the results, the record shows that 14,900 persons witnessed the $19,000 celebration. Newspapers from Kitty Hawk to Brisbane, Australia, carried front-page articles on it. Hundreds of theatres flashed it on their screens. And every national radio and television network broadcast it to millions of persons. Two great Americans had been honored for one of man's greatest achievements.

The Air Force Association is proud of its part in helping plan and stage this celebration. This kind of thing is part of AFA's mission—to acquaint the public with airpower. As we watched plans turn into action, our greatest moment of satisfaction came when the following paragraph appeared on the front page of one of the newspapers covering the event:

"Chief topic of conversation . . . was the manner in which those in charge have taken care of all the details for scores of newspapermen, photographers, TV workers, and newsreel men. They've done everything for us except breathe."—END

4 major developments in TEMCO's rapid growth

PRODUCTION — TEMCO early built a reputation for airframe production of high quality, on schedule, at lowest possible cost. In its Dallas and Garland plants, TEMCO is producing major components for Martin, Lockheed, Consolidated, Beech, McDonnell and Boeing. One current subcontract is Boeing B-47 Stratojet tail assemblies, shown above.

OVERHAUL — Another major TEMCO activity has been aircraft overhaul and modification for the armed services. Today, assembly-line rehabilitation of multi-engine aircraft is an important, growing service both at the Dallas and Greenville plants. A current project at the Greenville plant is the Air Force C-97 Hospital Ship conversion, illlustrated above.

BASIC DESIGN — In recent years, TEMCO has placed additional emphasis on new design of its own. New military aircraft such as the Model 33 PLEBE trainer, illustrated above, now being evaluated by the U. S. Navy at Pensacola, Florida, are evidence of the company's development policy.

RESEARCH AND DEVELOPMENT — TEMCO'S expanded engineering staff is working on many new military aircraft projects of advanced scope. Modern facilities, such as the well-equipped engineering research laboratory above, help TEMCO designers solve complex military aviation design problems.

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AIR RESCUE——CONTINUED

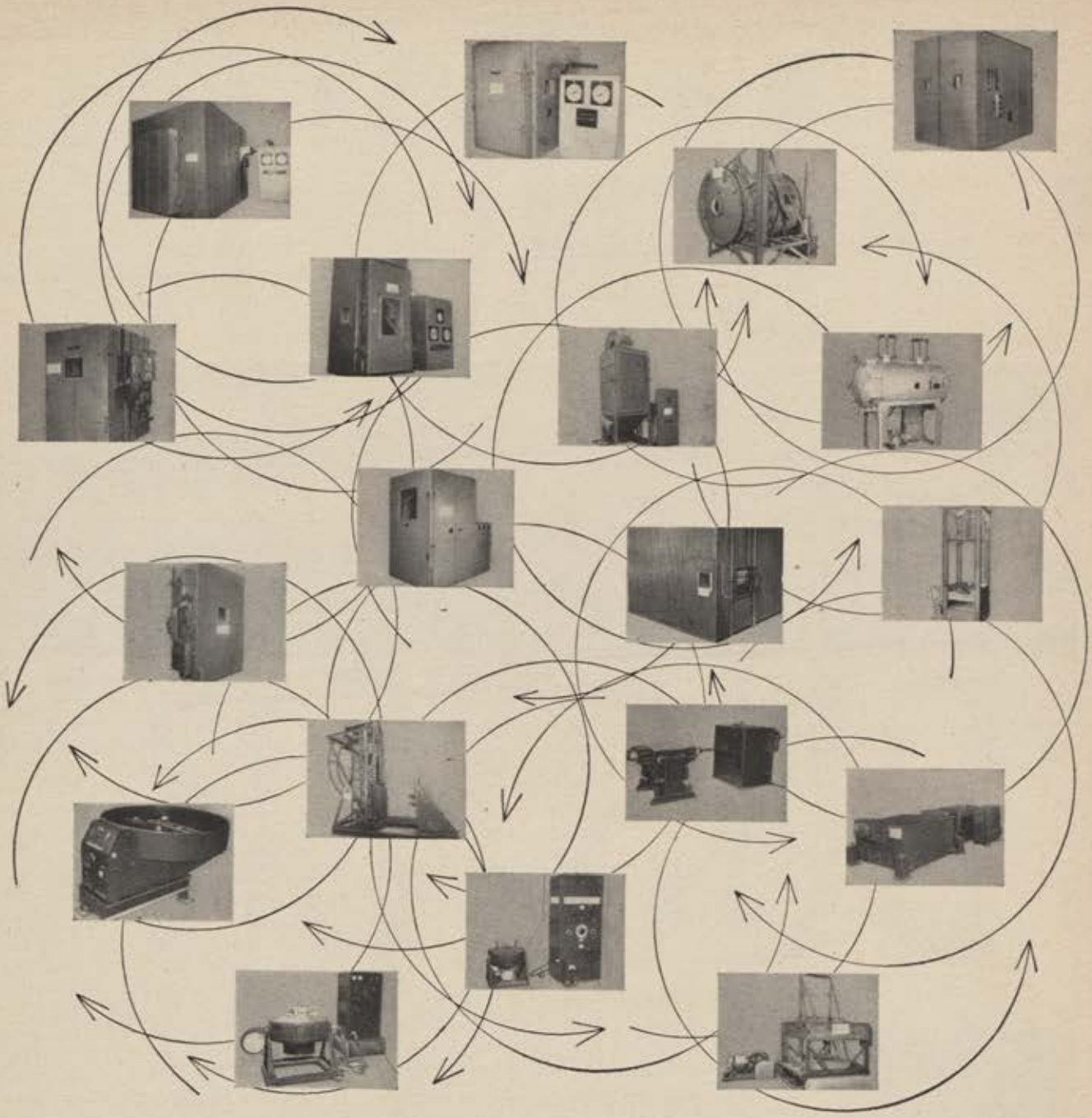
plane was aloft and fighting its way out of downdrafts and tricky mountain winds. The doctor and his medical technician, Staff Sergeant Robbins, buckled on their parachutes as they flew, Suddenly through a break in the storm the pilot spotted the cabin. The doctor and technician jumped, taking their medical equipment and supplies down with them.

Mother and child were barely alive and the rescuers went to work, giving restorative treatment. When the immediate danger had passed, the doctor and technician took turns attending the patients in the cabin and smoothing a landing field in the snow outside the door. Using boards from an old shed they marked its boundaries and on their portable radio asked for a helicopter. A Sikorsky H-5 arrived with the slackening of the storm. The two patients were taken aboard and flown to a hospital.

Halfway around the world, in the Persian Gulf, the British launch *Trucial Maid of London* went aground in a storm and was threatening to break up. Surface craft, unable to approach it to take off the crew, asked for aid. Air Rescue planes sighted the launch, with waves breaking over it, and sent for a helicopter. In spite of the weather the helicopter managed to set down on the upper deck of the grounded wreck and take off two persons who were ill. It raced them to the British hospital on Bahrein Island, was returning to the ship when the storm slackened and the vessel's crew decided to remain on board and attempt to save it. They were short of food and water, however, so Rescue planes dropped these on deck.

In 1951 a Turkish patrol of ninety men was cut off and surrounded by Communist troops in North Korea. The Turks were among the best soldiers on the front and Allied officers sent frantic word back to the Rescue Service. Helicopters took off and other planes guided them to the beleaguered patrol, which was fighting hard to hold the surrounding enemy at a distance. The helicopters landed, saved every man in what was probably the largest air rescue in history.

Thus the ingenious and daring young men of the Air Rescue Service are writing a new chapter in the history of heroism and self-sacrifice, in the air, at sea, and on land, performing miracles of stamina, courage, and skill. Sometimes they die, trying. When they do they die proudly, for every man and boy among them believes in their slogan: "That Others May Live."—END



19 chambers of hell

You are looking at the units of a $2,000,000 Martin testing laboratory—part of a man-made hell of fire and water, shock and vibration, explosion and corrosion, designed to torture *electronics equipment!*

For these vital components of today's aircraft, guided missiles and weapons systems must carry tremendous responsibilities. Consider, for example, the electronic system of the Martin B-61 Matador:

Incredibly versatile, it comprises the entire brain and nervous system of America's first successful pilotless bomber. Yet this sensitive equipment must withstand the shock of many tons of thrust in the first second of take-off—violent changes in temperature and pressure—and ground conditions ranging from sand storms to arctic blizzards, desert dryness to tropical downpour.

Today, Martin's facilities are among the finest in the world for design, production and proving in the field of avionics...one of the major developments of Martin Systems Engineering which is now tailoring airpower to previously impossible requirements.

