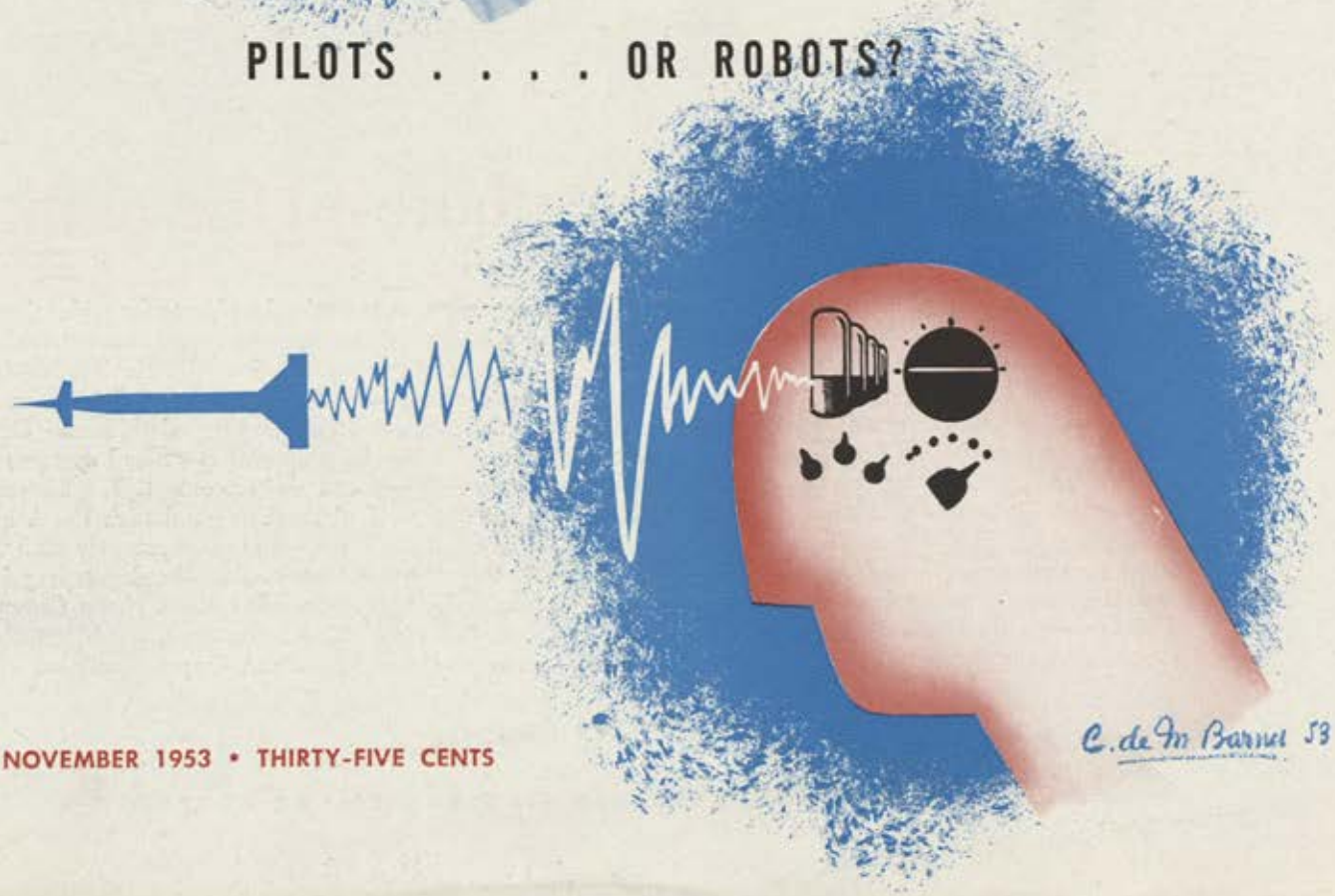
AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

PILOTS . . . . OR ROBOTS?



NOVEMBER 1953 • THIRTY-FIVE CENTS

Now! Arma puts the plane on the map...

Arma's new Pictorial Computer shows a pilot his exact location and heading, continuously on a projected map—throughout a given flight. Here's how it works:

A film strip containing as many as 700 maps shows the various OBD stations over which the aircraft will pass. During flight, the Arma Computer automatically indicates position and heading of the plane on a TV-like screen. In other words, the Computer shows continuously and exactly where the plane is in respect to the ground, at every moment of flight—regardless of weather, altitude or speed. It automatically tunes to the appropriate OBD frequency, automatically adjusts for scale of map and has provisions for automatic chart changing.

Arma has worked closely with the Air Navigation Development Board and the Civil Aeronautics Administration in developing this Pictorial Computer for use in proposed advanced systems of air navigation and traffic control. For 35 years Arma has worked hand in hand with the Army, Navy and Air Force—and more recently with the Atomic Energy Commission—in developing important military control systems. *Arma Corporation, Brooklyn, N. Y.; Garden City, N. Y. Subsidiary of American Bosch Corporation.*

ARMA ADVANCED ELECTRONICS FOR CONTROL

This one was built to *BOOMERANG* on purpose!

Official U. S. Navy photograph of the pilotless Regulus, landing after test flight

IN developing the pilotless Regulus, the Navy's new guided missile, Chance Vought called upon the Aviation Products Division of Goodyear for help in solving two tough problems.

First, it was imperative that the experimental missiles be made *returnable*—be made to come back to base and land after launching—in order that data essential for perfecting the production model could be obtained, and economy maintained.

Goodyear delivered specially designed wheels and brakes for the retractable main gear required to land the ultra-high-speed Regulus. As pioneer of the famed Single Disc Brake which has unequaled capacity for its size and weight, Goodyear was the logical choice for the job.

Next, a new-designed fuel cell of rubberized fabric was needed—one which could be actuated by an air-pressure diaphragm rather than the conventional fuel pump. Again, Goodyear delivered the goods.

The above are typical of countless aeronautical problems aided in the solving by Goodyear experience—which has been contributing to aviation progress since 1909. Goodyear, Aviation Products Division, Akron 16, Ohio or Los Angeles 54, California.

We think you'll like "THE GREATEST STORY EVER TOLD"
every Sunday—ABC Radio Network
THE GOODYEAR TELEVISION PLAYHOUSE
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AVIATION 50th ANNIVERSARY
GOODYEAR
ONE OF THE PIONEERS

GOODYEAR
AVIATION PRODUCTS

MORE AIRCRAFT LAND ON GOODYEAR TIRES, TUBES, WHEELS AND BRAKES THAN ON ANY OTHER KIND

PILOTLESS

1915 Working with the U.S. Navy, Sperry developed first aerial torpedo whose course could be pre-set and held during prolonged flight with Sperry instruments. In early experiments, Lawrence Sperry (above), piloted torpedo to landings. Later models were radio controlled.

FLIGHT...

another Sperry first... 1915

1946 The WAC CORPORAL (in circle), developed by American military scientists for launching from a V-2 rocket, first used compact Sperry control mechanism to guide it.

There's little physical resemblance between the first automatic aerial torpedo of World War I and the guided missiles of today. Yet both were made possible by the gyroscopic principles developed by Sperry.

When the automatic flying torpedo took to the air, it was kept on its predetermined course with a Sperry Automatic Pilot. Today, combined with radio, principles of those early flights are incorporated in the compact, sensitive Sperry controls that form the brains of supersonic rockets, experimental drone aircraft and guided missiles.

What new developments lie ahead in the field of pilotless flight? No one knows. But you can be sure of this—as improvement follows improvement, Sperry engineers will be applying the "know how" and experience acquired during more than 40 years of leadership in aviation.

1951 Sperry E-4 Automatic Pilot converted Lockheed jet fighter to automatically controlled drone, permitting command from ground or from EDT-33 Director plane. Such robots served as targets in evaluating missiles and gathered data by penetrating atomic blasts.

1953 Guided missiles, such as the Navy's Regulus, designed by Chance Vought, are directed in flight by Sperry controls combined with highly developed radio. From controls and guidance systems to complete "birds," Sperry is designing and producing missiles for the national defense.

19?? For as long as there is a need, Sperry's engineering, research, and manufacturing facilities are at the command of the Armed Forces. And through licensing arrangements, Sperry has been proud to share its developments with others – to give the Services more Sperry-designed equipment in the shortest possible time.

SPERRY GYROSCOPE COMPANY
DIVISION OF THE SPERRY CORPORATION
GREAT NECK, NEW YORK

PROGRESS 50TH ANNIVERSARY OF POWERED FLIGHT SECURITY

One of a Series of Advertisements Commemorating the 50th Anniversary of Powered Flight.

AIR MAIL

College Education

Gentlemen: If I interpret Joseph L. Bowen's letter ("Jet Blasts," AIR FORCE, June 1953) correctly, then pity the poor unfortunate Reservist with his college education and still no commission. Does he think the Air Force owes him a commission simply because he is a college grad? (Many do.) If he had gone to the right college he could have received a commission quite easily, and with no more qualifications than his "sheepskin." Too bad he doesn't qualify under AFM 36-5; then there would be no further work involved for him.

Suppose he had stayed in. He might be a master sergeant now, working for some commissioned college graduate with no experience, no intentions of making the AF a career, no desire to do the AF any more good than necessary to keep his commission, and just waiting until he gets hold of his DD-214 at the end of his tour of active duty. Experience and know-how do not seem to be of any value to the Air Force—a college degree seems to be the ONLY prerequisite to getting a commission in the AF.

How about commissions to career-minded airmen able and capable and willing and desirous of giving their all to the Air Force, as they have done in the past. Give us a test along with those "no prior service," "non-interested" commissioned college graduates and see who comes out on top. Granted, occasionally the potential is there but very rarely is there willingness to make the potential work.

M/Sgt. Stanley A. Phillips
Canton, Ohio

Author, Author!

Gentlemen: Two articles that recently appeared in AIR FORCE Magazine by Flint O. DuPre impressed me very much. They were: "Remember When They Were Allies?" (July issue) and "We're Too Busy for Medals" (September issue).

I read many of DuPre's stories when he was an Air Force PIO in Japan. He is a thorough researcher and he has a knack for telling an interesting story. Let us hear more from DuPre.

Lt. Col. C. B. Whitehead
Air University
Maxwell AFB, Ala.

Gentlemen: The August issue of AIR FORCE Magazine was well balanced and of considerable interest to the Reservist. I was particularly interested, however, in the article about past personal contacts of some of our top generals with the Russian military. I believe that just this kind of article, sandwiched in with stories about the latest developments in airpower, makes for a well rounded editorial meal. I also believe that we need to be reminded, over and over again, of the calibre heels that our once (?) allies the Soviets continue to be. An orchid to Mr. DuPre, who wrote the article.

Lt. Col. Robert J. Nelms, AFRes.
Dallas, Tex.

Gentlemen: I should like to comment on the fine story of the 3d Air Rescue Group, "We're Too Busy for Medals," by Flint O. DuPre, which appeared in your September issue.

Having served with the 7th Air Force in the Pacific during World War II, it was my privilege to observe, first-hand, much of the rescue work that was then being carried out. There is no doubt in my mind that the men who make up the 3d, as well as the other Rescue Groups, receive far too little credit for a big job well done.

I might add that the entire September issue is very attractive.

Lyle Brown
San Francisco, Calif.

Gentlemen: We are often so engrossed in our own flying that we overlook the jobs being done by our compatriots. And of all people, we should never forget the men of the Air Rescue Service, the best friends of all airmen.

Flint O. DuPre's article "We're Too

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Busy for Medals" in the September AIR FORCE reminded me of the obligation we have of remembering the ARS. Mr. DuPre's story was a citation those fellows well deserve.

Lt. Jack H. Patton
9th Bombardment Wing (M)
Mt. Home AFB, Idaho

Budget Discussed

Gentlemen: Lest there be any misunderstanding of my position, let me first state that I am:

a. An ardent believer in airpower and in a strong USAF for the defense of our country;

b. A charter member of the AFA and believer in its mission;

c. One of those relatively few individuals, an ordinary citizen, who in 1948 publicly called attention to the then existing serious deficiencies in airpower and the failure to follow the recommendations of the report, "Survival in the Air Age."

With the above in mind, you will permit me, I trust, to write a word of caution to AIR FORCE editors and AFA officers to be less heated and dramatic in their arguments with respect to the current defense budget discussions. I think we all agree that there is no more merit in Air Force recalcitrance than there was sometime ago in the Navy's.

The President of the United States and his aides deserve an opportunity to work out a solution to the enormous problems facing our country economically as well as militarily. If our legally constituted authorities, after public investigation and discussion, decide that the defense budget must be reduced, our obvious duty is to work intelligently together and make the best of a difficult situation. When we permit bitterness and unfairness in our arguments we do serious damage to our national defense establishment and discredit the Air Force and its friends. Moreover, since our President is quite expert in matters military, it might be a wiser course to proceed with dignity, restraint, and confidence.

David A. Lurensky
Chestnut Hill, Mass.

Chaplains Neglected

Gentlemen: As an Air Force Chaplain, and a member of the Chaplains' Division of the AFA, I always look forward to receiving my copy of AIR FORCE, which I read with interest. It provides a wealth of helpful and enlightening information. Your excellent articles on the various commands are valuable aids in understanding the mission and problems of the Air Force units.

As a Chaplain, however, I frequently find a neglect of this important aspect of the Air Force structure. Judges, Surgeons and other professional services are given mention, but the Chaplain is hardly ever given coverage. In the recent article on SAC, for instance, I searched the organizational chart in vain to find the Chaplain—whose role is so important in the successful operation of any unit.

(Continued on following page)

AIR MAIL——CONTINUED

I think it would give proper recognition to the Chaplains Service if you were to include them in your organizational charts. I should like further to suggest that a feature article on our role and mission in the Air Force be run in the not too distant future. It might be enlightening to your other readers.

John P. Thomas
Chaplain (1st Lt.), USAF
APO 132, New York, N. Y.

Nurses Slighted?

Gentlemen: I was most chagrined while looking over your chart of Hq., USAF, in your anniversary issue to find our Col. Varena M. Zeller among the missing!

Yes, Air Force nurses do exist; although you seemingly are not aware of our presence, may I assure you that our absence would really put you in a quandry.

1st Lt. Anna Marie Rider, AFNC
495th Medical Group
APO 633, c/o PM, N. Y.

Polish Hero

Gentlemen: It was announced in the newspapers on August 22 that Gen. Hoyt Vandenberg was named as aviation's man of the year.

Now, General Vandenberg is a fine man, I agree. But the man who deserves this award above everyone else is the Polish pilot Lt. Frank Jarecki. He is an inspiration to all freedom-loving people the world over. I wonder how many people feel as I do?

Frances Sikora
Pittsburgh, Pa.

The Great Debate

Gentlemen: Civilians do read your magazine. Whether they are Democrats, Dixiecrats, Dixie Republicans, or Know-Nothings, we are all on the same team trying to attain survival under some form of government, or splinters thereof.

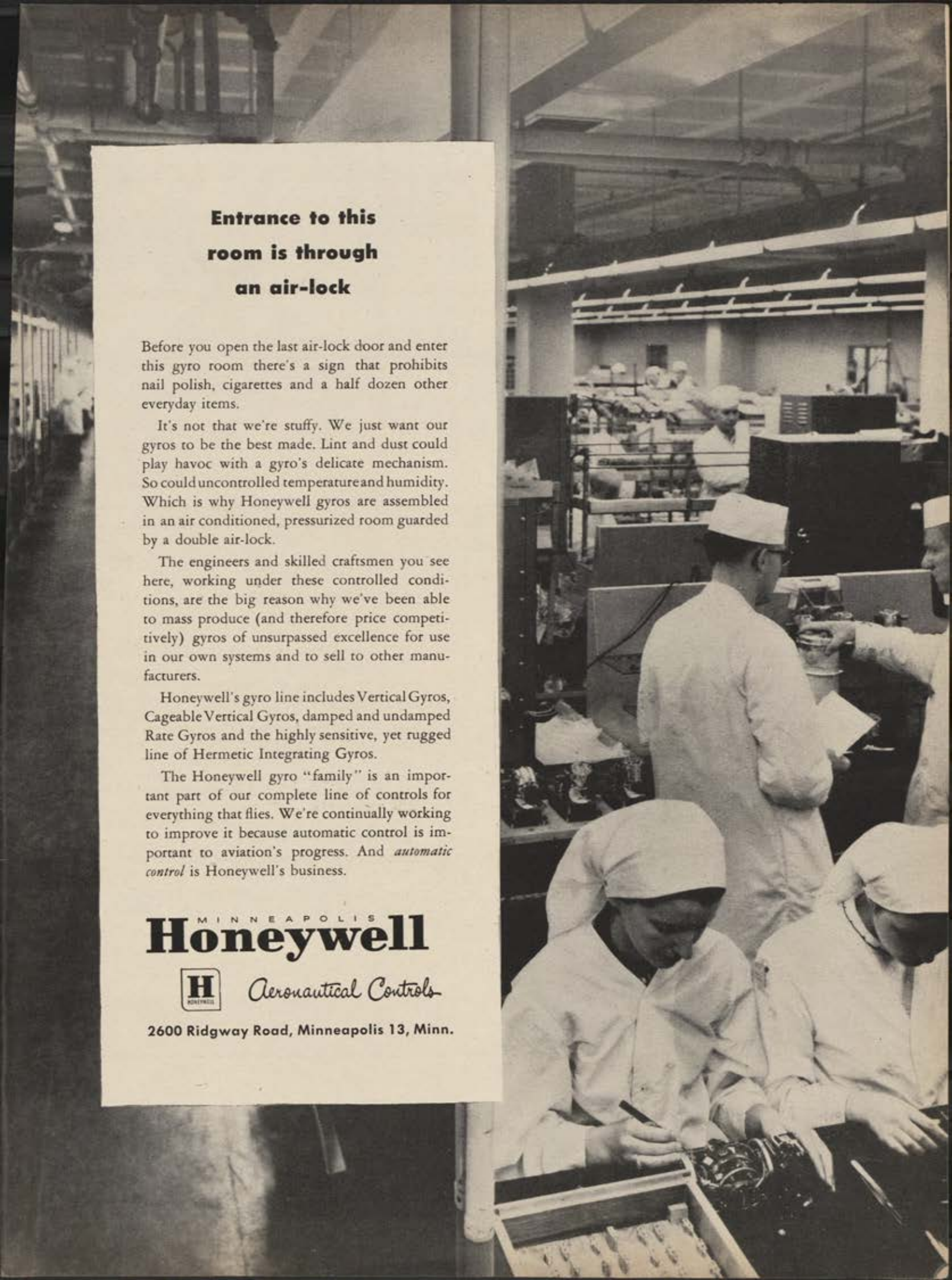
Your article in the September issue on the Air Force budget appears to cover the main points of contention and in most instances it contains the facts though the text is slightly slanted for Air Force personnel consumption.

Horsepower-hours, man-years, etc., do not give me the answer as to why there are eighteen sergeants in the orderly room and only twelve men outside in the motor pool working; or why the new B-52 wing set-up requires fourteen air police for each of the planes. There are 532 officers and airmen in the ground bombardment squadron alone. Why can't some of these do sentry-go now and then?

The $40 billions the AF has available as of July first are not hay, and it requires a new look-see by new minds of thought, by our new President. The end is not yet in sight. Probably by next January we will have another report that will give us the answer as to what is wrong with our AF.

It is not money, nor planes, nor men;

(Continued on page 9)



Entrance to this room is through an air-lock

Before you open the last air-lock door and enter this gyro room there's a sign that prohibits nail polish, cigarettes and a half dozen other everyday items.

It's not that we're stuffy. We just want our gyros to be the best made. Lint and dust could play havoc with a gyro's delicate mechanism. So could uncontrolled temperature and humidity. Which is why Honeywell gyros are assembled in an air conditioned, pressurized room guarded by a double air-lock.

The engineers and skilled craftsmen you see here, working under these controlled conditions, are the big reason why we've been able to mass produce (and therefore price competitively) gyros of unsurpassed excellence for use in our own systems and to sell to other manufacturers.

Honeywell's gyro line includes Vertical Gyros, Cageable Vertical Gyros, damped and undamped Rate Gyros and the highly sensitive, yet rugged line of Hermetic Integrating Gyros.

The Honeywell gyro "family" is an important part of our complete line of controls for everything that flies. We're continually working to improve it because automatic control is important to aviation's progress. And *automatic control* is Honeywell's business.

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Honeywell

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First Full Radar Traffic Control Solves Bad Weather Jams at Washington National Airport*

Gilfillan ASR-1 and PAR-1 at Washington National Airport

Credit for developing the successful radar procedure at Washington National Airport goes to CAA and a special Traffic Control Committee including representatives of Air Transport Association, Airline Pilots Association, Air Force, Navy and Coast Guard. Gilfillan is proud of the part Gilfillan GCA plays in this achievement.

RESULTS OF FULL RADAR TRAFFIC CONTROL OVER 6-MONTH PERIOD

- IFR capacity of airport doubled.
- Traffic delays due to weather cut ⅔.
- "Stacking" practically eliminated.
- Departure delays cut from maximum of 2 hours to 10 minutes.
- Delays due to missed approaches or lost aircraft virtually eliminated.
- Time required to unsnarl wholesale shifts from VFR to IFR flight plans materially reduced.
- Safety of terminal-area traffic increased.

* (As reported in Aviation Week)

OPERATIONAL STATISTICS

(Covering 2-month bad-weather period during winters of 1952 and 1953)

1952, WITHOUT RADAR: 2,239 IFR operations. Traffic delay 76 hr. 58 min.

1953, WITH RADAR: 5,570 IFR operations. Traffic delay: 9 hr. 9 min.

GENERAL MILTON ARNOLD, ATA Vice-President for Operations, said that radar traffic control permits airline IFR operations at virtually the same capacity as VFR and has shifted the airline operating bottleneck from the air to the ground.

RADAR EQUIPMENT

LONG RANGE (100-MILE) RADAR to guide air traffic to four major approach fixes.

GILFILLAN GCA SURVEILLANCE RADAR to guide air traffic from approach fixes to final approach.

GILFILLAN GCA PRECISION RADAR to guide air traffic on final approach.

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the FIRST name is... *Gilfillan*

Los Angeles

GCA

therefore it must be the utilization of all three; and whatever it takes to correct it the AF does not appear to be able to grasp it.

"Activated" wings without a home or equipment are not by any means to be classed as a scandal.

Save your Great Debate article until the snow flies, then take a second look.

Stephen J. Fraser, Sr.
Country Grocer
Tampa, Fla.

'Copter Rescues

Gentlemen: To one whose Air Force experience stems from WW II, Flint DuPre's article on the 3d Air Rescue Group in your September issue comes as a revelation. Not that helicopters are in their infancy. They aren't. But it was surprising to learn that helicopter rescue work has advanced so rapidly and worked so effectively, as the article so roundly confirms.

It is also gratifying to learn that the Air Force is still doing everything possible (and challenging the impossible) to safeguard lives. The 10,000 or so men borne from behind enemy lines in Korea are a mighty profit of brave endeavor!

Kenneth E. Lively
Austin, Tex.

Squadron Commanders

Gentlemen: Congratulations to you and Lt. Col. Robert Kahn on the article "What's Happened to the Squadron Commander?" in the June issue.

Col. D. K. Miller, commander of this supply group, was so impressed that we cut a stencil and ran off fifty copies, distributing them to the wing commander and his staff as well as all officers of this group.

Colonel Miller has always agreed with the line of thinking set forth by Colonel Kalm and has insisted that the command and operational functions of his squadrons be separate and has assigned different officers to these duties.

In addition to the above, the article was brought to the attention of 85th Air Depot Wing Character Guidance Council, and copies were distributed to all members.

Again, congratulations on the high caliber and timeliness of the articles which you continue to publish.

Maj. B. H. Lowry
Adjutant, 85th Supply Group Depot
APO 207, N. Y.

Naming Bases

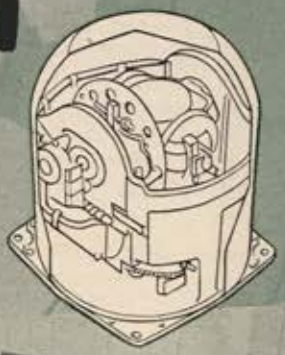
Gentlemen: I should like to propose to the US Air Force through you, should they be considering naming any more Air Bases, the name of Maj. Wilbur G. Miller. Major Miller was killed in the Aleutians early during World War II. He was one of the finest men I have known, either in or out of service, and I know that all who knew him are richer for having had that opportunity.

Arthur W. Goring
Uravan, Colo.

pushing precision toward perfection

Eclipse-Pioneer's "Polar Path" system guided the first commercial over-the-Pole flight* with such accuracy that the log of the now-famous Scandinavian Airlines System's flight carried the notation "works to a miracle". How was it possible to produce this gyro that actually proved to have less than 1° random drift? Admittedly, it was a special gyro, but the answer nevertheless lies in advanced production techniques and facilities that are pushing gyroscope precision toward perfection. Today, *even machining* of gyro parts is being accomplished at E-P in a specially constructed, atmosphere-controlled room where castings "soak" for 36 hours to assure stability of carefully machined tolerances—where electronic air cleaners snatch up foreign particles so fatal to delicate mechanisms—where specially constructed machines automatically hold split-hair tolerances as a matter of routine and surface finishes are maintained to the incredible limits of the thickness of a single light band. In the entire industry, only Eclipse-Pioneer can offer precision mass-production facilities like these—facilities that literally are pushing gyro precision toward perfection.

*NOVEMBER 20, 1952



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*Manufacturing capacity is now available for a great many models of these products.

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World's Largest Producer of Aviation Instruments and Accessories

Shooting the Breeze

ON PAGE 47 of this issue, Aycock Brown and AFA's Ralph Whitener tell you "Where It All Started." Of course, "where" is Kitty Hawk, N.C., scene of man's first powered flight. This, 1953, is the fifth year AFA has co-sponsored the commemorative program at Kitty Hawk honoring the Wrights.

And being the fiftieth, or golden, anniversary of the birth of flight, this year's celebration will be a gala, four-day affair. That is just twenty-three hours and forty-seven minutes less time than it took Thomas G. Lanphier, Jr., AFA past president, to fly around the world when AFA first joined the Kill Devil Hills Memorial Society in sponsoring the Kitty Hawk anniversary.

That was in 1949. Lanphier, to call attention to the Kitty Hawk celebration, flew regularly scheduled commercial airlines — Pan Am, United, and American—on a globe-circling hop that covered 22,180 miles in fewer than five days. He carried a message from then President Harry S. Truman, commemorating the forty-sixth anniversary of the Wright Brothers' flight.

Two years ago it was an International Banquet. Each item on the menu was flown in from a foreign country. There were pineapples fresh from Hawaii, and Brussels sprouts from you-know-where in Belgium.

That this year's fiftieth anniversary celebration should be the most ambitious yet is fitting. AFA is proud of the part it plays.—END

AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

Vol. 36, No. 11 • NOVEMBER 1953

FEATURES

DEPARTMENTS

THE COVER

Pilots are easy enough to illustrate on a cover, and so are robots. It's only when you try to relate them that you find a few problems. Cover artist Charles deM. Barnes, we feel, has solved those problems effectively and in an attractive way. The pilot vs. robot controversy is a popular topic in the Air Force "hot-stove" league. The case for the pilot is well stated this month by Brig. Gen. Dale O. Smith, of the Air University's staff, beginning on page 32.

