AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

March 1955 • 35c

How the New Red Fighters Stack Up

Is the Effectiveness Report Effective?

USAF Fighter-Bombers on Formosa

in the air...

ARMA'D DEFENSE
will assure max bomber survival

Strategic Air Command is our nation's primary striking force. And Arma is qualified to provide SAC with the most advanced bomber defense yet known. Arma's accurate, producible, reliable Defense System assures maximum survival for our intercontinental bombers... Arma... Brooklyn, N. Y.; Garden City, N. Y. A division of American Bosch Arma Corporation.

ARMA ADVANCED ELECTRONICS FOR CONTROL

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

Before choosing your tubeless airplane tires, just ask yourself:

Who's on First?

FIRST airplane designed with tubeless tires was GOODYEAR EQUIPPED

FIRST two production aircraft to use tubeless tires as standard equipment are GOODYEAR EQUIPPED

FIRST Navy fighters to use tubeless tires for carrier operations were GOODYEAR EQUIPPED

FIRST Air Force order for tubeless tires awarded to GOODYEAR

FIRST Helicopter on tubeless tires—GOODYEAR EQUIPPED

FACT IS: **of all airplane tubeless tires ordered to date, approximately 74% are Goodyear's.**

Any other questions?

GOODYEAR AVIATION PRODUCTS

When it comes to Tubeless Airplane Tires and Tubeless Tire Wheels—it's

Goodyear, Aviation Products Division, Akron 16, Ohio or Los Angeles 54, California

GOODYEAR

air mail

Off Our Rocker

Gentlemen: I noticed in reading my letter to you, published in the February issue, that you credit me with being the founder of the Air Command and Staff College, which I was not.

Actually, I was founder of the Squadron Officer School and not the Air Command and Staff College. I would appreciate your making the correction, especially with the Air Command and Staff College who probably think I'm off my rocker.

Col. Russell V. Ritchey
Norton AFB, Calif.

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Conscription

Gentlemen: In regard to your article on conscription in AIR FORCE Magazine for January, I concur emphatically. Any system designed to provide the Air Force with airmen of extremely limited retainability is an undesirable one. As you pointed out, there is no comparison between the technical proficiency a "doughfoot" had to attain in previous years and the technical proficiency many of today's airmen must possess to insure getting aircraft in the air and over the target.

Your concluding recommendations that the Air Force is the service capable of giving this nation the "most bang for its buck" and should, therefore, receive priority consideration when available manpower resources are distributed is the type of message I would like to see published in every magazine in the country. The first-line defense mission of the Air Force makes it a selective service and the more publicity we can give that idea, the better.

I have always been an avid reader of AIR FORCE Magazine and consider it as one of the best publications devoted to the Air Force cause.

Col. Stephen D. McElroy
Director of Personnel
Hq., Strategic Air Command
Offutt AFB, Nebr.

Up We Go Again!

Gentlemen: Concerning Len Morgan's article "The Day the Balloon Went Up" in your December '54 issue—

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As for that flying school, run as a regular secret weapon establishment by the Minister of the Interior, Napoleon's contribution was to close it. There was no balloon unit in the Imperial service until Carnot improvised one at Antwerp in 1814. Except for artillery, Napoleon was not receptive to improvements.

Lt. Col. John R. Elting
APO, San Francisco, Calif.

Prisoners of Reds

Gentlemen: Thank you for taking the positive position of pressing for the release of our USAF and civilian personnel imprisoned in Communist Red China.

Please continue your splendid work until every United States citizen has been released. These constructive steps initiated by you have made me feel more proud than ever to be a member of Air Force Association.

George H. Jensen
Arlington, Va.

How To Be . . .

Gentlemen: We are appreciative of your permission to reprint the "How To Be an SOB" article for forwarding to each squadron commander in Fifteenth Air Force per General Sweeney's desires.

Sergeant Clifford is to be congratulated for a string of fine articles. But it is nothing more than we have come to expect in "our" fine magazine.

Congratulations and best wishes to you for the fine job you and staff are doing.

Maj. Lee R. Gulley
March AFB, Calif.

Condemnation!

Gentlemen: Lately, the favorite opening words of contributors to "Air Mail" have been "I condemn," and I wish to go on record as saying I condemn all those who begin with "I condemn."

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First of all, let's take the matter of taxes and taxpayers. Mr. Harmon, like many others, is probably unaware that combat crews also pay taxes, whether they're being fired upon or not. Yes, Mr. Harmon, those men pay taxes for the privilege of being shot down, even for the likes of you.

However, you may be right, Mr. Harmon; maybe they should be replaced by real fighting tigers. Therefore, I should like to nominate Millard Harmon for the distinguished position of roaming the icy air of the Arctic Zone in quest of MIGs. But of course, Mr. Harmon, if you should volunteer for the job, then I shall withdraw the nomination.

Taxpayer in Blue
Smoky Hill AFB, Kans.

ARDC

Gentlemen: It was most thoughtful of you to publish the "Salute to ARDC" in your January issue, and we appreciate it very much.

You and your staff are publishing a fine magazine which is of special interest to members of the Air Force, and a publication which I personally read each month.

Lt. Gen. Thomas S. Power
Commander, ARDC
Baltimore, Md.

Squadron Officer School

Gentlemen: Your article "Learning How to Stay Loose" in the January issue is an excellent presentation of the Squadron Officer School curriculum. Capt. Bernard R. Marsh was a faculty member of the SOS when he wrote the article, and, as you probably know, Dr. Cox is the Edu-

(Continued on page 7)

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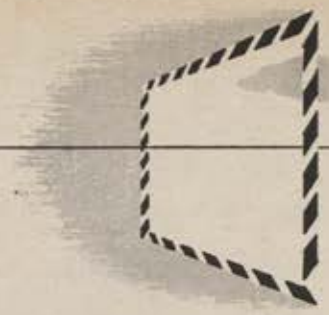

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TREE-TOP MINING PROSPECTOR—Modern electronics and Sikorsky's S-55 commercial helicopter are combined in a new aerial prospecting technique developed by Aero Service Corporation, Philadelphia. Data on underground mineral-bearing formations are disclosed by magnetometer, flown over an area at tree-top height. Such geophysical surveys are far faster, reveal more and cost less than slow ground studies.

HELICOPTER HISTORY:

America's first world helicopter record—set by Sikorsky's VS-300

MAY 6, 1941—Flying his historic VS-300, Igor Sikorsky, nearly 14 years ago, remained in the air for 1 hour 32 minutes 26 seconds, to bring America her first world helicopter record.

The VS-300 was first of the many Sikorsky achievements in advancing helicopter design, development and production.

SIKORSKY AIRCRAFT

BRIDGEPORT, CONNECTICUT

One of the Divisions of United Aircraft Corporation

OFFSHORE AIRBUS—Going to and from work in Sikorsky helicopters is now routine for crews drilling oil wells offshore. In the Gulf of Mexico, helicopters have made as many as 2000 scheduled flights a month for one company alone. They have introduced new operating methods offshore. Here, an S-55 nears a tender's landing platform.

AROUND THE WORLD WITH SIKORSKY HELICOPTERS

NEWFOUNDLAND PATROL—This commercial Sikorsky S-55 now regularly polices Newfoundland's extensive coastal waters, on duty with the Fisheries Department of Canada. Speed, versatility and rugged stamina of the big Sikorsky make it an ideal vehicle, especially for work in remote areas where surface travel is difficult.

NORTH SEA RESCUE—In mid-January, 16 crewmen from a Norwegian freighter, grounded on the coast of Holland, were rescued by the Royal Dutch Navy helicopter shown above with one of the rescued men. The big Sikorsky, an S-55 Navy version from a Dutch aircraft carrier, made five quick flights to carry the men to the beach.

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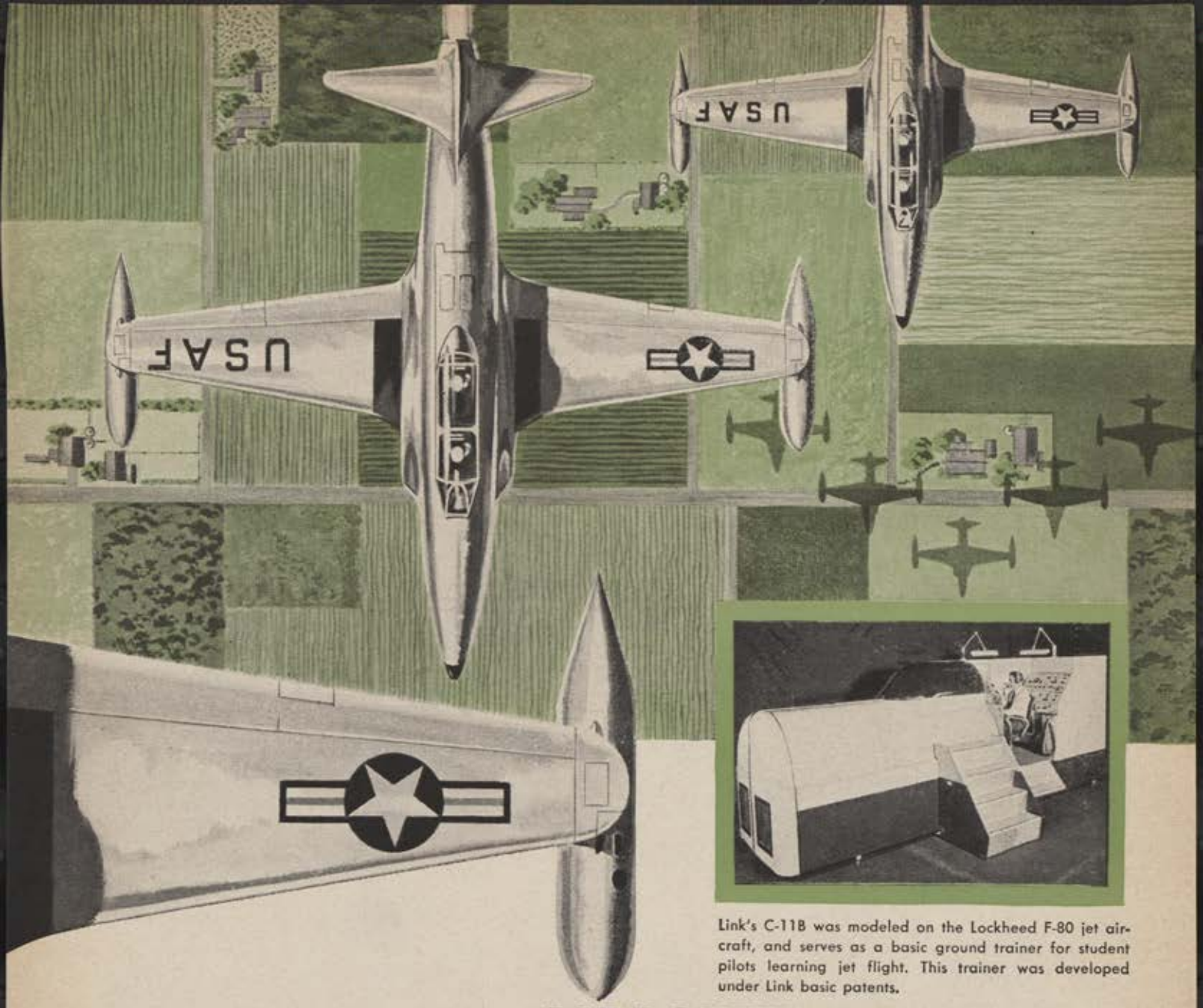


Link's C-11B was modeled on the Lockheed F-80 jet aircraft, and serves as a basic ground trainer for student pilots learning jet flight. This trainer was developed under Link basic patents.