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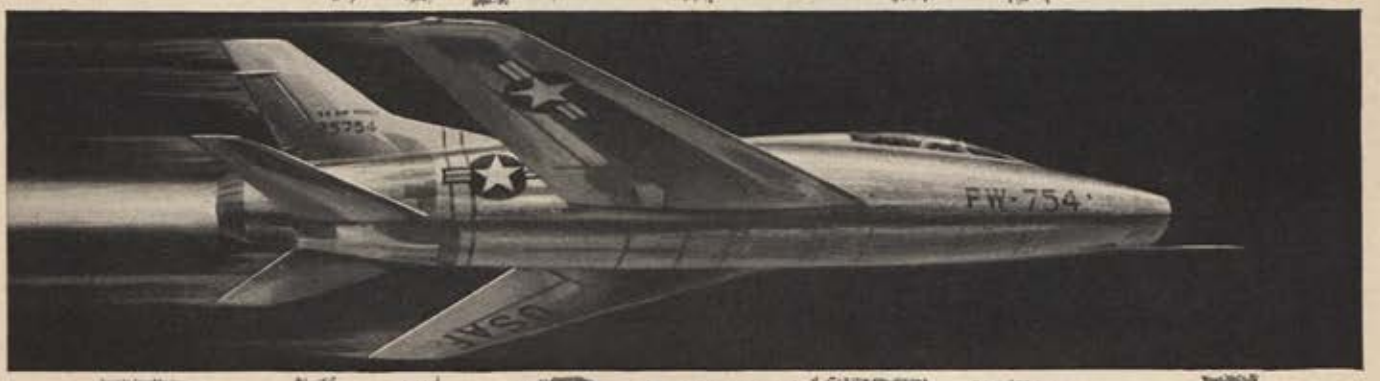

BUSTER!

First of the true tri-sonic fighters, the new F-100 Super Sabre exceeds Mach 1 in normal, level flight... flying faster than the speed of sound.

MACH (pronounced "mock") is a term you'll be seeing more and more since it is the only really accurate way of evaluating jet plane speeds. The need for this special standard of measurement is due to the fact that the speed of sound varies with changes in temperature and altitude. At sea level, for instance, sound travels at speeds ranging from 735 MPH at an air temperature of 60° to 800 MPH at 100°. However, using the Mach numbers, a jet traveling at Mach 1 is flying at the speed of sound, no matter at what altitude or temperature. Far advanced beyond any fighter now in production, the F-100 Super Sabre was designed and built by North American to meet our nation's need.

Engineers of vision... men who appreciate a challenge, are wanted at North American. If you are an engineer looking to the future, write North American, Los Angeles 45, California.

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JET BLASTS

IGNORED OBSERVER

Is he the Air Force's newest forgotten man?

Stand by for a blast! I've held this back as long as I can and here it comes.

I was reading the article in your November issue entitled "Night Fighters in MIG Alley," when I came to one part that really did it. I quote: "On the same night, Lt. Robert F. Cunningham, of Washington, D. C., may have destroyed a MIG-15. But he probably lost his life doing it, for reports indicate the two planes collided. Cunningham flew in Major O'Neil's squadron." With due and humble respect to Lieutenant Cunningham, I'd like to ask, what about the observer? Was he there? Was he also killed? And wasn't he equally heroic?

That small paragraph was one very small example of what I believe to be a very big mistake commonly made by the Air Force, their public relations people, and our nation's magazines and publications such as yours. You always underrate the observer!

Right here I had better give you a little of my background, then I'll go on. At present I'm an aviation cadet in the Air Force's Observer Program. I've been in the service five years and have had three years of college and intend to make the Air Force my career—as an observer. Naturally, I am a little prejudiced towards this, my chosen field.

To continue. I also noticed in another article, about security, that you had the results of some interesting public opinion polls. Well, here's a poll you could take. Go up to some civilians and ask them what an observer is. You would undoubtedly get answers anywhere from "He rides in a balloon and checks weather," to "He sits in a plane and watches what goes on." And why would you get these answers? Because the public just doesn't know what an observer is or does. Certainly, some people know that an observer works the radar in an F-94, and some know that he navigates planes and drops bombs. But how many know that a large number of observers do all those things plus the fact that he might also be a performance engineer or an electronics countermeasure officer or an armament officer? I assure you the number would be very small.

(Continued on following page)

LET'S HAVE YOUR JET BLAST

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

JET BLASTS——CONTINUED

We have a saying around here (although the morale of the observer cadet corps is very low because of lack of recognition) which states "The observer, the man who makes an aircraft a weapon." How many people outside of our relatively small Air Force circle have heard that?

I truthfully believe that the Air Force is trying to build up the prestige of the observer. Some of us in the cadet corps are trying as well, but we can't do it alone. We need the help of the people, of the newspapers and of publications such as yours.

I don't mean to underrate the pilots of the Air Force, but isn't it time the people of this nation were made to realize that when a pilot takes an aircraft over the target someone has to show him the way there, drop the bombs, warn him of enemy aircraft, steer him clear of bad weather, and then get him, the aircraft and its crew on the road back home? And that someone is the *observer*!

An Aviation Cadet Observer

Skyward the Future

Ever since I attended the Air Force Association convention in Washington last summer I've been wanting to tell you what an eye-opener it was to this one Air National Guard fighter pilot. It was my first convention. To individuals like myself, who have spent a dozen years following the wild blue yonder trade, it appeared somewhat fantastic to see General Twining casually walk into the scene and begin renewing his old acquaintances. Not too far behind him General Vandenberg, attired in mufti and sporting a big grin, made his appearance. Eight stars and a big cigar loomed from around a corner and big as life and twice as natural General LeMay moved into the local area. Shortly thereafter Gen. Jimmy Doolittle, Gen. George Kenney, and Gen. Leon Johnson soon added their conviviality to the throng. More and more stars made their appearance and it wasn't long before one GI fighter pilot became a little starry-eyed. For a dozen years these men gathered in front of me had been eight-by-ten pictures hung in the CO's office and names printed at the bottom of Air Force regulations. Although I had seen a number of them before, both overseas and in the States, it overwhelmed me to see so many of them congregated in one small area. It reminded me of flying on a pitch black, moonless night. Stars . . . there was a million of 'em! Unlike in The Pentagon, or ADC Headquarters, or ConAC Headquarters, the men with all the stars weren't dashing down a corridor with a handful of official papers to make a billion dollar command decision. They were pumping arms, slapping backs, and acting just like the rest of us shade

(Continued on page 50)

WORTH Writing FOR

Now available, for the first time, is a printed record of the AC defense-production story. All AC activities and resources are interestingly presented via picture and text. Through it you can become quickly acquainted with the physical facilities, manpower, training programs and production achievements of this Division of General Motors. Get your copy soon and discover how the "know-how" and experience AC has accumulated in the past can be projected into the future . . . perhaps in your behalf! AC is now producing – in volume – these complex, high-precision, electro-mechanical devices for the Armed Forces:

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eighty-four characters, who hadn't seen one another for a number of years. No holds were barred and the AFA convention was launched.

Perhaps it's because my particular reserve component, the Air National Guard, was not very well represented at the AFA convention that I was so particularly impressed by the enthusiasm of the AFA members. The great number of distinguished people present made me wonder who the members were that made the AFA such a terrific organization. After a bit of investigation I learned that the members fire-balling the AFA were the people who benefited the least from the accomplishments of their organization. In this day and age, when the fast buck has added an afterburner to crash the sonic barrier and enter into the realm of Supersonia, it's a heartwarming thing to know that we still have a vast assemblage of red, white, and wild blue altruists. Their sole aim is to build airpower and keep alive the Air Force spirit. And as Gill Robb Wilson stated so perspicuously, "Airpower is not a physical thing, it's a spiritual thing." A person has to feel it to realize its true meaning. With the exception of the United States Air Force no other group of men in the nation realizes this meaning better than the Air National Guard.

It has only been a short time ago when Air Guardsmen were considered "Weekend Warriors." This unsanforized world in which we live has shrunk to such an extent in the past five years that "Part-Time Civilians" is the new designation for the defenders of States Rights proprieties. To the civilian world we look for our livelihood but to the sky we look for our future. Although we have our own National Guard Association to forward our aims, I sincerely believe all Air Guardsmen should belong to the Air Force Association, so that our airpower goals do not conflict and create ill feeling as they have done in the past. The Air Force Association can use the talents of Air Guardsmen who are abreast of the ever-changing airpower picture. No other group of civilians in the United States are more current, or more aware, on the subject of airpower, than Air Guardsmen. The contribution the Air Guard can make to the entire nation, by wholehearted participation in the AFA, will be reflected in the sky where we look for our future.

Maj. David F. McAllister, Del. ANG
Folsom, Penna.

AFA HAS MOVED

Air Force Association's Washington Headquarters have moved to a new address. Address all correspondence to:
Air Force Association
The Mills Building
17th St. and Penna. Ave., NW
Washington 6, D. C.

They're flying on top of the world

Allison's service representative on assignment with the 318th Fighter-Interceptor Squadron at Thule Air Base didn't know he was writing an advertisement when he sent the following report—but we think you'll be interested in these comments from northern Greenland:

"I am sending a few pictures taken at Thule shortly before old Sol set for its last time here in the Arctic. I am sure that these pictures will be of interest—with a caption indicating satisfactory performance of the Allison J33 engine even in these adverse conditions, some 800 miles from the geographic North Pole, and almost due east of the magnetic pole.

"The Air Echelon overseas movement of the 318th with Lockheed F-94B's was made from McChord Air Force Base, Washington to Thule. This move, made without incident, indicates not only the pilots' capabilities and outstanding maintenance of equipment, but also the rugged dependability of the J33 engine. During the first four months of operation here, even with the onset of the Arctic night and extreme temperatures, this squadron is still logging hundreds of hours of combat-ready flight a month.