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CONGO 'COPTER—Health authorities of the Belgian Congo have won a battle against dread disease-carrying insects. Sikorsky S-51 helicopters spray insecticides on vast breeding areas inaccessible to other aircraft or spray equipment. Leopoldville residents are reported now to be as safe from carrier insects as are New Yorkers.

AROUND THE WORLD WITH SIKORSKY HELICOPTERS

"DRY RUN" RESCUE—Here a Navy HO3S Sikorsky helicopter awaits the loading of a "wounded" man carried on a stretcher improvised of poles and Navy jackets. This pickup was part of a practice operation for search and rescue helicopters and survival parties. The HO3S Sikorsky is specially equipped to carry litter patients.

UNUSUAL CARGO—This crashed Army L-19 liaison plane was salvaged with ease in Korea by an Army Sikorsky H-19 helicopter. Two trips were needed to fly the damaged wings, engine and fuselage (above, in cargo sling) to a repair depot. Army Sikorsky helicopters are now solving hundreds of tough, unusual transportation problems.

SPECIAL AIRLIFT—A wounded veteran of months in a North Korean PW camp is carried from an Army Sikorsky H-19 helicopter to a South Korean hospital in Seoul. As in earlier prisoner exchange activities, Army Sikorsky helicopters played a big part in the post-truce prisoner exchange, providing airlift for repatriated soldiers and other personnel.

SIKORSKY AIRCRAFT

BRIDGEPORT, CONNECTICUT

One of the Four Divisions of United Aircraft Corporation

LEAR VGI SYSTEM ...SIXTH SENSE FOR THE BOEING B-47

IN HIGH-SPEED maneuvering hazardous errors are introduced by conventional attitude indicating instruments. For greater safety, the jet plane needs something *special* in the way of an attitude indicator. For the Boeing B-47 and other jet bombers and fighters, this critical function is performed by the Lear Vertical Gyro Indicator System.

Operating as the plane's "sixth sense," the Lear VGI system is designed to measure and display deviation from horizontal flight with near-perfect accuracy and speed. All necessary gyros, amplifiers, and power supplies are contained in one compact unit which is remotely installed, transmitting pitch and roll intelligence electrically to the flight attitude indicator. The Lear VGI may also be used as a master vertical reference for an autopilot, radar, or other equipment.

Let us discuss *your* problems in instrumentation. We have been solving the tough ones for almost a quarter of a century.

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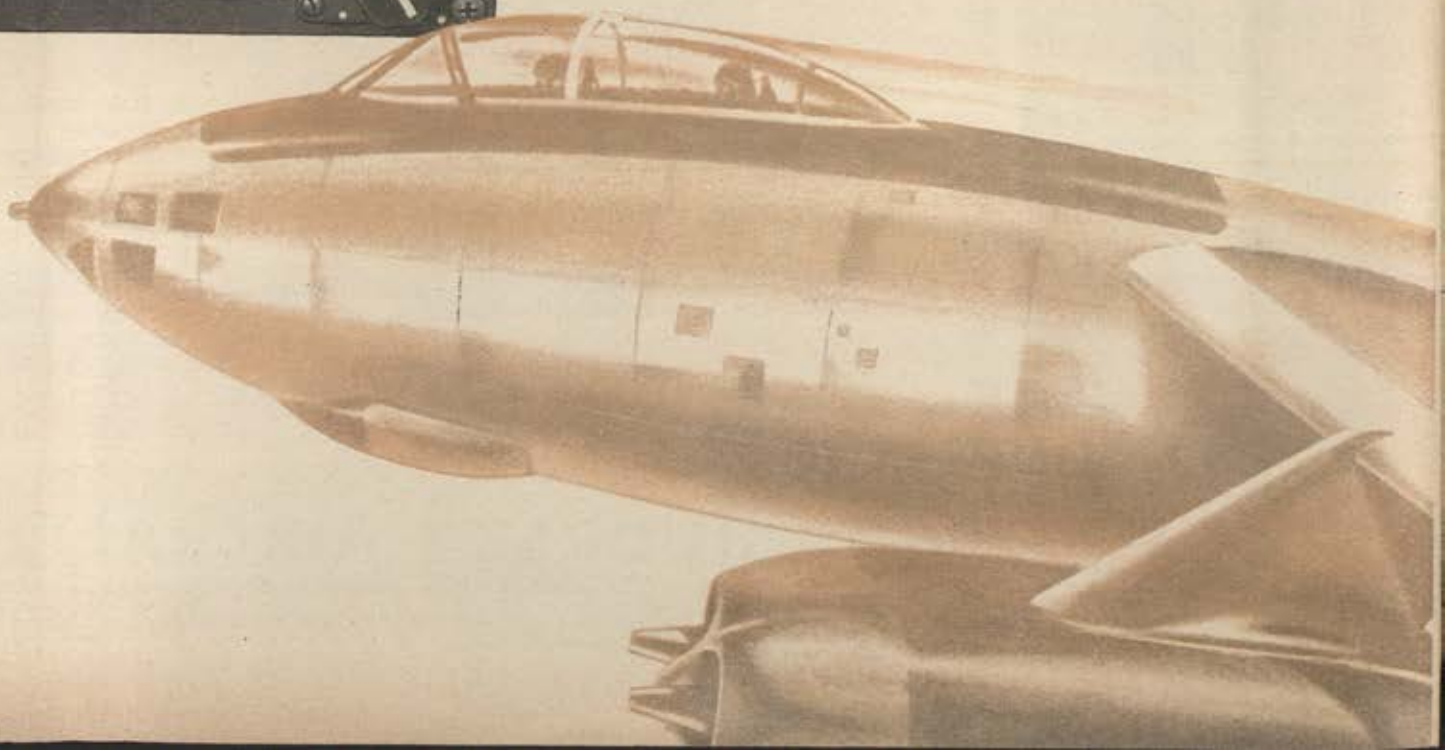
110 IONIA AVE., N.W., GRAND RAPIDS 2, MICHIGAN
Executive Offices: 3171 S. Bundy Dr., Los Angeles 34, California

LEAR VGI SYSTEM Non-tumbling horizon gyro (in roll), provides greatly improved accuracy, reduced turn errors. The system includes 24,000 rpm gyro motor and a highly sensitive Lear electrolytic erection switch.

IP-3



AIRPOWER IN THE NEWS — BY JAKE CULPEPPER

ENGINES — AF is reducing production and in some cases cancelling orders on several types of engines. Largest number affected are J-47s which power the B-47. AF says J-47s are lasting longer than expected, hence it won't need so many. In general the reductions are due to longer time between overhauls and lower attrition rates. On the other hand AF will place increased orders for the J-57, which powers the B-52, F-100, F-102, and F-105. Increased emphasis will also be placed on development of turbo-props. Secretary Talbott estimates that four to five hundred million dollars will be saved this way.

AIRCRAFT — Reductions in orders totaling 965 aircraft are being made. Of these, 748 are combat aircraft, contradicting Administration pledge that no combat planes would be cut. AF now says these reductions are largely made possible by decreased attrition rates, as revealed by experience with jet aircraft. One real reason is that budget cuts resulted in a reduced flying program. Also accident and damage rate has not been as high as anticipated. The situation also reflects the shift of certain B-47 training activities from Training Command to SAC. As part of revised program, AF is ordering additional North American F-100s—the most advanced day fighter now ready for production—and more Boeing B-52 Stratofortress jet bombers.

PERSONNEL — Revised plans cancel the second force-out phase of 4,000 officers slated to receive RIF notices last month. Total AF officer strength on June 30, 1954, should now number 134,000. Despite the nurse shortage, 131 AF nurses and fifteen chaplains were among the officers selected by the RIF board for forced separation.

COMMAND AND STAFF — Lt. Gen. Orval Cook who in his present position, Deputy Chief of Staff, Materiel, has full responsibility for production and procurement functions in AF, has now been handed additional responsibility for research and development. Under the revised set-up, Lt. Gen. Laurence C. Craigie, Deputy Chief of Staff for Development, will continue to have responsibility for research and initial phases of development in AF, but he will report to General Cook. . . . Brig. Gen. Charles F. Born has replaced Maj. Gen. Julius K. Lacey as Commander of Crew Training AF.

SAVINGS — AF's Incentive Awards Program has netted a saving of $11,400,421 during FY '53. Employees making the suggestions received a total of $348,242. . . . AF has saved $400,000 by cutting size of bedsheets from 62 by 108 inches to 63 by 99 inches.

POLICY — Airmen recommended to be "busted" will have a chance for a hearing before an impartial officer under recent change in AF regulations. . . . Airmen separated in grades E-1 and E-2 are no longer allowed to reenlist except in certain specific cases. . . . Airman aviation cadet applicants with fewer than twenty months to serve before going to pre-flight must extend their enlistments to make up difference before being shipped to pre-flight. Extension will be cancelled if cadet washes out. . . . Airman now going overseas must have spent at least eighteen months in the ZI either in the military or as a civilian. Only exception will be those who volunteer for an overseas assignment and they must have been in ZI for at least twelve months.

SHADE 84 — October 1, 1955, is the new deadline. After that, no more AF-type Army tan shade 61, optional summer uniforms may be worn by AF personnel. . . . WAF's wool slacks and battle jackets should be available soon.

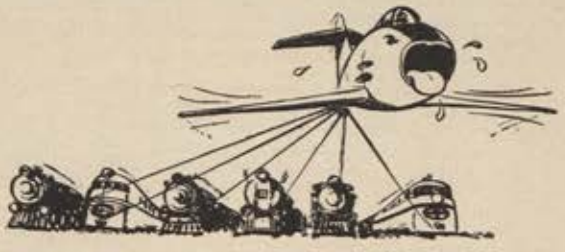
Power companies are using helicopters to string electric cable in England and Canada, and railroads are hiring 'copters to spray the weeds along their tracks.

° ° °

Nearly half of all the civil aircraft in New Zealand are engaged in aerial farming.

° ° °

The Lockheed Super Constellation develops more horsepower at take-off than eight of the newest type diesel locomotives.



And one of today's jet fighters has enough power to pull six sixty-car freight trains.

° ° °

The helicopter has been a long time coming. Igor Sikorsky got one off the ground at Kiev, Russia, in 1910. But it was thirty-one years later, on May 6, 1941, that Sikorsky stayed up one hour and thirty-two minutes to set a world helicopter endurance record.

° ° °

But translating ideas into things that will fly takes even longer than that. Twin-rotor helicopters are about to appear on the air transport scene, but the first published design for such a vehicle is credited to Sir George Cayley way back in 1843. And Leonardo da Vinci sketched a design for direct-lift aircraft 470 years ago.

° ° °

If you plan to take your automobile from Spain to Morocco, North Africa, take it via air ferry. The flight takes fifty minutes compared to the sea and rail journey of four days.

° ° °

The largest single unit of commercial air freight recently crossed the Atlantic by Seaboard & Western Airlines from New

York to Milan, Italy. It was an eight-ton section of an oil tanker's stern frame, for a ship laid up in Genoa.

° ° °

There are now 100 scheduled aircraft flights across the North Atlantic in each direction every week. The planes are operated by twelve US and foreign carriers. Flight time from New York to London has been cut nearly six hours during the past six years.

° ° °

The State Department's eighty-nine couriers, who provide "special delivery" service for secret documents, count on air transport for ninety-five percent of the 10,000,000 miles they travel every year.

By Wilfred Owen

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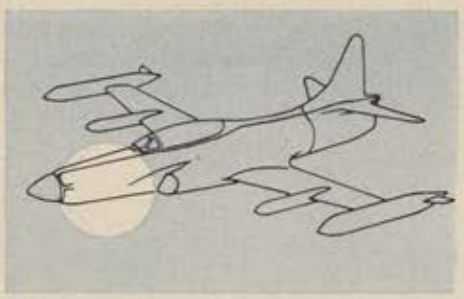

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THE MEASURE OF BRAVERY

American prisoners who defied Red torture deserve Medal of Honor

By Gen. George C. Kenney

PRESIDENT, AIR FORCE ASSOCIATION

BOTH public policy and public opinion face a severe test in decisions regarding the repatriated prisoners of war who confessed to "germ warfare" in Korea.

This is a delicate and complex problem. Each case must be weighed individually against all of the facts. We must not succumb to fast conclusions.

There is a difference between bravery in battle and human reaction to mental and physical torture. We think of bravery in terms of ability to face death. Dying can be sweet compared to the hopeless prospect of trying to endure day after day the deliberately prolonged agony of torture. The torturer doesn't let you die—and several of these POWs attempted suicide rather than confess—because death doesn't fit the torturer's purpose.

Our military men are well trained in the normal methods of waging war—and have proved their abilities in battle. We have not, however, trained them in psychological war. We have not taught them how to deal with the technique underlying the ludicrous "germ warfare" charges of the enemy. Our fighting men still are instructed to give only "name, rank, and serial number" when captured, as if silence were protection. Our fighting men and their families here at home must realize that ethics, honesty, and humane treatment, as we know them, do not prevail when we are dealing with Communism.

Of course, the human flesh can be weak. The United States, like all nations, has had its collaborators and its traitors, and we cannot forgive human weakness too easily in this fight for survival. When the evidence is uncontestable that a man has compromised our national position without having been subjected to undue pressure from the enemy, a firm policy must be invoked or our military stature will crumble. But when torture—mental or physical—is involved, we cannot afford to generalize our conclusions.

The so-called "germ warfare" confessions must be evaluated in terms of sympathetic appreciation of the mental and physical condition of American fighting men worn down by months of forced exhaustion, unbelievable living conditions, solitary confinement, continuous interrogation, ingenious methods of mental torture, and, in some cases, brutal physical torture, all of which play tricks with the senses and the nervous system.

These men deserve the full understanding of both government and public, and the opportunity to resume normal military or civilian careers.

We must also pay homage to those prisoners of war who, despite barbarous treatment, hideous torture, and threats of death flatly refused to confess to germ warfare, or to any other aspect of Communism's Big Lie. These men deserve proper recognition from their country. After careful examination of all the facts, their actions in POW camps should be judged equally with the actions of men in combat. Under the conditions imposed, refusal to confess represents public service "above and beyond the call of duty." These men are the bravest of the brave. They deserve the highest decoration our country offers —the Congressional Medal of Honor.

Certain men of Communism also deserve recognition—as war criminals. These gangsters must be stamped as public enemies of the free world. If we thought it proper to try, convict, and often put to death the German and Japanese torturers of World War II, it becomes proper to prescribe the same treatment to the Communist torturers of the Korean war.

This is a responsibility of the United Nations. Our representatives in that body should demand that a commission be appointed to obtain the names of those responsible for these outrages and that they be listed as criminals against humanity, subject to trial and punishment. This may be a long and difficult task, but it must be done. If not, the blood we have shed in Korea will have been shed in vain.

Further, our country and the United Nations must continue to demand—with all of the power at their command – the release of the hundreds of prisoners of war still behind Asia's Iron Curtain. We cannot compromise our position in this matter.

Finally, we must recognize once and for all the true nature of the enemy. Let there be no misunderstanding regarding his intentions or his methods.

Out of the "germ warfare" hoax and the tortured confessions of our American fighting men must come a broad program of education on the nature and threat of Communism. This knowledge is vital to our survival and the survival of civilization itself.—END

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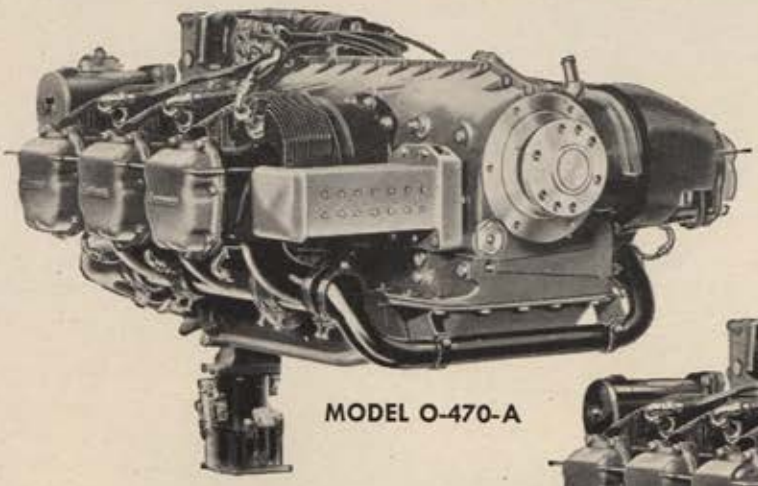

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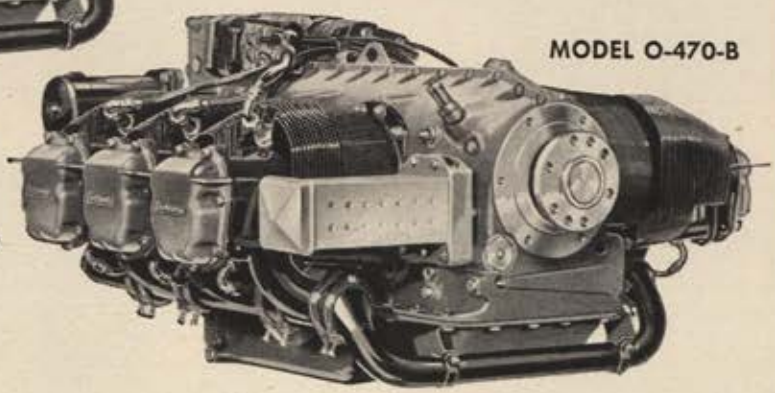

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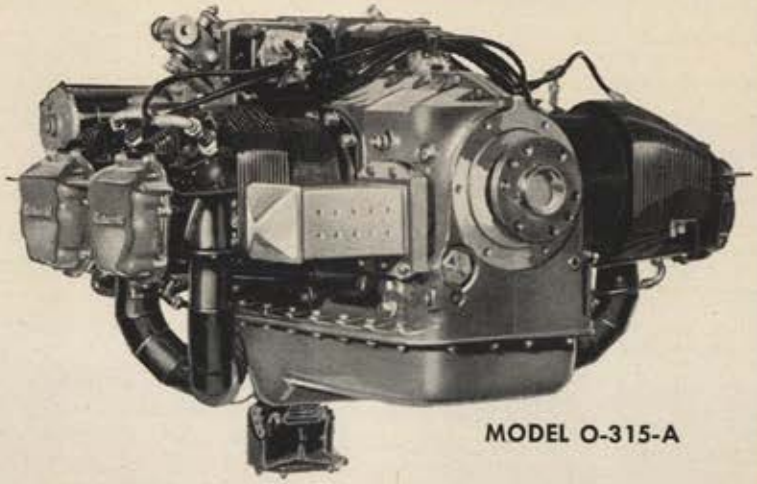

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PEOPLE IN THE AIR NEWS

One afternoon last July **Maj. Stephen L. Bettinger**'s wingman returned from MIG Alley with the news that the major had made ace. The F-86 pilot from West Caldwell, N. J., said the wingman, had clobbered his fifth MIG-15 and then been shot down himself. Because AF regulations require a pilot's statement as corroboration on kills, Bettinger was not considered an ace as long as he was behind the barbed wire of a North Korean prison camp. When American airmen were repatriated after the truce, Bettinger was among them. He is now listed officially as the USAF's 39th and last jet ace of the Korean war.

Bettinger

Goddard

Brig. Gen. George W. Goddard, USAF (ret.), WW II director of reconnaissance for Allied Air Forces in Europe, was appointed head of Bulova's Research and Development lab's military and aerial photo division. General Goddard invented camera processes in long-range, night, color, and 3-D photography. In 1926 he developed a special shutter and flash synchronizer that resulted in the world's first night aerial photographs. In 1950 he received the Thurman H. Bane award from the Institute of the Aeronautical Sciences for "outstanding achievement in aeronautical development."

Jerome Lederer, managing director of the Flight Safety Foundation, has won the Arthur Williams award, one of the major honors in the field of flight safety. It's the first time the 11-year-old award has been given solely for achievement in aviation safety.

An experienced throttle jockey and long-time member of AFA climbed into the left seat of the VFW when **Wayne E. Richards,** 42, was named commander-in-chief for 1953-54. A WW II combat pilot in the South Pacific, Richards was elected at the VFW's annual encampment in Milwaukee. He holds a Reserve commission in the AF and has been an AFA member since 1947.

A "kick in the pants" made **Lt. Cmdr. James B. Verdin,** 35-year-old veteran of more than 100 combat missions in WW II and Korea, the air world's fastest human being over a measured course. Piloting the delta-winged Douglas F4D Skyray (it resembles the ocean-dwelling manta ray), the boyish-looking commander averaged 753.4 mph on four low-level passes over a 3-km. (1.863-mile) course over the shores of the Salton Sea, Calif. Verdin's flight was officially recorded by the Federation Aeronautique Internationale and won back for the US the speed record established eight days earlier by Great Britain. It also gave the Navy its first record holder since 1947. Verdin's fastest run in the Skyray (powered with Westinghouse J-40 turbojet with afterburner) was 761.4 mph. "When I nudged the throttles forward to turn on the afterburner," said Verdin, "it was like a kick in the pants."

Lt. Cmdr. James B. Verdin

Douglas Skyray—the speediest

The RAF and Royal Navy exchanged areas of operations and for a brief time Great Britain was without peer in the air-speed realm. In an overwater sweep just fifty feet above the English Channel, RAF **Squadron Leader Neville Duke** drove his Hawker Hunter to a world's speed record of 727.6 mph. A few days later the British Royal Navy's **Lt. Cmdr. M. J. Lithgow** scorched the air over the hot sands of the Libyan desert and extinguished Duke's record by registering 737.3 mph. But eight days later the baton passed back across the Atlantic to the USA and Navy Speedster Verdin (see above).

Receiving B'nai B'rith's 1953 Humanitarian and Distinguished Public Service award at New York's Hotel Astor, **Sen. W. Stuart Symington** (D.-Mo.) had words of warning and asked a question: "For the first time in our history we have an enemy who, if he exercises the initiative, may well have military superiority over us. . . . Can a sound policy for national security emerge as the convenient product of thinking which starts with a dollar ceiling rather than with enemy capability?"

One of Civil Air Patrol's newest members is **Miss Jacqueline Cochran,** a lieutenant colonel in the USAF Reserve and the CAP. Miss Cochran (wartime head of the WASPs and first woman to crack the sound barrier) drew as her first assignment a trip to Japan. There she is investigating and will report back to Maj. Gen. Lucas V. Beau, CAP commander, the possibility of establishing a Japanese equivalent of CAP.

Northeast Air Command's Sondrestrom AFB, just inside the Arctic Circle, is rarely visited by polar bears. It's too far south and nearly 85 miles inland. No wonder **Maj. Joseph J. Weidner,** base adjutant, was "incredulous" when he received word of Sugar Loaf Transmitter Farm's siege by a one-polar-bear task force. Weidner grabbed a photographer and hied to the isolated communication site. When they spotted the bear, the photographer went to work—and so did the bear. As the animal closed in, Weidner, armed with a six-foot steel rod, "hit him with a batting-left-handed stroke in his Adam's apple. He slowed down, coughed, shook his head. Then I hit him soundly over the head." MPs finished off the bear later.

Major Weidner with a rare trophy

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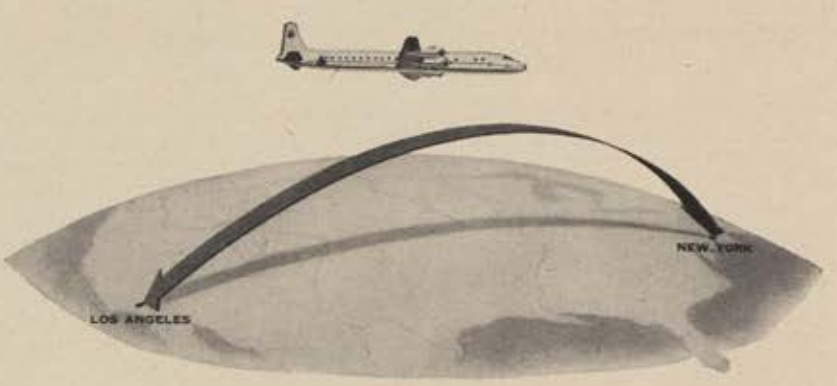

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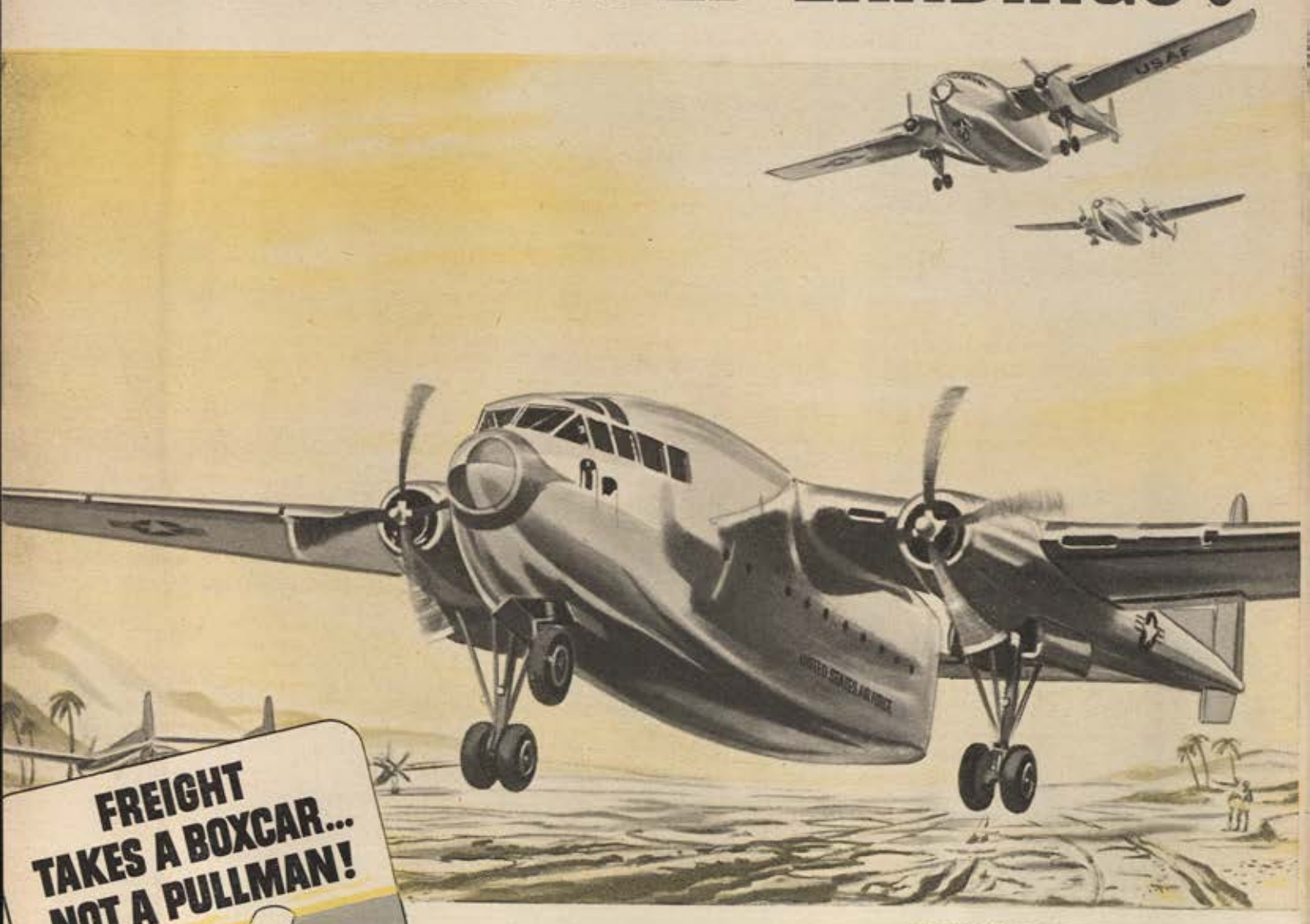

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'CONFESS, YANKEE, CONFESS!'