WHEREVER YOU FIND AIRPOWER, YOU'LL FIND LINK!

Graduating from pistons to jets demands special skills and training of our pilots.

And, to help the men of our air arm bridge the gap between the two, Link designed and built the C-11B Jet Instrument Trainer. Over 500 of these trainers are at work right now—at more than 100 U.S. and foreign air bases throughout the free world.

THE C-11B, through its reproduction of the many conditions of jet flight, is giving our fighter pilots realistic training in all phases of single-jet flying—from the pre-takeoff inspection right through to an instrument landing.

THE C-11B is also used by veteran jet pilots to help them maintain peak proficiency in the performance of their vital assignments.

This is one of the many ways in which Link helps pilots keep pace with the rapid development of jet aircraft in America.

LINK INVITES APPLICATIONS FROM QUALIFIED ENGINEERS AND DRAFTSMEN.

LINK AVIATION, INC
BINGHAMTON—NEW YORK

A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION

Manufacturers of world-famous Link trainers and simulators (such as F3D, B-47, F-89, F2H-2, F2H-3) • simulated aircraft instruments specialized computers • servo mechanisms • computer components gear boxes • friction over-drive clutches • precision potentiometers ratio voltmeters • phase angle meters • and other electronic devices

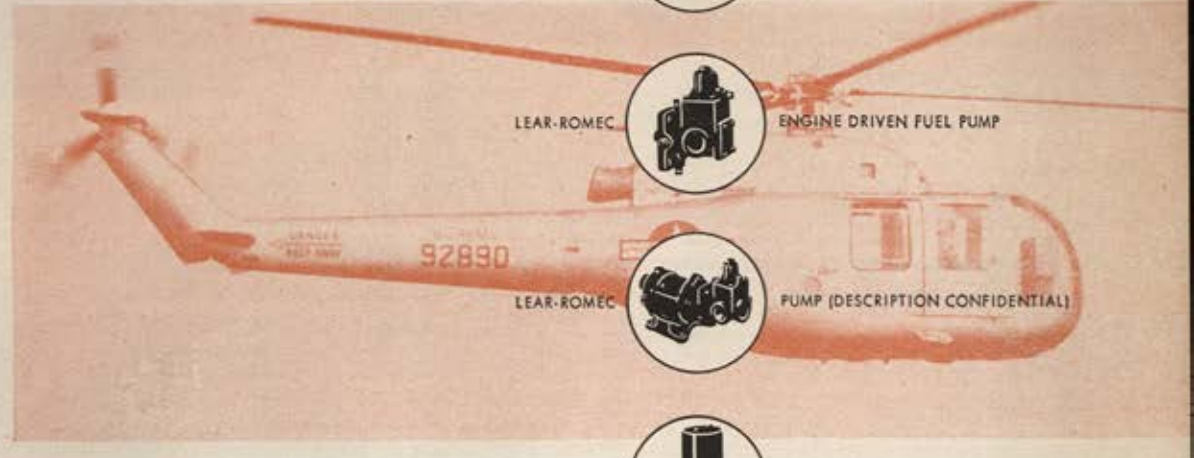
not one...

not two...

not three...but...

four...

Yes, *four* Lear-Romec pumps help the Sikorsky XH-39 set world's helicopter records for speed (156.005 mph) and altitude (24,500 ft).



LEAR-ROMEC  HYDRO-MECHANICAL CLUTCH PUMP

LEAR-ROMEC ENGINE DRIVEN FUEL PUMP

LEAR-ROMEC PUMP (DESCRIPTION CONFIDENTIAL)

LEAR-ROMEC  SUBMERGED FUEL BOOSTER PUMP

LEAR

LEAR-ROMEC DIVISION *Elyria, Ohio*

RO-13

cation Advisor for the SOS. I was glad to see the article as evidence of some of the progress we are making in encouragement of writing for publication.

As usual, the other articles on airpower were very appropriate. I was especially interested in Jack Loosbrock's "What Would Conscription Do To Our Airpower?" as a provocative presentation of a timely subject.

All in all, again you have a very good issue.

Lt. Gen. Laurence S. Kuter
Commander, Air University
Maxwell AFB, Ala.

To Each His Own

Gentlemen: I did not like the AFA opposition and failure to take a positive, vigorous stand for the Reserve Officers Personnel Act.

I am for more airpower, but a high percentage of the AF officers are Reserve officers and I would like an AFA that has an interest in proportion to the interests of the membership.

I find little or no important news of developments pertaining to the Reserve components. I am referring to items other than those about AFA chapters.

Leonard A. Voss
Columbia, Mo.

Gentlemen: Being a Regular AF officer I am primarily interested in affairs of the Regular establishment and an organ to carry the ball for the Regulars.

I do not question the need for Air Force Magazine, which represents the Air Force in general, and is doing a commendable job, and the Reserves in particular. With an emphasis equally divided between Regular and Reserve affairs I would renew my membership in the Association.

Col. Daniel A. Cooper
Los Angeles, Calif.

Picture Library

Gentlemen: I, also, would like to see some full-page color pictures of our military aircraft in the magazine which would be suitable for framing. I am constructing an aircraft file in which I have the specifications, three-view drawings, cut-away views, and photos of each type and model of American military aircraft.

With or without those full-color pictures, you have a swell magazine. Hope it stays in publication for many years to come.

A/3 Donald M. Bruce
Billerica, Mass.

Classroom Work

Gentlemen: We here at Howard University plan to make intensive use of all copies of Air Force Magazine. The content of your publication lends itself naturally to AF-ROTC classroom work by serving as a guide to the up-to-date thinking in the airpower ranks.

Maj. John J. Suggs
PAS&T
Howard University
Washington, D. C.

A Reminder

Gentlemen: Your article "Montgomery on Airpower" in the December 1954 issue is great. It reminds us—as we need to be reminded—that we Americans do not, as we like to imagine, always have the best of everything either in machines or in ideas about their use. In view of our own miserable record with the airplane from its birth until halfway through the second war, we will do well to pick up all of the outside ideas that are offered to us.

Len Morgan
Dallas, Tex.

Personnel Problem

Gentlemen: Even though I really enjoy each issue of Air Force Magazine from cover to cover, I especially enjoyed the January one because of the article on UMT by your managing editor. I particularly liked the next to the last paragraph. It seems to me that there are only two simple problems: pay (it should be commensurate with industry, and according to the cost-of-living index), and personnel (the poor utilization thereof, and, in some cases, poor treatment).

Finally, I have one complaint about the magazine—why can't you get the Concrete Cobweb Personnel people to read it? About ninety percent of their problems are very plainly solved for them within its pages! Keep up the good work.

M/Sgt. Robert H. Bender
Mather AFB, Calif.

★ ★ ★ ★ ★ ★ ★ ★

Tell us about 'em!

Tell us the names of some of your friends you think would like to know about membership in AFA. Clip the coupon, shoot it in to us—we'll do the rest!

NAME_____
ADDRESS_____
CITY_____ STATE_____

NAME_____
ADDRESS_____
CITY_____ STATE_____

NAME_____
ADDRESS_____
CITY_____ STATE_____

NAME_____
ADDRESS_____
CITY_____ STATE_____

YOUR NAME_____
ADDRESS_____
CITY_____ STATE_____

★ ★ ★ ★ ★ ★ ★ ★

wing tips

By Wilfred Owen

New York's helicopter passenger service has now been extended from the major airports to New Brunswick, Princeton, and Trenton, N. J.

° ° °

Last year the nation's airlines carried nearly 18,000,000 pieces of parcel post.

° ° °

The world's first scheduled commercial service using flight refueling was operated before World War II by British Imperial Airways for non-stop transatlantic service. The flying boats were refueled over Newfoundland and Ireland.

° ° °

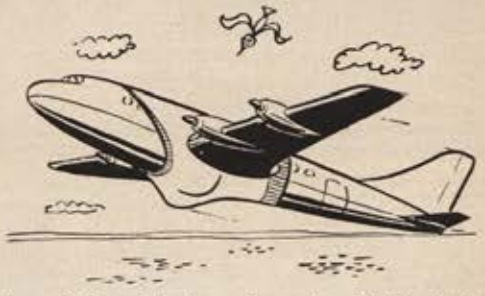
Every day we eat or wear something that has been treated by an agricultural airplane. One out of every six acres under cultivation in the United States is treated from the air with dust, spray, fertilizer, or other chemicals.

° ° °

A helicopter has been used to "air lift" maintenance personnel into a struck Utah plant to relieve a group of men "under siege" for six days.

° ° °

When the first shipment of Christian Dior's famous new sweaters arrived in New York, they won the additional



distinction of being the largest sweater lift in air transport history. BOAC's "Royal Scot" unloaded a record 5,000 of them at International Airport.

° ° °

Cleveland is the fifth city in the United States to have helicopter taxi service. Cleveland Air Taxi, Inc., operates between the Hopkins and Lakefront Airports.

° ° °

American Airlines reports the following passengers off at Washington from Los Angeles: four black-striped wallabies, two red-necked wallabies, two agile wallabies, two rat kangaroos, four crimson rosellas, two frogmouths, six kookaburras, four rainbow lorikeets, and two red-tailed black cockatoos. They went directly to the National Zoological Park.

° ° °

Travelers from the American West Coast to Copenhagen and Scandinavian points via the North Pole save $18 compared to the same trip across the American continent and the North Atlantic.

° ° °

Here's a sample of the air freight items carried by United Airlines during a typical month: a bag of rags (Newark to Tokyo); 1,000 "Dangerous" signs (Omaha to Louisville); a carton of earth (New York to Manila); 200 prime rooster necks (Calcutta to Long Beach); and one roulette wheel (Reno to Havana).