"I believe it would be quite fitting for Allison to indicate its appreciation of the Squadron's unrelenting confidence in the J33 engine and its prolonged effort toward making jet fighter operations both possible and practical in the far northern reaches of the globe."

Allison greatly appreciates this opportunity to salute the 318th Squadron of the Northeast Air Command for its splendid record in maintaining vigilant guard at the top of the world.

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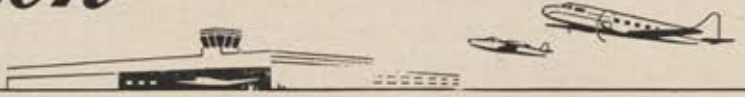

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MOBILIZATION NEWS

BY JAKE CULPEPPER

ACTIVE DUTY — AF has broken the ice on its recall program which is now open to prior-service airmen of the AF Reserve who may volunteer for two-year tours of duty. About 100 volunteer airmen will be recalled each month for the remainder of FY '54. This change in recall policy does not affect the officer and warrant officer recall freeze. (Only a limited number of chaplains, JAGs, and specialists of the medical services have been ordered to EAD since last May when it became known that AF funds would be cut.) Currently, active duty is being offered airmen in twenty-eight career fields. To be eligible, Reserve airmen must have a skill level of five or higher and must have had prior service. Grades for the recall slots have been established as follows: five percent, m/sgts; ten percent, tech/sgts; fifty percent, staff/sgts; and thirty-five percent, airmen 1/cl. Reserve airmen who want another go at active duty apply through the AF organization holding their field personnel records to the Air Reserve Records Center, ConAC, at 3800 York St., Denver 5, Colo. AF says it may increase its airman recall quota during FY '55 if the "over-all manpower situation" becomes "acute." In the main, reenlistment rates will determine the course of action.

RESIDENCE COURSES — Three residence courses of the Air University are open to Reserve officers during the remainder of FY '54. Courses available with starting date and duration are: JAG Staff Officer, May 10, ten weeks; Squadron Officer, March 29, ten weeks; and Academic Instructor, March 1 and April 19, six weeks each. Air Reservists may send a letter of request to office having custody of their field personnel file.

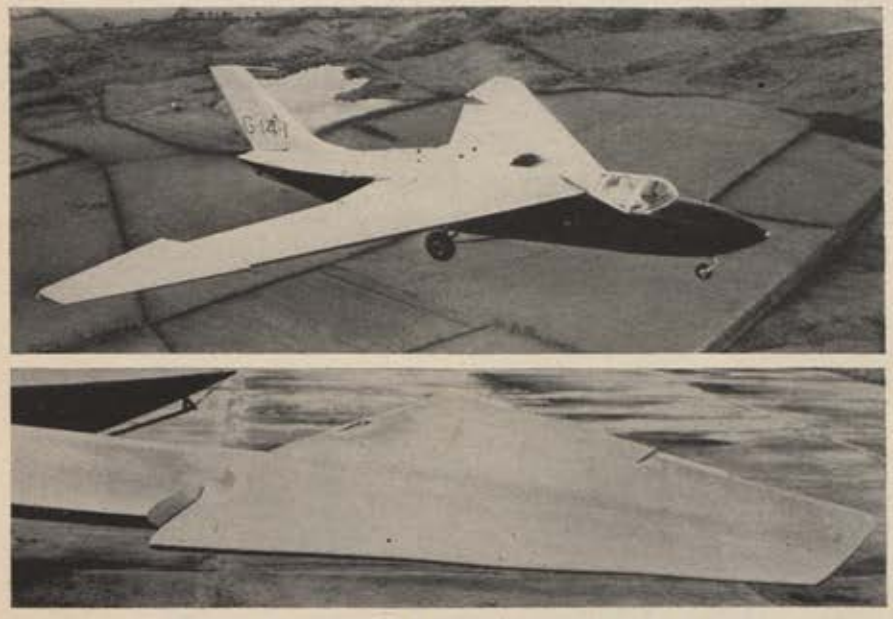
REFRESHER COURSES — Reserve forces personnel with an eye toward the short-term refresher courses offered by Air Training Command schools during early months of 1954 should apply immediately. Courses for officers will be given in ten technical fields. Airman instruction will cover three specialties. Reporting dates for the two-week courses listed below are April 6 and 20; May 4 and 18; and June 1 and 15. Officer courses available with prerequisite AFSC and locations are: A/C Maintenance, 434, Chanute AFB, Ill.; Armament, 323, Lowry AFB, Colo.; Budget and Fiscal, 673, Lowry; Communications, 301 or 313, Scott AFB, Ill.; Intelligence Photo Radar, 201 or 205, Lowry; Intelligence Photo Radar (Advanced), 204, Lowry; Personnel, 732, Scott; Statistical Control, 683, Lowry; Aerial Photo, 233, Lowry; and Supply, 643, Francis E. Warren AFB, Wyo. Airman courses are: Aircraft Eng. Mechanic, 43151, Lowry; Supply Tech., 32022, Sheppard AFB, Tex.; and Armament Tech., 64050, F. E. Warren AFB, Wyo.

BRIEFS — Total of 7,052 officers and airmen not on active duty was promoted in AF Reserve between December 1952 through September 1953. . . . USAF Extension Course Institute rounded out 1953 activities with awarding its 10,000th diploma. More than 35,000 Reservists are currently enrolled. Contracts totaling $1,063,239 have been awarded for construction and repair of facilities for Air Reserves at Scott AFB, Ill. . . . Col. Dean H. Eshelman, AF Res., is new Ass't Chief of Staff for Reserves, Hq., MATS, Andrews AFB, Md. . . . Lt. Col. Anna Marie Frost was recently named WAF staff director for ATRC, Scott AFB, Ill.

TRADITION — Brig. Gen. Hume Peabody (USAF Ret.) has been named Executive Director of the AF Historical Foundation, which recently moved to the Air University, Maxwell AFB, Ala. Since its organization last fall, the Historical Foundation has grown to a membership of more than 2,000.

TECH TALK

BY EVERETT E. DODD



British Short Sherpa unlimbers wings in test hop

Great Britain's **Short Sherpa,** snapped on one of its first flights, is shown above with close-up of one of its rotating wing tips. A small plane—thirty-eight-foot wing span, 43 degree sweepback—the Sherpa is an experimental, not a production, model. With highly flexible wings and rotating wing tips—either together or in opposition—the Sherpa's to be used in studying wing design for high-altitude, high-speed planes of the future. It's powered by two Turbomeca Palas turbojets that develop 350-lb. thrust each.

Gulping deep draughts of salt seasoned air, Navy's jet interceptor, the **Douglas Skyray,** was stopped strikingly in mid-air just as it leaped off the *USS Coral Sea's* flight deck (below). It was the F4D's first taste of sea duty. Piloting the twin-engine jet in its carrier evaluation tests, was Lt. Cmdr. James B. Verdin. Last year he flew an F4D to a new world's speed mark over a 3-km. course.

In 1947 a new term entered aviation's lexicon—**jet stream.** It's an air current coursing west to east over the northern hemisphere at altitudes between 30,000 and 40,000 feet, and at velocities reaching 300 mph. Last month at two AFBs in Florida, ARDC, for the first time, undertook extensive studies of the phenomena. A B-47 and a B-29, both fitted with instruments to measure winds, temperature, turbulence, and humidity, plus wire recorders for verbal in-flight descriptions will be used. For military and commercial planes the "horizontal escalator" of the sky is a great assist. It can be dangerous, though. Insufficiently powered planes entering the jet stream unknowingly could exhaust their fuel—standing still, or even flying backward.

British and US manufacturers of jet engines toss **pounds-of-thrust** statistics about as a juggler does Indian clubs. Each claims his engine is "world's most powerful." But recently the dissonant sound of another country's jet made them prick up their ears. It was the engine of Russia's new twin-jet, high-speed Type 175 bomber. Each engine is said to develop 11,000-lbs. thrust. Our announced best production model, P & W's J-57, produces 10,000 pounds.

Huge flying radar stations with thirty-one-man crews are scheduled to augment our radar network. Pilots of the newly activated Airborne Early Warning and Control Squadron, ADC, will fly them. They are **RC-121Cs,** Lockheed Super Constellations with radome and ra-belly ("Technique," November '53). Based at McClellan AFB, near Sacramento, Calif., the EW squadron will fly high, far-reaching patrols off the nation's Pacific coastline. With six tons of electronic equipment, including height-finding radar, the EW pickets extend our defense network by thousands of miles.

More than 500,000 passengers and patients were airlifted 1.5 billion passenger miles by the **Military Air Transport Service** in 1953, without a single fatality.