By John F. Loosbrock

Some did. Why did others withstand torture without 'confessing' to germ warfare?

EXACTLY ONE year ago, in this magazine, we called attention to the fact that our prisoners of war in North Korea were being subjected to tortures, mental and physical, of the foulest sort. In the November 1952 issue of AIR FORCE, we exposed, for the first time in public print, the Communist "germ warfare" plot and flatly accused the Reds of exploiting our captured airmen for propaganda purposes. As a direct result of that article, by Air Force Col. John J. Driscoll and entitled "It Could Have Been You," then Secretary of the Air Force Thomas K. Finletter issued a public statement pointing out that the so-called germ war "confessions" made by captured Air Force personnel were groundless and palpably extorted through cruel and inhuman methods. This was the first public acknowledgment by an agency of our government that such might be the case.

Colonel Driscoll, of course, had no first-hand knowledge that the Communists were torturing our flyers. He based his conclusions upon skillful deductive reasoning, tracing the parallel between the signers of the phony germ warfare "confessions" and those who had undergone

(Continued on following page)

He pounds until you wish he'd use the hammer on you.

the same treatment in other sections of the Red domain—men like Cardinal Mindszenty, Robert Vogeler, and William Oatis. It seemed only logical that our prisoners in North Korea had been subjected to the same sort of pressures. And so we made the accusation.

Now the prisoners, most of them at least, have been returned. And their testimony clearly indicates that, if we erred a year ago, it was on the side of conservatism. As a matter of fact, their tales of life in a Red prison camp try the imagination. No one doubts that Communist torture is even more inhuman than we had imagined.

At the same time there is a compelling need to place the matter once more in its proper perspective. For the problem of how to deal justly and humanely with those unfortunate individuals who were tricked and tortured into signing false "confessions" concerns each of us.

Perhaps the best way to obtain this kind of perspective is also the most personal way. Place yourself in the position of these captured airmen and see what they were subjected to. Then ask yourself this question: "How would I have responded?"

First of all, imagine that you are hungry, dirty, ill, mentally and physically exhausted, homesick, and lonely, for this was the common lot of all prisoners of the Reds. But it goes beyond that. You have been selected for exploitation. And you're worked on.

You are stripped, bound, and forced to lie full length, on your back, in a three-foot-deep trench. The trench contains just enough icy water to chill you to the marrow without drowning or freezing. A discarded airplane gas tank lies across the trench and a stolid Chinese soldier beats rhythmically and steadily on the tank with a hammer.

The cold water stiffens your limbs. The pounding beats at your brain until you wish he'd use the hammer on your own splitting head. There's no room to work the kinks out of your cramped arms and legs. You twist your head in an effort to shut out the interminable drumming, but the icy water rushes into your mouth and nostrils.

"Confess, Yankee, confess!" barks your inquisitor.

You pray for death, or at least merciful oblivion. But you know in your heart that both will be denied you, for you would then lose your value to your captors. Worst of all, you know it will all happen again tomorrow. You begin to waver. What am I gaining? Why not sign? It's only words scribbled on a scrap of paper. I know it's all lies and so will anyone else who reads it. They'll never believe it back home. What harm can it do? Who cares?

Would you sign or wouldn't you? Ask yourself the question once again. If you're honest with yourself you'll truthfully admit that you don't actually know. And you can never be sure how you might behave under similar circumstances unless, God forbid, you should experience it. Man is a complex being and, above all, he is an individual. Each of us has his own threshold of resistance—physical, mental, spiritual—beyond which he cannot be pushed without breaking. And none of us knows where that point is until we are put to the test.

Some of our prisoners did break. They have told us so themselves and have described the circumstances under which that breaking point was achieved. Now that they have returned, they have repudiated the false statements they made under varying degrees of duress. Our judgment of their actions, both officially as a nation and individually, must achieve a delicate balance. One thing is sure. Their conduct is not to be either condoned or condemned without a careful and scrupulous examination of all the evidence in each individual case.

We owe such an examination to still another group of men, those who did not succumb, who were tortured brutally and stood fast. Some of these are dead, others are still imprisoned. It would be grossly unfair to them; their suffering would be a great part in vain, were we not

Why not sign? It's only words on a scrap of paper.

to single them out for commendation and recognize their valor in specific and concrete ways. The Congressional Medal of Honor, as Gen. George C. Kenney, President of Air Force Association, points out in his editorial on page 18, is not too high an honor for such exemplary conduct.

Exactly what makes one man cave in while another stands steady is not clear. Perhaps one answer can be found in the conduct of three members of a B-26 crew, who were shot down when their plane flew into a flak trap. A United Press dispatch identifies the three as Capt. Byron A. Dobbs, 33, Clio, Mich., Lt. James L. Stanley, 24, Decatur, Ga., and S/Sgt. Richard Abbott, 25, Wellsville, N. Y. After capture they made a pact among themselves that they would die before they would break under torture. They were tortured. They did not die. But they did not break.

Captain Dobbs, for example, was questioned from May 15, 1952, until October 25, 1952—more than five months. He almost broke, he said, on July 1, when Chinese inquisitors told him that others had confessed.

"I nearly cracked," Dobbs said. "I'd known two of the men they said confessed. I'd lived in the same barracks with them. They kept telling me other men had confessed.

"I thought the Chinese were lying. But one day they threw down a confession written in English in longhand.

"I've always been a foxhole Christian, but that night I really got down on my knees and prayed in earnest. I didn't know whether the Chinese were going to give it to us fast or slow."

Lieutenant Stanley described his share of the "treatment" in detail.

He told how, during his interrogation, "a couple of them held me and kicked me in the stomach. Then I had to stand at attention for twenty-four hours. Every time you quivered, they would poke you with a bayonet.

"When I didn't come across, they tried the soft-soap treatment for a week. They took me up to a Chinese in charge of the prison camps, called Ding. He tried to talk me into confessing, then sent me back.

"I was taken into a room with big searchlights. I was stripped naked and tied with a choker around my neck. It was supposed to be a military tribunal. They passed sentence that I had to die, then they took me out in the rain and make me stand under a rainspout that night.

"I saw Ding again and he gave me forty-eight hours to live. I said I didn't care, and he threw a pot of tea in my face and kicked me ten feet.

"They marched me out with the execution squad, and asked me the name of my wife and my family and my religion. They said they would tell my family how I died.

"Then they put a Mauser pistol to my head and cocked it, but they never came through.

"They finally marched me back and strung me up for the night with my feet and hands tied to pillars. The next morning they cut me down and left me in solitary for three months."

It is possible that these men, and others, did not succumb because they were more patriotic than the average American, or because they were in better condition, mentally and physically, than their fellows who did confess. But it is more likely that they found strength in their unit solidarity and identification with their group. The very fact that they had made a pact, one with another, must have stiffened their backbone considerably. It must have led to a sort of Three Musketeers, "All-for-one, one-for-all" kind of camaraderie which can push a man to greater heights of heroism in order to maintain his integrity in the eyes of his group than he might attain were he accountable solely to himself and to his own conscience.

Whatever the reasons unearthed, the official investigators of the "confession" cases will have to devise some sort of yardstick, a norm of duty which can be laid against an individual's conduct and—to which he must measure up or suffer punitive action of some degree. The yardstick must not be an inflexible one, however. In fact, a different one is called for in each individual case.

Those who confessed or collaborated under little or no duress have failed in their duty to themselves, their comrades in arms, and their country. They should be punished in a way consonant with the degree to which they failed to measure up to a proper standard of conduct.

The vast majority of the prisoners will fall into a middle category. They did their simple duty—no more, no less.

"They strung me up for the night, tied to pillars."

This group would include those who, for one reason or another, the Communists made little or no effort to exploit. They are the fortunate ones, the men who were merely let alone. They are neither heroes nor blackguards. They deserve neither cheers nor boos. But they did their part. In this same middle category one must place the unfortunate men who were tortured beyond the call of duty and who gave in long after their own particular threshold of human endurance had been exceeded. Again, they are neither to be condoned nor condemned.

The third category includes those rare individuals who were able to marshal physical, mental, and spiritual resources not given to the average man. They are the men who proudly spat in their captor's eye and were able to say without flinching, "Do your worst." They deserve the highest honor a grateful nation can bestow.

The parallel with conduct on a battlefield is obvious, as General Kenney also points out in his editorial. In any combat force, there is always the small minority who cut and run the first time they hear a shot fired in anger. Then there is the larger group of men, who do exactly what is expected of them, no more, no less. There are those who fight bravely enough for a time, but continued exposure to the threat of death causes them to crack up.

(Continued on following page)

Combat fatigue, we call it. And there are the heroes who push themselves "beyond the call of duty"—our Congressional Medal of Honor winners on the battlefield.

It would seem that the treatment of the repatriated prisoners of war should follow pretty much the same pattern as our judgment of conduct on the battlefield. The evidence is not yet in, or at least it has not been made public. The waters are still muddied, so much so that snap judgments would be badly out of order. It is far too early to assess individual cases or to single out persons for either praise or blame. That is a job for the official investigators and one which they must approach with open minds, with wisdom, with sympathy, and with justice.

All of the foregoing has to do with treatment. An even bigger task is one of preventive therapy to prevent or forestall similar occurrences in the future. Hence it is certainly in order for the people of the United States, for their appointed representatives in the Department of Defense, and specifically in the Department of the Air Force, to take a good hard look at the dilemma which will face every man who is preparing for a possible future battle against Communist forces. Obviously, the old rules don't suffice any more. We are dealing with a foe which, of its own volition, has placed itself outside the pale of civilized human relations. The Marquis of Queensbury rules are fine—in Madison Square Garden, with the six-ounce gloves, a referee, and a qualified physician in attendance. Apply the same standards to an alley fight and you'll likely wind up being carried home in a sheet.

So a new approach to this business of being captured is called for. Let's first of all acknowledge, to ourselves and in the training of the men we expect to do our fighting for us, the true nature of the enemy. Let's tell our SAC crews and our fighter pilots that, if shot down over enemy territory, they need not look for comfortable Geneva Convention quarters, with Red Cross packages arriving regularly and an amateur show every Saturday night. Let's warn them that they'll be beaten, starved, interrogated without mercy, forced to the lowest extremes of degradation that the human intellect has ever been able to devise.

As Colonel Driscoll pointed out in these pages a year ago, we can no longer confine a pre-mission briefing to "tell them only your name, your rank, your serial number." That's no longer close to enough. We must marshal all our medical knowledge and spiritual resources to brace our airmen for the ordeals which they will likely face. They must be made steady in their resolution to withstand the Commie book when it is thrown at them.

We may look to still other solutions and indoctrinate our flyers in the art of mental deception so they will have a few weapons at their disposal in the duel of wits that is sure to follow their capture. We must vaccinate the minds of our men against the virus of Communist treachery just as we now inoculate them against typhus and yellow fever.

And they must steel themselves to face death, if need be, in the prison camp with the same fortitude and equanimity with which they expect to face it in the sky battles. As a propaganda device, it is suspected that the Red terror tactics may have backfired even now. In the past, when the military situation was hopeless and surrender was compatible with honor, capture was neither a disgrace nor a tragedy. But who, after hearing the tales which have come out of the prison camps south of the Yalu, would not fight to the death rather than surrender into a hell on earth? The enemy has reverted to piratical ethics, wherein quarter is neither expected nor extended.

Any steps toward solving the intrinsic problem of behavior after capture will be a big contribution to the overall combat efficiency of the Air Force. It is understood that such steps are being taken but the program has dragged because of a lack of concrete evidence. With the wealth of material now available as a basis for new training doctrines, there is no longer any excuse for delay. There may be other Koreas ahead and other American airmen sent into battle against this ruthless and implacable foe. If we can come up with some answers quickly enough to be of value, then the sufferings of our captured airmen will not have been entirely in vain, and we will have learned one of the big lessons of Korea.—END

Official Policy on POWs

Sec'y Wilson

Official Defense Department policy on what to do with the men who confessed to germ warfare in Korea—and those who didn't confess, though tortured—has not yet been fully spelled out. The following statement, which was recently released by Defense Secretary Charles E. Wilson, is a start in that direction.

THE Department of Defense has recognized the problems of military personnel who were captured while fighting for our country in Korea.

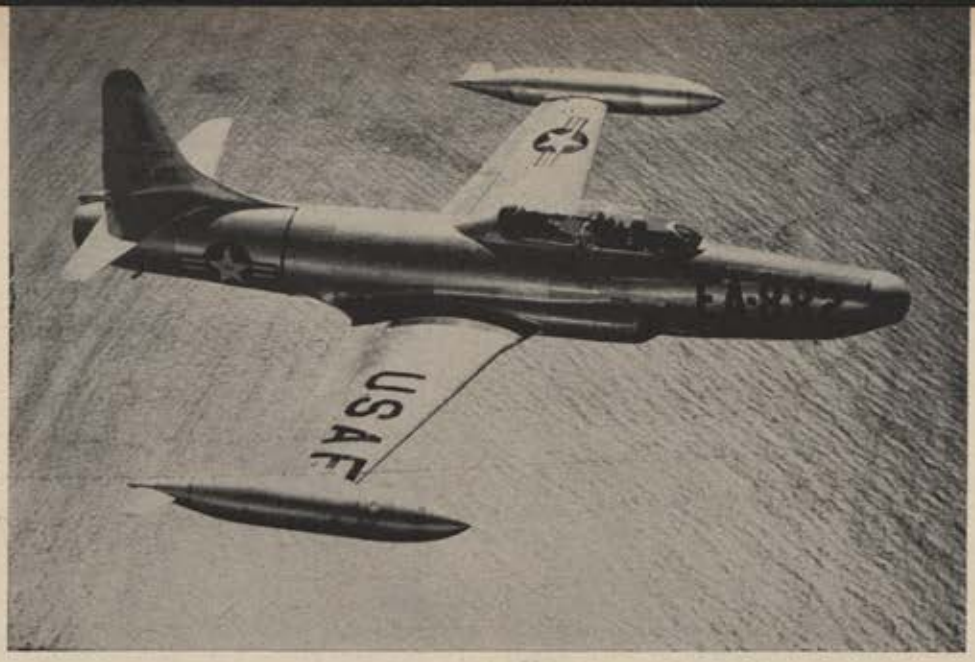
Now that these men have been repatriated, the Department is using every effort to investigate and establish what happened to these men while they were prisoners, the punishments and sufferings they endured, what false confessions some of them may have made under duress and the effect of the actions of some of them on their fellow prisoners.

Any action by the Department of Defense will be on an individual basis, will be just and fair and in line with established facts and evidence and the rules, regulations, and laws in regard to military conduct.

Only a few American prisoners succumbed to Communist pressure, abuse, and indoctrination. It is to the credit of the vast majority that they steadfastly resisted all efforts to undermine their character and their Americanism despite, in many cases, endless and brutal inquisitions.

Americans have sympathy for all those who suffered physically and mentally at the hands of the Communists. All of us have high praise and admiration for those who resisted the Communists' efforts to break them down. Their fortitude will be recognized.

We do not as a general principle condone those who made false confessions contrary to the interests of their country, or whose actions caused their fellow prisoners added misery. Such cases will be carefully and sympathetically examined by the services concerned to ascertain whether in any of them there has been an unreasonable failure to measure up to the standard of individual conduct which is expected even of a prisoner of war or deviations from standards of behavior prescribed by law.—END



Lockheed's F-94 Starfire.

NIGHT FIGHTERS in MIG ALLEY

What they learned in the pitch blackness of Korean skies will help do a better job of defending America

THIS NIGHT fighter business is an entirely different breed of flying, according to the men who do it.

Those who flew Lockheed F-94 interceptors in Korean combat found it a not-so-simple mixture of nasty weather, darkness, and enemy.

Those who patrol our nation's air corridors need only worry about weather and darkness, for the moment. It's one dry run after another for the time being.

But if the enemy does strike the US, our all-weather pilots and radar observers will be able to do a better job because of the lessons their fellow night fighters learned under combat conditions in Korea.

Some of the techniques which have come out of the F-94 performances over North Korea are classified and can't be divulged. But other things were demonstrated firmly and convincingly to the Reds' dismay and can be related here.

Maj. Donald E. O'Neil, of Ann Arbor, Mich., who commanded the first squadron (68th Fighter-Interceptor) to be equipped with the F-94s in the Far East, puts it this way:

"The main thing we learned is that the F-94, with its speed of 600 mph plus and a good rate of climb, can easily intercept conventional bombers in flight. When we were escorting B-29s over North Korea we would pick them by radar, at a high altitude, during the time they were vulnerable, in enemy territory near the target and bomb run. We used to use F-82s, but it took forever to get to 25,000 feet or better. We found we could get up there in a hurry in the F-94, which operates real good at 30,000 feet and up."

O'Neil flew the first F-94 mission across the bomb line in Korea, in November 1952. As squadron commander, he had the problem of giving the Starfire its first real test under combat conditions and his observations are first-hand.

He believes the second most important lesson of the Korean night fighting operation was techniques learned in the control of high-speed jet aircraft by GCI (Ground Control Intercept), which resulted in successful interception of enemy fighter planes.

"We spent a lot of our time in Korea working with GCI stations," he says. "GCI found out how long it takes a jet to intercept a bogey, and how long it takes an F-94 to get up to intercepting altitude. The pilot and radar observer learned to 'see in the dark' with our airborne radar so we could tangle with aircraft like the MIG-15."

Those were the two most important lessons, but O'Neil says some other contributing techniques can be chalked up to this experience.

By Flint O. DuPre

"For example, we learned about runways," he says. "Some in Korea were rough and rugged. We found out the hard way how much punishment our electronic equipment (1,400 pounds of radar and other devices) could take. We learned how much extra maintenance we needed to keep operational. Since this extra equipment makes the F-94 pretty heavy, we discovered some take-off and landing peculiarities, particularly in bad weather.

"Our squadron never aborted a take-off and we had a high rate of all-weather flying time per man."

Since O'Neil and his men flew those first trail-blazing missions to North Korea, about 3,000 F-94 sorties followed before the war ended. The commander of the second Starfire squadron in the Far East, the 319th Fighter-Interceptor Squadron, is Lt. Col. Jack C. West, of Centerville, Iowa, who is still there.

Colonel West feels the high point of the F-94 operations for the Fifth Air Force was the great respect shown by the enemy for the plane.

"They demonstrated this respect by turning tail once they got the word that the F-94s were airborne, and this included the MIG-15s, the speedy LA-9s, or the modified LA-11s," says Colonel West. "The Reds

(Continued on following page)

1. L. J. Vansant (center) and R. G. McGlyn, radar observer, checking in at operations.

2. It may save their lives. Vansant and McGlyn check personal gear.

3. F-94 Starfire gets last minute once-over from pilot and observer.

4. Vansant and McGlyn climb aboard. Ahead: a two-hour weather recce mission.

5. While some planes are flying, others at the base are made flyable.

6. A mission over, another coming: refueling Starfire for new mission.

wouldn't fly in real bad weather, but some of our B-26 light bombers would be up, and we usually gave them support and protection."

West complains that the Communist retreats accounted for his squadron's low kill record. But he is proud of the protection F-94s gave the slow-flying B-29s. The Superforts were taking a beating until the Starfires went into action. Then their plodding bombing missions became more fruitful.

F-94 activity was a closely guarded secret, and mission assignments changed frequently. But now much of the story can be told.

Originally designed for the interception of enemy bombers, the Starfires, like other air weapons used in Korea, had to be adapted to the problem at hand. For the first few months they followed a familiar pattern. Once the perimeter radar fence showed "bandits" crossing from the north on harassing raids over the plush targets around Seoul, the F-94s were airborne for the chase.

This activity started mildly enough, with no kills for at least two months, until January 30, 1953, when Capt. Benjamin L. Fithian, of Kansas City, Mo., and his radar observer, 1st Lt. Sam R. Lyons, of Houston, Tex., performed what may be history's first blind interception, by bagging a Communist LA-9 fighter plane without ever having seen it. Ground radar directed the Starfire to its intercept point, where Lyons picked up the enemy plane on his radar scope. Lyons called the signals and Fithian fired the guns, embedded in a circle in the nose of the F-94. Flames from the explosion were their first visual sight of the plane.

On the same night, Lt. Robert F. Cunningham, of Washington, D. C., may have destroyed a MIG-15. But he probably lost his life in doing it, for reports indicate the two planes collided. Cunningham flew in Major O'Neil's squadron.

Another Starfire crew damaged a YAK-9, and other Communist planes soon joined the swelling list. There were some US losses, but they were small.

As F-94 crews continued to prove themselves in the dark nights and rough weather over Korea, they got other jobs besides B-29 escort and enemy fighter interception. When most planes were weathered in, the Starfire often flew deep over North Korea on weather reconnaissance.

Some of these missions were flown under zero-zero conditions, with no visibility and under extreme icing conditions. One night was so evil that no commander could order his men into the air. But a commander could send himself up. That's exactly what Major O'Neil did.

His radar observer, Capt. Leo Needham, of West Palm Beach, Fla., tells the story.

"Joint Operations Control called for a voluntary mission that February night," says Needham, who is now appearing in motion pictures. (He has been in "Destination Gobi," "Battle Circus," and "Man on a Tight Rope.") "JOC needed the weather up around the Yalu where attacks were being planned for next day.

(Continued on page 70)

Why Not a PROFESSIONAL NON-COM CORPS?

If we figure out a way to get better non-commissioned officers, then we wouldn't have to have so many of them

By M/Sgt. Norman Winfield

WITH THE awakening interest in re-establishing the Air Force non-commissioned officer to his rightful position of leadership and responsibility, I think it is time that some serious consideration be given to the establishment of a permanent, professional school for Air Force top graders.

The old system of allowing a certain amount of upper-level military knowledge to "rub off" on a non-commissioned officer is too slow, too haphazard, and too much governed by the fickle chance of assignment and duty. To assume that just because a man has ten-plus years of service he is endowed, by some mysterious process, with a certain amount of military savvy is not only unrealistic, costly, and dangerous, but entirely ridiculous.

Technical advances have made the non-commissioned officer in today's AF a narrow specialist, confined and devoted to his field, and completely unequipped with the attributes which prompted the saying that the non-com is the backbone of the army. He has become, in all too many cases, a uniformed civil service worker, well informed in his own field, but completely ignorant of even the faintest view of the bigger picture—the AF itself.

It can be argued that specialization is the device which makes a complicated military unit like the Air Force function; that it would be impossible to train everyone in all things. This is obviously true but I make the point that the specialization should take place when the man is young in the service—during his apprenticeship and while he is not a non-commissioned officer.

Immediately upon donning the chevrons of a staff sergeant he should be sent to a school with a curriculum especially designed to mold him into a full-fledged non-commissioned officer, uniform in quality and with a foundation upon which he can advance his professional knowledge.

The school I envision would not have anything to do with the "how-to-do-it" techniques of his trade since this is very well taken care of by existing technical schools. Rather, I propose a school of broad curriculum which would include studies similar, but not necessarily the same as, those given in OCS. These courses are general in nature and give a broad view of the Air Force without confining the attention to one specific phase.

It is true that the Air Force would lose the services of a man for the few months he would be away at school, but the end result would more than justify the loss. The most notable advantage would be the establishment, for the first time, of a truly professional non-commissioned officers corps.

The value of such a corps needs no argument. With every non-com a potential, technically trained officer, one of the sharpest personnel problems of all-out mobilization would be to a large extent eliminated. Men with leadership training and characteristics would already be sorted out, and what is more, they would be in daily, active practice of this art. A ready-made, standby officer cadre which would automatically replenish itself would be thus created. Need-

(Continued on following page)

Basic to the establishment of a successful non-com corps would be a sound system of leadership training.

less to say, the cost of maintaining this hard core of dedicated airmen-officers would be little more than their regular monthly pay—a sum which is disbursed in any case.

Equally important, the school would provide a uniform curriculum and produce a product of uniform quality. Standards for promotion vary considerably, in actual practice, according to different bases, but the school would be the anvil upon which all these approximately similar men would be hammered into something that could be clearly identified as a non-commissioned officer in the best tradition of the word.

In time this elite corps, for that is what it would be, could not fail to establish a reputation for uniform dependability and devotion to the Air Force. I think it would be safe to assume that the great bulk of men trained in such a school would be career airmen as a natural consequence of their training and indoctrination. Thus, we anticipate and at the same time eliminate to a large extent one of the most serious and expensive manpower losses in the Air Force. Top grade men, imbued with a sense of esprit de corps, would be reluctant to leave a service in which they are a recognized part.

Before such a plan could be expected to develop its maximum value to the Air Force certain steps should have to be taken. Steps which would spell out and guarantee a non-com his rights to exercise command and assume responsibility. This may seem like a statement of no consequence but the facts prove otherwise.

Since 1945 the trend, until very recently, has been to dilute and abridge the position of leadership and authority spelled out in regulations. Many factors contributed to this decline and are properly the subject of a separate article, and I will not go into them in detail but will side-step this phase of the question by saying some of the factors can be found in below-standard on-base housing and messing facilities for bachelor non-coms.

A non-com "academy" would help to recapture this lost prestige by producing graduates of demonstrated competence.

In order to assure the necessary uniformity of instruction, I recommend that the schools—for there would have to be more than one school because of the great number of first three graders to be trained, especially at the beginning of the program—be established at the headquarters of the major air commands and numbered Air Forces.

This is important because it would do much to establish a degree of quality not possible to attain at air base levels. It is a cold matter of fact that schools on a base level only too often must subordinate their goals and efforts to fit into the mission of the base. Furthermore, it would be expecting too much to hope to find sufficient high quality instructors on every base. Only by concentrating the best talent available, in a few big schools, can the desired results be obtained. Any other approach would be a waste of time, money, and effort.

Being "away at school" has psychological benefits too. A man placed in strange company for a limited time and challenged by a goal can be expected to develop a keen sense of competition. His status as a full time "cadet" in a cadet atmosphere would place him fully on his own.

The question of exact curriculum and especially the matter of individual failure, I leave to the experts in adult education. Concerning failure, I don't think a man should be marked a "failure" in the ordinary sense of the word. Note should be taken of poor grades, of course, but in action against a failure consideration should be taken of such factors as length of service, rank, AFSC, combat experience, wounds, awards and decorations, and age, to name a few.

Entrance into the school would be automatic. Men selected for staff sergeant grade could expect to be on their way soon after promotion orders were published. However, I would write into the regulation provision whereby a man could decline to attend but at the penalty of losing all future chances of promotion. When the Air Force settles down to a reasonable stability, perhaps it would be wise to make all staff sergeants' promotions temporary until successful completion of the school. Completion of the school would not automatically confer "permanent" status but perhaps could be called something like "temporary-preferred."