° ° °

The total amount of sprays and dusts applied by air each year would fill 1,000 freight trains of fifty cars each.

ANTICIPATING OUR MILITARY TOMORROW

Skilled hands and energetic minds are translating visions of tomorrow into realities, today. Crosley research and development achievements are paying off in practical production—geared to Military demands for "rightness."

Specialized testing facilities must be created constantly to keep pace with the complexities of the projects under development. Yes, guided by Crosley *reliability*, engineers of vision are broadening the scope of exploration into communications, armament and radar—in all phases of electronics and electro-mechanics.

For Procurement Agencies and defense contractors: an illustrated brochure describing Crosley's complete facilities. Write for your copy, today, on your business letterhead.

CROSLEY GOVERNMENT PRODUCTS DIVISION AVCO MANUFACTURING CORPORATION

CINCINNATI 15, OHIO

TWIN J-57s POWER THE

NEWEST FIGHTER and the first with two J-57 engines, is this new "century series" Air Force fighter being tested at Edwards Flight Test Center in California. The big, long-range McDonnell F-101 is 67 feet in length and has a wing span of 39 feet.

PRATT & WHITNEY AIRCRAFT
DEPENDABLE ENGINES

ONE OF THE DIVISIONS OF
UNITED AIRCRAFT CORPORATION

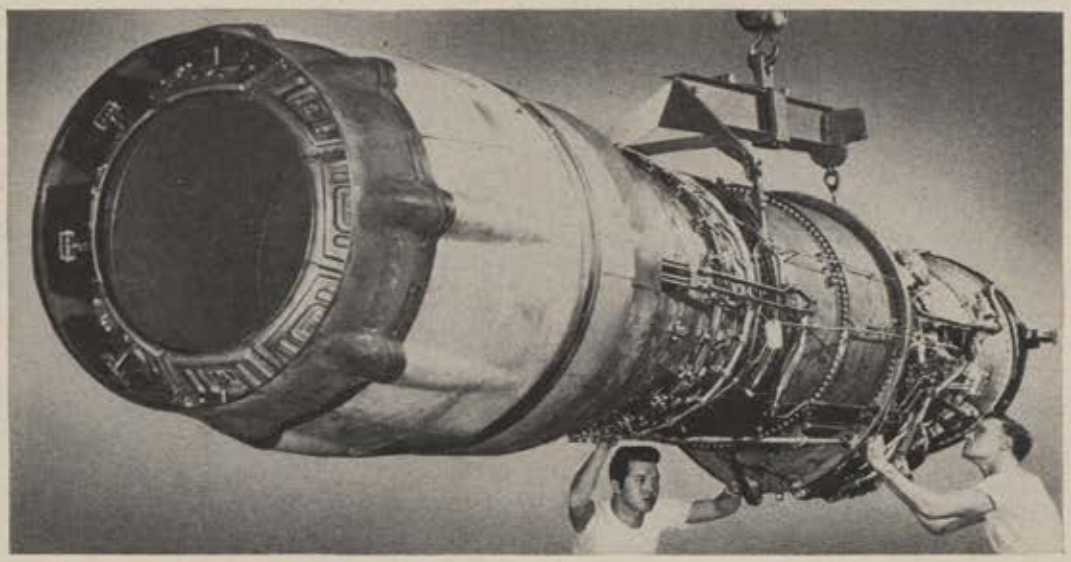
NEW VOODOO FIGHTER

The most powerful jet fighter ever built in America—the first with two J-57 turbojets—is joining the U. S. Air Force's supersonic team of "century series" fighters.

It is McDonnell's F-101 Voodoo, a long-range fighter-bomber capable of carrying atomic weapons and slated for service with the Air Force's Strategic Air Command.

Like its supersonic sisters, the F-100 Super Sabre and the delta-winged F-102, the F-101 Voodoo is designed to take full advantage of the tremendous thrust provided by Pratt & Whitney Aircraft J-57s and their afterburners.

In the new Voodoo, Pratt & Whitney Aircraft's J-57 continues to make its vital contribution to American Air Power.



OVER 20,000 POUNDS OF THRUST and outstanding fuel economy are available in the F-101 from twin P&WA J-57s and special afterburners, like that on the J-57 shown above. They are about two feet shorter than other J-57 afterburners. This engine equipment makes the long-range Voodoo the most powerful fighter known today.

Pratt & Whitney Aircraft

MAIN OFFICE AND PLANT: EAST HARTFORD, CONNECTICUT • BRANCH PLANTS: NORTH HAVEN, SOUTHINGTON, MERIDEN

In Canada: Canadian Pratt & Whitney Aircraft Co., Ltd.

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

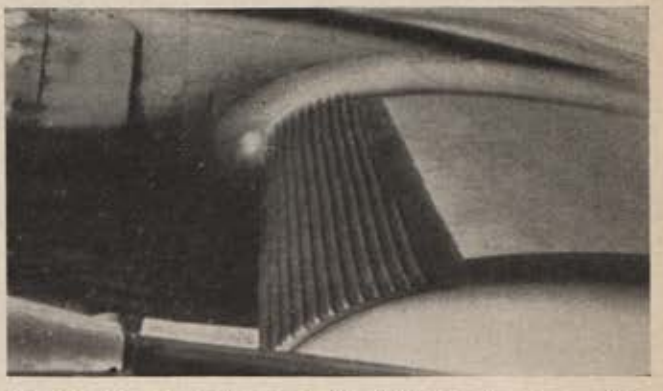
How to keep planes from coming down with the cold

KEEPS ICE FROM CHOKING A PLANE'S THROAT

Ice forming in the narrow "throat" of an engine intake could soon choke off vital air supply. B. F. Goodrich electrically heated rubber—rubber with resistance wires in it like a heating pad—prevents ice from forming. Its flexibility lets it fit skin-tight around the intake's bulges, curves and corners. BFG heated rubber also gives cold weather protection on propeller blades, spinner domes, hydraulic lines, many other parts.

EGG BEATER WHIPS ICE

The weight of ice forming on rotor blades used to ground helicopters in cold weather. The problem was to design an anti-icing system that wouldn't add as much weight as the ice. B. F. Goodrich engineers developed a set of specially shaped heated rubber boots that minimized weight and bulk. 30-day tests in freezing rain and snow, down to −14°F, proved their worth. The biggest single obstacle to all-weather helicopter operation was removed.



MAKES ICE REMOVING A SNAP

This B. F. Goodrich De-Icer has rubber tubes that inflate to crack ice off wing leading edges. B. F. Goodrich De-Icers have been giving planes ice protection since 1930. Latest type De-Icers snap off ice faster by inflating quicker with almost three times the pressure of earlier models. They last longer, too, because they're simply cemented to the wing without stretching or fixed tension.

RUBBER BOOTS HELP BUSINESSMEN HURRY

"We can count on B. F. Goodrich De-Icers to keep wings of our plane ice-free," say flight personnel of the Hoover Company. "They enable us to make trips we otherwise couldn't make." Practically every executive plane of twin-engine size or larger has De-Icer plumbing already built-in, making the cost of De-Icer installation low-cost insurance.

For 25 years, B. F. Goodrich engineers have been solving aircraft icing problems of all kinds. Why not let them put this background of experience to work for you? Write *The B. F. Goodrich Company, Aeronautical Sales, Akron, Ohio.*

B.F.Goodrich
FIRST IN RUBBER

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AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

Volume 38, No. 3 • March 1955

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THE COVER

If you detected a certain lack of detail in artist Chuck Barnes' conception of what the Russian double-delta interceptor looks like, let us say here and now that it was not only deliberate but necessary. And we hope it is a good long time before any of our pilots get close enough to the thing to confirm our educated guess. For more about the double-delta and other new Russian fighter aircraft, read "How the New Red Fighters Stack Up," beginning on p. 25.

AIRPOWER IN THE NEWS

■ The United States Air Forces in the Far East girded for possible combat as the President's message and the Congressional resolution spelled out our **policy in the Formosan area.** American aircraft have been redeployed in the area, and authorities there report that our forces are **ready to fight**—if necessary.

FEAF sent a squadron of **F-86 Sabrejets** and a squadron of **B-26 bombers to South Korea,** and a squadron of **F-84 Thunderjets to Okinawa.** In addition, the **Eighteenth Fighter-Bomber Wing,** consisting of seventy-five F-86 Sabrejets moved **to Formosa** from Okinawa and the Philippines (see page 38).

Even though our planes are far outnumbered by Communist aircraft in the Far East, military authorities say that our forces can deal with any Red threat in the Formosan area. It has been estimated that FEAF has about **1,000 combat planes**—including about 120 bombers—available in the area. In addition, the **US Seventh Fleet** has 300 to 400 planes on carriers. These figures do not include Strategic Air Command planes in the area. Against this, it is believed that the **Red Chinese** have 1,200 to 1,400 planes in the immediate Formosa area, and a total of **about 5,000 planes,** including Russian and North Korean, could be available to them.

Following on the heels of the resolution, **two MIG-15s** were shot down by **F-86 Sabrejet pilots** Capt. George F. Williams of Austin, Tex., and 1st Lt. Charles D. Salmon of Port Jervis, N. Y. The MIGs were in a group of four that attacked a USAF **RB-45 recon bomber** as it was flying a mission over the international waters of the Yellow Sea, forty miles west of the North Korean capital of Pyongyang. The Air Force said there were **no injuries** to US personnel.

■ Testifying before the House Armed Services Committee, **Gen. Nathan F. Twining, Air Force Chief of Staff,** said that USAF enlistments would decline **without the pressure of the draft.** He estimated that draft pressure motivated about forty percent of the volunteers for the Air Force. Also testifying for the extension of the draft for four years, **Secretary of Defense Wilson** said that failure to extend it might have "an important effect upon the numbers of men willing to volunteer in the Air Force, the Navy, or the Marine Corps."

■ The Air Force had a big pair of shoes to fill when **Dr. Theodore von Karman** resigned his position as chairman of the **USAF Scientific Advisory Board.**

Dr. von Karman, who is seventy-three, is also chairman of **NATO's Advisory Group on Aeronautical Research and Development** (AGARD) and felt that he must resign from one of the chairmanships to prevent undue strain on his health. He said he believed he could be of more use to the newer NATO group.

Dr. Theodore von Karman, left, resigned as chairman of the Scientific Advisory Board. New chairman is Dr. Mervin J. Kelly, president of Bell Telephone Laboratories.

He had been head of the USAF Board since 1944, and in 1950 received **AFA's Science Award** for his work as chairman of the advisory group.