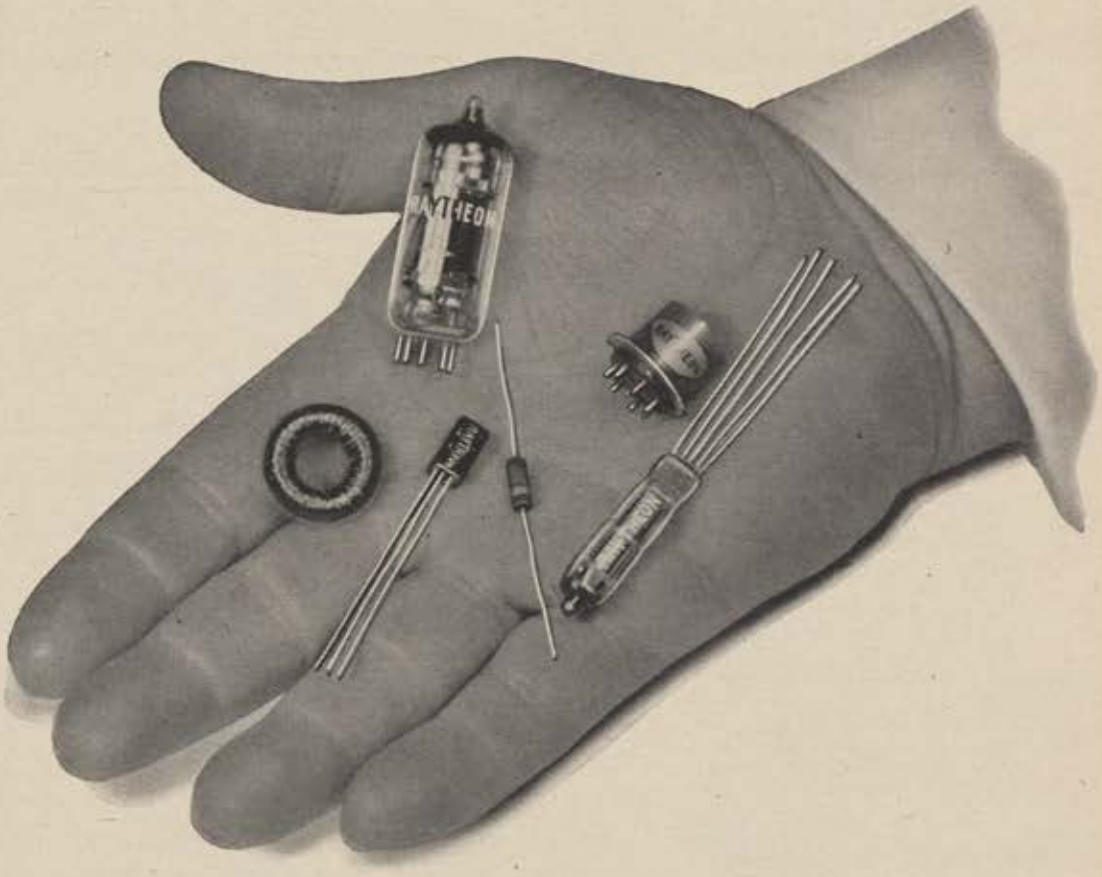
Below, **Hamilton Standard's** new turbo-hydromatic prop with wide blades for added thrust. Now in production, it's for turboprop engines like Pratt & Whitney's T-34, here a fifth engine for a World War II B-17.

F4D takes to the sea air

Five-engined Flying Fortress

RAYTHEON

the GIANT *that makes* MIDGETS



Ability to think big about miniaturization problems is only one of the many talents that has set Raytheon apart in the field of electronics. It is an example of how Raytheon is serving the current needs of the Armed Services while paving the way for new and better developments.

Not all Raytheon products are small but all benefit from Raytheon's broad experience with miniaturization. Raytheon pioneered in the development of reliable miniature vacuum tubes, now leads in the production of subminiature tubes, germanium diodes and transistors. Miniature magnetic components are another example of Raytheon's unique ability to pack perfection into incredibly small units.

Raytheon has also pioneered in the application of miniaturization techniques to complete equipments. The benefits are unmistakably reflected in the compact design, trim appearance and servicing ease of *all* Raytheon products which include radar, sonar, communications equipment and other types of electronic equipment used in all branches of the Armed Services.

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RECORD FLIGHT SETS OFF ANG RECRUITING PROGRAM

Millikan's sizzling cross-country has given the Air Guard its greatest moment. ANG recruiters are making the most of it

LAST month brought both triumph and tragedy to the Air National Guard. The triumph came in the form of the successful attempt by a "weekend warrior" to set a new speed record for the transcontinental crossing between Los Angeles and New York (see page 28).

The tragedy came in the death of Maj. Gen. Earl T. Ricks, Deputy Chief of the National Guard Bureau and Chief of its Air Force Division (see page 17).

Colonel Millikan's flight brought the Air Guard its greatest moment in the public eye since the Air Guard was organized in 1946. Virtually every newspaper in the nation headlined his feat on page one the day after the successful flight on January 2. National radio, newsreel, and television shows bid for his appearance.

The flight touched off a nation-wide ANG recruiting program, aimed at bringing the ANG to its June 30 programmed strength of 50,700 not later than April 1. The recruiting goal approximates 11,000 officers and men.

There is sound reasoning behind the Air Guard's desire to fill up its ranks ahead of schedule. If the vacancies can be eliminated now, basic training can be completed at air base drills before the units go into the field next summer. This will reduce the time required for basic schools during the fifteen-day encampments and allow more time for actual on-the-job training. It also will free commanders of the necessity for wearing a recruiting hat in the immediate pre-field period when they are concerned almost exclusively with getting the training program worked out.

• • •

Although the recruiting drive is a national effort, the responsibility for its success or failure rests with the individual states, territories, and the District of Columbia. NGB notified each state of the flight and sent an estimate of the numbers each unit needs to bring it up to the June 30 strength. The national publicity generated by the Millikan flight was designed merely to create the momentum upon which local recruiting efforts could be set in motion.

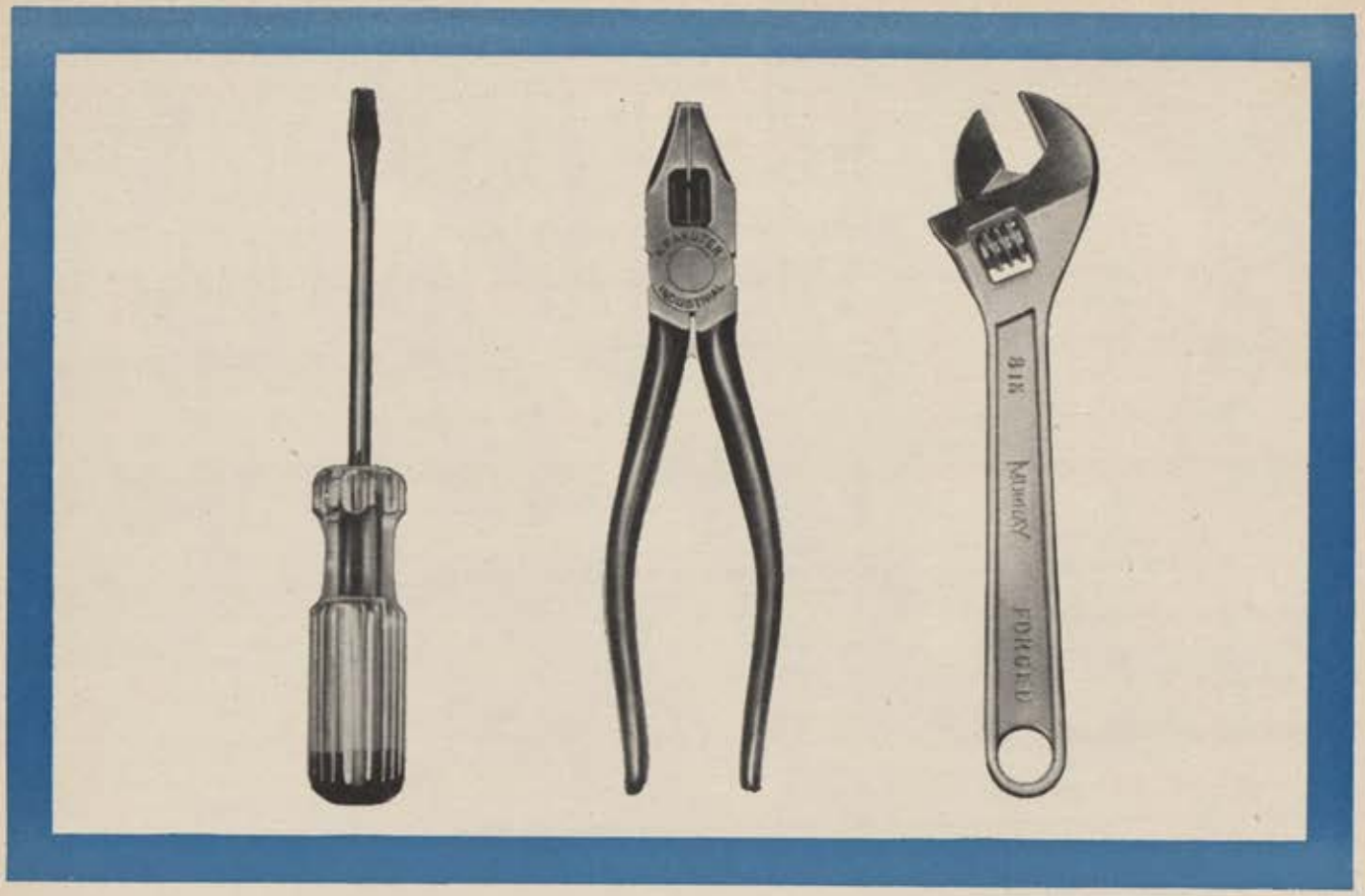
NGB is hopeful that units will use the flight to step up procurement of aviation cadets. It is no secret that this is the key to the ANG's future. Either ANG replaces pilot losses, or it faces a struggle to survive.