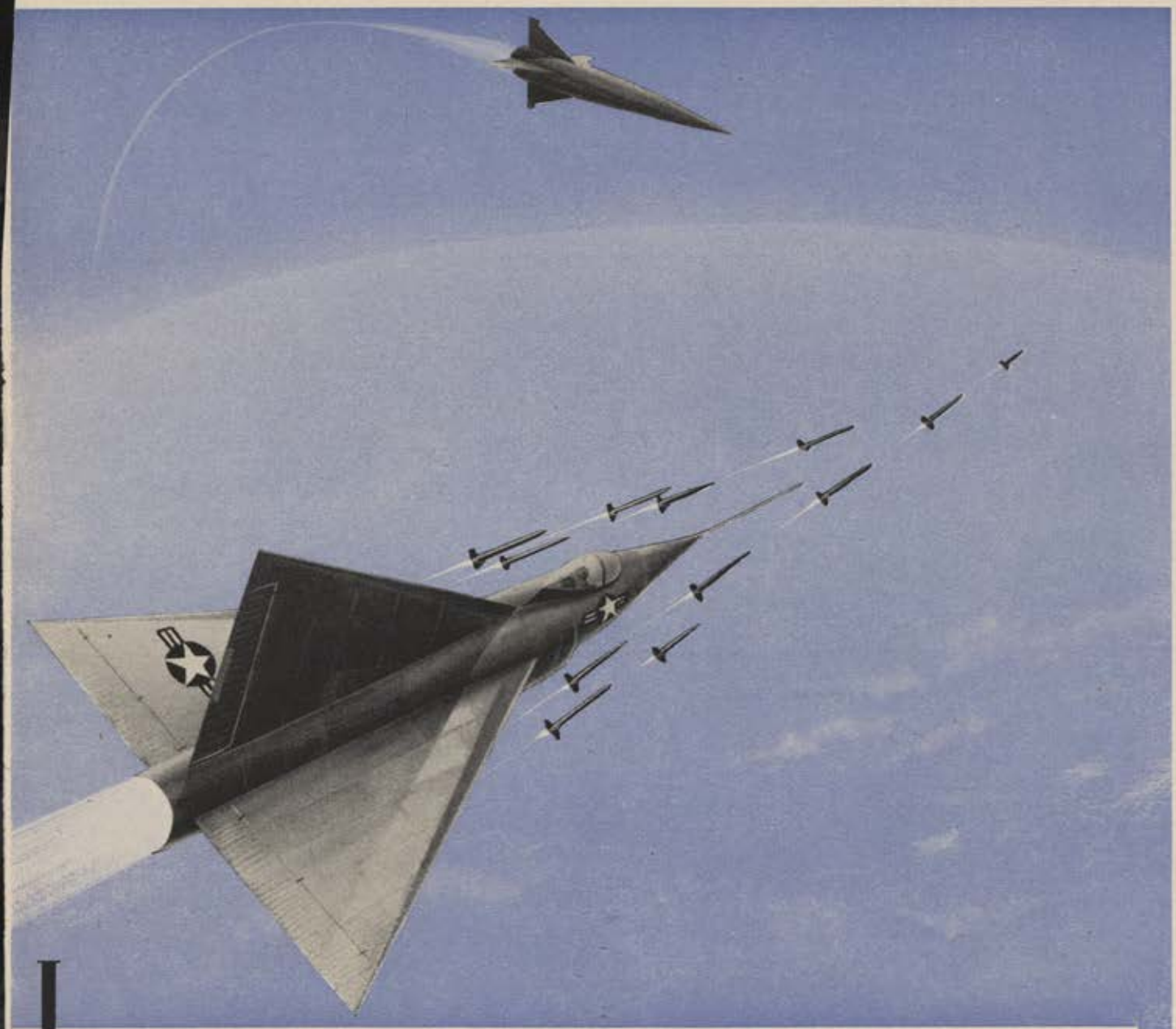
Equal opportunity would be extended to all men. No age limit should be set; no physical and mental standards higher than those prescribed for general military service.

Such a school would not be a non-com "factory" creating new and more glorious Chiefs and fewer Indians—just better Chiefs for the same price.—END

PILOTS OR ROBOTS ?

Is there a future in manned air vehicles or can the pilot be replaced by servo-mechanisms?

By Brig. Gen. Dale O. Smith



IS THERE a future in manned air vehicles? Or will the pilot be replaced entirely by servo-mechanisms? Guided missiles have developed startlingly since the V-1s began rumbling over London in 1944. Have they made the pilot obsolescent?

I think we have been led by two main influences into granting human capabilities to the so-called thinking machines which guide our missiles. First, it seems popular to be a visionary in this age of breathtaking technological advance. And the easiest way to prognosticate the future is to extrapolate various trends and say, "Look, here is obviously where we are going because we have already started in this direction." Unfortunately for the visionary, the stock market doesn't always keep rising. Nevertheless, as long as the trend continues everyone climbs on the bandwagon and congratulates himself on his ability to foresee the future.

Second, we feel the potentialities of science to be boundless. Scientists have continually confounded us with new knowledge and devices, but when they gave birth to the cataclysmic atomic bomb, any doubts as to the ultimate limits of science were washed away. "Science can even duplicate the human brain," we say. "Why, look at the electronic calculators which can solve problems hundreds of times faster than a skilled mathematician."

Yet the scientists themselves are skeptical. Dr. Howard Aiken of the Harvard Computation Laboratory has said of his famous Mark IV, "It is merely a computer—fast, accurate —but nothing more than a slavish automatic device designed to help us solve mathematical and mechanical problems." Even the originator of cybernetics, Dr. Norbert Wiener of MIT, hesitates to predict that calculators will ever duplicate all the activities of the human brain.

A final influence has, I believe, resulted in a rather wholesale acceptance of guided missiles as the exclusive vehicle for future air war. This philosophy underplays the complexity of air war and treats it as a cut-and-dried kind of science. A science

(Continued on following page)

that can be calculated and forecast with precision—so many miles to fly, so much weight and fuel to carry, empirical probabilities of penetration and target hitting with so many kilotons of explosives. Q.E.D., Victory. We talked this way before and during World War II, but found out, as with all war, that the empirical probabilities (like the trends of curves) had a disturbing habit of never remaining constant or predictable. Our combat air leaders became more and more convinced that war was as much an art as ever—a contest of wills, strategy, and quick decision based upon fragmentary information.

THE AUTHOR

The views expressed in this article are the author's own, not necessarily those of AIR FORCE Magazine. General Smith, 42, is director of education at the Air University, Maxwell AFB. A West Pointer, he received his Ph.D. from Stanford University in 1951. In World War II he commanded the 384th Bomb Group and flew thirty-one missions with them out of England. He received his star just at presstime.

The guided missiles vision may well be right, but more analysis of this trend is certainly indicated when we are possibly committing our whole destiny to this kind of air warfare. The comfort of believing oneself right merely because fifty thousand others have made the same bet, could turn into excruciating pain or death in this case, if the dark horse comes in.

Pilots are hard to come by. Years of training and experience are necessary to produce air fighters, and still more to produce air leaders. There is little future for a pilot if the present trend continues, because, good or bad, most air weapons of the future will be automatically controlled. There will be no switching back to manned aircraft if we later learn that the thinking machines cannot perform as well as a man.

An article in AIR FORCE Magazine (December 1952) prophesied that we were building our last manned interceptor. From then on it will all be done electronically and much more efficiently, said the writer, because we will save on the pilot's weight and not be bothered in our design with things like G-forces and breathing oxygen. This is all very well, provided the enemy does not counter our electronic controls. Unfortunately we have always seemed to tangle with an enemy who was a lot smarter than we had expected. And after the shooting started we quickly modified many of our plans and almost every piece of equipment.

Supposing the enemy does counter our electronic controls, what then? Do we sit in our dugouts and design new ones while he bombs us manually? Do we expect our factories to turn out new gadgets while being bombed? It might be prudent to fall back on an interceptor with a control that is more difficult to jam—namely, a pilot.

Guided missiles are definitely here and provide us with many new and terrible weapons. I do not wish to belittle their effectiveness nor their necessity, but rather to examine the concept that these weapons will replace airborne fighting men. Just as artillery supplemented rather than replaced the infantry, may not guided missiles supplement rather than replace the manned Air Force?

What can a missile do, ultimately? It can be directed toward a target by certain influences, principally electronic. It can home on a blip that it "sees" on its radar or ride a beam which is directed at a target by some human being. It can conceivably home on non-electronic discriminations such as heated objects, magnetic fields, and certain predicted sizes and shapes. Or it can be designed to navigate to a certain point in space by celestial guidance.

A crude weapon is one that navigates by dead reckoning—flying a certain time in a certain direction at a certain speed, like the V-1 and V-2. Most people feel this guidance is so inaccurate as to be wasteful, yet it is least likely to be countered. In fact, it can be stopped only by damaging the missile in flight, or by preventing it from being launched.

Every guidance system has a certain number of predictable judgments built in. It can be made to recognize its target in some measurable way by postulating certain stimuli. But that number of responses will be a finite, limited number. Only the human intellect can truly recognize a new, unpredicted situation, relate the knowledge thus gained to a vast store of experience and then come forth with a novel solution.

Some machines can even be made to repair themselves when things go wrong, but the possible troubles must still be predicted ahead of time. Unhappily there is always something unexpected going wrong with a gadget. At this point the un-precise human mind gets into the act, finds the trouble and corrects it.

We need machines, more and better ones. They protect us from human error, extend our senses and provide new tools for our intellect. But any thought of them replacing the intellect seems just a little beyond reality.

Why is this intellect needed in the air? Why can't it hide in a dugout and do everything by remote control?

A recent science fiction story told of a "foolproof" guided missile. The superb specifications of this hypothetical weapon are worth noting. Its range was half the earth's circumference, its speed Mach five (about 2,800 mph), its ceiling 170,000 feet, its warhead could devastate an area thirty miles in diameter, and it had an accuracy of plus or minus one mile. It was guided by dead-reckoning and celestial means and therefore not subject to jamming. Built into it were marvelous counter-countermeasures which did such things as prematurely detonate the proximity-fuzes of approaching rockets. Let us examine this amazing dream from the standpoint of military science.

First, the launching of such a huge machine would not likely go unnoticed. It would have had to be tested at great ranges, and word of its existence would probably leak to the other side. Next, its flight could be picked up by radar and defending missiles started on intercepting tracks. Even at Mach five it would take two hours en route for an intercontinental shot and if we assume the defenders are as advanced technically as the attackers, an interception would be by no means impossible. But if the attacking weapon has a device which prematurely explodes defending influence missiles, would a man in the defending missile serve a good purpose? No radiation can explode *him*.

(Continued on page 37)

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

FASTER THAN SOUND

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AMERICA'S FIRST TRI-SONIC AIR SUPERIORITY FIGHTER...FIRST TO FLY FASTER THAN THE SPEED OF SOUND IN LEVEL FLIGHT...TOP WEAPON EFFECTIVENESS...NOW IN PRODUCTION FOR THE U. S. AIR FORCE

NORTH AMERICAN AVIATION, INC.

BUILDERS OF THE KOREA FAMED F-86 SABRE JET

Tracking flight path of early Boeing guided missile.

On its way—a supersonic missile of defense

Boeing's F-99 Bomarc is an aerial destroyer, designed to strike enemy bombers attempting to attack the continental United States. It is a logical outgrowth of Boeing's extensive earlier developmental work in the guided missile field.

The F-99's rocket engine hurtles it from the ground to its operating altitudes, and to speeds beyond those of sound. During test flights the unmanned F-99 broadcasts to earth a complete record of what's happening. This data, recorded on tape and processed through electronic computing machines, furnishes information about speed, temperature changes, fuel consumption and countless other factors vital to continued progress in this complex field.

Bomarc is designed to carry out its mission under the guidance of radar and other electronic equipment. These ingenious devices control the F-99's flight path and guide the missile into position to destroy the target aircraft.

Boeing's pilotless interceptor experience is not confined to work on the Bomarc project. Its earlier program, also sponsored by the Air Force and known as GAPA, produced rocket missiles that attained speeds in excess of 1,500 miles an hour. Today Boeing is devoting a substantial amount of its engineering effort to developing complete systems of air defense.

Guided missiles, along with strategic jet bombers, are a strong deterrent against attack. In each of these fields, Boeing's contributions are characterized by unyielding integrity of design and construction—and by the sound, imaginative kind of research that produced the revolutionary B-47 Stratojet and the eight-jet B-52 Stratofortress. These advanced aircraft, in common with the F-99, bear a name you can depend upon: Boeing.

Boeing is now building a prototype jet transport, designed to be adaptable for either military or commercial use. The new plane has the benefit of Boeing's unparalleled experience in multi-jet aircraft. It will fly in 1954.

BOEING

He may launch smaller rockets with various kinds of fuzes on collision courses, or perhaps choose several weapons until he finds one that the attacking missile had not been designed to counter. Only a human intellect can cast about for an entirely new method of solving a problem.

Now this human mind can be in a bomb shelter, of course, and select different kinds of defending missiles to shoot at the intruder. But no matter how great future speeds become, we must still contend with the factor of time. When the intellect is far from the scene of action, it must wait some time before it can evaluate the effect of its effort. In the meantime, the intruder is that much closer to its target. The nearer the intellect, the more chance for a second, third, or fourth try, each capitalizing on what was learned by preceding failures.

The man in the bomb shelter could launch a series of different kinds of defending missiles, but without any feedback until the long interval when the first missile hit or missed. Up to this time he would be guessing. Then, if he discovered a weakness, the underground intellect would be hopelessly committed before learning the effects of his defending weapons.

The first question in speculating about this kind of combat is the inability to turn at such high speeds. On a reciprocal approach course, the manned defender would likely have no more than one pass at best. The pursuit curve is obsolescent even with today's speeds. So head-on tactics would probably be just as effective with automatic weapons as with manned aircraft when considering a duel of a single intruder against a single defender.

But here is where military tactics come into play. War is not a simple multiple of individual fights. Suppose we have a number of manned defenders. The first misses, but learns that the intruder can prematurely detonate a proximity fuze. He radios to the second defender, who sets his fuzes for contact bursts. But the intruder has a mechanism which, if it senses that the proximity fuzes fail to explode automatically, jerks the missile into violent evasive action, causing the aimed rockets with the contact fuzes likewise to miss. So the second defender passes this news on to the third, who tries a radar homing rocket, but countermeasures in the intruder spoil its guidance. All this action may have taken just a few minutes, but in that time human intellects plus human communications have learned quite a bit about the intruder: proximity fuzes are ineffective, it evades aimed rockets with contact fuzes, and it deflects radar homing rockets. What next?

The defenders could exhaust the whole bag of scientific tricks. But to make the problem as puzzling as possible, let us assume this marvelous intruding missile adequately counters every one. Now what?

This is the time for the much maligned military mind to suggest a solution. Somewhere near the scene of action is a manned defender carrying a military commander. He has all the facts learned in the series of abortive attempts. Approaching the intruder are dozens of defending craft, strung out and closing at full throttle. The obvious thing is to try multiple attacks, to concentrate, to try the barrage or shotgun tactic. If the barrage is heavy enough, no evasive action will save the missile.

The air commander radios the closing defenders to take up a box type formation on a designated leader, and to fire their rockets simultaneously, aimed, and with contact fuzes. If the intruder escapes this, the air commander may try the same tactics with larger formations. If the commander has enough strength, the intruder is bound to be shot down. It is simply a matter of probability.

Up to this point we have considered only the head-on attack. Are we limited to this? Only if we base our defending aircraft near the targets we wish to defend. But must we? Isn't that like building a wall around a city? And have not all such walls been breached by determined invaders? Has not military history told us that the way to deal with an intruder is to attack him in the field on our terms, rather than hole up so that he can lay siege?

If we base our defending fighters near his borders, and nearer his launching areas, our tactics can become a stern chase. If we catch him, we can throttle down and stay with him, harrowing him constantly with every conceivable scientific and tactical weapon at our command. From the standpoint of pure air combat this tactic should give us much more promise of success. What can make it feasible?

First, we must fly fast enough to overtake the intruder. Suppose we had Mach ten capability. This is not unreasonable technically if we postulate an intruder with Mach five and give him, in addition, a massive payload and world-wide range. The defenders could trade payload and some range for speed and very likely double the intruder's speed. In the short history of air war, it has generally been true that fighters can outrun bombers, and unless the laws of physics are changed or fighter development lags (as it sometimes has) this will probably remain true.

Next, can a man take the acceleration to Mach ten fast enough to make a chase worthwhile? The School of Aviation Medicine has determined that a man can reach Mach ten in three minutes without any ill effects. We must assume, too, that

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General Electric's "OARAC"—fast computing but no thinking.

the friction heat barrier has been overcome. With a five minute scramble, eight minutes would be required to put our pursuit craft aloft at Mach ten. If the intruder was as much as 1,000 miles ahead, he could be caught within thirty minutes, which might provide up to an hour of combat in a stern chase.

Early warning of the intruder's take-off, course, speed, and altitude would be essential to success. But remembering that we are talking about the far-distant future, we can postulate this kind of intelligence with little hesitation. In World War II, German controllers had almost immediate information of attacks coming from England. We can assume that future developments will extend the range of warning systems to give equally prompt notice. Defending fighters, if strategically disposed, would have much less than 1,000 miles to close on the intruding missile.

With a running fight type of defense, the minds in the defending craft would have still more time to evaluate the situation and devise means to bring down the intruder. Defenders could concentrate their force and stay with the missile. All the measures of bringing down the hostile craft which were discussed earlier could be attempted, and more. Several defending craft could overwhelm the single intruder with the power of their electronic emissions, countering the counter counter-measures of the automatic missile. The defenders could fly formation with the missile and pepper it with deflection fire, or in desperation, ram it. Like the British fighters who spun in the V-1s by overlapping wingtips and flicking the missiles off their gyros, the intellects in future defenders could think up new methods of downing the intruder. But such new methods would never become apparent to the man thousands of miles away in a dugout.

What could the underground controller learn by watching the blips on his radar scopes? He would see the blip formed by the intruding missile, and the closing blips of the automatic defenders he had launched. He would watch the blips merge, but see the intruder continue and the defending missile vanish. Would he know that the intruder had prematurely detonated the proximity fuzes of the defender? Or that the defender was brought down in some other manner? He would only know that the defending missile had been destroyed and the intruder was still on the way.

One may question the ability of the airborne mind to collect more information than the underground controller, considering the terrific closing speed and the limitations of sight. But the observer on the spot will see something, and whatever he sees will add to his knowledge of the true situation. Moreover, the airborne operator will have radar, and there is another law of physics which will permit him to see more by this means than does the distant ground controller. Electronic emissions decrease proportionately with the square of the distance from their source. So the airborne radar observer will see considerably more detail and thus acquire more information.

F-102—last manned interceptor?

No matter how one looks at the question, it seems that the flesh and blood man is just coming into his own in the air. The complexity of equipment is making him more essential to the air battle.

When we deal in military terms of strength, numbers, tactics and strategy, rather than in the single units of attack and defense which fascinate the physical scientists, we must consider infinite combinations of weapons and as many possible maneuvers. The air war becomes so complex that no systematic methods have yet been suggested for conducting it. Like surface war, it becomes an art rather than a science. Those who attempt to codify such military operations merely lay themselves open to discovery and defeat. It is as hopeless to make a precise science of warfare as it is to coax a new sonata from an electronic computer, or to establish a mathematical formula for producing a Rembrandt.

We have had the automatic pilot for many years. It has freed the human pilot of much stick and rudder work and has given him time to perform other duties. Even take-offs and landings can be performed mechanically. But the pilot will still be required to overrule the machine in an emergency. It will probably be many lifetimes before we entrust million dollar aircraft and highly trained crews to the whims of a robot pilot. A modern ocean liner can cruise unaided on the high seas and is brought in and out of ports by local pilots. But there has never been any thought of discarding the captain.

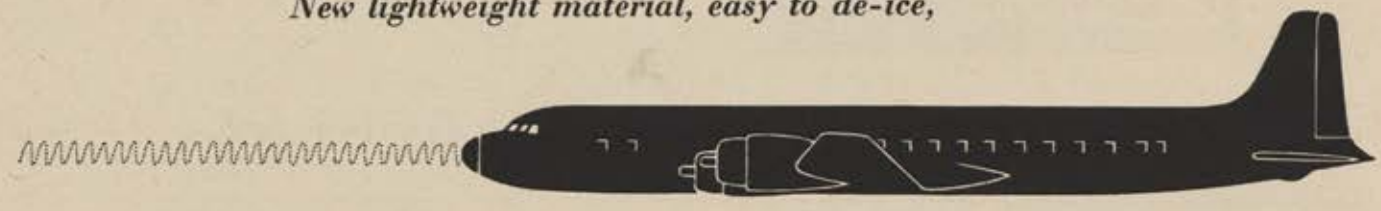
The air commander of the future may seldom need to manually control his craft, but other duties will keep him busy. First he will repeatedly check and double-check his numerous control mechanisms to be sure they are performing properly. As now, he will likely require a crew to help him. Similarly he will examine and test his power and his weapons. Present mechanisms can be made simpler, to be sure, but we are perpetually wanting mechanisms to perform more functions more precisely. The resultant trend has been toward increased complexity. When a mechanism takes over one duty of the pilot, two more duties are added with other new mechanisms.

The ultimate reason that the pilot is here to stay, however, is that only he can appraise a situation that has not been predicted. Only he can conceive of military opportunities, enemy vulnerabilities and dangers to friendly forces on the spot. And only he can think up tactics to meet the new circumstances encountered. Ability to fly is just one of the hundreds of skills he must master, but it is nonetheless fundamental to a balanced understanding of air war.

We are hypnotizing ourselves into believing the military pilot is devolving into a dodo, and young men are reluctant about pursuing a moribund profession. The drama of technical progress has blinded us to the true and inimitable nature of the human intellect and its role in air war; so much so that a career in engineering or the physical sciences seems to hold far more promise.

If we could blind the enemy similarly we would have no serious worry, but unhappily he is not as impressed with complicated devices as we are. It seems time that we restore the pilot to his rightful stature as the exponent of air war and that we consider his future to be as enduring as the need to think.—END

New lightweight material, easy to de-ice,



protects radar instruments

without distorting the radar signal

Douglas "RADOME"

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Douglas solves the problem with a new material, easy to de-ice. Rods of extruded wax are wrapped in fibre glass tape, impregnated with polyester resin. With multiple layers, Douglas builds the correct aerodynamic shape, then cures the resin at low temperature, and "sets" it under pressure. Next the temperature is raised and the wax melts away, leaving hollow passages through which hot air can be forced. No metal. No electricity. No distorted radar signals.

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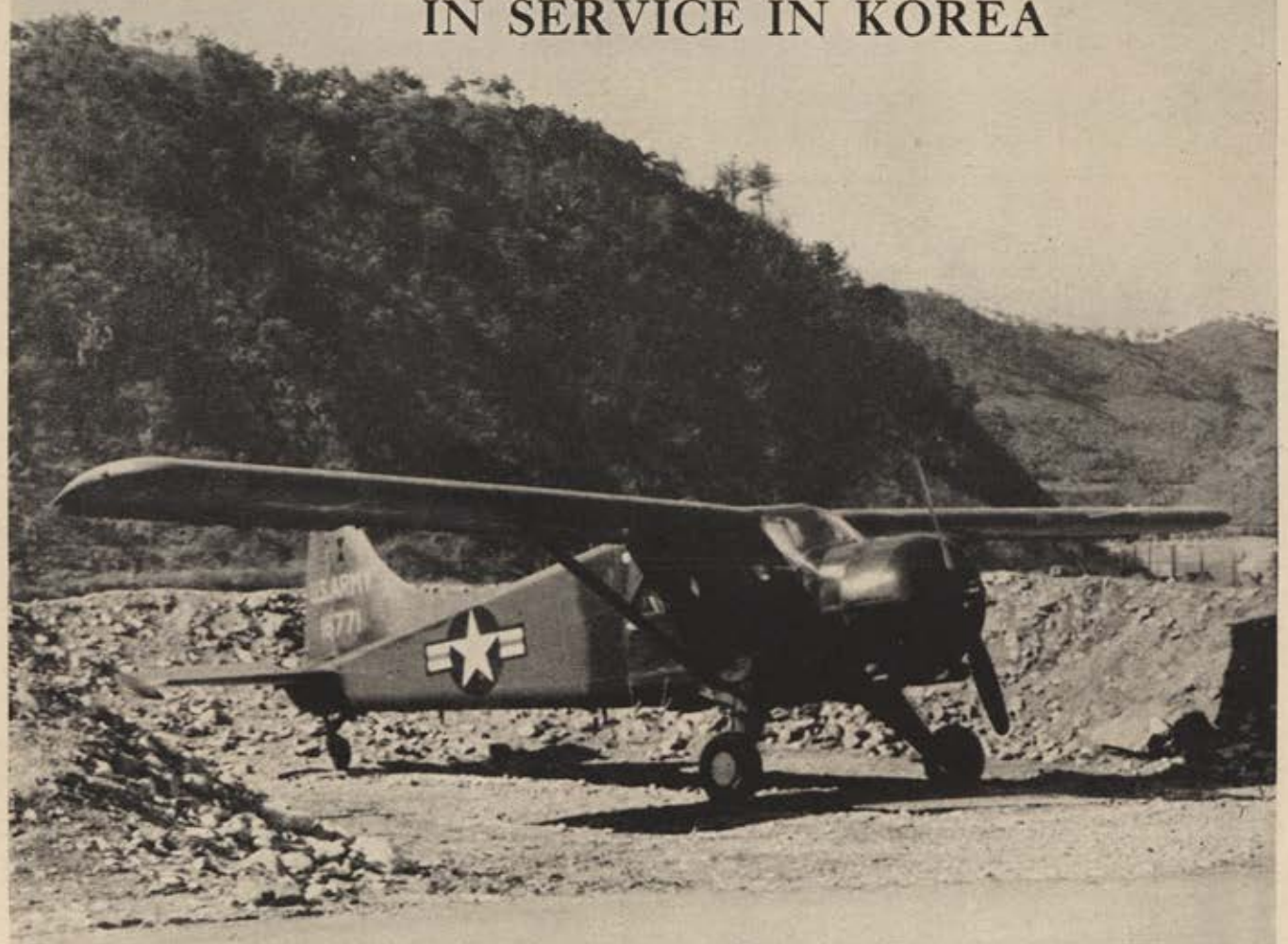

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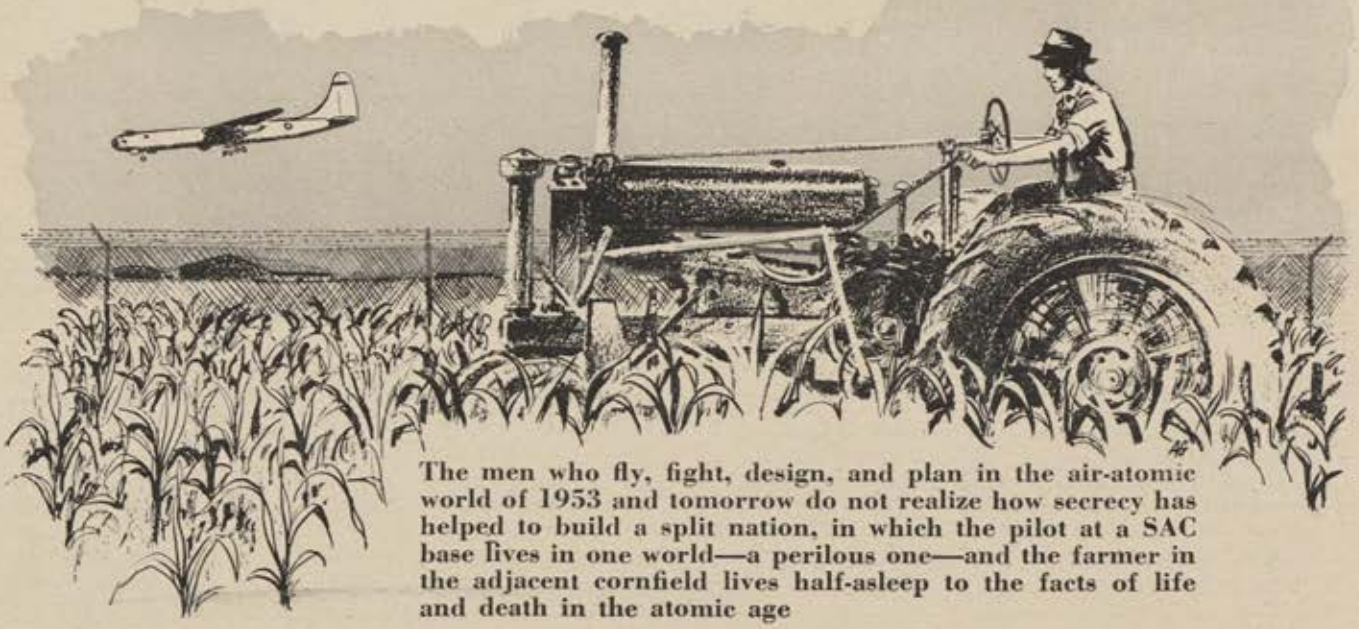

The men who fly, fight, design, and plan in the air-atomic world of 1953 and tomorrow do not realize how secrecy has helped to build a split nation, in which the pilot at a SAC base lives in one world—a perilous one—and the farmer in the adjacent cornfield lives half-asleep to the facts of life and death in the atomic age

By Michael Amrine

IT IS HIGH time the American people were told the facts of life and death in the air-atomic age.