To fill the SAB slot, the Air Force turned to **Dr. Mervin J. Kelly,** vice chairman of the Scientific Advisory Board since July 1, 1950, **president of the Bell Telephone Laboratories** and also an **AFA Science Award winner** (1953). Dr. Kelly was one of the speakers at the Airpower Symposium during the **1954 AFA Convention in Omaha** where he delivered a report on air defense.

■ The nomination of **Trevor Gardner** as **Assistant Secretary of the Air Force for research and development** was resubmitted to the Senate by **President Eisenhower** in February. Mr. Gardner, now a special assistant to **AF Secretary Talbott,** had been nominated during the past session of the Senate, but **confirmation was postponed** at the request of Senator Bourke B. Hickenlooper, Republican of Iowa. The delay was requested after it was reported that Gardner had sought to intercede in behalf of **Dr. J. Robert Oppenheimer,** the nuclear physicist who was deprived of his security clearance by a security board. Senator Hickenlooper said that he did not object to Gardner, but that he had not heard of the incident and desired clarification.

■ Following the announcement in January of **launching ramps** for F-84s (see "Tech Talk," page 70), the Air Force has taken further steps toward divorcing airpower from dependence on elaborate permanent bases, with recent announcements of two **vertical-take-off planes** first mentioned in this magazine last July (see "Old Jobs, New Tools," July '54). **Bell Aircraft Corporation** is now flight-testing a twin-jet, vertical-take-off and landing (VTOL) airplane at the Niagara Falls, N. Y. Municipal Airport. Unlike the Lockheed and Convair VTO types which sit on their tails for take-off and landing, the Bell plane takes off and lands in a **normal horizontal position.** Its two **Fairchild J-44 turbojet engines** (1,000 pounds of thrust each) **can be rotated** from a vertical position **ninety degrees** to a horizontal position for forward flight. Bell developed the plane on its own (loan of the engines was the only Defense Department assistance) but the Air Force is interested in the project.

Bell Aircraft's new jet-propelled, vertical-rising airplane, which takes off straight-up. The pilot then can rotate the plane's engines ninety degrees for normal forward flight. Two Fairchild J-44 turbojets power the new aircraft.

Earlier, **Ryan Aeronautical Co.** announced that it has an **Air Force contract** for the development of a jet-powered vertical-take-off aircraft. It has been reported that the Ryan VTO may be pow-

(Continued on page 17)

bases unlimited

The recent unveiling of the United States Navy's new 4-jet waterbased aircraft, the Martin XP6M SeaMaster, has focused attention upon one of the most important discussions in America today: The Waterbased Aircraft concept.

In essence, you are looking at that discussion in the piece of our world shown here. It is a glimpse of the countless free and indestructible water bases available throughout the eastern Pacific area.

Did you know that . . .

. . . The SeaMaster has global range, operating from the seaways, lakes and navigable rivers of the world — water bases that are within a few miles of virtually any area on earth.

. . . The SeaMaster is Ship No. 1 of a new aircraft *type.* In speed it is in the over 600 m.p.h. class, and it spearheads a whole new arm of the naval arsenal — the Seaplane Striking Force.

. . . The SeaMaster is not a research airplane, but the prototype of an operational weapons system designed to remain on duty for extended periods anywhere in the world. For the Navy program includes facilities for off-shore maintenance, refueling and resupply which give it a mobility never before possible in military aircraft.

To American security the SeaMaster now offers *bases unlimited!*

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DAY AND NIGHT ALL WEATHER ATOMIC BOMBER DESTROYER

VERBATIM FROM HANSARD*
HOUSE OF COMMONS, OFFICIAL REPORT, THURSDAY, 4TH MARCH, 1954

The Under-Secretary of State for Air (Mr. G. Ward):

"The development of the Javelin is going well. It will be difficult to exaggerate the importance of the all-weather Javelin. Modern bombers and their equipment have much increased the advantages enjoyed by the attacker. We therefore need for our Defence, aircraft capable of operating with high performance in all weathers. The Javelin should be able to fly and fight at a height of over 50,000 feet and to have a speed of between 600 and 700 miles an hour; and at these great heights and speeds it will be a fighting weapon equipped with modern armament and modern radar capable of finding and attacking the enemy in all conditions."

Mr. Emrys Hughes (South Ayrshire):

" Does it work at night? "

Mr. Ward: " Yes, indeed. An aircraft of this kind has the great advantage of flexibility. When the Javelin is in service many new tactical opportunities will be opened to us which should greatly improve the quality of our defence by day and by night."

The Javelin is now in full-scale production. Airmen know it is the most important aircraft in Europe. No other aircraft in the world compares with it.

*Hansard is the official record of the Parliamentary debates of the House of Commons.

DAY AND NIGHT ALL WEATHER FIGHTER

Gloster Javelin

GLOSTER AIRCRAFT CO. LTD., GLOUCESTER, ENGLAND *Member of the Hawker Siddeley Group* | *Pioneer . . . and World Leader in Aviation*

ered by a **British Rolls-Royce Avon turbojet** and that its speed will be **more than 600 mph**, compared with 500 mph for the Navy's two turboprop VTO planes.

■ **Navy Lt. Cmdr. William J. Manby, Jr.**, set an unofficial climbing record when he zoomed to 10,000 feet in 73.2 seconds at Norfolk, Va., in a North American FJ-3 Fury. He cut almost ten seconds off a record set (also in an FJ-3) three days before at Miramar Naval Air Station, Calif.

■ In his annual statement to the House Armed Services Committee in support of the Air Force program for fiscal 1956, **Air Force Secretary Talbott** reported that "this year has shown marked advance in the development of the **intercontinental ballistic missile.**" (See "Tech Talk," page 70.) He called missile development "of most critical importance to us," and said that the fact that the Russians took over the entire German V-2 rocket installation plus their known ability to produce **fusion weapons**, "makes it imperative that our country be the first to possess operational long-range ballistic missiles."

Also appearing before the committee, **Air Force Chief of Staff Gen. Nathan F. Twining** said that high priority had been given the development of **atomic-powered aircraft.** Expressing confidence that the engineering problems involved could be solved, he said "we believe the advances we have made to date have given us the basic knowledge from which we can project practical applications for military weapons systems. We have hopes that this will be a **truly intercontinental weapon** freeing us from dependence on overseas logistics."

Wide World Photos, Inc.

AF Sec'y Harold Talbott, center, talks with Rep. Dewey Short, left, and House Armed Services Committee Chairman Carl Vinson before testifying on AF's missile program.

■ The importance of **weapon planning** for an "age of peril" that could last **fifty years** or more was emphasized by **Assistant Secretary of Defense Roger W. Lewis** at a dinner of the **Institute of Aeronautical Sciences** in New York recently. Speaking at the Honors Night dinner on the opening day of the group's twenty-third annual meeting, Lewis warned that carelessness in planning could lead to disaster as surely as carelessness in fighting. He pointed out that along with "too little, too late," we now have to reckon with the problem of **"too much, too soon."** He called for mutual respect and understanding among science, industry, and the military and said that "each must recognize that technical decisions made today irrevocably commit us militarily years ahead."

At the dinner, **Robert E. Gross**, president and board chairman of **Lockheed Aircraft Corporation**, was installed as president of the Institute for 1955, and four men were singled out for honors. **The Lawrence Sperry Award** went to **Scott Crossfield**, 33-year-old test pilot for **NACA** who on November 20, 1953, became the first man to fly at twice the speed of sound. For his contributions in wind-tunnel testing, **Dr. Clark B. Millikan**, director of the **Guggenheim Laboratory at the California Institute of Technology**, received the **Sylvanus Albert Reed award**, and **James P. Henry, M.D.**, received the **John Jeffries Award** for his medical research contributions. The group's **Robert M. Losey Award**, for his "contributions in meteorology as applied to aeronautics," went to **Hermann B. Wobus, a Navy Bureau of Aeronautics** meteorologist.

■ **Personnel news** . . . Hqs. USAF has authorized **concurrent dependent travel** to **Bermuda** by advance application of eligible airmen and officers. It was also announced that concurrent travel to **Panama** is now automatic for all airmen and officers who are authorized transportation of dependents. Other places now open to concurrent dependent travel include continental **Europe**, the **United Kingdom, Turkey, French Morocco, Libya**, the **Caribbean Air Command** and three bases in **Alaska.** Officials are now working on plans to permit concurrent travel to other areas.

■ The **proposed pay raise** recently submitted to Congress favors men who plan to **stay in the service.** Airmen with less than two years of service and officers with less than three do not receive recommended increases. For example, an airman first class with more than eight years of service would receive a 17.35 percent increase in pay, but those completing three years of service would receive an increase of only 8.04 percent. The **largest percentage increase** for officers—twenty-five percent—would go to second lieutenants completing three years of service. The Department of Defense also submitted to Congress a plan that was designed to provide incentive pay increases for **hazardous duty.**

On his way to Hong Kong, AF Reserve Col. Jimmy Stewart, star of the new movie "Strategic Air Command," stops off to visit with Gen. Earle E. Partridge, commander of FEAF.

■ **Staff Changes** . . . **Col. Jay Dean Rutledge, Jr.**, has been named new **Deputy for Personnel for FEAF**, replacing **Brig. Gen. Herbert L. Grills** who now commands the advance headquarters of the reactivated 7th Air Force on Guam . . . **Maj. Gen. Warren R. Carter** was released from duty at **Hq. 3510th Flying Training Wing, Randolph AFB, Tex.**, and retired on January 31 . . . This month, **Brig. Gen. Charles B. Root** leaves his post as **Deputy Director of Supply and Service**, in the office of the Deputy Chief of Staff, Materiel, Hq., USAF, to become **Deputy Commander** of the **Northeast Air Command**, at the **Pepperrell AFB** headquarters in Newfoundland . . . On February 1, the **Directorate of Procurement and Production** merged with the **Directorate of Industrial Resources.** Designated the **Directorate of Procurement and Production Engineering**, Deputy Chief of Staff, Materiel, the new agency is headed by **Brig. Gen. Thomas P. Gerrity** . . . **Col. Clare W. Bunch** is new **Deputy Director of Maintenance Engineering** replacing **Brig. Gen. W. W. Wise.**—END

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SABRE JETS... FREEDOM'S BODYGUARD

Today there are more F-86D Sabre Jets flying on active duty than all other interceptor-types combined. North American Sabre Jets are the winged backbone of our nation's continental defense system and the defense system of many of our allies throughout the world. Day or night, fair weather or foul . . . F-86D's are ever alert to intercept any possible invader.