The Guard's Aviation Cadet program is improving but needs more emphasis. In the six months between last July 1 and the new year, the Guard sent 330 young men to pilot training. This was an increase of sixty-two over the number sent in the full year between July 1, 1952, and June 30, 1953. Although this is encouraging, NGB officials hope the rate of improvement can be pushed up considerably in the next six months so that a minimum of 750 ANG pilot trainees will be in the pipeline when the new fiscal year starts.

• • •

Notes on the back of a Form 175 . . . The ANG's first F-86s have gone to the 186th Squadron at Great Falls, Mont., while the first F-86Es ever to arrive in the ANG have been sent to Michigan's 127th Wing. The Squadrons concerned are the 107th and 171st at Detroit and 172d at Battle Creek. . . . Guard's jet program is on schedule and additional T-33s will be moved in soon. . . . The 118th Tac Recon Wing at Nashville, Tenn., has come up with a training device that saves both money and manpower. It's a T-6 photo ship which makes the pilot a one-man team of pilot, navigator, photographer, and observer. The T-6 is more economical to operate than other camera aircraft and more pilots are current in it. Now the 118th is working on an idea for cameras in the wing tanks of F-51s. . . . One of the originals of the Air National Guard program has left. Lt. Col. Paul A. Wedlan, comptroller in NGB's Air Force Division, has been transferred to Spain. Colonel Wedlan was in on the start of the ANG program, along with Col. W. A. R. Robertson, who richly deserves the title of "Father of the Air Guard." Colonel Robertson, now CO of Francis E. Warren AFB in Cheyenne, Wyo., toured the states, getting governors to accept ANG allocations. Colonel Wedlan produced the financial support, without which the Air Guard could not have reached its present stature. . . . It's never too early to think of field training. Already NGB has established the fifteen-day field training dates for all ANG units this summer. Nine bases will be used throughout the nation.

By Capt. Edmund F. Hogan, ANG



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No field calibration, no complicated data, and no "experts" are needed to install this simplified system.

When it's time to install Avien's Two-Unit Fuel Gage, all that's needed are simple tools.

There's no need for calibration instruments, complex field data, or specially trained personnel. The Avien gage will have been precalibrated for the aircraft, so installation becomes as simple as "plug-in, plug-out."

This quick and easy installation avoids costly, time-consuming calibration on the flight-line.

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This ease of installation is just one of the factors which have made Avien's Two-Unit Gage the most talked-about system in the aviation industry.

Because the system is reduced to a sensing unit and indicating unit, it weighs 50% less than previous three-unit systems. Fewer wires and connectors are necessary. Fully 158 separate parts are eliminated. Maintenance problems are brought to the minimum.

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On the basis of this economy factor alone, the Avien Two-Unit Fuel Gage arrives at the right moment. Avien equipment is specified for over fifty types of military aircraft right now.

And every month, Avien produces over 10,000 major instrument components for the aviation industry.

You ought to look into Avien, particularly the Two-Unit Fuel Gage, to help solve both your cost and specification problems. Write or call us today.

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Guided missiles launched from submarines promise to be major offensive weapons in case of war. A missile of this type travels to its distant destination under unerring electronic orders. The brain center for such missiles will be typical of the electronic systems developed and manufactured by Arma Corporation.

In close collaboration with the Armed Forces since 1918, and more recently with the Atomic Energy Commission, Arma has contributed much in basic research, design, development and manufacture to the advancement of electronic and electromechanical weapon control, navigation, and other precision remote control systems. There is every reason to believe that engineering background and techniques—first used successfully in these devices—will see widespread industrial applications. *Arma Corporation, Brooklyn, N. Y.; Mineola, N. Y. Subsidiary of American Bosch Corporation.*

ARMA ADVANCED ELECTRONICS FOR CONTROL

AFA'S LARGEST? IT'S OMAHA!

Omaha's Arthur Storz, 1954 Convention Chairman, holds a one-man membership drive and signs up 1,233 new AFA'ers

Arthur Storz set a new all-time AFA record when he beat the bushes for 1,233 new members in Omaha area.

A year ago, Omaha's Arthur C. Storz asked, "How many members in AFA's largest Squadron?" He doesn't have to ask that question any more, because he now knows AFA's largest is the Ak-Sar-Ben Squadron of Omaha. And it's the largest because Storz, to mid-January, had personally signed up more than 1,233 new members to be added to the 100-odd members already on the Squadron roster when he began his unique, one-man membership campaign that has set a record in AFA history.

Besides being AFA's top member-getter, Storz, a brewery executive, is 1954 Convention Chairman for the meeting in Omaha August 19-22. He's also chairman of his Chamber of Commerce's Armed Services Committee.

SQUADRON OF THE MONTH

Chicago Squadron 41
Chicago, Ill.

CITED FOR

its preparation and presentation of a series of Airpower Forums, designed to better inform the community on the development of airpower and the role of the Air Force Association.

Birthday in Taunton

Among the honored guests at the Taunton, Mass., AFA Squadron's recent fourth "birthday party" were State Senator John F. Parker, Regional Vice President Tom Stebbins, Col. Oliver Cellini, CO, 4707th Air Defense Wing, and Everett King, Taunton airport operator. King received the Squadron's Airpower Trophy for outstanding service to the community's aviation development. Other guests included Phil Coury and Alden West, from Boston's Squadron, and Gus Duda, representing National Headquarters. Toastmaster was Edwin Tomawski. William L. White is Squadron Commander.

Everett L. King (center), operator of the Taunton, Mass., airport, accepts Airpower Trophy from AFA Regional V-P Tom Stebbins at the Squadron's "birthday party." The others, from left, are Squadron Cmdr. William L. White; Past Cmdr. Edwin Tomawski; and Col. Oliver Cellini, 4707th Air Defense Wing.

Miami Honors Jet Ace

The Greater Miami Squadron recently gave the traditional "farewell" party for one of its more noted members, jet ace Capt. Manuel "Pete" Fernandez before he married Miss Jean Ebermann, Miami. Two hundred friends of the couple got together in a Miami club for a buffet. Among the guests was Capt. Joseph McConnell, Apple Valley, Calif., the Korean war's top jet ace and an usher at the wedding the following day. Alex Morphonios, Miami Squadron Commander, acted as official host.

(Continued on following page)

Happiest one at the party—as he should have been since it was the Greater Miami Squadron's party for him—was Capt. Manuel Fernandez, above with Miss Jean Ebermann, his bride-to-be, the evening before their wedding. Some 200 friends of the jet ace and his fiancee gathered in a Miami club for the buffet "farewell" to "Pete" Fernandez.

At the third in Chicago Squadron 41's Airpower Forum series are, from left, Howard Markey, Past President of Chicago's ARA Chapter; Julius Simmons of the Argonne Laboratories; Norman Lauer, Past Commander of Squadron 41 and Program Chairman for the series; and George Wilson, Illinois Wing Commander.

Chicago Holds 3d Forum

Chicago Squadron 41 has held the third in its series of Airpower Forums. The three principal speakers were George Wilson, Illinois Wing Commander, whose topic was "The True Objectives of AFA"; Howard Markey, who pointed out "The Need for a Strong Air Reserve"; and Julius M. Simmons of Chicago's Argonne Laboratories, who spoke on "Electrical Power and the Atom."

Norman Lauer, a past commander of Squadron 41, is Program Chairman for the Forum series.

Harrisburg Reorganizes

A familiar name returns to AFA's Squadron roster with the approval of a Charter for the Olmsted Squadron in Harrisburg, Penna. Once one of AFA's top squadrons, the Harrisburg unit has been reorganized under the new name and with the guidance of AFA stalwarts Jack and Bob Gross. Jack was named temporary Commander, pending a formal election next month.

The new Squadron played an important part in the celebration of the Fiftieth Anniversary of Flight in Harrisburg, December 9. During an Airpower Forum, before some 6,000 people, AFA President George C. Kenney presented the Squadron Charter to Gross, and, talking to AFA members, declared, "We must get out and preach the gospel of airpower. We must have the number one Air Force, or we are toying with the very life of the nation."

Col. Charles W. Skeele, 1st Air Reserve District Commander, was general chairman of the affair, and Jack Gross was vice chairman. Among the honored guests were Robert S. Johnson, an AFA Past President, and Marietta C. Miller, AFA Auxiliary President.

The 1954 California Wing Convention will be April 24-25 in Santa Monica's Hotel Miramar. William W. Walker, Convention Chairman, promises a memorable weekend.