Ever since the age of the atomic bomb and the guided missile dawned, there has been a great difference between the attitude of those who have worked behind the locked doors of secrecy, and that of the great American public, which all too often acts as if it still believed that America was invulnerable to attack.

Secrecy essentially is planned ignorance. And wherever we can successfully plan to keep a potential enemy in ignorance, it is elementary strategy to do so. But in the case of atomic energy, air defense, strategic striking power, and other fields of knowledge, we have often attempted to buy this ignorance at a fearful cost—always including the ignorance of our own people.

It is easy in government to act on the rule-of-the-thumb that *if you can keep it secret, you might as well keep it secret*. But the main question is not whether "it" can be kept secret—although that question has sometimes been answered quite wrongly in the past.

The real security question is, and always has been: Would publication of this set of facts help the enemy more than it would help our own people? We forget that every fact and every idea kept secret from the Russians is kept secret from our own people. Today technical development sometimes enables the Russians to learn secrets on their own, while we continue blindly to stamp CONFIDENTIAL on items now secret from none but our own citizens.

The men who fly, fight, design, and plan in the air-atomic world of 1953 and tomorrow do not realize how secrecy has helped to build a split nation, in which the pilot at a SAC base in Omaha lives in one world—a perilous one—and the farmer in the adjacent cornfield lives half-asleep to the facts of life and death in the atomic age.

Dr. George Gallup's public opinion pollsters recently asked citizens whether they thought their cities could be destroyed by Soviet atomic bombs. Fewer than a third thought there was much risk!

An exhaustive and scientific study of American public opinion on these issues was made by the Institute of Social Research, of the University of Michigan. This Institute is headed by the psychologists' own Dr. Gallup—Rensis Likert, a former member of the United States Strategic Bombing Surveys. From his experience in studying German and Japanese public reactions to Allied bombing, Likert recently told this writer that when bombing caused panic and mob action, "It was always directed against *their own governments*, not against the enemy—they turned with hate on the governments which had lulled them with false security, which had encouraged them to believe defense measures would be perfect."

What chance is there for such ugly reactions in America some day? The figures gathered by Likert and his associates were based, not on simple questionnaires, but on long interviews with hundreds of persons in New York, Chicago, Philadelphia, Los Angeles, and other target cities. The surveys were done in 1950 and 1951—but SECRECY itself kept them classified until last year. Dr. Gallup's recent survey, which showed similar results, demonstrates that in the meantime the public has not learned as much as it might have.

Among other things, the Michigan Institute found that more than a fourth of those interviewed thought it uncertain, unlikely, or *very unlikely* that their cities would ever be hit with atomic bombs.

To the question, "How well do you think the Army, Navy, and Air Force could do in preventing air attacks on our cities?", twelve percent answered "very well"; forty-two percent answered "all right." Only eleven percent answered "poorly"; and two percent answered "very poorly."

This is the customer-demand the Air Force is expected to satisfy. It is a large order to fill on a reduced budget, in face of the new offensive ability of the potential enemy.

Another question bit more deeply. "All in all, would you say the Army, Navy, and Air Force could give our cities

(*Continued on following page*)

complete protection, protect them from heavy damage, or wouldn't be able to prevent heavy damage?"

To this, in 1951, sixteen percent answered that they could expect "complete protection"; and fifty-two percent thought our cities would be protected from heavy damage. Only one in five thought there would be heavy damage anywhere. Asked if they thought their own cities would be bombed, one in four said no.

Analysis of the backgrounds of the persons interviewed left no doubt that simple ignorance was the answer to this mistaken belief in a magic Maginot Line around America. Of college graduates, forty-six percent thought the services would not be able to prevent heavy damage. It was the more poorly-educated who expected the most protection.

THE AUTHOR

Michael Amrine, contributor to national magazines, syndicated feature writer, and consultant to the American Psychological Assn., lives in Washington, D.C. Formerly managing editor of "The Bulletin of Atomic Scientists," he's also worked in public information for the Atomic Energy Commission's Brookhaven Lab.

This Michigan study, which runs to hundreds of pages, spells out in detail what any student of airpower knows—America has not yet been told how vulnerable it is.

Dr. Likert's interviewers found that nearly half the people in major cities did not know that volunteers were needed for civil defense. Only one out of three adults had thought seriously about volunteering. Yet they wanted to learn about atomic attack, and four out of five thought school children should have atomic drills "even though it might scare them."

Yet seven percent thought the Army should do the job of civil defense. Eight years after Hiroshima millions of Americans still do not understand the nature of the bomb, nor know the basic definition of *civil* defense, much less realize it is up to them, not to anyone else.

Asked if we are likely to be in another war in the next year or two, one in ten said it was "likely"; forty-one percent said "unlikely."

One in twenty said it was "very unlikely," and *only one in a hundred* said, "We are already in another war."

Air Marshal Wilhelm Goering once said that if the Allies ever sent a plane over Berlin, "then my name is Mayer!" This was the supreme ridicule of his distorted Nazi mind—that he should have a Jewish name. But a few years later, as he and his aides ducked for an air raid shelter, a messenger came up, crying, "Marshal Goering! Marshal Goering!" The once boastful Marshal answered dryly, "Call me Mayer!"

But the "joke" was on the German people, who woke up too late.

Thomas K. Finletter, former Secretary of the Air Force, recently wrote (in the September 1953 *Atlantic Monthly*):

"It is being suggested by those who know the air-atomic facts that the American people ought to be told about this very serious situation affecting their country and themselves; and that they could be told, without revealing to the Russians anything of importance they do not know. Nothing would do more to rid us of this balanced force incubus which is doing us such damage."

What are some of the things which the American people need to know?

The obvious answer is: some of them can't even be talked about, because the secrecy tag on them is so supreme.

But it *is* possible to talk about the general areas in which the public needs facts, and a lot of facts. And it is one thing merely to insert a paragraph of new weapons information in the text of a technical report to a Congressional committee, and another thing for the executive side to decide that a real effort should be made to inform the people.

There are several levels of secrecy, and one of them might be called the lack-of-education level, when the basic facts are known, but they are not really conveyed because the associated facts are not made public. It is as if flyers were told the Air Force would have a new bombsight, of such-and-such a design, but were told nothing else. If they did not know whether it would be issued to their kind of squadron and were not permitted to train with it, mere knowledge of its existence would be useless. To a large extent this is true on a national scale as relates to the effects of the atomic bomb and air defense. Even where information is available, it is still secret at the citizens' level.

Three years ago the Atomic Energy Commission issued a 456-page report on "Weapons Effect," written in language only an engineer could understand. Civil defense has since issued millions of copies of a pamphlet describing bomb effects in simpler terms, but its psychological advisers say that these cannot be nearly as effective as they should be until still other facts are released. For example, because of secrecy and conflicting statements about radiation, the Michigan studies showed a strong tendency to exaggerate the radiation effects of A-bombs. Such ignorance in turn makes people exaggerate the size of the civil defense problem, and waver between unreasonable fear and unreasonable complacency.

Then civil defense has built its whole information program around the Hiroshima-sized bomb, although gradually it has leaked out that we have "conventional" A-bombs several times more powerful.

Confused statements on the hydrogen bomb have left the average man with the vague sense that both Russia and the US have the H-bomb—but many believe there is no use trying to build any kind of air defense or any kind of civil defense against it. Many others still believe we have a perfect defense. This confusion is a direct result of the fantastic situation in which we pretend that we can keep our hydrogen development secret, while we boast that we can detect Russian bombs whenever we desire! Why expect the average man to believe in the Russian bombs when even an ex-President did not?

In the case of a secret bombsight, even the bombardier is not given a blueprint of the device. But at least he knows enough about it to perform his military mission.

We need not release blueprints of the atomic bomb, nor the exact size of our stockpile, nor our production rate. But can't we tell the American people something about bomb effects in terms they can understand, since the Russians already understand the main facts from their own bombs?

If we have the hydrogen bomb, let's say so, and alert our own country and our allies to what Mr. Finletter has called "the greatest technological revolution in armaments in all history—a revolution that has utterly changed the nature of warfare and has developed a weapon which in all probability will be decisive in the early weeks or days of a war."

In the field of air defense, every informed person "knows" of the existence of "secret" reports by scientists, such as Project Lincoln, Project Charles, and the like. Sometimes when considering these "secret reports," one is reminded

(Continued on page 45)

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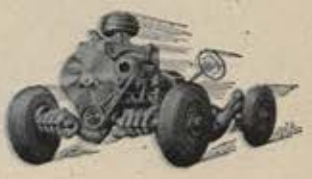

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To help swell the production of the mighty Wright-Cyclone engine—dependable "horses" for air-sea rescue work—CURTISS-WRIGHT *and the* U. S. AIR FORCE *look to Lycoming.*

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of the visiting Englishman who said, "America is the only country in the world where you would have a Secret Service, *whose existence is known to every schoolboy.*"

Nonetheless, in spite of repeated discussion by columnists of these various studies of radar, interceptors, electronic-calculated anti-aircraft missiles, etc., no one could pretend that this country has even an approximate idea of its true air defense position.

It is said by a vocal minority of scientists that spending perhaps $20 billion could enable America ultimately to score an eighty to ninety percent kill ratio. The best-informed men, so far as the outside world may judge, say the peak we can hope for in a defensive program is a fifty to sixty percent ratio. Is this worth $20 billion, and should that money and, more importantly, the time and talent needed to spend it wisely, be expended while we neglect a civil defense at home and a striking power which can carry an air-atomic power abroad?

The point is not that we should tell Americans the exact details of new radar—that might well be giving Russians useful information, although the law of the laboratories is that major discoveries are going to be made in widely separated parts of the world about the same time.

Nor is it the purpose here to argue for the 50 to 60 percent view against the 85 to 90 view. The point is that the ultimate figure is far more important to the average American than the horsepower of his automobile. But he does not even know that it is important to him; and millions believe the kill ratio would be 100 out of 100 sent against us. The real "balance" of *defense* is to balance radar, interceptors, warning systems, civil defense, and shelter and evacuation plans.

One inevitable result of secrecy, even where intelligently applied, must be that the people who know the most about a subject can talk the least; the people who know the least may be depended upon to talk the most. Secrecy not only withholds truth but promotes error. Again, the question is whether the enemy's errors are equal or greater than ours.

Today a scientist who knows nothing of production problems can theorize at length and in public about guided missiles which can span continents, and come down accurately upon a pinpoint target three thousand miles away. Then the Navy can come along with a Hellcat fighter plane rigged with a radio-guidance system and produce an announcement which, based on a 200-mile flight, permits the public to believe the guided missile has arrived.

The Army can unveil an atomic cannon, an artillery piece first put on the drawing-boards before the atomic bomb was even perfected, which cannot negotiate rough terrain, and which requires ten vehicles as supply carriers. This can be misinterpreted as the answer to delivery of atomic bombs around the clock in all kinds of weather.

And, just to keep the record rounded, a lack of basic information makes it easier for advocates of the airpower-of-tomorrow to confuse what could happen in a war of the future with what could happen if war came tonight.

The public still does not know that the Secretary of Defense at the last moment cancelled a correspondents' tour of the Nike missile production and testing grounds, on the grounds of expense and security. The public knows only of brief stories about a missile with "a one hundred percent record of kills," after which there were no more announcements. The curtain descended.

Is John Public's city defended by the perfect weapon? Can any city be so defended? He has no idea, and neither have his representatives in Congress, who must soon vote in the dark as to what they are voting for when they pass on the national budget.—END

IS YOUR HOME HERE?

If so, you're living in a "critical target area." So are 67,750,991 other Americans, according to this list released by Civil Defense authorities.

(AREA)	(POPULATION)
Akron (Ohio)	410,032
Albany-Schenectady-Troy (N. Y.)	514,490
Allentown-Bethlehem-Easton (N. J.-Penna.)	437,824
Atlanta (Ga.)	671,797
Baltimore (Md.)	1,337,393
Binghamton (N. Y.)	184,698
Birmingham (Ala.)	558,928
Boston (Mass.)	2,369,986
Bridgeport (Conn.)	258,137
Buffalo (N. Y.)	1,089,230
Canton (Ohio)	283,194
Chattanooga (Tenn.-Ga.)	246,453
Chicago (Ill.-Ind.)	5,495,364
Cincinnati (Ohio-Ky.)	904,402
Cleveland (Ohio)	1,465,511
Columbus (Ohio)	503,410
Dallas (Tex.)	614,799
Davenport-Rock Island-Moline (Ill.-Iowa)	234,256
Dayton (Ohio)	457,333
Denver (Colo.)	563,382
Detroit (Mich.)	3,016,197
Erie (Penna.)	219,388
Evansville (Ind.)	160,422
Fall River-New Bedford (Mass.-R. I.)	274,767
Flint (Mich.)	270,963
Fort Wayne (Ind.)	183,722
Fort Worth (Tex.)	361,253
Grand Rapids (Mich.)	288,292
Hartford (Conn.)	358,081
Houston (Tex.)	806,701
Indianapolis (Ind.)	551,777
Kansas City (Kan.-Mo.)	814,357
Knoxville (Tenn.)	337,105
Lancaster (Penna.)	234,717
Los Angeles (Calif.)	4,367,911
Louisville (Ky.-Ind.)	576,900
Memphis (Tenn.)	482,393
Milwaukee (Wis.)	871,047
Minneapolis-St. Paul (Minn.)	1,116,509
New Britain-Bristol (Conn.)	146,983
New Haven (Conn.)	264,622
New Orleans (La.)	685,405
New York-N. E. New Jersey (N. Y.-N. J.)	12,911,994
Norfolk-Portsmouth-Newport News (Va.)	589,427
Peoria (Ill.)	250,512
Philadelphia (Penna.-N. J.)	3,671,048
Pittsburgh (Penna.)	2,213,236
Portland (Ore.-Wash.)	704,829
Providence (R. I.-Mass.)	737,203
Reading (Penna.)	255,740
Rochester (N. Y.)	487,632
St. Louis (Mo.-Ill.)	1,681,281
San Diego (Calif.)	556,808
San Francisco-Oakland (Calif.)	2,240,767
Seattle (Wash.)	732,992
South Bend (Ind.)	205,058
Springfield-Holyoke (Conn.-Mass.)	407,255
Syracuse (N. Y.)	341,719
Toledo (Ohio)	395,551
Trenton (N. J.)	229,781
Utica-Rome (N. Y.)	284,262
Washington (D. C.-Md.-Va.)	1,464,089
Waterbury (Conn.)	154,656
Wheeling-Steubenville (Ohio-W. Va.)	354,092
Wichita (Kan.)	222,290
Wilkes-Barre and Hazleton (Penna.)	392,241
Wilmington (Del.-N. J.)	268,387
Worcester (Mass.)	276,336
York (Penna.)	202,737
Youngstown (Ohio-Penna.)	528,498

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WHERE IT ALL STARTED

Plans are to reconstruct exactly the site of the Wright Brothers' historic first powered flight at Kill Devil Hill

By Aycock Brown and Ralph V. Whitener

FIFTY years ago this December 17, an odd but soundly engineered, winged machine rose into the air under its own power at Kill Devil Hill, near Kitty Hawk, N. C. It climbed to a height of ten feet, struggled forward at a speed of eight mph for 120 feet, then plunged into the sands from which it had risen just twelve seconds earlier. Thus began the era of powered flight.

Orville and Wilbur Wright, by their genius, courage, and perseverance, had achieved one of man's oldest dreams.

Unlike many historic areas, Kitty Hawk has changed but little since the Wrights "invaded" it in 1900. Some of the houses still remain unpainted. The business section of the village boasts less than a half dozen stores. There are two churches. The post office still has one employee. The roads have changed most. The sandy trails, over which ponies once pulled two-wheeled carts, have given way to asphalt and clay-topped roads.

Contrary to what a great many people believe, the Wrights did not make their powered flights at Kitty Hawk. It was at Kill Devil Hill, some four miles away as the crow flies, that Orville and Wilbur, taking turns, flew four times on Thursday, December 17, 1903.

This fact does not detract from Kitty Hawk's role in powered flight. Had it not been for the months of glider flying from a sand dune on the outskirts of Kitty Hawk, the Wrights might never have enjoyed success. This dune, the site of the Wright Brothers' camp in 1900 and 1901, is all but forgotten today. Only a storm-beaten oak tree and the skeleton of another remain to identify the spot.

Few people have ever visited the Wrights' 1900-01 camp site. In fact, Orville had forgotten exactly where it was when he visited it a few years before he died. Elijah Baum, a sixty-eight-year-old native of Kitty Hawk, had to point it out to him.

Unlike Kitty Hawk, the Kill Devil Hill area has changed a good deal in fifty years. US Highway 158 has replaced the boat routes to the island. The lone Coast Guard weather station now shares the Atlantic beach with hundreds of dwellings, ranging from rough one-room cottages to modern resort hotels. The sea gulls share the ocean air with elaborate television aerials. The residents of Kill Devil Hills are natives of New York, Pennsylvania, and Kentucky.

The actual site of the first flight has changed, also, but in a different way. The area is now a National Memorial—317 acres in all. Grass and small bushes have replaced the white sands. Paved roads cover Orville and Wilbur's footpaths. A granite boulder marks the take-off point of the four 1903 flights, and a sixty-foot monument stands atop Kill Devil Hill in tribute to Orville and Wilbur Wright.

But the structure which had a direct bearing on the first powered flights are missing. The crude hangar in which the Wrights assembled and stored their rugged plane no longer stands. The wooden shed in which they lived, slept, and ate has vanished. The sixty-foot mono-rail from which they launched their plane is gone. Not one of the landing points of the four 1903 powered flights is marked today.

That is why the Kill Devil Hills Memorial Society, the National Park Service of the Department of Interior, the Air Force Association, and the North Carolina Fiftieth Anniversary of Powered Flight Commission have decided to reconstruct the historic site exactly as it was in 1903.

The reconstruction is to be completed by December 14, when the sponsors open a four-day celebration of the golden anniversary. Already the National Park Service has begun collecting the items—tools, furnishings, food—that are to go in the buildings. The reconstruction will be under the supervision of the National Park Service, which operates and maintains the Kill Devil Hill National Memorial. Costs of this project will be met by popular subscriptions.

Since 1928, when the National Aeronautics Association erected the granite boulder marking the take-off point of the four 1903 flights, and 1932, when the monument atop Kill Devil Hill was dedicated, an annual celebration has been held at the site. Originally, these were staged by the Kill Devil Hills Memorial Society. Since 1949, the Air Force Association has assisted the Society in making its celebration world-wide.

This year, for the first time, the celebration at Kill Devil Hill will cover four days—December 14-17. The first day will honor aviation's pioneers and private flyers. The Aircraft Owners and Pilots Association will particiate and the Soaring Society of America is planning at least

(Continued on page 63)

One of the Wrights snapped this shot of plane, hangar, and living quarters.

APPLYING THE LESSONS OF KOREA

We must either build a superior fighter force or withdraw to this continent and concentrate on defensive measures

With the new economy program again catching the Air Force squarely on the chin (and the American people), it's high time we take a "practical" look at aircraft requirements. Gen. "Hap" Arnold stated many times that we must have sufficient aircraft to "do the job." General Doolittle has stated that we must maintain a modern Air Force "in-being" large enough to discourage Russian attack. All clear thinking airmen will readily agree that we must construct, immediately, a large enough air superiority fighter force to "do the job." At the present time we have not a semblance of this force, nor it is programmed. We must either build this force, or withdraw to the North American continent and concentrate on defense.

Our experts will do well to dig into the facts and apply some of the lessons we learned in the air war over Korea. In the "unique tactical situation" of the Korean air war, the Communist Air Force made little effort to win the war. It is obvious to all with experience in the air over Korea that the primary mission of the Communist Air Force was training.

Let's not be smug and complacent about the recent results. The facts are there to see and understand. Our technologists, a group of extremely valuable men, have begun to cloud the issues with gobbledygook. We will be crushed by the "black boxes" yet.

Real fighter people will all agree that the light weight fighter is our salvation. To us, the handwriting is on the wall, and it may be later than we think.

Maj. William T. Whisner, Jr.
Nellis AFB, Nev.

Midshipman Sounds Off

I want to congratulate you on your fine work in forwarding the fight for airpower. Your coverage of Mainbrace was tops! There is a place for Navy air, but certainly *not* the position where the Navy is attempting to place it.

When I am graduated from Annapolis I hope to be commissioned in the USAF and enter flight training. I intended to enter the Air Force when I came here as I thought choice of duty and service upon graduation was dependent upon class standing. After being sworn in as a midshipman, I discovered, to my horror, that it was dependent upon a number drawn from a bowl. Contrary to popular belief, the Air Force quota here has always been filled eventually. If there was any delay in filling it, it was due to the fact that, prior to this year, if you put down Air Force as first choice and did not have a good enough number to make it, you automatically were placed at the bottom of the list for the drawing of ships. The result was that men with low numbers hesitated to make the Air Force their first choice. There was no such difficulty encountered this year and all I can do is hope for a good number next year.

There is one other thing that perhaps you and your magazine could help. There are certain midshipmen who are merely interested in getting into the Air Force because it is a "good deal." They have no more desire to make a career out of it than the man in the moon. To quote one . . . "Sure, I'm going into the Air Force, get my master's degree for free, then get out." This is typical of this group's attitude. As a result, there are those who are sincere and intend to make it a career and, because of this type of individual, do not (due to the limited number that may enter the Air Force and the preference number system).

Now, my idea is this: Why not a screening of some type, such as flight aptitude tests, or even requiring the Air Force candidate to agree to serve, say, six or even more years before being able to resign. Granted, this may reduce the quantity, but the quality would be outstanding. Well, our class will not be drawing our "numbers" until December of this year, and perhaps you could cause some action on the matter before then. Another system might be the selection of those men entering flight training first, giving the remaining billets to those not qualified. (This, I believe, is how they work it at West Point.) This would eliminate the majority of "free-loaders" and, since the Air Force obtains its leaders from the flyers, would insure men who are potentially capable of filling that category.

Midshipman

An Error Repeated

I note a most dangerous argument voiced by your letter writer, Stanley Mohr. Referring to AIR FORCE criticism of defense economy, he says: ". . . I believe we cannot honestly buy ourselves into bankruptcy for the sake of survival."

Let's look at the record. In the spring of 1949, the then Gen. Eisenhower assured the Senate that he thought $15 billion the annual figure representing the balance between what we could afford, and what we should have. Now—after post-Korea spending which skyrocketed to $70 billion a year—the present Administration is sponsoring a $42 billion program, and aiming at a "balance between defense and what we can afford" of about $34 billion annually, though the year they hope to reach this figure isn't given.

Mr. Mohr does say: "The proper application of our forces, including airpower, in various stages of the Korean war could well have been decisive for us." With any luck, and with crack outfits such as Prussia used to maintain in peacetime, that might have been the case. But the sad facts were that proper funds for training weren't available either to the Air Force or the Army. Particularly lacking were funds for ground-air teamwork perfection.

Let's see the effect of this peacetime parsimony on the very first ground engagement—when Lt. Col. Ayres' 1st Battalion, 29th Infantry, took US troops' baptism of fire. First of all, economy left him with only two rifle companies—instead of three; he had a 105 mm howitzer battery of the 57th Field Artillery Battalion, without any sort of provision for air spotting; there was no training in air-ground teamwork, nor any organization for it. Yet Ayres was in a key position to do a modern Leonidas—and hold the pass, *if he had the air support the Army later got.*

But what was America's airpower able to do? The B-29s, which later did such yeoman work at Pusan by bombing within 300 yards of US troops, weren't then adapted to join the Army team at all. At that only ten flew that key day, but later performance indicates what great results even they could have obtained, had the system and technique for air-ground cooperation been actively functioning in peacetime.

As for the F-80s, they were trying to help. But they were from an interceptor wing hastily assigned—without previous training, much less workouts with MacArthur's Army divisions – to attack ground targets.

True, Ayres did hold things long enough to permit air-landing of additional troops down the road at Taechon. But all too clearly, had the air-ground team been a practiced reality instead of a paper project, he'd never have been budged.