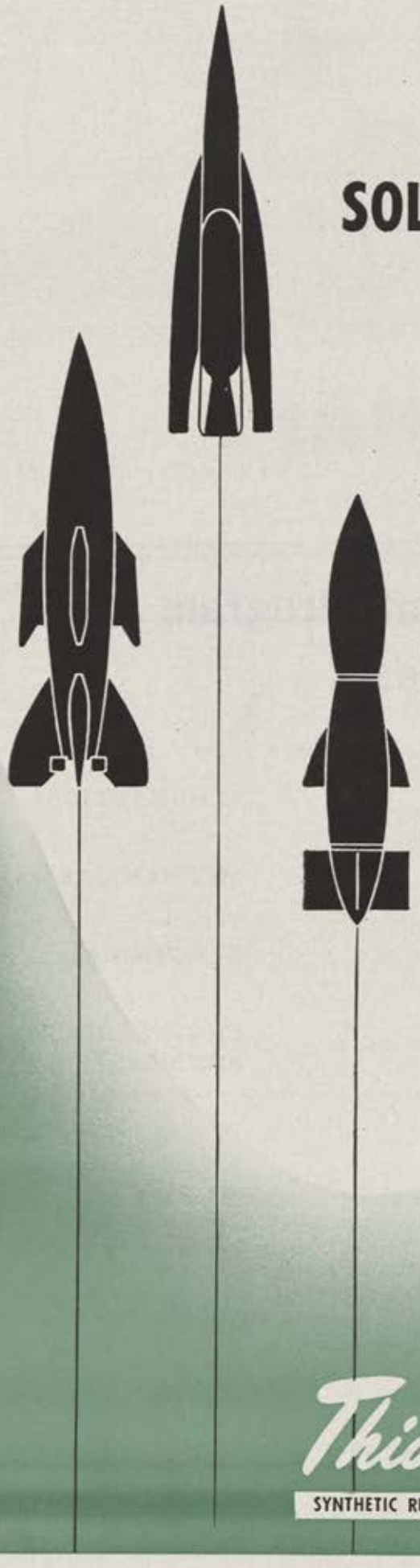
The "D" was the Air Force's first one-man all-weather interceptor. Capable of 650 m.p.h. plus speeds, it carries 24 Mighty Mouse rockets, each able to destroy any known type of bomber.

Latest in North American's famous Sabre family is the new F-86K, cannon-armed sister of the F-86D, which is now in production and will soon join NATO forces in Europe's air defense. Both the "D" and "K" are prime examples of North American Aviation's unsurpassed ability to design and produce the planes to meet America's defense needs.

Research and development keep North American foremost in aircraft, rocket engines, guided missiles, electronics and peaceful applications of atomic energy.

ENGINEERING AHEAD FOR A BETTER TOMORROW

NORTH AMERICAN AVIATION, INC.



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Civil Engineers (Structural). Openings for recent graduates to work on aircraft structural analysis.

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AVRO AIRCRAFT

AVRO AIRCRAFT LIMITED

SHOOTING THE BREEZE

We won't pretend to mastermind the significance of the shifts in the Russian government but the masterminds we do know say they portend no good. And the predicted return to Stalin's "get-tough" policy makes sense in terms of the Red military budget, up twelve percent from last year.

☆

Of late we have noted two or three items in the news magazines that should not go unchallenged. One was in *US News & World Report*, which stated, "Gen. Nathan Twining, Staff Chief *(sic)* of the Air Force, really is getting more money for the service that he heads than he had expected." Not so. The budget meets neither General Twining's hopes nor requests.

And *Newsweek* says, "It will happen only over the Air Force's bitter protests, but the first atom-powered aircraft may be a seaplane. Reason: The weight of the required protective shielding around the atomic engine means an almost prohibitively heavy landing gear for a land plane." The part about the seaplane is true. That the Air Force is protesting bitterly is not. The Air Force is no stranger to seaplanes, has a good many of them in its Air Rescue Service. USAF is charged with responsibility for development of atom-powered planes regardless of what type of landing gear the first model may carry.

In the same issue, *Newsweek* says that secret plans called for an airborne Army regiment to parachute into Costa Rica during the recent rebellion, but that the Air Force could provide only enough planes for an understrength battalion. Actually, the Air Force has never turned down an Army request for airlift, even in Korea, where the request was based on numbers of people and tons of equipment. Some requests have been refused where the Army has insisted on designating types of aircraft to be used. For example, in one instance Army wanted to use C-124s in an area where there was no possible landing field for the big planes, wouldn't accept smaller substitutes.

☆

A press release from Bell Aircraft notes that test pilot David H. Howe, who is putting Bell's new vertical-rising aircraft through its paces, spent five years as a mechanic with the Otis Elevator Company.

☆

The ex-carrier pilot on our staff notes with some satisfaction that the new way of launching F-84s from a ramp (see page 70) gives the pilot a chance to choose his own moment for take-off.

"In a catapult launching aboard ship," our man reports, "we always had some qualms about the catapult officer—the guy who gives the signal for the shot. We figured they all had a sadistic streak and were a little over-eager to shoot you off come hell or high water.

"Here's the way it worked. You would be secured to the catapult and get a 'one-finger wind-up' from the Cat officer. Then you'd rev up the engine high enough to check the mags, etc. If all was well, a 'two-finger wind-up' was the signal to push the throttle to the stop, full power. Brakes were off. The catapult mechanism held the plane in place. If everything checked out at full power, you'd brace your head against the back rest and toss the Cat officer a right-hand salute. And away you'd go.

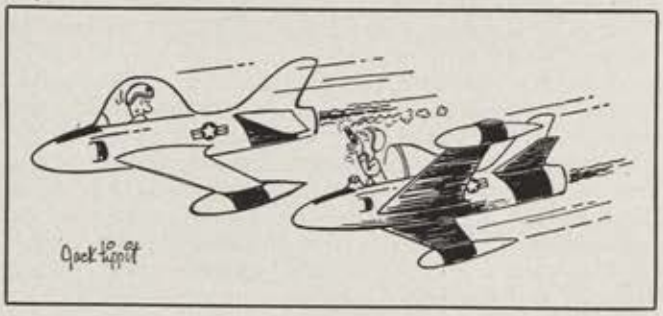
"We worried constantly that some involuntary movement in the cockpit would be misinterpreted by the Cat officer and we'd be shot off before we were ready. So we dreamed up our own safety device (never approved by BuAer). You put a rope noose around the Cat officer's neck and hung on to the other end in the cockpit. When you were ready to go, you let go of your end of the rope."

☆

One of the best hands at drawing an airplane that we know of is our artist friend, Chuck Barnes. His work is on our cover and on pages 26, 28 and 29. Oddly enough, Chuck is a light colonel in the Army Reserve and wears the crossed rifles of an infantryman. He served in Europe with the OSS in World War II and, when he's not cranking out art for AIR FORCE in the wee small hours, works for the Atomic Energy Commission.

☆

A friend of ours told us about an incident which sheds a little light on how much some "experts" really know about airpower. A leading Ivy League university recently published a study on passive defense against atomic war which, while it contained much that is good and true, also took a roundhouse



swing at the concept of strategic bombing and particularly at the amount of money we are spending on the Strategic Air Command. Our friend wrote the author a nice note, calling attention to what appeared to be some fallacious reasoning reflecting a lack of basic airpower knowledge. The author's reply, while temperate in tone, concluded with the statement that "the problems of atomic war do not represent my main field of interest." Our friend's comment—"His article shows it."

☆

We're not addicted to the use of *nom-de-plumes*, but once in a while we have to make an exception. For example, the author of our article on page 65 is an Air Force colonel on active duty. Obviously the things he has to say about the Effectiveness Report might make the next entry on his own report a chancy thing. Hence the pseudonym.

☆

Among the multitude of manuals published by the Air Force is one called "The Directory of National Organizations for Recreation"—AFM 34-9. We were perusing it recently in an idle moment and were rewarded with the comforting information that the list includes the National Slingshot Association, the American Lawn Bowling Association, and the American Platform Tennis Association, among many other organizations, including, of all people, the Air Force Association.

☆

A tip from Maj. William Overstreet, Base Operations officer at Orlando, advises against keeping long pencils around base ops. Pilots filing arrivals or clearances make off with the long pencils, won't pinch the short ones since it's too hard to fish them out of their flight jacket sleeve pouches.—END

A maintenance basis for the USAF?

The AIR FORCE BUDGET

It's a real "calculated risk" budget, with little fat, no excess of muscle, and even the skeleton would appear to be deficient in many respects

THE term "budget battle" to describe what is happening on Capitol Hill these days has been used often enough to qualify as a *cliché*. We have been guilty ourselves from time to time. But during recent times, at least, the word "battle" has been a misnomer. By the time the budget reached the halls of Congress, the battle was over, for all practical purposes. Like the old story about the lady of easy virtue, the principles by then had been established and there remained only haggling.

In recent years, then, the true budget battle was fought months before, in the Pentagon foxholes of the three services, in secret Department of Defense skirmishes, in the Bureau of the Budget, in Cabinet meetings, National Security Council sessions, and in the White House itself. It was a battle of military chieftains, of their civilian superiors, of comptrollers and financal experts. And by the time our elected representatives got their hands on the budget, the battle had been won or lost and the legislative hearings became a mopping-up operation. Give or take a few hundred million dollars, the budget went through Congress substantially as the Administration presented it.

This year may be a slightly different story, since it appears that the Armed Services Committees are going to satisfy themselves as to how strategic aims, force levels, etc., are reflected in the budget and not leave these decisions up to the Appropriations Committees.

The major features of the budget for Fiscal Year 1956, now under consideration, have been well reported in the nation's press and will not be discussed in detail here, although we probably will have more to say on the subject later on. In terms of percentage of the funds, the Air Force fared quite well. It is allotted $15.6 billion of the over-all $34 billion ticketed for the three military services. Whether that sum is enough for its needs, or even to meet its program, may be debatable.

But on the surface the Air Force should be happy. And it is, officially. However, even with well-nigh half of the planned military expenditures going for it, many veteran observers detect soft spots in the Air Force budget.

One of these has been pointed out by Brig. Gen. Thomas R. Phillips, a retired Army officer who writes for the *St. Louis Post-Dispatch*. While breasts are being beaten over manpower cuts in the Army, Navy, and Marine Corps, General Phillips sees as more significant the fact that "for the first time since the Korean war started there will be no funds provided in the budget for further expansion of the Air Force. New aircraft to be ordered will be replacements for those becoming obsolescent two and three or more years from now." "Budget-wise," says General Phillips, "the Air Force is on a maintenance basis."

Manpower-wise, too, the Air Force obviously must pull in its belt. The program, for example, calls for the activation of ten new wings during FY '56. Yet the AF military manpower ceiling has been lifted only far enough to include 5,000 more men. An average personnel "slice" for only one wing is around 8,000 men. So, if the Air Force is able to add ten wings while gaining less than ten percent of the people needed to man them, it will be a great tribute to USAF management.