Ute Squadron Meeting

Guest speaker at the last meeting of AFA's Ute Squadron, Fairfield, Utah, was Col. Philip B. Foote, Hill AFB Director of Supply and Services. Colonel

(Continued on page 63)

At San Diego's Lindbergh Field before taking-off for a tour of Luke AFB, Ariz., as guests of Brig. Gen. T. C. Rogers, the Base Commander, are (from left) Frank Brazda, Sqdn. Treasurer; Major Vance, AF co-pilot; Dr. Vincent Flynn, CAA Medical Examiner; Ed Kranch, Group Commander; Major Mason, AF pilot; and Clifford C. Jeffords, Senior Vice Commander of AFA in San Diego.

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We've honestly earned our reputation as experts in electronic development, design and production . . . and our complete facilities are always at your service.

Our two plants have a production area of more than 122,000 square feet. They are laid out for peak efficiency in development, design, fabrication and assembly of every component in electronic projects from simple test equipment to complex radar systems.

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Take advantage of our unique and complete ability to serve you, regardless of the size and scope of your electronic projects. Your inquiry will be expertly and promptly evaluated and our suggestions will be of interest and value to you. There is, of course, no obligation.

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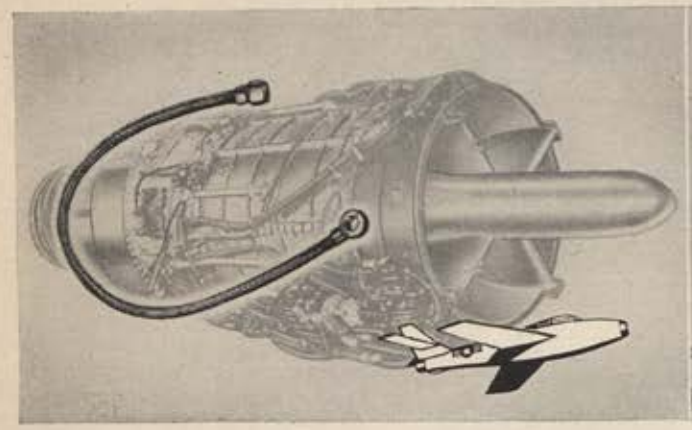
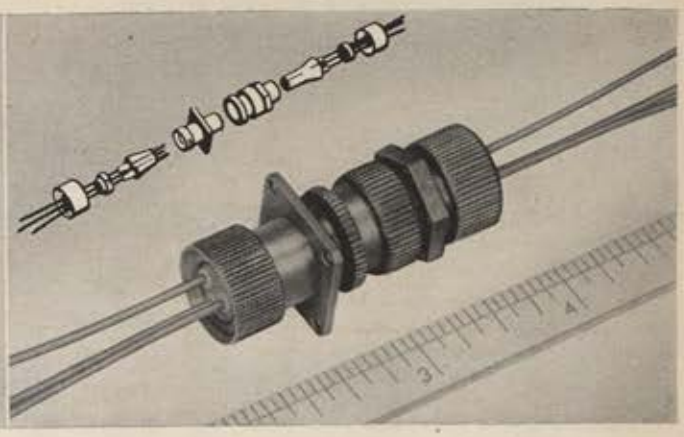
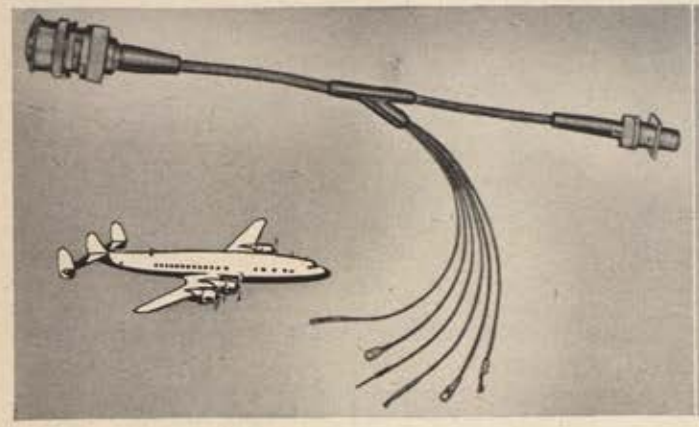


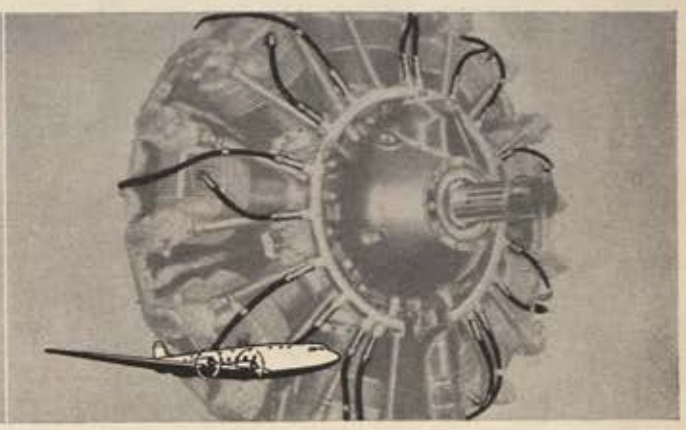
DEPENDABLE FUEL FEEDING. Fuel for the J65 Turbojet Engine is injected to the burners through Titeflex® flexible metal hose. Tough, lightweight Titeflex—tested for temperatures from —70°F. to +600°F. and for pressures up to 500 psi—reliably conveys fuel to engine nozzles; withstands vibration and rough use; is excellent for complex configurations.



FAILURE-FREE INSTRUMENTATION. Designed primarily for instrumentation service at high altitudes, lightweight Titeflex 07 Connectors are pressure-tight and resistant to moisture and corrosion. Plug and receptacle, mated, weigh only ⅜ of an ounce! Special sizes, meeting AN Specifications, can be made with 2 or 3 pins and AE threads—and adapted to your design.



CUSTOM WIRING SYSTEMS. Titeflex specializes in designing and building special "packaged" wiring systems and component assemblies for today's complex aviation and guided missile installations. These may be jacketed with protective silicone or other compounds—and Titeflex Special Connectors used as integral parts solve complex wiring problems.



RADIO SHIELDING. Titeflex Harness for reciprocating engines is our specialty. Titeflex makes a wide range of standard ignition harnesses meeting rigid aviation specifications—can also supply component parts, such as serviceable leads for military and commercial aircraft. Titeflex application on Wright R 1820 Engine includes harness and leads.

FROM DESIGN TO FINISHED PRODUCTS, Titeflex is especially well qualified to help you with all problems of special metal hose, wiring and connections. Take advantage of the long experience of Titeflex engineers in developing high temperature fuel lines, in designing and fabricating harness and wiring systems. Write us now about your application; our nearest representative will be glad to call and help you. Or send for our *new 48-page Metal Hose Catalog* No. 200.

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Foote, just back from a tour with FEAF, discussed "The Air Force in the Orient."

George H. Van Leeuwen conducted the meeting and introduced the evening's honored guest, Murray Moler, Regional Manager of the United Press. Moler was one of the first Americans to enter Hiroshima after that city was blasted by history's first wartime A-bomb. He also covered the tests at Bikini and Frenchman's Flat, and described those experiences for Squadron members. Max K. Kennedy, Fairfield, is Squadron Commander.

New Jersey Committees

The New Jersey Wing, under John J. Currie of Paterson, has announced plans for a membership and organizational campaign to give Wing activities some new steam. These Wing committees were appointed: Membership, Squadron Activities, Legislative, Health and Welfare, Convention, and Aviation Journal. The Executive Committee, with Currie as chairman, consists of Joseph Gajdos, Ken Hamler, Donald Gerhardt, Irving Beichner, and James Doeler.—END

AFA President George C. Kenney presents the Charter for the newly reorganized Olmsted Squadron to acting Commander Jack B. Gross during 50th Anniversary of Flight celebration in Harrisburg. Gross served as vice chairman for the event.

NEW PROTECTIVE COATING CHEMICAL FOR ALUMINUM

ALODIZING

Alodizing with "Alodine,"* a new technique in the protective coating of aluminum, was made available for production-scale use in 1946. Since that time Alodizing has largely supplanted the more elaborate, costly and time-consuming anodic treatments in the aircraft and other industries.

Continuous and successful industrial use has clearly demonstrated the simplicity and economy of the Alodizing process as well as the effectiveness of the "Alodine" amorphous coatings, particularly as a base for paint. In fact, the paint-bond that Alodized aluminum provides has been found to be superior to that possible with chromic acid anodizing.

The corrosion-resistance of unpainted aluminum Alodized with "Alodine" Nos. 100 or 300 is excellent, easily meeting the requirements of Specification MIL-C-5541. However, a need for protection of unpainted aluminum, even better than that obtained with chromic acid anodizing, has long been recognized.

NEW IMPROVED "ALODINE" DEVELOPED By ACP RESEARCH CHEMISTS

Several years of intensive research have now led to a new type of "Alodine," designated as "Alodine" No. 1200. This new protective coating chemical forms an amorphous mixed metallic oxide coating of low dielectric resistance that provides unusually high corrosion-resistance for unpainted aluminum. In addition, it forms an excellent paint bond that approaches closely the high quality obtained with the earlier types of "Alodine."

After having been tested for conformance with Specification MIL-C-5541, "Alodine" No. 1200 is now about to go into production.