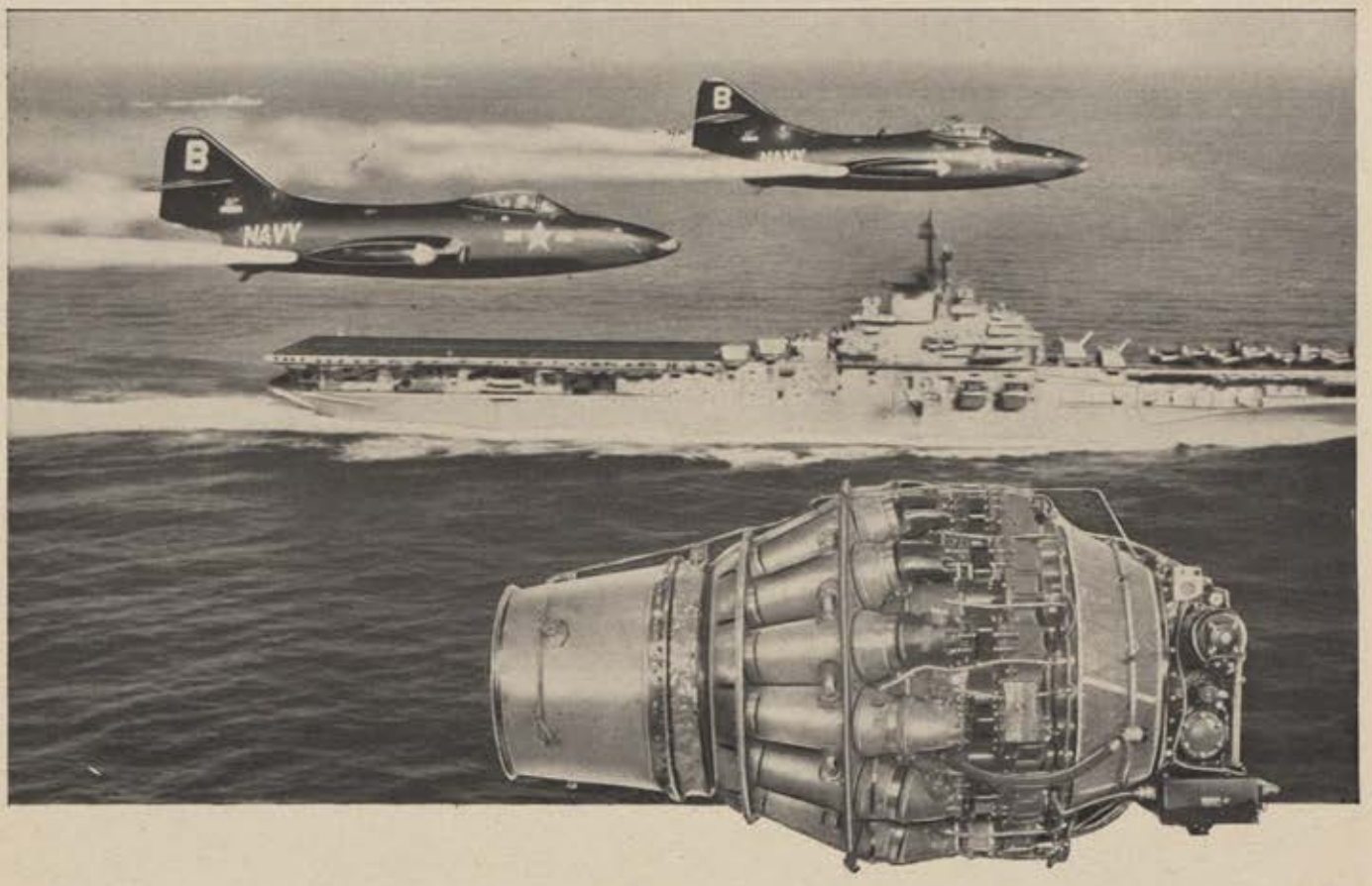
All too plainly, the present "economy budget" is—like the 1949-50 ones—a result of a desire to cut expenses, whether or not either intelligence, or a survey of the *ability* of our forces indicates that

(Continued on page 50)

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.

ANOTHER REASON ALLISON LEADS IN THE AIR



First Navy Jet engine

to score 1,000 hours without overhaul

Record made by Allison J33 Turbo-Jet in carrier-based Grumman F9F-4 Panther

Allison does it again! An Allison J33 Turbo-Jet recently became the first Navy jet engine to operate 1,000 flight hours without overhaul.

This engine was the first production engine in the J33-A-16 series and began its service life under the Accelerated Service Trials of the F9F-4 Panther, operating from the Naval Air Test Center, Patuxent River, Maryland. At the 500-hour mark, the engine became a test vehicle for engine modifications and for evaluation of extended service life under the severe conditions imposed by carrier landings.

This U.S. Navy achievement adds new laurels to the already well-known endurance records of Allison Turbo-Jets. For both the J33 and the J35 were the first jet engines which our Armed Forces actually operated 1,000 hours without major overhaul.

Proof once again of Allison leadership—where it counts most—*in the air!*

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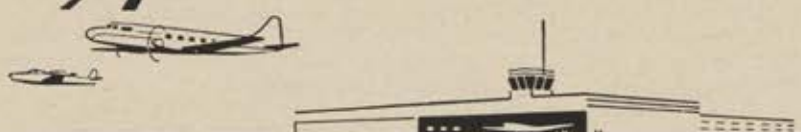
Allison DIVISION OF GENERAL MOTORS, INDIANAPOLIS, INDIANA



World's most experienced designer and builder of aircraft turbine engines—*J35 and J71 Axial, J33 Centrifugal Turbo-Jet Engines. T38 and T40 Turbo-Prop Engines*

they can stand this kind of economy.

If the USAF deserves any adverse criticism in the affair of the present budget, it's that it has failed sufficiently to stress the need for practice, particularly in teamwork. For forces equal materiel plus men plus that all-essential matrix, practice. They are teams, just like any football or baseball outfit.

Ayres' little incident shows that in Korea we sent in men, planes, guns, tanks, and trucks; but we did not send in a team.

The resultant cost in blood and treasure has been fantastic.

Must we repeat this error, so soon?

Garrett Underhill
Washington, D. C.

Usual Run Around

How much of a run around can a guy get? I'm disgusted and with damned good reason.

First though, I'll give a brief rundown on my Air Force service that began when I entered active duty in 1943. Since then I have maintained or tried to maintain an affiliation with the Reserve in spite of the drawbacks connected with the program.

During the last war I hit the Cadet program in the fading days of the wholesale cutbacks in the pilot program. I returned to college and engaged in flying training on my own at civilian flying schools. At present, I hold a Commercial, Instrument, and Multi-Engine Rating, plus the Ground Instructor Rating and over 800 hours total time. On top of this, I hold a commission in the Air Force Reserve as a "Ground Pounder."

Awhile back I heard a story that the Cadet Program was hunting for pilot trainees and that the Air Force was granting waivers to men over twenty-seven who held a Reserve commission and had a desire to enter pilot school.

At the time, I was very interested in making the Air Force my career, so, I spent a few hectic days trying to run the story down.

A sergeant at Reserve headquarters vaguely recalled seeing a directive concerning a waiver but couldn't remember where. He sent me over to Air Force Recruiting where, after a lengthy search, the letter was found. The letter was then closely examined by the recruiting people who, after a conference, directed me to the local Air Force office.

The people there proceeded to dig up what information they had on the subject. They advised me to initiate an application through a Reserve or National Guard unit. At the time I wasn't interested in either of these because I wanted to take a competitive tour and work towards a regular commission. Anyway, the National Guard Commanding Officer eventually rejected my application for a waiver after I had tried to work through their channel.

The biggest joke of all was the recommendation that I make an effort through a Reserve unit. Naturally, this meant an AFTRAC outfit, but the catch was that I had tried for at least a year to get into an Organized unit without success.

During the recent survey I mentioned the difficulty I had in my attempts to get active, all the while under the impression that the Unit must have no openings. The local AFTRAC officer in charge of liaison pounded the table and threatened to get to the bottom of this bottleneck in personnel procurement. He took all the pertinent information and promised to notify me in a week's time. That was around April and I still have heard nothing.

My attitude today is that the whole thing is just too much trouble, the Reserve included.

To hell with Air Force flying. I'm going crop dusting.

Ernest Stadvec
Akron, Ohio

Old-Timer Objects

I was amazed that your magazine would print the article entitled "Ability—Not Time-In-Grade," by Maj. David F. McCallister. The infantile mouthings of this "Guard" officer will not go unchallenged by many of us Air Force old-timers who have been submerged and demoralized by so many of his brilliant young executives.

In the first place, if the Major had taken the time to look up the present time-in-grade criteria for promotion, he would find that they are, for all intents and purposes, a negligible quantity. He would also find that under the "best qualified" method of selection over the past four years, little if any weight has been given the time-in-grade factor. To prove this point I cite my own case with twenty-seven years active service and almost ten years in my present grade; an effectiveness index of "superior," and General officer's recommendations for promotion in the "A" or outstanding category for the past three years. Still the brilliant young executives pass me by with most disconcerting regularity!

I have no quarrel with the statement that a straight seniority system for promotion is completely obsolescent—only the best is good enough for the Air Force. I do, however, violently object to the Air Force completely tossing out the experience factor—and, contrary to the Major's statement, industry has not become that foolhardy.

In the second instance, Major McCallister's comparison of the Air Force and civilian industry in the matter of brilliant young executive requirements, I believe to be highly erroneous. There is a vast difference in the personal requisites necessary to be a military leader and an industrial executive.

Personally, I have "bailed" so many of these brilliant young executives out of trouble in the Air Force, carried so many of them on my back for the past ten years, I am becoming mentally stoop-shouldered!

Lt. Col. R. A. Butler, USAF
APO 63, San Francisco, Calif.

IQ or Experience?

Your magazine articles over a lengthy period show a deep-seated interest in the problems faced by a Reservist as well as by civilians endeavoring to find a place in the Air Force in a career field. I would qualify under the latter category, and yet might just as well go against a stone wall for all that has been accomplished.

I hold an AB from Kenyon College with honors in history (my major) as well as an extensive background in political science. On top of that I have completed all requisite requirements for my MA and hope to obtain that in October. Again, the course subjects are history and public affairs. I am twenty-six plus, and though I have a long and deep interest in the Air Force, feel it would be silly to go in as an observer. For one thing, I am too old to compete physically with men just out of the Academy, and also would be a Reservist and so a long way off from getting anywhere.

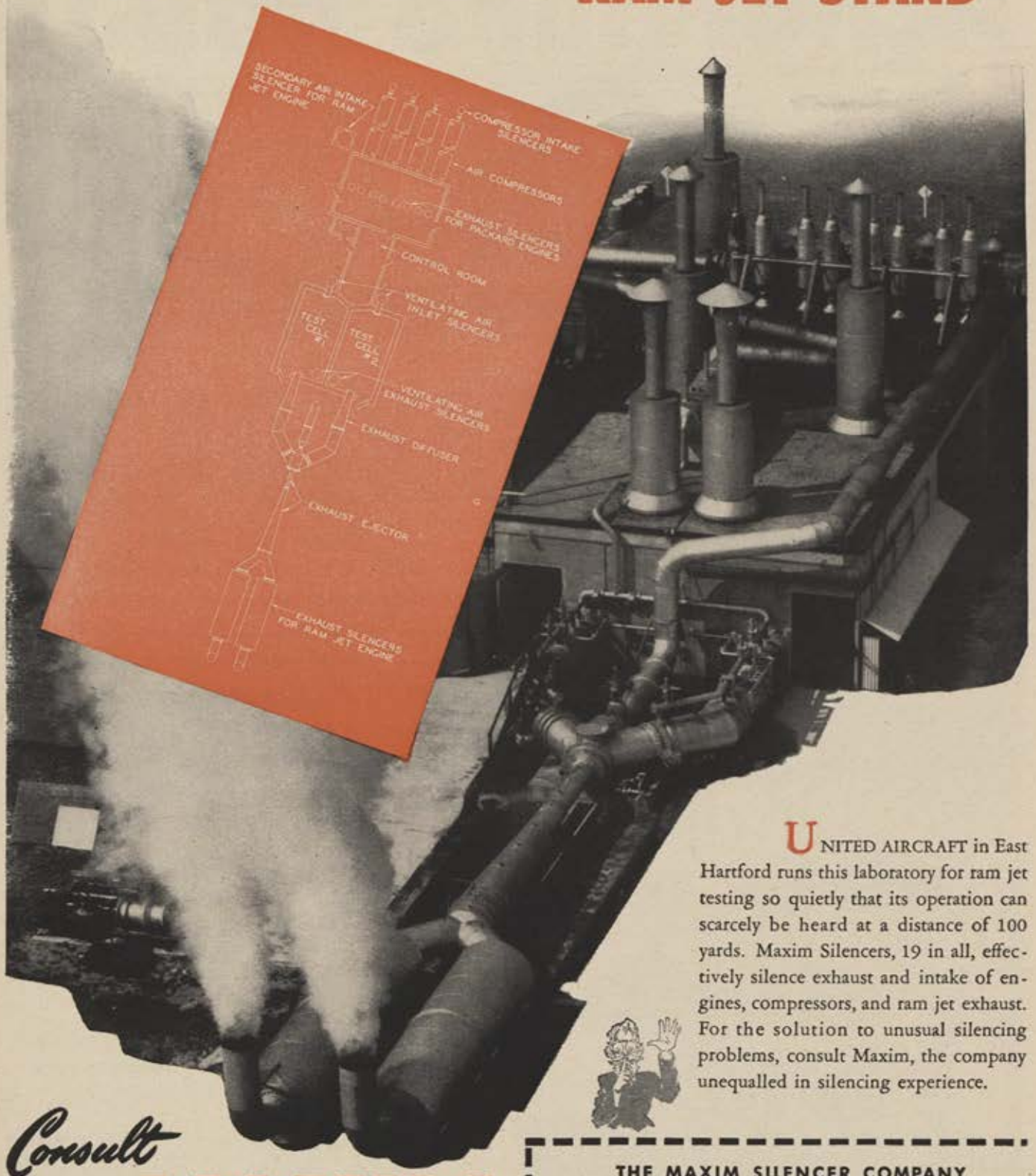
The thing that I would be best suited for is now cut back by budgetary limitations. The degree needed for intelligence officer is specified as being a bachelor's in political or social science. So far, all right. But then the joker of required qualifying experience is thrown in. An intelligence officer needs a minimum of twelve months in intelligence or related assignments. Without being facetious, my point is this: If I have spent two years in the Air Force as a radio mechanic, five years in college working for and getting two degrees, and one year working to gain college tuition, where, in heaven's name, am I supposed to find time to get the required experience? As you can see, this listing covers me from the end of high school.

A letter from the Director of Reserve Personnel Procurement of the 1st Air Force noted tersely that I lacked the necessary qualifications and therefore could not be considered for appointment at this time. I have an interest in the Air Force Reserve *and* the Air Force, but this is one way of helping to make the "have" the past tense "had."

Many wonder at people with college educations being willing and eager to accept commissioned status. I am one of those rare birds and yet am now beginning to think it was all my mistake. Isn't there any way of giving people such as I the benefit of a doubt, or isn't a degree in the social sciences worth even that? I wonder.

Murray N. Segal
Brooklyn, N. Y.

YOU WOULDN'T KNOW AN ENGINE WAS RUNNING 300 FEET AWAY FROM THIS RAM JET STAND



UNITED AIRCRAFT in East Hartford runs this laboratory for ram jet testing so quietly that its operation can scarcely be heard at a distance of 100 yards. Maxim Silencers, 19 in all, effectively silence exhaust and intake of engines, compressors, and ram jet exhaust. For the solution to unusual silencing problems, consult Maxim, the company unequalled in silencing experience.

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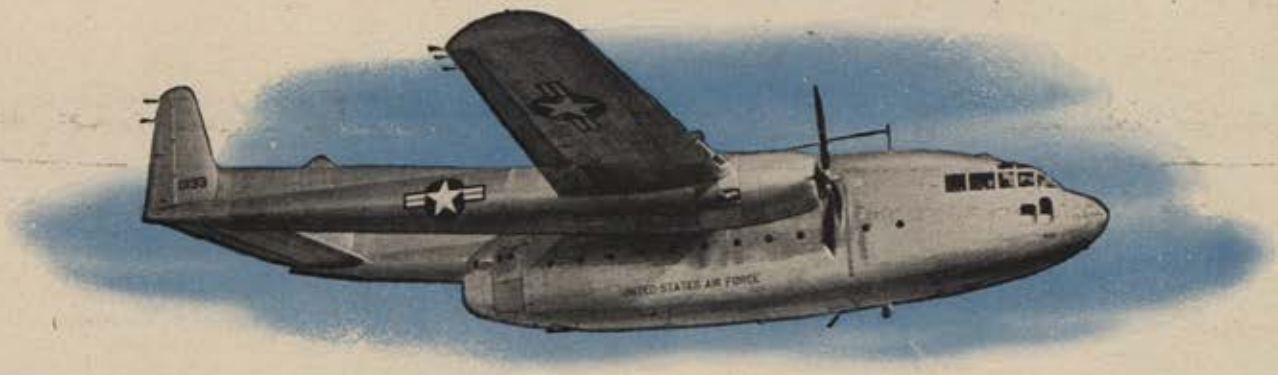

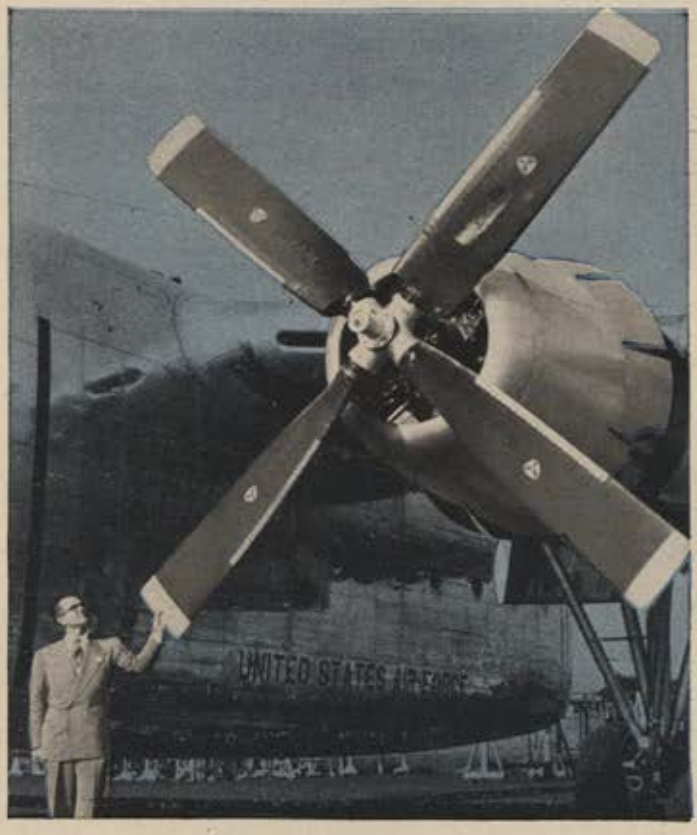

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ANGuard ANGLES

By Capt. Edmund F. Hogan, ANGUS

THE big word in Air Guard lexicon these days is J-E-T. Pipes are coming into the program and more are on the way. Just about all of the T-33s required for transition and instrument training in the squadrons scheduled for jet fighters have been delivered. As of this moment, thirteen squadrons are boring holes in the sky with F-80s and four have F-84s. One of these F-84 outfits, incidentally, the 152d Fighter Squadron of Providence, R. I., is flying out of Connecticut's Bradley Field, the runways in Providence being too short for jet operation.

Those in the National Guard Bureau riding herd on this transition of the ANG from conventionals to jets believe the change-over will be accomplished on schedule. In fact, they say, the first F-86s will be delivered to Guard squadrons within five months.

Some squadrons will undergo two transitions in the change-over. Those which have a basic interceptor mission and which receive F-84s initially will hang on to the Thunderjet until the F-86s become available. The 84s then will be withdrawn, replaced by Sabrejets, and passed on to other squadrons. Eventually, supply will overtake demand and as newer types and models are allocated by Air Force, the older versions will be withdrawn entirely.

It is wishful thinking, however, to believe that the entire ANG will be flying jets within a year. In the first place, some units stand little chance of ever getting into the business. These are based at locations which do not have long enough runways or whose runways can't be extended. Most important, there just aren't that many jets available now.

• • •

In line with the jet transition program, NGB has just announced a major change in the ANG Aviation Cadet training program. Heretofore, Air Guard cadets returned to their units as soon as they got their wings. But beginning with the class which graduates on December 16—and in all subsequent classes—ANG graduates will go on to three months of advanced air crew training. This means ANG pilot training will be stretched out to seventeen months. The advanced air crew training is designed to make the pilot combat-ready in his unit's equipment. For example: if a new pilot is scheduled to return to an all-weather squadron, he will spend the post-graduate three months being trained in intercepts and air-to-air gunnery. It makes no difference whether the unit is fighter, light bomb, or recon. The young ANG pilot will get ninety days of advanced training in the equipment he'll be flying back home. The new program will relieve the unit of responsibility for getting the young graduate combat-ready, which usually requires a full year.

• • •

Hq., USAF is giving ANG excellent cooperation in making its schools available to Air Guardsmen. ANG'ers can pick and choose. The jet mechanics schools at Chanute AFB and Amarillo AFB are getting a good play. About sixty Air Guardsmen enter each month. Air Force also has opened its Gunnery Instructors School at Nellis AFB to the ANG. Last month six ANG pilots were admitted as students. The school lasts ten weeks. The standard ANG quota for the future will be five pilots in each new class. NGB hopes that eventually each Air Guard fighter squadron will have at least one graduate of this school. To qualify, pilots must have had their wings at least three years, 150 hours of jet time, and have held such squadron positions as flight leader or operations officer.

• • •

Notes on the back of a Form 175: ANG has in operation two F-84 Mobile Training Units, one F-80, and one F-51. Coming up are F-86 and F-94 MTUs. These units consist of all of the various systems in the jets. They move into a squadron and set up classes to teach pilots and mechanics the intricacies of the systems in the aircraft they'll be handling. . . . NGB also has received six C-11 jet trainer units. These cost about $100,000 apiece and are to jets what the Link is to conventionals. Program calls for twenty-seven, one for each wing; thirteen should be on hand by next July 1. . . . ANG now has a quota of thirty-seven aviation cadets every two weeks. Although interest has perked up, the quota's not being met. The 152d in Providence seems to have the answer. The squadron has sent nineteen off to school and has a backlog. Need for young pilots in the Guard is so vital, NGB intends to stress cadet program in the months ahead. . . . Local purchase plan, which permits ANG units to buy many needed items from hometown merchants, reported meeting with considerable success. ANG's experience same as AF's. Plan saves money because often purchase price is less than what it used to cost to process the paper work. . . . At deadline time, third annual ANG gunnery exercise was under way in Boise, Idaho. Total of twenty-five teams entered, one from each of twenty-three ANG wings and two separate squadrons (Puerto Rico and Hawaii). Three F-80 jet teams entered, representing the 140th Wing of Colorado, 137th of Oklahoma, and 132d of Iowa. . . . Full details will be reported here next issue.

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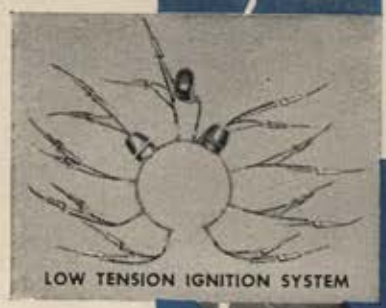

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KB-47B Is New Jet Tanker

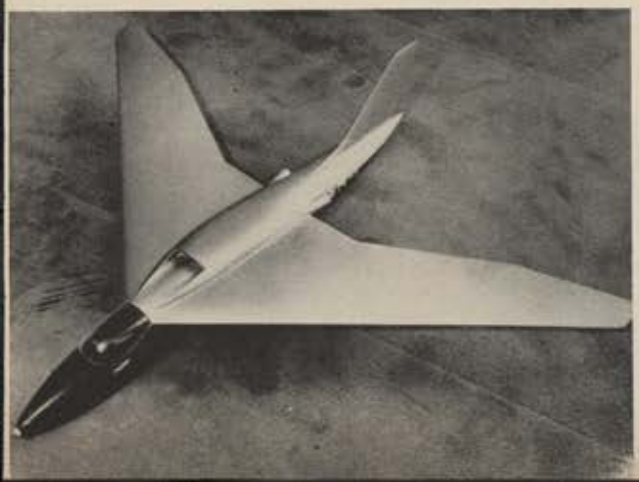
The first step toward aerial refueling of jet-powered aircraft with other jets has just been completed. The project was started more than two years ago by the Air Research and Development Command, Boeing Airplane Co., and Flight Refueling, Inc. Above, a KB-47B refuels a standard B-47 Stratojet (left). An adaptation of the Flight Refueling probe and drogue system is being used.

Sea Dart Undergoes Tests

The world's first delta-wing seaplane, the Navy's XF2Y-1 – Sea Dart – touches down. Elevons on wing's trailing edge replace conventional aileron and elevator controls. Powered by two Westinghouse turbojets and after burners, the Convair Sea Dart uses hydroskis instead of pontoons.

New British Wing Design

Wings of sweptback aircraft bend upwards under airloads, losing "incidence" at the tips. In high-speed planes this can cause serious instability. The Short & Harland Sherpa (model below), an experimental British aircraft, may provide an answer to the problem with its flexible wing and rotating wingtip controls. Powered by two Turbomeca jets, it's designed for altitudes of more than 60,000 feet.



Navy Neptune Has Stinger Tail

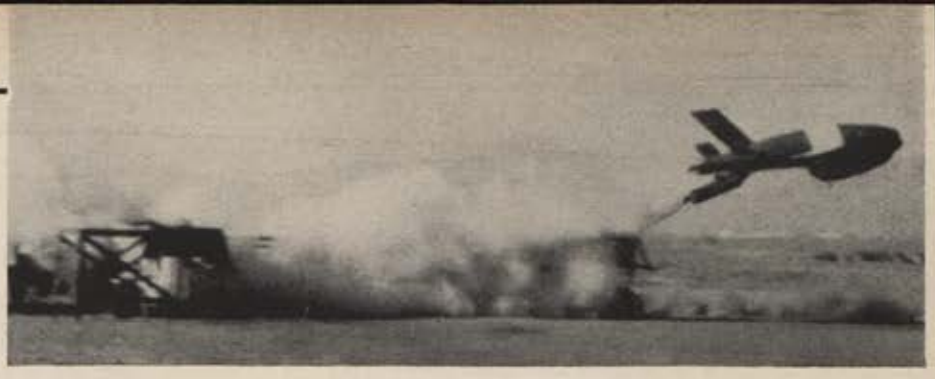
Those attending the recent National Aircraft Show at Dayton, Ohio, had a peek at the Navy's submarine hunter-killer plane, the P2V-5 or King Neptune. The elongated tail (see cut above) houses the latest in what Lockheed, its builder, and the Navy call "labor-saving" devices. With its "stinger tail," the P2V-5 can pinpoint undersea marauders lurking "hundreds of feet" beneath the surface. On spotting an enemy submarine, the King Neptune can then go to work with its respectable arsenal of airborne rockets (for surfaced craft), mines, depth bombs, and standard guns.

RC-121C Packs Six Tons of Radar

Shown below is the Air Force's RC-121C, a recon version of Lockheed's Super Constellation. It is a high-altitude, pressurized aircraft, powered by four 3,250-hp. Wright turbo-compound engines capable of cruising the RC-121C at approximately 335 mph. It has galley facilities for a crew of thirty-one. For USAF, the RC-121C, which carries six tons of radar equipment, will be used to give its air-defense forces extra-early warning. For the Navy it will improve its radar eyesight by hundreds of miles.

Compass Swinging

No more trial and error in compass swinging when TEMCO's miniature compass rose is used to short-cut the process—that's the Dallas company's claim. The table-top model, about 1/30th the size of the ramp-type rose, finds defects before reworked or aging compasses are installed in aircraft. One operator can swing and compensate four compasses an hour on the miniature rose, as against the time (installation takes 10 to 15 minutes), manpower, and average $18-worth of gas needed in the conventional method. The miniature works with either the B-16 or remote indicating compasses.



Ryan Firebee Blasts Off for Target Run

Blasting off from a sixty-foot launching rail is the ground-controlled Ryan Firebee. One or two seconds after a rocket blast-off, the Firebee's Fairchild J-44 jet engine (1,000-lb. thrust) takes over. Looking like a dwarf fighter plane, the sweptback-winged drone flies at speeds near that of sound. Weighing 1,800 pounds, it is about twelve feet wide and eighteen long. The Firebee, capable of a conventional plane's aerobatics, will be used in air-to-air gunnery practice and for training anti-aircraft batteries. It is equipped with a two-stage parachute system that brings it back to earth after target runs.