Another soft spot would appear to be in the field of airlift and air logistics. The Air Force's need for a modern air logistics system was plainly outlined by both Secretary Talbott and General Twining at the Air Force Association's Logistics Conference last December. Yet both expenditures and new appropriations for aircraft and related procurement are now running at a rate of about $6 billion a year. In terms of combat aircraft for the 137-wing program this does not appear to be out of line. But many observers question whether such a program is adequate if the promised emphasis on air logistics is to be forthcoming.

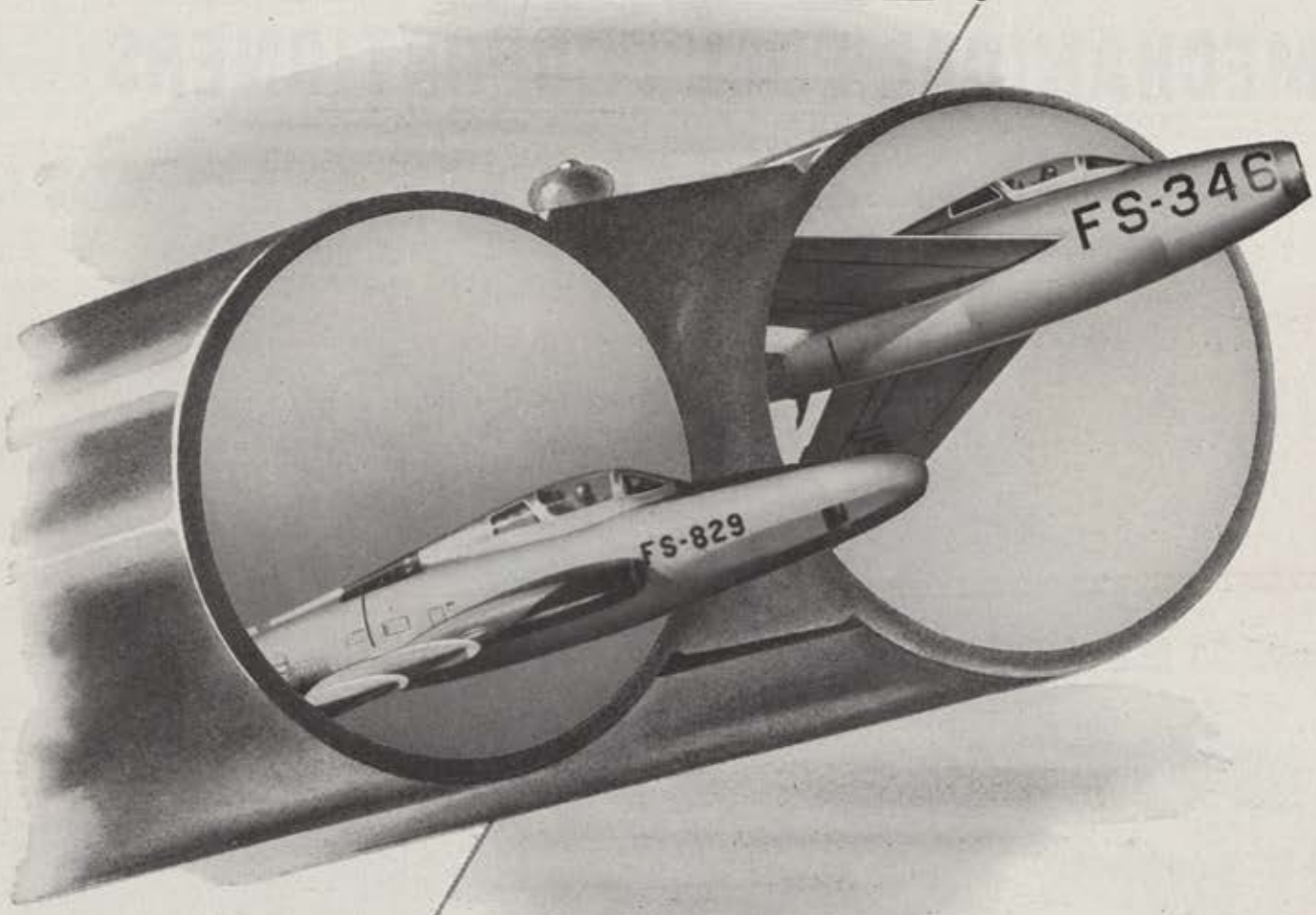
The base construction program continues to pose a problem in vulnerability. The precise sum to be allotted to the program has not been disclosed at this writing but, judging by past performances, it's a good bet that the budget will be deficient in this respect. And a large chunk of the Air Force's base-building money is ticketed for air defense installations such as the Distant Early Warning (DEW) line, rather than for dispersal of our striking forces. Yet Secretary Talbott has said, "We must increase our dispersal bases. It is no good to have billions of dollars' worth of planes bunched together where a few bombs could knock them all out."

It would make more sense, according to some experts, to have more bases than we have SAC wings. Then, by shifting units, we could keep the enemy from knowing exactly where our retaliatory forces were at any given time. At present, the opposite is true, and in some cases we must jam two wings on a single base. On this score the budget appears to be as vulnerable as our aircraft.

Another soft spot is in research and development, traditionally underfinanced. The Air Force's R&D funds total $570 million, on paper $152 million more than last year. But this increase is accounted for in large measure by $28 million previously carried under procurement and $110 million previously carried under maintenance and operations. Thus, the net gain in R&D funds adds up to only $14 million. Guided missile R&D money is actually $14 million less than last year—$105 million against $119 million. Certainly research and development funds are scarcely on an upswing.

What it appears to add up to is bare minimum money to attain what is conceded to be a bare minimum force of 137 wings by the end of Fiscal Year 1957. There is little fat, no excess of muscle, and even the skeleton would appear to be deficient in many respects. It's a real "calculated risk" budget.—J. F. L.

DOUBLE BARRELLED!



Deadly efficient are these two defenders of Democracy . . . and the USAF is ready to "let go" with both barrels should the need arise. ➤➤➤ *One of these twins, the* **F84F THUNDERSTREAK,** *is now in active service and able on instant notice to deliver its nuclear wallop in retaliation.* ➤➤➤ *Its photo-reconnaissance counterpart, the* **RF-84F THUNDERFLASH,** *has power and speed to locate the target, identify it in detail by use of the latest aerial photographic equipment . . . and if necessary, fight its way home guarding the secrets it has uncovered.*

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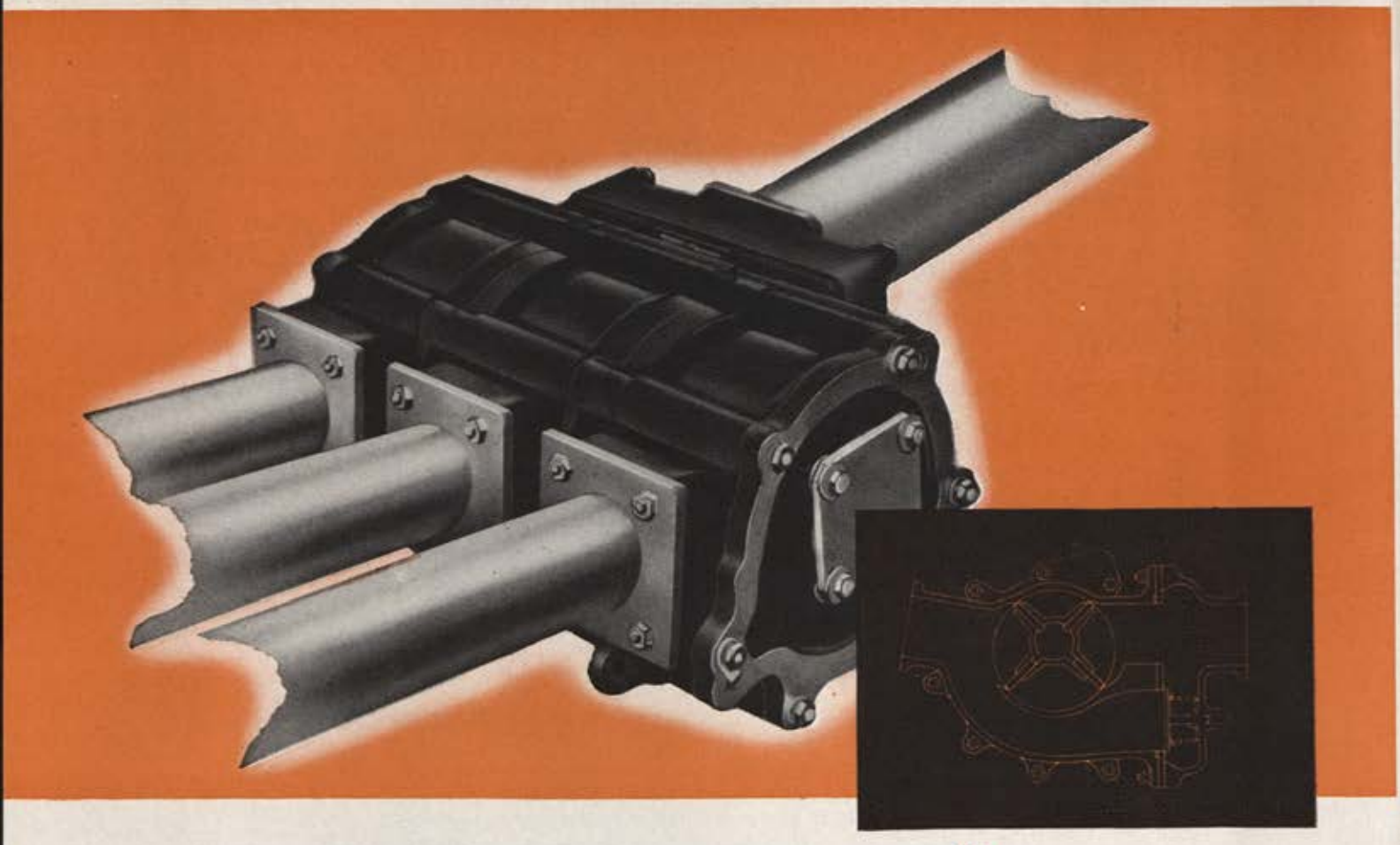

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AIR FORCE
MARCH 1955

How the New Red Fighters Stack Up

They look pretty good, in terms of both quality and quantity, according to this writer

By Michael Gladych

ONE December night in 1942, a Soviet airplane designer—Alexander Yakovlev—was summoned to Stalin's office in the Kremlin. The Red dictator pounded a sheaf of papers that lay on his desk. "Can you build an airplane that flies without a propeller?"

"Well . . ."

"Beria's men tell me the Germans, the British, and the Americans have such airplanes—I want to see a Russian one fly in six months."