PROCESS DETAILS

"Alodine" No. 1200 is the only essential chemical needed to prepare the coating bath and the final rinse bath. One of its unique features is that it can be used in tanks in an immersion process, or, in a multi-stage power washer in a spray process, or, with a slight adjustment of pH, with brush or portable spray equipment in a manual process. This means that even where the simple production equipment is not available, or where touching up of damaged coatings previously Alodized or anodized is required, excellent protection and paint bonding can still be obtained with practically no equipment.

All three methods of application easily meet the requirements of Specification MIL-C-5541.

Process sequence for all three methods of application is the same as for other standard grades of "Alodine" such as Nos. 100, 300, and 600, viz.: 1. Pre-cleaning. 2. Rinsing. 3. Alodizing. 4. Rinsing. 5. Acidulated rinsing. 6. Drying.

Coating time in an immersion process ranges from 2 to 8 minutes and in a mechanized spray process is about 30 seconds. "Alodine" No. 1200 baths are operated at room temperatures (70° to 100°F.) and heating is required only if the bath has gotten cold after a "down" period.

RECOMMENDED USES FOR "ALODINE" No. 1200

"Alodine" No. 1200 is specifically recommended for coating wrought products that are not to be painted or are to be only partially painted; and for coating casting and forging alloys whether or not these are to be painted. "Alodine" Nos. 100 and 300 are still recommended for coating wrought products such as venetian blind slats, awnings, etc., that are invariably painted.

RESULTS OF TENSILE TESTS

This new "Alodine" not only retards visible corrosion and pitting, but as shown in the table below, the loss of ductility with "Alodine" No. 1200, both brush and dip, after 1000 hours salt spray was less than for chromic acid anodizing after 250 hours, and for "Alodine" No. 100 and a conventional chromate treatment after 168 hours exposure.

PROCESS	SALT SPRAY EXPOSURE	COMPLIANCE WITH TENSILE REQUIREMENTS OF MIL-C-5541
CHROMIC ACID ANODIZING	168 hrs.	passes
	250 hrs.	passes
	500 hrs.	fails
	1000 hrs.	fails
BRUSH "ALODINE" No. 1200	168 hrs.	passes
	250 hrs.	passes
	500 hrs.	passes
	1000 hrs.	passes
DIP "ALODINE" No. 1200	168 hrs.	passes
	250 hrs.	passes
	500 hrs.	passes
	1000 hrs.	passes
DIP "ALODINE" No. 100	168 hrs.	passes
	250 hrs.	fails
	500 hrs.	fails
	1000 hrs.	fails
CONVENTIONAL CHROMATE TREATMENT	168 hrs.	passes
	250 hrs.	fails
	500 hrs.	fails
	1000 hrs.	fails

*"Alodine" Trade Mark Reg. U. S. Pat. Off.

CHEMICALS ACP PROCESSES

AMERICAN CHEMICAL PAINT COMPANY

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Detroit, Michigan ***Niles, California*** ***Windsor, Ontario***

Chicago's O'Hare. Will bigger, more expensive airports really speed up air travel?

OUR EARTH-BOUND AIR AGE

Air travel is fine but it'll be better when you can go all the way by air

By Wilfred Owen

THE SUPERIORITY of air transportation over all other methods of getting places is based on two inherent characteristics. First, it is faster. An average of sixty to eighty mph is about tops for any surface vehicle, but five times that rate of speed is already feasible by airlines. Second, air is everywhere, so theoretically an airplane can go anywhere. And no one has to build the air like the roads, or lay it like rails, or dredge it like channels.

These attributes of air travel, however, must be taken with a grain of salt. Although in the Air Age such advantages will certainly hold true, today we are only part way into the Air Age, and they often fail to hold true. What we are in today is a mixed air-and-ground age, and the mixture is keeping a lot of people and cargo on the ground.

First of all, the fact that the air is everywhere doesn't mean very much if the ability to go anywhere is not combined with the ability to stop where you want to go. Air travel today is circumscribed by the availability of airports. There are really not so many places that one can get to by air.

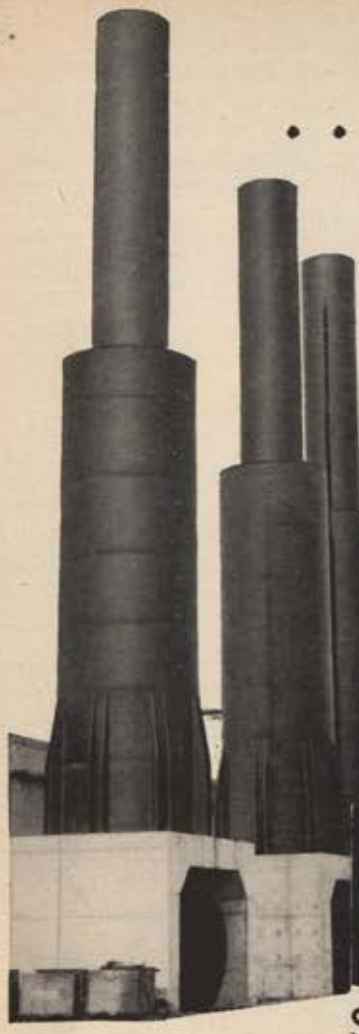
In the United States there are 18,000 urban communities and thousands of other places that people may wish to fly. If you travel by domestic trunk airline there are about 484 places you can land. By local feeder lines you can add 199 other possible places to go. If you fly your own plane and it's small enough you have a choice of 5,966 destinations. There are that many airports altogether. By railroad, on the other hand, you can come and go from 48,000 stations, and the automobile age is based on the ability of the automobile to get you all the way.

But even for those communities which, by virtue of an airport are able to benefit from air travel, it is frequently impossible to realize the speed potentials of the airplane. For speed in the air is often cancelled by the slowness of getting to and from the airport on the ground. The traveler is not interested in how fast he travels from one airport to another, but rather in how fast he can get from where he is to where he wants to go. And when you count the time spent getting to and from today's airplane you often find the over-all elapsed time from origin to final destination makes the so-called Air Age earth-bound.

On the trip from Cleveland to Detroit, for example, the airline traveler spends forty-six minutes traveling through the air. The airport "serving Cleveland" is twelve miles and sixty minutes from Cleveland, and when you land at Willow Run you are exactly thirty-two miles from where

(Continued on page 67)

. . . one SOUND BARRIER no Jet can break through!



MAXIM SILENCERS

In flight, man has long since left sound behind at speeds that stagger the imagination. Tests and preparation of these powerful engines, however, produce sound levels that man simply cannot accommodate and live with.

Faced with this problem, the aircraft industry turned quite naturally to Maxim, the pioneer and today's unquestioned leader in the science of silencing.

The battery of Maxim silencers above, installed on the production cells of one of the largest manufacturers of jet engines in the United States, make this important testing possible in a location adjacent to a residential area.

If your problem is silencing—consult Maxim.

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SMX54

most travelers to Detroit want to be. So it's forty-six minutes in the air and at least 125 minutes on the ground.

The Detroit and Cleveland situations are not exactly representative, but they are certainly not unique. When you land at Pittsburgh's airport you are sixteen miles northwest of Pittsburgh, and at New York International you are sixteen miles from Broadway. The airlines leave you nineteen miles outside Fort Worth, twenty miles from Kalamazoo, and twenty-one miles from Tacoma. The customer who lands in St. Louis is fifteen miles and sixty minutes from town. Chicago minced no words when its airport was named Midway. It is one hour and ten minutes out, and those who fly there from St. Louis are just about midway to Chicago when they land.

Loss of time resulting from antiquated and tedious methods of surface travel is actually worse than the figures indicate, because not all passengers are headed for the center of the city. Some are headed for the opposite side from where the airport happens to be. The destination of others is not in that city at all, but in a neighboring town that is minus an airport.

If you crave a true taste of the Air Age today your best bet is to fly from Augusta, Me., to Jackson, Mich. The airport at Augusta is one and a half miles and five minutes from town, and at Jackson you land one and a half miles and ten minutes from the center.

The trouble with air travel today, then, is that it doesn't get you all the way. In many cases it doesn't get you anywhere near all the way, and the speed attained in the sky is dissipated in the traffic tangle on the ground. In the never-ending quest for greater speed in the air, we tend to overlook the fact that air speed gets us nowhere if faster planes mean moving the airport farther and farther away from the people and cargo that ought to be flying. Last year domestic airline passengers spent something like the equivalent of 400 years traveling on the ground to save time in the air.

How did our airports get where they are today? In many cases their location seems to be the product of some diabolical plot to get the airplane as far from the customers as possible. Despite the evidence to support this view, airports were not located with the express purpose of discouraging their use. This has been an incidental outcome of other location factors that have played a dominant role in putting airports where they never should be.

First of all, just as municipalities have awakened to the need for an air terminal, they have found that most of the vacant land within reasonable distance has been swallowed up by the tremendous growth of urban development during recent years. Between 1940 and 1950 our urban population increased by fourteen million, and the suburban areas of our metropolitan cities grew three times faster than the central cities. This has meant a great expansion of industrial and residential building right where it might have been nice to locate an airport. So to get enough land cheap enough has meant that prospective airport sites are pushed farther and farther beyond man-made obstructions and inflated land values.