High Speed Recce

You're looking down (left) on the world's fastest photo-recon aircraft. It's the high-speed, high-altitude Boeing RB-47E. The RB-47E has a longer nose than the B-47, more windows, and an air-conditioned camera compartment in the "bomb bay." Photographic equipment includes: intervalometers making possible continuous pictures at regularly spaced intervals, optical viewfinder, and photocell-actuated shutters tripped by flash illuminants in night photography. The air-conditioned compartment maintains constant temperature to keep camera windows clear.

ARDC's Huge Wind Tunnel

The cavernous yawn of a section of the Propulsion Wind Tunnel at ARDC's Arnold Engineering Development Center, Tullahoma, Tenn., dwarfs construction workmen. The tunnel, as high as a five-story building, has sections for both transonic and supersonic tests. Full-size jet engines, wing sections, guided missiles, and fuselages can be tested at speeds up to 2,500 mph. It can hold a stream of air equivalent to air consumption of 350 F-80s full throttle at sea level. Air pressure is variable from two atmospheres to 100,000 feet. Water-cooling uses 150,000 gallons per minute.

Cuts Down Drilling Time

This machine, developed by Boeing, reduces drilling time for rivet holes seventy-eight percent. Index pins (shown under part) locate, drill pilot holes. Cone-shaped pressure foot holds part in place. It can drill 180 holes per minute.

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Rate of Climb	1700 F.P.M.
Service Ceiling—2 engines	24,000 Feet
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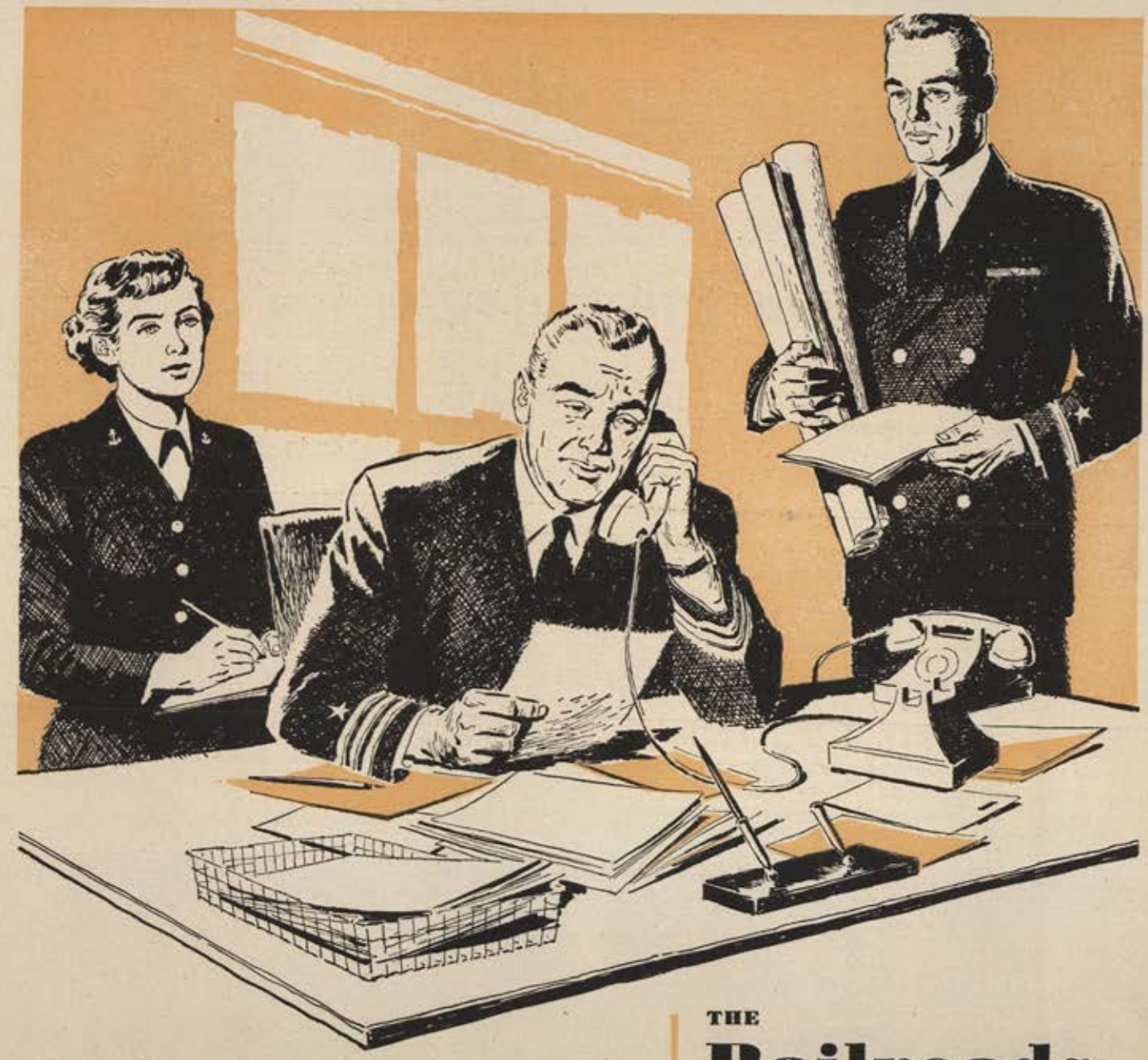

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MOBILIZATION NEWS

BY JAKE CULPEPPER

ABOUT FACE — AF once more has revised its off-again-on-again policy which required most AF-ROTC students to agree to take flight training or be discharged from the program. As it now stands, advanced course AF-ROTC cadets presently under contract will be allowed to finish college, and Selective Service has agreed to keep hands off until the ROTC course is completed. Not all AF-ROTC students now in the advanced course will receive commissions, however. AF says only the best qualified potential junior officers will win appointments with the remainder being awarded Certificates of Completion. Students who receive these certificates may apply for an AF commission after they have fulfilled their Selective Service obligations. However, they will be offered a special two-year enlistment in the AF with the grade of airman third class. AF's primary need is for flying officers, pilots and aerial observers. Therefore, majority of commissions awarded will go to students applying for flight training. Approximately 1,000 AF-ROTC senior cadets will receive commissions because of their college technical training. A few commissions may be given to outstanding cadets who neither qualify physically for flight training nor have technical skill backgrounds.

DIRECT COMMISSIONS — Direct appointment freeze, resulting from budget cuts, is not expected to be lifted this fiscal year. Only nurses, dietitians, and a limited number of chaplains and sanitary engineers are currently being commissioned directly.

RESERVE STRENGTH — To date, AF Reserve has twenty-three flying wings, which are approximately twenty-one percent manned and have twenty-eight percent of required aircraft. In the lagging support unit program, AF Reserve has set up twenty Specialist Training Centers and two Air Depot Wings. . . . For Reservists interested in flying, plenty of opportunities continue to exist. More than 2,500 Mobilization Assignee slots in the AF's major commands are presently unfilled. Vacancies can also be found in flying squadrons of almost all of the twenty-three flying and combat reserve wings. . . . Airmen with an eye toward a longer enlistment in AF Reserve may now sign up for four, five, or six years. . . . AF has reaffirmed its policy of handing out paid officer assignments in AF Reserve only to those who have accepted permanent Reserve commission.

VARTUs — Although 50,000 officers and an unlimited number of airmen are authorized for Volunteer Air Reserve Training Units, only 36,936 officers and airmen have assignments in the VARTU program at present time. To fill the commissioned gaps, ConAC officials are now working out a plan to offer new promotion chances to AFR officers assigned to VARTUs.

WARRANT OFFICERS — Appointment of Warrant Officers in AF Reserve, now underway, is to be handled in three phases. First, appointment of approximately 1,700 qualified Warrant Officers Junior Grade from airmen on active duty whose applications are now going through the mill at the ConAC air forces. Applicants with Reserve commissions will automatically forfeit their appointments at the time warrants are accepted. Phase two, personnel currently serving on active duty as temporary Warrant Officers, will receive appointments as Warrant Officers Reserve of the Air Force. In this group, Reserve warrants will include Chief Warrant Officer and Warrant Officer Junior Grade. Temporary W-1s will receive Reserve WOJG status, and W-2s, W-3s, and W-4s will be offered Reserve CWO rank. Phase three, airmen now assigned with AF Reserve will be appointed as WO Reserves.

POSTSCRIPT TO THE CONVENTION

Kelly presents trophy to Rosenthal.

First President's Trophies go to AFA's Man of the Year and Squadron of the Year during AFA Convention

TWO new trophies—the President's Trophy—were awarded for the first time at the Airpower Banquet of AFA's recent convention. They went to National Secretary Julian B. Rosenthal, named AFA's Man of the Year, and to the San Francisco Squadron—Squadron of the Year. Retiring President Arthur F. Kelly cited Rosenthal for "selfless devotion of his talents and efforts to the cause of American airpower and the development of AFA." Robert A. Dobbins, commander of the San Francisco Squadron, accepted the other trophy, as Kelly cited the Squadron for its membership promotion and civic activities.

Besides bestowing its annual honors, the delegates in business sessions passed some thirteen resolutions and amended the constitution. Most far reaching of the resolutions passed was that which authorized the merger of AFA with the Air Reserve Association. Its passage precipitated an amendment to the constitution to create a National Reserve Forces Council as one of AFA's standing committees. The merger was later also approved by ARA and now awaits action by AFA's Board of Directors.

One amendment provides for the formation within AFA of flights in areas which lack the twenty members needed to qualify as a squadron. A flight will "consist of not less than ten nor more than ineteen active members."

At the Chaplain caucus all officers were re-elected: John R. McLaughlin, Englewood, N. J., was named commander; Anthony A. Cirami, East Vineland, N. J., deputy commander, and Charles W. Carnan, Rockville Centre, N. Y., adjutant.

The Medical Division elected: Richard L. Meling, Columbus, Ohio, commander; Charles P. Campbell, Hackensack, N. J., vice commander, and Jan H. Tillisch, Rochester, Minn., secretary-treasurer.—END

AFA'S FAMILY AWARDS

THE PRESIDENT'S TROPHIES

Julian B. Rosenthal, Lake Success, N. Y.: AFA's Man of the Year.

San Francisco Squadron No. 1, San Francisco, Calif. (Robert A. Dobbins, Commander): AFA's Squadron of the Year.

UNIT PRESIDENTIAL PLAQUES

Baltimore Squadron No. 1, Maryland Wing.
California Wing.
Detroit Squadron No. 1, Michigan Wing.

INDIVIDUAL PRESIDENTIAL PLAQUES

Paul Bolinger, Toledo, Ohio.
Stanley C. Denzer, Brooklyn, N. Y.
Robert A. Dobbins, San Francisco, Calif.
James S. Ellis, Van Nuys, Calif.
Robert F. Emerson, Lansing, Mich.
Roland E. Frey, St. Louis, Mo.
Cecil C. Howard, Pasadena, Calif.
Stanley K. McWhinney, Lansing, Mich.
Bernard T. Peters, Inglewood, Calif.
Joseph D. Myers, Venice, Calif.
Ruth Stern, Bayonne, N. J.
Meir Wilensky, Baltimore, Md.
W. Hamilton Wilcox, Drexel Hill, Pa.
Mary Jane Rosenqvist, Milwaukee, Wis.

PRESIDENTIAL MERITORIOUS SERVICE BARS

Irving H. Kempner, Detroit, Mich.
Edward C. Kranch, San Diego, Calif.
Edward J. LeFevre, San Diego, Calif.
Randall Leopold, Lewistown, Pa.
James H. McDivitt, San Gabriel, Calif.
Paul Potter, Colorado Springs, Colo.
Charles W. Purcell, Baltimore, Md.
Thomas Stack, San Francisco, Calif.
George W. Wilson, Chicago, Ill.
William Walker, Los Angeles, Calif.
Morry Worshill, Chicago, Ill.

MEDALS OF MERIT

Charles Y. Cheriez, Detroit, Mich.
Frank Chun, San Francisco, Calif.
Frederic P. Goulston, Dayton, Ohio.
Edwin A. Kube, Minneapolis, Minn.
LeRoy S. Kwiatt, Skokie, Ill.
Richard Lasher, Staten Island, N. Y.
Marietta Miller, Hollidaysburg, Pa.
Charles Morgan, San Francisco, Calif.
Alex G. Morphonios, Miami, Fla.
Donald P. Spoerer, Chicago, Ill.
Kathryn B. Work, State College, Pa.
Kathleen Murray, Pittsburgh, Pa.
Gladys E. Kranch, San Diego, Calif.
Marian Johnson, Des Plaines, Ill.

Dobbins accepts trophy from Kelly.

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Free your engineers from man-made "musts". Let them design your product to do its job best. Encourage them to pack it with features your customers want. And have them get in touch with us to work right along with them. Together we'll fit a Jack & Heintz motor to space, weight and operating requirements. Together we'll give you such a product as can be developed only by engineers whose hands are free. Jack & Heintz, Inc., 17640 Broadway, Cleveland 1, Ohio.

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one or more days of glider flying.

Tuesday, December 15, will be Industry Day—honoring all phases of the aviation industry: the manufacturer, the supplier, and the airlines. The Aircraft Industries Association and the Air Transport Association have been invited by the sponsors to hold a joint meeting at Kill Devil Hills.

The military services will be honored on Wednesday, Defense Day. Top defense officials will travel to Kill Devil Hill to pay tribute to the Wrights, and late model planes will fly overhead.

The big day will be Thursday, December 17, the golden anniversary. A feature of the program will be the re-enactment of the first flight by a 1910 pusher plane, over the original course and at the same time and altitude at which Orville flew in 1903. More than 100 military planes, representing all the military services, and scores of private planes will participate in the aerial phase of Thursday's program. Leaders of government, industry, and science will join many of the "old timers" on the speaking program. President Dwight D. Eisenhower has been invited to speak.

Newsmen who travel to Kitty Hawk and Kill Devil Hill to report the four-day program first-hand will have an opportunity to interview A. W. Drinkwater, the telegrapher who filed thousands of words of copy for the newsmen who covered the Wright Brothers' 1908 flights. Elijah Baum, the fifteen-year-old boy whom Wilbur Wright asked to show him the way to Captain Bill Tate's house on his first trip to Kitty Hawk, will be on hand in December. Baum, an active carpenter at sixty-eight, still lives at Kitty Hawk. Newspaperman Harry Moore, who figured in the controversial front-page account of the first flight in the Norfolk *Virginian-Pilot*, will join in the four-day December celebration.

J. T. Daniels, W. S. Dough, and A. D. Etheridge, all members of the Life Saving Station at Kitty Hawk, W. C. Brinkley, of nearby Manteo, and Johnny Moore, a young boy who happened to be on the beach at the time, were the only witnesses to the Wright Brothers' flights on December 17, 1903. All are dead today. Moore, the last surviving witness, died two years ago. Captain Bill Tate, with whom the Wright Brothers lived for a short time during their first stay at Kitty Hawk, died this spring.—END

Addressing guests at the Auxiliary's Fashion Luncheon preceding the fashion show is Miss Jacqueline Cochran. Others are (from left) Marietta Miller, Auxiliary president, Jinx Falkenburg McCrary, and Mrs. Harold C. Stuart.

ABOUT THE LADIES

THE AFA Ladies' National Auxiliary celebrated its first anniversary at AFA's recent convention. It was a fine birthday. Since 1952 the Auxiliary has experienced a more than two-fold expansion in units and members.

Then there were eleven units (a unit is equivalent to an AFA Squadron). Today there are twenty-three, including four Auxiliary Wings.

The two most important items on the Auxiliary's agenda were the questions of membership and the inclusion of the Auxiliary's president on AFA's board of directors. There were also special reports by Mrs. James Doolittle, chairman of the advisory committee, and Mrs. Carl A. Spaatz, a member of that committee, and the ratification of an amended constitution.

President Miller addresses a business session.

It was decided that women are now eligible for Auxiliary membership without, as formerly, having to be members of the Association.

A resolution adopted by the Convention settled the remaining item. The Auxiliary's president, as a result of the resolution, is now an ex-officio member of the board.

The final business session of the Auxiliary closed with a resolution that at subsequent conventions the first session will convene on the convention's opening day. This affords the ladies more time for discussion, and will let them bring pertinent issues to the floor of the AFA convention.

At the Auxiliary's election of officers, Marietta C. Miller was re-elected president. Elected, besides Mrs. Miller, were: Mary Kempner, secretary; Nettie Richardson, treasurer; and Gladys Kranch, Janice Emerson, and Mary Jane Long, vice presidents. Frances Karr is the new chairman of the board of governors.—END

Chairman of the Auxiliary's Air Age Fashion Show was Miss Tillie Gamble. She is pictured here (left) with Mrs. James H. Doolittle and Jinx Falkenburg McCrary, radio and TV star, who was toastmistress at the fashion show.

AFA BACKS 'STALAG 17' PREMIERE

'Greatest display of brass ever assembled for a premiere' gathers at NYC's Astor Theater for the film's first showing

New York City's Astor Theater recently welcomed "the greatest display of 'brass' ever assembled for a movie premiere," according to Paramount's Adolph Zukor, at the world premiere of "Stalag 17," a film about Air Force men in a WW II German prison camp.

The premiere was sponsored by AFA's New York Wing, with Wing Commander David S. Levison, 216 Forbell St., Brooklyn, acting as over-all chairman. Profits went into a special fund for AFA's Air Force Widow Rehabilitation Program.

Tex and Jinx McCrary handled premiere publicity, and were able to locate several AF veterans who had been prisoners at Stalag 17. As part of the program at the theater, these men were "imprisoned" again, in a barbed wire enclosure in the lobby with such "cellmates" as Jinx McCrary, Lizabeth Scott, Mrs. James Doolittle, and AFA's own Joe E. Brown.

New York Wing officers, besides Levison, are Ruth Stern, Secretary; Arthur Wegman, Treasurer; and Richard Lasher, Harold Rosenstrauch, Herbert Heimberg, and Brother Leo Merriman.

New AFA Squadrons

Several new Squadrons have been added to AFA's list of local units. A California Squadron has been organized in Fairfield. The Commander of this Northbay Squadron is Charles P. Prime, 709 Jackson St., Fairfield.

In Ohio, the Butler County Squadron has been formed, and its first elected Commander is its organizer, Harold T. Kramer, 625 Ridgelawn Ave., Hamilton.

The Rocky Mountain Region can also boast another unit, in the Ute Squadron of Ogden, Utah. Commander is Max K. Kennedy, P. O. Box 114, Clearfield. Charter presentation was made at a recent banquet by William Thayer Tutt, Colorado Springs, Regional V-P.

The Boston Squadron is now "in business," and planning an airpower banquet for its first big social affair. Commander is Philipe F. Coury, 77 Readville St., Readville, Mass.

The Southeast is also more active in the organizational field. Florida's Tampa Squadron has been reorganized, and is once again holding regular meetings with good turnouts. Commander is Thomas Dawson, 4010 Barcelona. Recently, Brig. Gen. H. K. Mooney, Commander of the Sixth Air Division, spoke to Squadron members about the development of intercontinental bombing, with emphasis on the B-47 as the weapon carrier.

The Missouri Wing, under the leadership of Commander Roland Frey, has

(Continued on page 67)

SQUADRON OF THE MONTH

Capital Squadron
Washington, D. C.

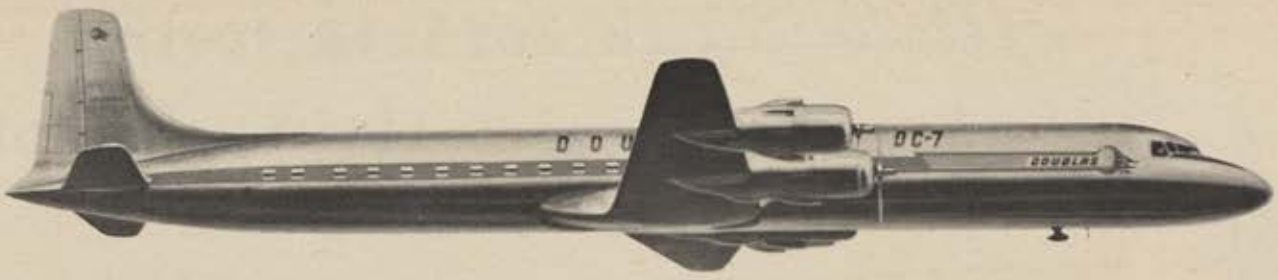
CITED FOR

outstanding contributions to the success of the seventh annual National Convention. The assistance given by the committee workers made possible the smooth and successful operation of the entire Convention. For this cooperation, AFA salutes the Capital Squadron.

Queens Squadron members and guests visit New York's International Airport to get first-hand information on the activities of the N. Y. Port Authority.

New York Wing boasts the city's most glamorous ticket-seller in Lizabeth Scott, Paramount star, who here sells first "Stalag 17" ticket to John M. Murtagh, NYC Chief Magistrate, as Wing Commander David Levison looks on.

Three AF veterans of WW II's real Stalag 17 are "locked up" again behind wire, in the Astor Theater's lobby in New York. Here they're greeted at the premiere of the picture by Joe E. Brown and Mrs. James H. Doolittle.



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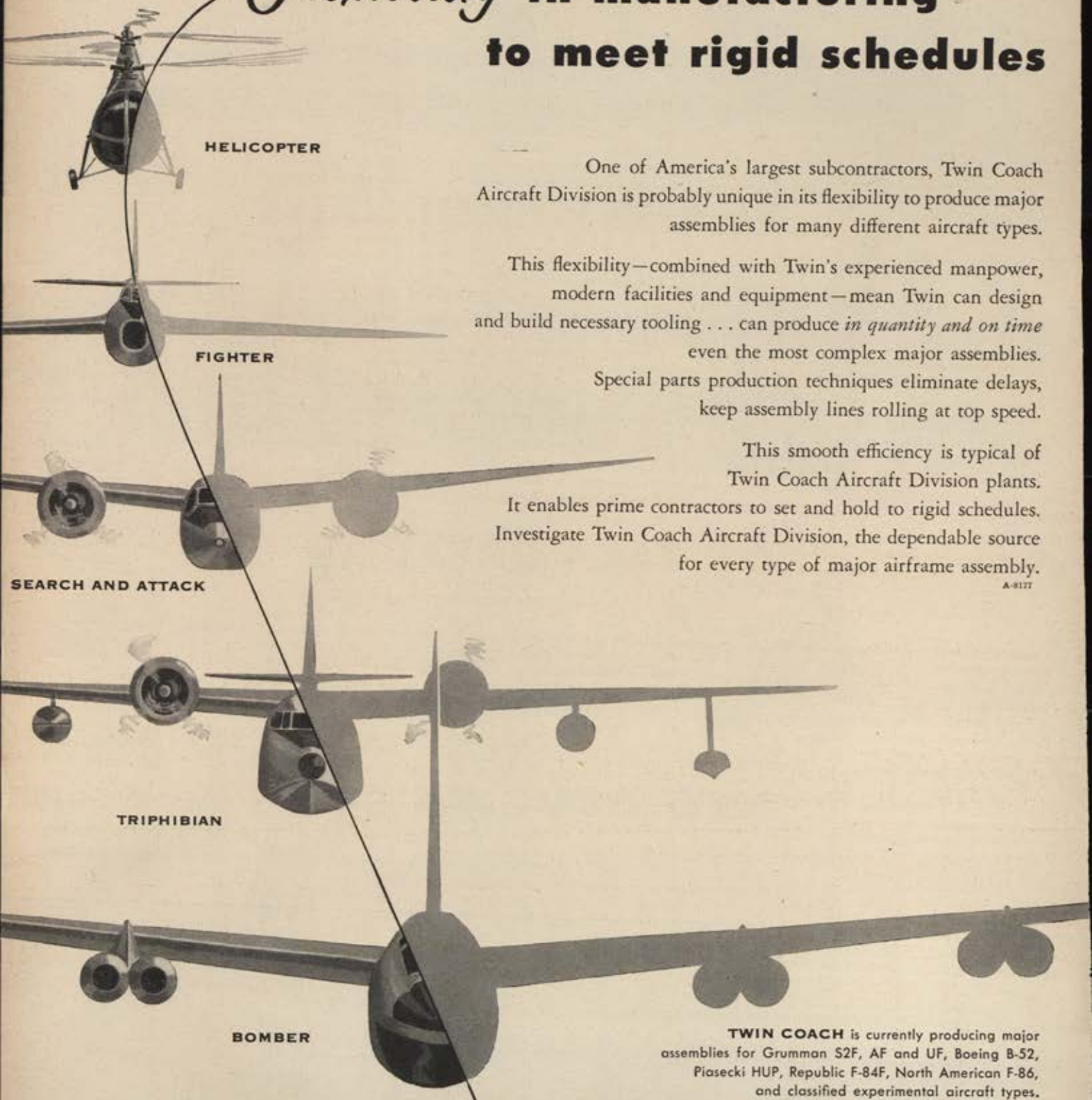

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chartered the Ozark Squadron in Owensville. The Commander of this new unit is Jack G. Hansen, 212 W. Madison, Owensville.

Dayton Squadron

Dayton's Wilbur & Orville Wright Memorial Squadron took advantage of the three-day 1953 National Aircraft show there recently to stage several AFA promotions.

A special suburban program was put on in the Town & Country district, with several of the USAF's jet aces on hand plus stars of the new United Artists' film "Sabre Jets," premiered in Dayton.

During the premiere, the AFA Squadron presented a "Golden Anniversary of Flight" membership plaque to Karl Krueger, producer of the film. The presentation was made by Frederic Goulston, Squadron Commander. Others on this program were Dayton's Mayor Louis Lohrey, Chamber of Commerce President Philip Ebeling, and Brig. Gen. C. Pratt Brown, Commander of Wright-Patterson AFB.

New Jersey Wing

Keynote of the sixth annual convention of the New Jersey Wing was preparedness. The convention was held in Asbury Park in September. Well over 100 members and guests attended the business session, cocktail party, and airpower banquet.

Principal speaker at the dinner was AFA's President George C. Kenney, who discussed the threat of the Soviet Union, and suggested possible solutions to the dangers facing the Free World. "We must have the world's best Air Force," General Kenney said, "and only so long as we maintain supremacy in this respect is the nation safe from unprovoked attack."

John J. Currie, 697 East 23d St., Paterson, was elected Wing Commander, the second time he has held the post. He succeeds Robert Westerveld, Hawthorne. The other officers elected were Joseph Gajdos, Kenneth Hamler, Donald Gerhardt, and Irving Zeichner. Zeichner was convention chairman.

Installation of new officers was performed by Regional V-P Randall Leopold, Lewistown, Penna.

Top award presented by the Wing went to Ronald Gall, Assistant to the President of Curtiss-Wright, for his contributions to New Jersey's aviation during the year.

Other guests included David Levison, New York Wing Commander, thirteen Squadron members from the New York area, Leroy Kwiatt, of Chicago's Squadron 41, and Gus Duda, representing national headquarters.

321st Bomb Group Assn.

One result of AFA's 1953 Convention was the formation of the 321st Bomb Group Association. This group elected Henry J. Fallone, 5 Beverly Rd., Livingston, N. J., as President for the coming year. Other officers and directors include James E. Toohey, Stephen Batchelder, Stanley Sattenspiel, and Alden A. West.

Youth Education in D.C.

At a recent meeting of the Capital Squadron, Gill Robb Wilson, AFA Director and Commander of Manhat-

(Continued on page 69)

Carl Krueger, left, producer of United Artists' film "Sabre Jet," accepts AFA membership plaque from Frederic Goulston.

Metropolitan Philadelphia Squadron members, their wives, and Auxiliary, inspect T-6s during open house held by the 111th Fighter-Bomber Wing, an Air National Guard unit.