The story that circulates in the Red Air Force goes on to say that three months later the prototype of the Yak-15 jet fighter rolled down the runway at Kimry experimental airfield. Apparently, Yakovlev, in cooperation with expert thermodynamicist Andrei Kostikov had previously worked out, in secret, a jet fighter design. So the ninety days were enough to build the prototype. The story is perhaps apocryphal and definitely on the optimistic side. But the fact remains that that first clumsy wood and fabric Yak jet fighter has been multiplied in a few short years into the 15,000-plane fighter force defending Russia today.

Although Russia's fleet of modern jet bombers is impressive, the Red fighters are the pet force close to every Russian's heart. In the true tradition of the fierce Cossacks who roamed the Ukraine steppes, the Russian fighter pilots are alert, aggressive, and tough. They are thoroughly sold on the idea that they are the first-line defenders of the Peoples' Paradise. Carefully selected by stern physical and psychological screening, the Russian fighter pilots are the Soviet version of Superman. They are the best of the "Red Eagles" and only the best is good enough for them.

What they want from an airplane was well summed up by the top Soviet ace of the last war, Guards Lt. Col. (now Maj. Gen.) Ivan Kozhedub. Having test flown one of the lend-lease Bell P-39 Airacobras, Kozhedub said, "In my fighter I want *less* comfort, more maneuverability, and more speed . . ."

The Russian engineers did their best to give the pilots what they asked for. The Yak-15 and MIG-9 were on a par with the contemporary US and British fighters. Later, the MIG-15, with its business-like snout and rakish tail, was exactly what Kozhedub and the other aces had wanted. And the old MIG had a slight performance edge over our own F-86.

The MIG-15 configuration was not created on Mikoyan's drawing board. Most experts credit the snappy design to Kurt Tank, the German plane

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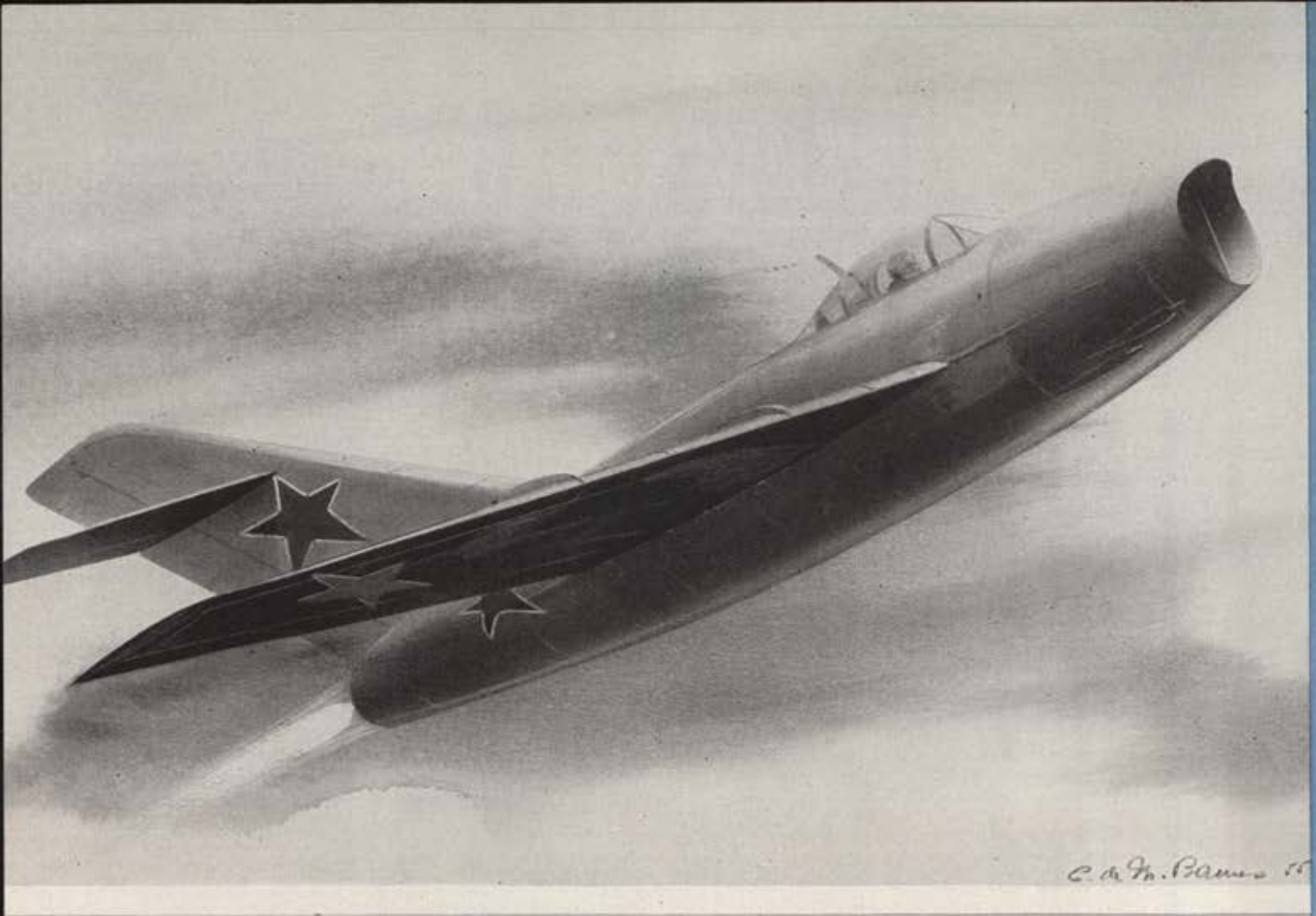


TOP

The MIG-17, roughly comparable to our F-100, has greater wing sweep than the MIG-15 and a lengthened wing chord. Its turbojet and afterburner give total thrust of 15,000 pounds.

BOTTOM

MIG-19 evolved from old MIG-9, early postwar Russian jet fighter. The version pictured is all-weather with radar search gear in nose. There is a day version that is also in production.

wizard, designer of the famous Focke-Wulf 190. The MIG engine originated in England as the Rolls-Royce Nene. Many argue that the facts prove the Russians lack originality and engineering creative spark. But that mongrel MIG-15 was, in its day, probably the top fighter in the world. And apart from its excellent combat performance, the old MIG was rugged and simple to make and service.

To Russia, short on skilled labor and technical personnel, the MIG was a godsend. The ground crews could handle it with ease. The pilots loved it. So the Russian air planners decided to prolong the MIG's life by a skillful face-lifting operation.

The first lesson the Russians learned in Korean air warfare was that the MIG was powerless in bad weather which was not bad enough to deter the United Nations bombers. So, the first modification of the MIG-15 consisted of adding radar gear and changing the air intake. The fighter was now all-weather, but the pilots complained about the added weight and the slight changes in handling characteristics. Once the all-weather MIG-15-Bis had been flown by several top pilots, they all agreed that something ought to be done, and their opinion was enough to call for an extensive redesign. Thus, the MIG-17, comparable to our own F-100, was born.

The air intake was further remodeled. On the day version, it resembled the lipped scoop of the F-86. Both the day and the all-weather versions of the new MIG-17 had an increased wing sweep and a lengthened wing chord. This pushed the critical Mach number further ahead, made room for more speed, and at the same time increased the wing area to take care of the extra weight. To boost its speed, the new MIG was powered by a new version of the centrifugal turbo with a short afterburner. Recent reports mention a limited number of MIG-17s powered by an axial turbo with afterburner, producing a combined thrust of 15,000 pounds.

First seen in public over Red Square in May 1954, the day version of the MIG-17 is reported in line service. [Another report places the first public showing on August 23, 1953 (Red Air Force Day). The author says this was probably a MIG-15-Bis.—The Editors.] As more of the new MIGs take off from the factory fields, the old MIG-15s are being shipped to the satellite countries, which form the outer defense line of the Soviet empire.

The Russian defense system has three zones. The outer zone is equipped with radar warning and ground observer posts and armed with the aging MIG-15. To supplement

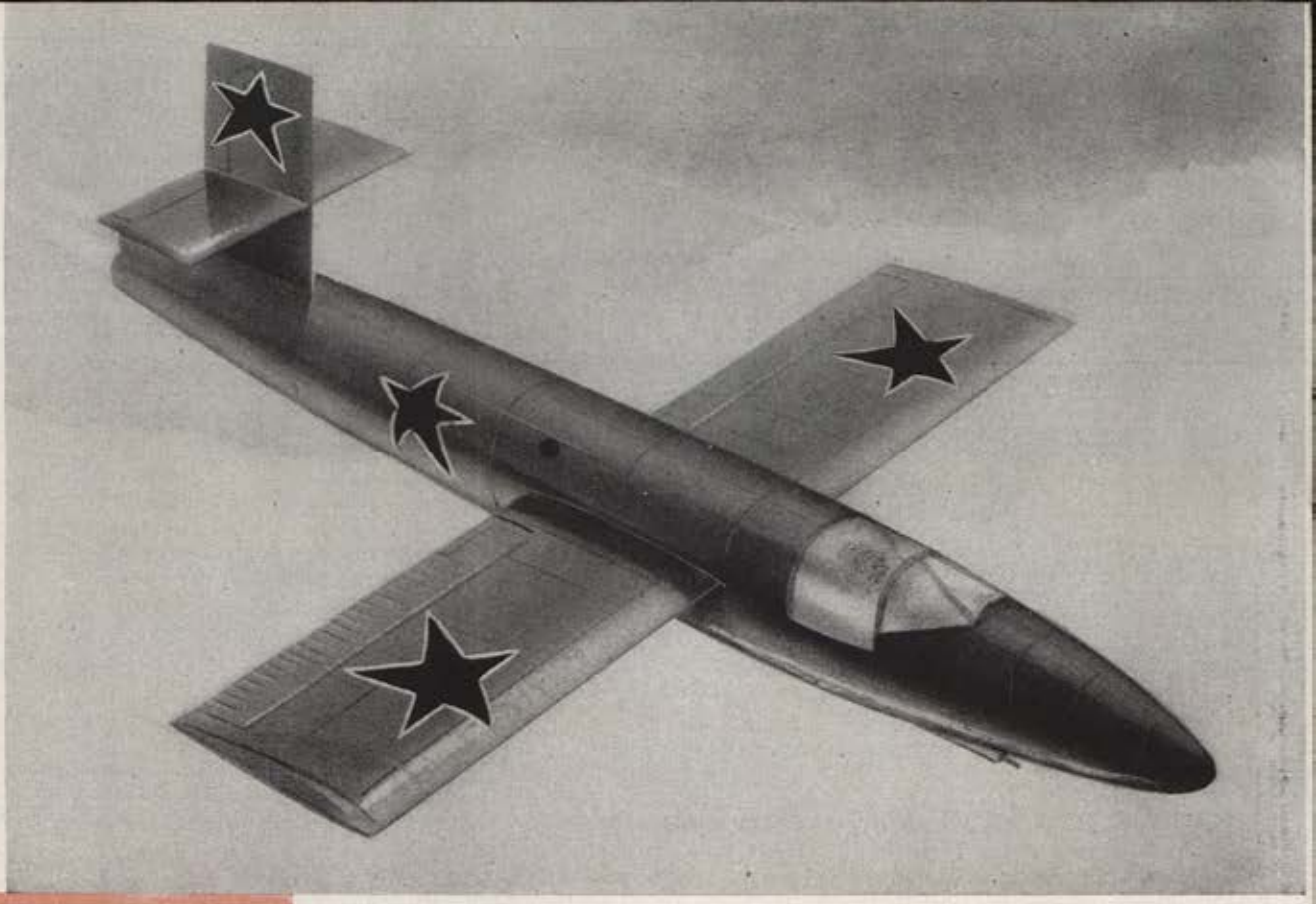
(Continued on following page)

Day version of MIG-17 is reported in line service. As more MIG-17s are delivered the Korea-tested MIG-15s are being used to beef up satellite air forces which make up outer Red defense ring.