Another reason for inaccessible airport location may be ascribed to unforeseen developments in air transportation itself. First, the fact that the major airports of the United States accommodated twenty-seven million air passengers in 1952 is an indication of how rapidly they have outgrown their original sites. Terminal buildings and hangars and all of the servicing facilities necessary to move this many people have constantly demanded more and more space. Added to this has been the rapid change in aircraft size and performance, requiring longer and stronger runways, and safer approaches. In the early 1930s average take-off distance for air transports was under 2,000 feet. In the mid-1940s it was slightly below 4,000 feet. Today the range for many of our transports is 5,000 to 6,000 feet, and the trend is upward. There have been reversals of the trend, notably the Convair Liner with short take-off and reversible props for shorter landing distance. But the trend in the opposite direction predominates.

Finally, airports have been located away from people for the express purpose of avoiding people wherever possible. Those who live anywhere near an airport do a great deal of complaining about noise and low-flying planes. One family will be annoyed by the way the dishes rattle when planes pass overhead. Another will be unhappy that air travel has made the pictures on the living room wall hang crooked. One man has complained that low-flying aircraft have blown the sheets off his bed. To many people, the noise of engine run-ups and aircraft take-off is a source of fear as well as annoyance. These and similar dissatisfactions with life around the runways have exerted considerable influence on those who have favored the more rustic airport locations.

Every method of transportation has had its principal headaches in the terminal area, so the problem of the airport must be accepted as something of an occupational hazard in the transportation business. The railroads have long been beset by the high costs and delays associated with yard and terminal operations, and rail passenger and

(Continued on following page)

This Belgian heliport is right downtown. Here a Sabena S-55 comes in from Brussels.

freight depots have frequently wound up in the worst possible locations. Truckers find the speed and flexibility of the motor truck to be a myth when congested city streets are added to the problem of antiquated loading facilities, and the auto that does fairly well on the open road finds the going tough when it comes to finding a downtown place to park.

But for air transportation the terminal problem is a little different. The speed of the airplane from airport to airport makes the delays of getting to and from the terminal by limousine or bus seem worse than ever, and proportionately they are. With increasing airline cruising speeds the terminal problem will be a bigger headache than ever.

Then there is the matter of airport costs, which the airline traveler has been fortunate enough to avoid, in large measure because most of the capital invested in airports has been provided from public sources. During the depression years of the 1930s large airport expenditures were made in conjunction with relief and public works programs, and during World War II a tremendous amount of new airport construction and improvements to existing airports was undertaken for military purposes. Much of the work so accomplished has proven highly beneficial to civil aviation.

In 1941 there were only seventy-two class IV airports in the United States—airports, that is, with runways of 4,500 to 5,500 feet. Partly as a result of military expenditures there are now 437 airports in this category, plus an additional 297 ports with longer runways, rated in classes V and VI.

Up to 1933 we spent about $146 million for airport construction in this country, mostly state and local money. From 1933 to 1940 there was an additional investment of $273 million, with federal participation an important factor. Then from 1941 to 1944 a total of $608 million was devoted to airport requirements, primarily for defense.

Today, with increasing air traffic demands, the money required to meet new airport needs and expansion of existing facilities continues to mount, but the difference today is that commercial aviation is expected to pay the bill. The Port of New York Authority since 1947 has spent $95 million on the four New York area airports, on top of the $121 million already invested before the Authority took over. It is expected that another $100 million will be needed by 1960. New York International, with 4,900 acres of land, is nine times the size of LaGuardia. And in Chicago, O'Hare Field will have 6,900 acres. The trend toward bigger and better and costlier airports continues. That is why the question of proper design and location is so important—especially since the future may see more and more of the bill reflected in the cost of traveling by air.

What then can be said about the possibilities of alleviating the growing problems at the airport—the rising costs and increasing inconveniences of airport location that promise to hold back the development of civil aviation? With the coming of jet aircraft will it be necessary, as many are predicting today, that our airports be even farther removed from the city to provide necessary runway length and protection from excessive noise levels?

From an engineering standpoint there is ample opinion that problems of landing and take-off for jets will be solved, and that it should not be necessary in the future to provide more than 6,000 feet of runway for domestic operations and 8,000 feet for longer-range aircraft. A properly designed jet, in the opinion of Maynard Pennell, Senior Project Engineer for Boeing's jet transport project, "will be able to fly exactly the same paths as today's reciprocating engine airplanes. It can, however, climb more steeply and at a higher rate of speed, and it will want to do so for efficiency if it is not limited by a coexistence with some of today's airplanes which by comparison are 'clunkers.'" And for landing the jets in less space there are high hopes that methods such as reverse-jet-thrust will do what the reversible prop has done so well.

From an economic standpoint, however, it would be dangerous indeed to place undue confidence in 6,000- or 8,000-foot runways, and today's far-away airports. The importance of somehow achieving close-in terminals for air travel is highlighted by the fact that so large a number of air travelers are moving such short distances. For example, Northeast Airlines reports fifty-seven percent of all its passengers traveling between 100 and 200 miles. For Capital Airlines forty percent are in this distance bracket. Altogether last year six million people traveled less than 200 miles by airline. The big market to be captured in the travel business is the short-haul market. And you can't carry really short-haul patrons by air if the time getting to and from the airport continues at levels common today.

But even for the long-distance traveler the time lost on the ground is important. Suppose, for example, that speed in the air is increased from 300 to 400 mph, but that this means larger airports located more distant from the city. A traveler going 1,200 miles will make the air trip in three hours instead of four, but he is very likely to lose the entire one-hour advantage by reason of more difficult ground transport at either end. An hour gained in flight is very easily lost in the traffic battle on the ground.

In the Air-Age-to-be, therefore, it seems highly improbable that we will continue to rely on the airport locations and designs that have developed thus far. For as cities spread out through the influence of air travel, the adequacy of a single airport for a given urban area will become less and less, and the traveler's tolerance of present-

(Continued on page 71)

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day trips to the airport will diminish. The ultimate solution, it seems apparent, must lie in reducing rather than increasing the space requirements for air terminals. That will have to be accomplished by altering the characteristics of the airplane to permit landing and take-off where the customers happen to be.

There are many signs that point to a rather dim future for the great terminal airports of the present time, and many people are working on possibilities for making the big, remote airports obsolete. For jet aircraft the proposal has been made in several quarters that water-based jet airliners would have many advantages over land-based planes, including the elimination of lengthy runway requirements. Ernest Stout of Consolidated-Vultee points out that there are more than 100 ready-made airports in the United States for landing jet aircraft on the water at close-to-downtown locations. Eddie Rickenbacker, chairman of the board of Eastern Airlines, has predicted that the return of the flying boat may well result from the introduction of commercial jets.

Another significant undertaking is military support for the development of convertiplanes. A convertiplane, with all the characteristics of conventional aircraft, plus vertical lift and descent, is "well within the realm of immediate practicability" according to studies of this new answer to the airport problem. At the National Advisory Committee for Aeronautics' Langley Field laboratory, work continues on this significant development that may put out-of-the-way airports out of business.

The most immediate answer to the airport problem is, of course, the helicopter. In New York City a beginning has been made that helps to compensate for far-away airport location by shuttling passengers from one New York airport to another. New York Airways makes sixteen trips a day carrying mail and freight, and up to four passengers. Ultimately the service will be extended to the downtown New York area from the airports, but as yet there is no commercial heliport in the city.

Inauguration of passenger helicopter service in the Sikorsky S-55s is the forerunner of regular inter-city 'copter service for short hops. Sabena Belgian Airways has begun the first international helicopter service, connecting such cities as Brussels, Rotterdam, Lille, and Bonn. The shortest hop is sixteen miles, from Bonn to Cologne, and the longest jump is sixty miles. The Brussels to Bonn route, 131 miles in length, saves three hours over express train schedules. In December, the service was extended to Paris.

With the twin-engine helicopter available for commercial service in the United States in the near future, much of the passenger volume at present airport locations will be shifting to the downtown heliport. Sabena is operating into the heart of seven European cities to heliports about 480 square yards in area—a far cry from the thousands of acres required to accommodate conventional aircraft.

These are some of the signs that point to ultimate solution of the vexing limitations now imposed on air travel by inconvenient airport location and continued dependence on surface transport. Viewing the future of the airport from an engineering standpoint, it seems highly probable that air travel will shake off the shackles through the development of new aircraft designs that will be freer to take advantage of the characteristics inherent in the airplane—its speed and its ability to go anywhere.

And viewing the future of air transportation from the economic standpoint, it seems equally clear that the present trends in airport location and design will not be the most effective basis on which to develop the potentials of the new form of transportation. The Air Age will continue to elude us until the trip can be made all the way by air.—END

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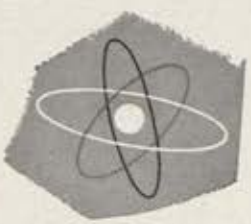

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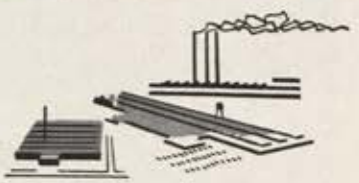

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