William J. McGrath, chief of New York state's Aircraft Warning Service (center), receiving Manhattan Squadron's annual award from Squadron Commander and national director Gill Robb Wilson (right). At left is Douglas Johnson, Squadron member and artist who created the award.

Reunion for the eight San Francisco Sqdn. Commanders: front row, from left, Howard Halla, 1950; Michel Pisani, 1949; Robert Dobbins, 1953; Charles O. Morgan, Jr., 1952. Back row, Michael Kavanaugh, 1948; Thomas F. Stack, 1947; Stewart Reed, 1951; and Edward Russell, ex-1951 (recalled during Korean war).

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tan Squadron, addressed 100 members and guests on the problem of Youth Aviation Education, and the value of the AFA Airability Survey.

Guests, including the chairman of the District of Columbia's Board of Commissioners, Samuel Spencer, were a "forum panel" who after hearing Mr. Wilson's definition of the problem, suggested possible solutions. Walter R. Savage, Squadron Commander, was moderator for the meeting. He was complimented by the many leading educators from the various school systems represented, both for arranging this type of meeting and for the manner in which it was conducted.

Salute for St. Louis

During September, the St. Louis Squadron signed up 192 new members, obtained during a concerted campaign at nearby Scott AFB. Lt. Gen. Robert W. Harper, Commander, Air Training Command, was a key figure in this drive, and presented the memberships to the Squadron at a meeting in the base Officers' Club.

J. Chesley Stewart, 1423 Locust St., St. Louis, is Squadron Commander. He was also elected Midwest Regional V-P at the recent national convention.

Chicago Squadron Meets

An inter-organizational program was presented by Chicago's West Suburban Squadron in September when officers of the Squadron, along with Regional V-P George Anderl, appeared before the St. John's Men's Club of Forest Park, Ill.

Anderl was principal speaker, and introduced two jet pilots returned from Korea, in addition to George DeHesus, Wing Treasurer, and Harold Blough, Squadron Commander.

Cadets at New Mexico

For each of the last three years, at the beginning of the University of New Mexico's school year, the PAS&T and his staff have put on an AFA membership campaign among the new and returning AF-ROTC Cadets at the school. This year's campaign resulted in 240 cadet applications from this one university.

"Key" men in this program were the PAS&T, Col. William M. Massengale, Jr., and Maj. Charles P. Downer, also of the Department of Air Science & Tactics.

This university is also the home of the only active AF-ROTC Cadet Squaddon in AFA. Its Commander is Cadet John A. Farris, 1800 Las Lomas Rd., Albuquerque.—END

There wasn't a plane in the air that night. Man, what a night! Even the boys in Hollywood couldn't have dreamed up the kind of soup that settled over Korea."

Needham says there were some brave men in his squadron, but they weren't volunteering that night. He continues:

"But Tiger O'Neil said he would do it. He got up in that nasty weather somehow and flew all the way to the Yalu. He found out the weather was breaking in that sector and the attack was planned. The Tiger was our man. He treated the privates and corporals on the line like they knew more about this night fighter business than the commanders did, and they believed in him. And we had the planes ready for missions when many others were grounded."

At first the Starfires worked almost every night, but as more planes were provided and another squadron added to the Korean operation, the routine became two nights of work and one night of rest while pilots and radar observers worked off their seventy-five-mission tours.

The men operated in various stages of alert, one being where the two-man crews were in flying gear in the squadron operations room, ready to "scramble" after an unidentified aircraft at a moment's notice. The way it worked: Fifth Air Force JOC would flash the scramble call to the squadron, and ground radar stations would direct the F-94 to an intercept point where the radar observer took over. As much as possible, the crew kept on a prebriefed route at a prebriefed time so that ground radar stations could identify the F-94 readily.

These missions require a great deal of specialized training. During the Korean war most pilots and radar observers got their training at Tyndall AFB, Panama City, Fla. Now Connally AFB, at Waco, Tex., is turning out experienced men at its all-weather school, with emphasis on instrument flying, intercept theory, and flying with radar observers. Training is the same for experienced fliers, and those who have just earned their wings.

Those who went to Korea got further indoctrination in combat tactics and familiarization with the deceptive hills and terrain in that part of the world. While he was squadron commander, Major O'Neil required pilots with no previous combat experience to take fifty hours of indoctrination within the squadron before flying their first missions. Those with combat experience in fighters got at least ten additional hours before going into combat.

A typical product of this training is a team which is still in the Far East. The pilot is Maj. Charles W. Hodgson, of Hutchinson, Kan., who has been in the Air Force twelve years. He went through all-weather school at Tyndall after peacetime F-51 (North American Mustang) fighter experience. He picked up his radar observer at Tyndall, Capt. Robert E. Nietz, of Bloomsberg, Penna. They went to Korea last fall and have been together ever since.

Captain Nietz is a Reservist. Formerly a bombardier with thirty-five missions over Germany in World War II, this time Nietz says he is going to make the Air Force his career.

Major O'Neil and others who have returned to the US say the maintenance of the Starfires in Korea was superb, considering that ground crews had to work outdoors under tough weather conditions.

"Those men were always on the job," he says. "I know it doesn't make exciting reading, but their devotion to the maintenance job gave us an extra safety factor."

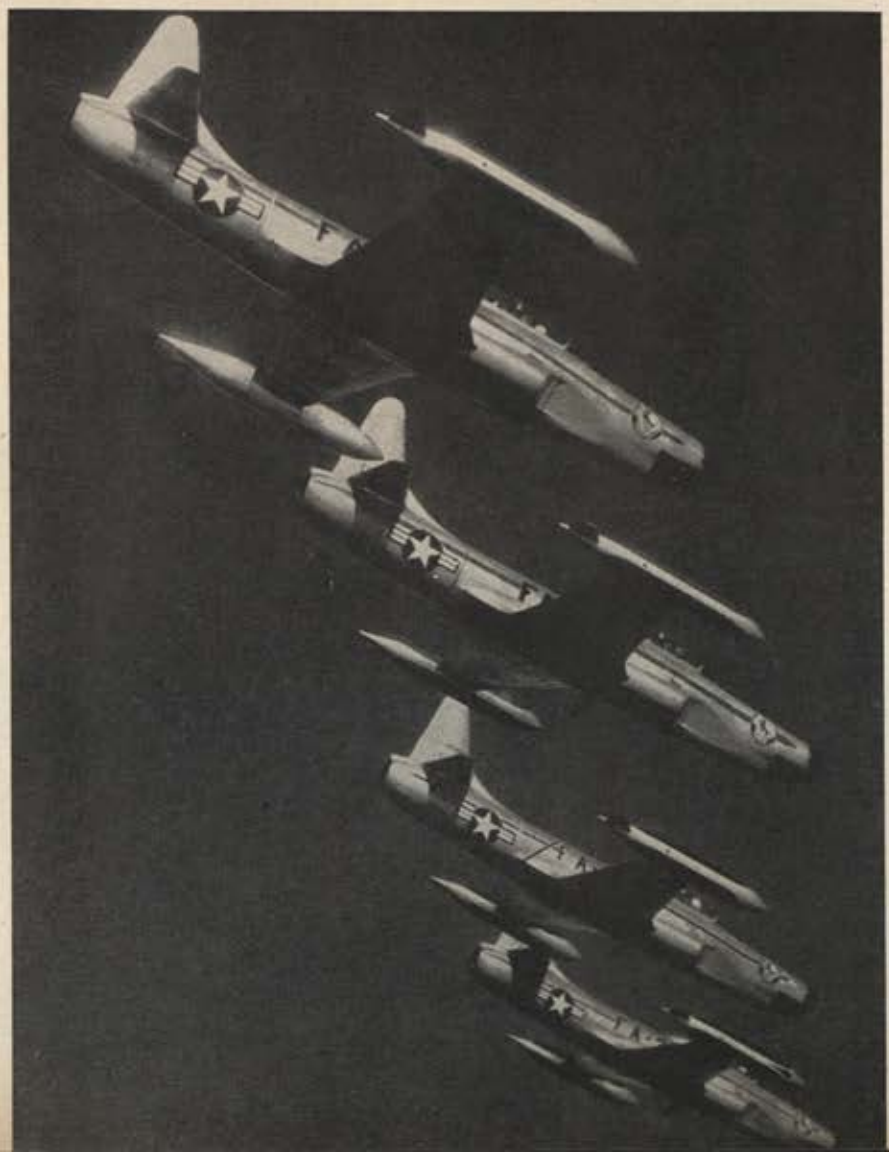
Returning F-94 veterans of Korea are being assigned where their special knowledge can best be utilized. For example, Major O'Neil is in the defense plans section, Directorate of Operations, at headquarters, Washington, D. C. Others who held command positions with the Starfire in combat will receive similar assignments when they return.

O'Neil sums up this night fighter business this way:

"Now we can really put what we learned in Korea to work for us in the tougher job of defending America." And he adds, with Korea now neatly placed on his shelf of memories:

"I'm glad I'm back home to help."

—END



This fine pattern shot couldn't be left out of any story about F-94s.

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.

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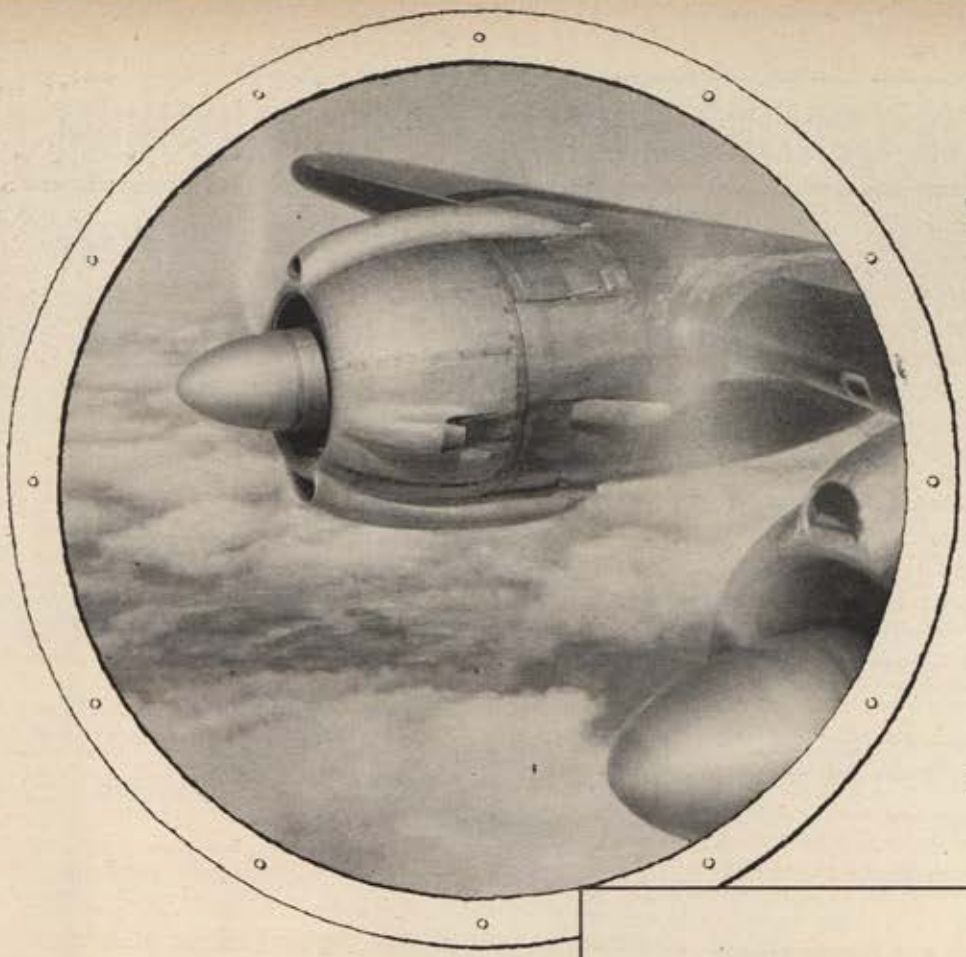

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Air Travel

A Billion-Dollar Baby Grows Up

Yesterday's airline passenger took second priority to a sack of mail. Someday he'll have atomic airliners at his beck and call

ALTHOUGH the airlines can trace their ancestry all the way back to Orville Wright's twelve-second trip over the sand dunes at Kitty Hawk in 1903, the birthday of commercial aviation was really not so long ago.

According to the history books, today's billion-dollar baby first saw the light of day in the middle twenties. Some say it was Henry Ford's air freight service between Detroit and Chicago, off the ground in 1925, that marked the beginning of regular scheduled air service. It was the following year that the forebears of the present passenger lines began to furnish open cockpit service for travelers whose priority was always second to a sack of mail.

On the international scene the early days were even later. It was not until 1939 that a Pan American flying boat took off from Port Washington, L. I., N. Y., on the first scheduled commercial flight to Europe. And you don't have to go back more than eight short years to the first land-based plane to make a commercial run across the Atlantic. In 1945 American Airlines flew a DC-4 from New York to England to start the big parade.

Once the preliminaries were over the airlines grew up fast. Last year they spent more feeding their customers than it cost two decades ago to fly them. Today they have nearly as many attendants warming coffee and passing out mints as there were passengers to fret over in 1926.

Since the scheduled airlines of the US first joined the transportation family, the total passenger-miles they've flown are the same as if the airlines had picked up all the people on earth and plunked them down thirty-four miles away.

Fortunately the airlines have never thought of doing any such thing. But the extent to which new ideas have prospered is indicated by United's new "men only" flights, daily between New York and Chicago. Only a few years ago the airlines were enticing mothers and their babies to fill up the vacant spaces. Now the "no family" plan will pay. The new air male specials furnish thick steaks, thick cigar smoke, and poker to rejuvenate the tired businessman.

In 1952 the volume of travel on the domestic airlines was one-third greater than all Pullman traffic, and the world's international airlines moved 300,000 more people into and out of the United States than all the world's ocean liners. Last year the domestic airlines accounted for two-thirds as much passenger travel as the busy intercity bus lines.

When you talk about the airlines you have to know exactly which airlines you're talking about. Fifty years of powered flight and high-powered lawyers find us with more classes of carriers than things that fly. By courtesy of the Civil Aeronautics Board, therefore, you should be briefed as painlessly as possible on regular, irregular, certificated, noncertificated, and other aspects of the business. First there are the certificated domestic trunklines – companies like American, United, Eastern, TWA, and Capital. There are thirteen altogether. Nine of these also operate on international and overseas routes, together with three other carriers that are engaged exclusively in international operations. That makes twelve international and overseas scheduled airlines. Then there are fifteen local service airlines that operate on low density routes—like Allegheny, Bonanza, Pioneer, Piedmont, and Ozark. Last year these feeder lines carried 1.7 million passengers compared to 2.3 million international passengers and 22 million riders on scheduled domestic lines.

Three helicopter lines carry mail and freight in the Los Angeles, New York, and Chicago metropolitan areas. New York Airways began carrying passengers in its helicopters this past July, with sixteen flights daily connecting LaGuardia, Newark, and International Airports.

Next come the certificated all-cargo carriers and a host of noncertificated airlines providing irregular freight and passenger service. There are forty-seven big irregular

(Continued on following page)

By Wilfred Owen

carriers. They did a billion passenger-miles of business, along with their freight hauling last year. If you add the 1,500-odd air taxi operators you have a sizeable fleet of aircraft making a living at hauling people and freight.

Many airlines, in addition to their commercial operations, are doing extensive hauling for the military. In the Korean airlift, for example, about two-thirds of all the passengers transported by air to the Far East have been carried by commercial lines under contract with the Military Air Transport Service. More than half of all the trans-Pacific cargo has also been hauled by the commercial lines.

In the event of a full-scale war, the government has told the airlines that they will be called upon to provide 294 four-engine aircraft, complete with crews, to bolster the military airlift. Aircraft designated as part of this Civil Reserve Air Fleet are being modified to meet the required military specifications.

For commercial aviation the years ahead look fully as exciting as those that have passed into history. The immediate future will see greatly increased use in domestic and international service of the Lockheed Super Constellation and the Douglas DC-7. These new airliners have top speeds right at 400 mph and cruising speeds of better than 350. They will be the last of the piston-type engines, the so-called turbo-compounds that provide additional speed by means of auxiliary exhaust turbines.

The new Connies are 113 feet long with a maximum take-off weight of 130,000 pounds. Their giant cabins accommodate ninety-nine passengers on tourist schedules and fifty-nine on luxury flights. Maximum range will be about 4,000 miles. The DC-7 is eight feet longer than the DC-6 and will carry up to ninety-six passengers.

But airline equipment gets obsolete fast, and soon these big and expensive new planes will be giving way to the turbojets and the turboprops. Right now, with British Overseas Airways flying the jet Comets and with rapid jet engine improvements being made at home through military development, predictions of US commercial jets-to-come are plentiful and rosy. Edgar Schmued, engineering vice president of Northrop, speaks of a 600-mph airliner flying at 40,000 feet—within the next ten years. And, says Jimmy Doolittle, "I do not betray any confidence when I say that jet transports—on which several American companies already have done design work—will be capable of linking New York and Los Angeles in four hours. In such aircraft, passengers will be able to take off from the East Coast at six p.m., Eastern time, and land on the West Coast at seven p.m., Pacific time."

President C. R. Smith of American Airlines is less sanguine. He favors the future of the turboprop to provide speeds of 450 to 500 mph with a good many important advantages over the turbojets. Right now the turbojet needs longer runways for take-off, operates inefficiently at low altitudes, eats up fuel, and makes a terrible racket. The turboprop accelerates more rapidly at take-off, and has reversing props for shorter landing roll as well. It is relatively efficient at low altitude and low power, has good fuel economy, and its ground noise should be almost melodious compared to that of the turbojet. "It seems to me," concludes C. R. Smith, "to be the course of good judgment to defer adoption of the turbojet until some later time."

Along comes Edward C. Wells, vice president of Boeing, who says that jet transports now under development will be able to compete favorably with present commercial airliners in terms of both range and payload in addition to surpassing them in speed, and he discounts the problems of landing and take-off. Boeing's jet 707, which will carry from sixty to 120 passengers, at more than 500 mph, will be the first US jetliner and the world's fastest. First flight is expected next summer.

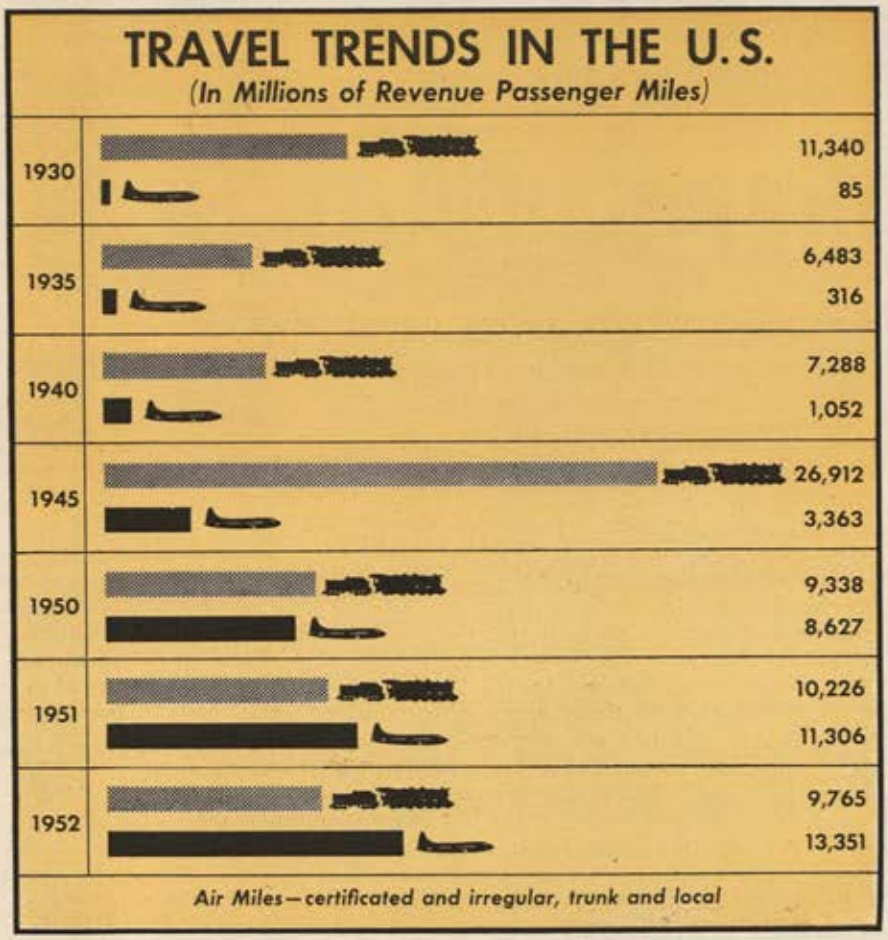
But while many of the experts are making the decisions that will determine whether New York-to-Los Angeles is six hours or four, a good deal is going on at the other end of the speed scale that may well make a greater impact on the future of commercial aviation. Here are the helicopters and the convertiplanes and the big push for the short haul market.

If the airlines expect to stay in the short distance travel market and develop this great potential, many think they will be operating helicopters before many months are passed. As soon, that is, as the twin-engine mod-

(Continued on page 77)

TRAVEL TRENDS IN THE U.S.

(In Millions of Revenue Passenger Miles)



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els now in prototype are in production. About half of all the passengers carried by the principal domestic carriers today are going less than 300 miles, and a high proportion of rail and bus patrons are in the same category. That's the range where the rotary wing aircraft is going to feel at home.

One of the coming models is the Piasecki YH-16B, carrying fifty passengers and looking pretty much like a DC-4 with its wings clipped. Rotors are fore and aft. The aircraft is ninety feet long, but the rotors make the over-all length 140 feet. Optimum range for this model is probably 150 miles, but the maximum possible range would be double that.

Another promising newcomer is the Sikorsky S-56, also with two engines but having only one rotor—with five blades. Cruising speed is 145 mph, with top speed 160. And another turboprop model will do better.

According to the views expressed by a Piasecki analysis, helicopters can replace Convairs and Martins on routes up to 365 miles by 1957. And development of speeds up to 200 mph, according to Piasecki, will extend the helicopters' advantage into the 500- to 600-mile bracket. Cost per mile to the patron is assumed to be about the same as airline travel today, including the limousine costs to and from the airport. But real travel economies seem to be promised by the elimination of large and costly airport facilities, and the possibilities of eliminating other indirect costs by operating the helicopter like a bus, minus all the complexities of the reservation system.

So the future of the airlines is going to hinge not only on how fast they'll be able to go but on how slow as well. And that brings up the convertiplane, by which the best advantages of both fixed wing and rotary aircraft may be incorporated in one all-purpose vehicle. Bell, which has a military contract for developing a convertiplane, is developing three designs for aircraft that will rise vertically and then fly at forward speeds comparable to fixed wing aircraft.

With these and other developments in the wind, it is no wonder that the prophets are doing some pretty optimistic crystal-gazing. Clifford Furnas, director of the Cornell Aeronautical Laboratory, talks of commercial air traffic of 100 billion passenger miles before the next fifty

(Continued on following page)

CREDITS

Front cover and page 33—Charles deM. Barnes; pages 16, 31, 41, and 74—Arlo Greer; pages 25, 26, and 27—Vernon Nye; pages 60 and 63—photos by "Tex" Glazier.

years are over, compared to thirteen billions for the domestic scheduled lines and the irregular carriers last year. And Thomas L. Grace, president of Slick Airways, has predicted that the next fifty years of powered flight will make the 200-ton airplane commonplace. It will carry 1,000 people, and atomic power will give it a lifetime of fuel built in at the factory.

There are indeed many factors in addition to the technological developments of the future that promise great things for air transportation. In 1952 the rate of passenger fatalities on the scheduled domestic airlines was one-tenth what it was in 1942—one death for every quarter of a billion passenger miles of travel. Air coach service now accounts for one-fifth of all airline use in the United States, and the tremendous success of tourist rates on the international airlines is likewise indication that air transport is turning from the luxury class to the mass travel market. Along with better merchandising, the airlines are reaping the benefits of improved landing aids and navigation facilities that continue to combat the vagaries of weather. And finally, with a rash of mergers in the wind, the airline route pattern is being strengthened to promote the financial health and economic stability of the carriers.

All this makes a pretty picture for the future, especially against a background of growing congestion and inadequacy in rail and highway transportation. But the airlines still have plenty of headaches. They have their own problems of congestion at the airport, and as yet they are at the mercy of time-consuming surface transport methods in the terminal area that go a long way toward canceling out the advantages of speed in the air. With steadily mounting costs of operation facing airline management, the further investments that will be needed to buy the latest in new equipment add to the apprehension of those whose job it is to keep revenues out in front of expenditures.

But fears on the financial side are far outweighed by the forward progress of science. The coming age of air travel may be as different from today's achievements as the gap that now lies between us and Kitty Hawk. Aviation's first fifty years were probably the hardest, but it would be risky business to conclude that they were also the most spectacular.—END

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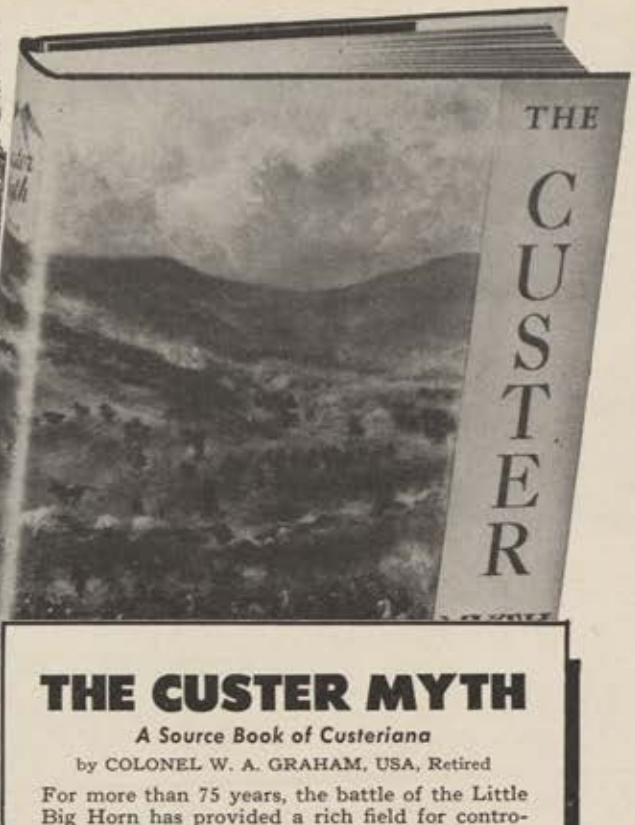

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Duane Edgar Dewey, USMCR
Medal of Honor

IT WAS AN APRIL NIGHT and the Marines, near Panmunjom, were under heavy attack. In one of E Company's machine gun emplacements, Corporal Duane Dewey and his assistant gunner lay wounded. A Navy Medical corpsman was giving them aid.

Out of the darkness, came a Red grenade.

Already seriously wounded, and in intense pain, Corporal Dewey pulled the aid down, shouted a warning, and threw himself over the missile.

"I've got it in my hip pocket, Doc!" he yelled. Then it exploded.

By smothering the blast, Corporal Dewey had saved his comrades.

"Now that I'm a civilian again," says Corporal Dewey, "I sometimes hear people talk as though stopping Communism is a job only for our armed forces and the government. Believe me, it's our job, too. And one way we can both do that job is through saving and investing in United States Defense Bonds."

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