LEFT

Powered by two side-by-side axial-flow turbojets, the MIG-19 has characteristic MIG vertical stabilizer. Wings have double-flow fences and either small tip tanks or anti-flutter devices.

RIGHT



Rocket-powered interceptor designed for point defense is called Yak-21 by author. Its two rocket engines with "cruising nozzle" permit low-speed cruising that saves fuel.

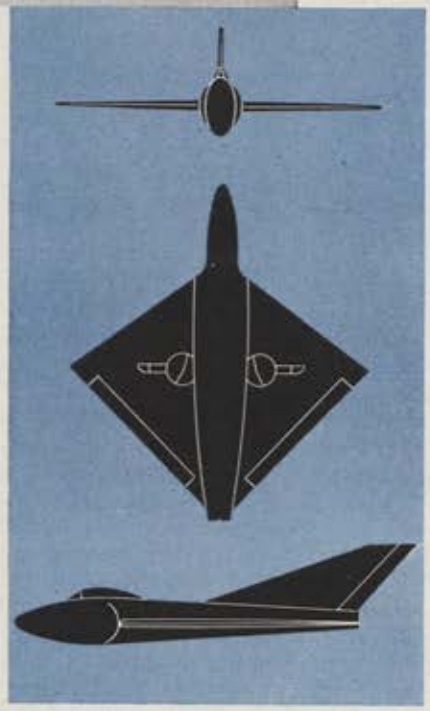
The little rocket fighter is a masterpiece of simplicity, with an extremely thin rectangular wing. Initial rate of climb is reported to be 15,000 ft. per minute, 39,000 over 20,000 ft.

this first line without parting with their best, the Russians revamped the old Yak-15. With more powerful engine, heavier guns, and wingtip tanks, the "export" fighter is now known as the Yak-23. Its span is about thirty feet and so is its length. Although a little heavier and more angular, it can easily be mistaken for the old Yak-15.

The second fighter defense zone lies on the perimeter of the Soviet Union itself, and this is where the MIG-17 units are deployed. Given the advantage of a warning from the outer zone, the MIG-17 squadrons could follow the World War II tactics originated by two Red air aces, Ivan Kozhedub and Alexander Pokryshkin. Scrambled well ahead of the attacking bomber force, the free-lancing squadrons would patrol assigned sectors at high altitude. As soon as the enemy raid was fixed and traced, fighter units from the adjacent sectors would be marshalled to the spot threatened by the bombers, in an attempt to gain local air superiority.

Russian air planners realize that fast jet bombers are hard to get at as they scoot along on the verge of the transonic foxhole around Mach .9. Attacking fighters would hit the mixed flow of the transonic speed range that pummels the life out of the steadiest gun platform. Of course, with its high critical Mach number, the MIG-17 might get in a 37mm slug or two, but the Reds are not taking chances.

Reports say that at Ramenskoye (Red experimental base) as many as fifteen new types have been seen tested in one day. Most interesting is the double-delta or flying rhomboid.



Design of double-delta is credited to Mikoyan, co-designer of MIGs. It can stand on its tail after take-off, climbs at an angle of seventy degrees, and has good landing characteristics.

They have established another fighter defense zone for point defense of the likely target areas.

Assuming that the attack would come at altitudes between 30,000 and 60,000 feet, the Russians developed a classic target interceptor—a rocket-powered aircraft, which I will call the Yak-21. This little fighter is a masterpiece of simplicity. What its genealogy is nobody really knows except Alexander Yakovlev and he ain't telling. Original reports accused Yakovlev of downright stealing from Professor Alex Lippisch, and redesigning the old German "Komet," the rocket ME-163. But a photo smuggled out of Russia and recent reports point to a fairly original configuration.

The Yak-21 has an oval cross-section fuselage tapered to double-barrelled exhaust nozzles. The fuselage has only one compound curve, that of the nose. The cockpit canopy is faired in to the rear fuselage very much like the old German jet fighter, the Heinkel-178. The low-cut sides of the cockpit and the short nose provide an excellent all-around field of vision. The Yak-21 has a mid-wing or perhaps a shoulder wing of a very thin airfoil and rectangular planform. The photograph does not show the wing roots, but the reports say that the wing has no fillets. The empennage is also of rectangular outline with the horizontal stabilizer mounted just above the fuselage.

(Continued on page 40)

a wing man has to have

Eyes in the back of

THIS is how it would happen:

Joe Jones, jet ace, would be sitting up there over the Yalu River in his F-86, "fat, dumb and happy," as Joe himself would say it. Everything cozy. Not a plane anywhere. Nothing except Joe and his wing man and the big, flat, unreal-looking sky at 30,000 feet.

Being a very heads-up sort of guy, which is what aces have to be, Joe would keep scanning that big sky, looking for trouble. He'd scan everywhere except directly behind and below him. He couldn't scan there because that's the fighter plane's blind spot. When trouble comes, that's where it almost always comes from—behind and below.

"Black Hat Leader, bandit at six o'clock! Break right!"

This from Joe's wing man. It might be his first warning. But it would be all the warning he'd need. He'd throw himself into a turn so violent and full of Gs that it would feel like his teeth were being crammed down through his chin bone. He'd sweep past the MIG and turn again and get on the MIG's tail and give him a squirt of 50s. And the MIG would blow up, dirtying the nice, clean sky with a mammoth smear of black smoke and scattering 10,000 pieces of airplane marked "Made in Russia."

Well, Joe, of course, would get credit for the kill, which is certainly as it should be. Joe would know, however, and so would his whole outfit, that a good share of the credit—for that MIG and very likely all the rest—belonged to his wing man. Maybe he'd try to explain this when he got home. But the newspapers would go into their customary flap about the brave young ace from Korea, and the wing man would get lost in the shuffle.

That's the way it happens. Wars come and wars go, and nobody hears very much about the wing man. He's old Mr. Anonymous himself, like the second baritone from the left in the third row of the glee club. He can pull a hundred missions and never get a kill, and maybe only fire a dozen shots or so. But he's a very important wheel all the same.

He started being important in World War II, when modern air combat tactics, as we know them, first evolved. He got more important in Korea as the jet fighter made its hissing, whistling debut. Now, if we ever fight a war again, he'll be more important than even.

For jets are being built to fly faster and climb higher than ever. This means that they need more space than ever in which to maneuver. At such speeds and altitudes, the close-massed aerial armada is too ungainly. The

his head

By Joseph Stocker

lone-wolf, man-to-man duel is too dangerous. And so we have the jet fighter team—small, fast, compact, self-protecting, easily controlled, and magnificently maneuverable.

The wing man is the *sine qua non* of this team. Without him there would be no team.

To understand exactly where he fits into the picture, hold out your hand —either hand—with fingers extended and separated from each other. There you have the four-plane flight—the "fingertip formation," it's called. The middle finger is the leader of the flight and the index finger is his wing man, or Number Two. The ring finger (Number Three man) is the leader of the second element, and the "pinky" (Number Four) is *his* wing man.

Each element supports the other and each wing man supports his leader, flying beside, behind, and usually just below the leader. He provides his support by serving as the leader's extra eyes, thus leaving the leader free to be a hunter and killer, which is what he's supposed to be. While the leader searches for a target, the wing man watches out for a sneak attack on the leader's tail. He watches in all directions. His head never stops turning. He's a man who, as one jet pilot put it, "has to have a swivel-jointed neck."

Now look at the diagram of a fighter formation in flight. Note that each of the four pilots has a particular area of search for which he is responsible. Note especially how the four areas complement each other, so that, in combination, they cover all 360 degrees of the compass. Thus no area is left unobserved.

The two elements can become separated and still fight as effective two-man units, with each plane expanding its area of search. But if the leader and his wing man become separated, the show is over. For not only does the wing man support the leader, but the leader supports the wing man. Together they are one of the most formidable fighting machines known to modern warfare. Separated, each loses his effectiveness. He ceases to be a fighting force. He is merely a lone airplane, terribly vulnerable, trying to keep from being shot down.

There's a rule of thumb which the jet fighter pilots have worked out, sort of unofficially. They'll tell you that the fire power of one fighter plane, by itself, is just one-fourth as effective as that of two planes working together. Call it jet arithmetic, or something, but it gives you a good idea of how much importance the Air Force these days attaches to teamwork—and to the wing man.

I remember a jet pilot from Korea telling how he lost a prospective kill because his wing man strayed out into left field at a crucial point in the proceedings. Not only that—the leader himself almost got clobbered.

They were tooling along over North Korea in 86s. Looking down, the leader saw two MIGs barreling southward. He flipped into a dive and was just closing on one of the red noses when suddenly he realized that his wing man was being curiously silent. He looked back. What he saw was about ten MIGs piling in on his tail—and no wing man.

He broke off and managed somehow to finagle his way out of the jam he was in. But he never came closer to being an obituary notice than he did that day.

The wing man? Well, it's significant, perhaps, that he went back to the States without ever finishing his 100 missions.

That's not a pleasant story. But maybe it explains why pilots feel that a good wing man—as one expressed it —"is worth ten times his weight in rubber, gasoline, gold, or anything precious." And any ace will tell you, if he's honest with himself and the men who fought with him, that behind almost every one of his kills there was a good wing man.

(Continued on following page)

Actually the wing man is a product of the evolution of aerial warfare, from the Spads and Fokkers of World War I to the Sabres and MIGs of Korea. In the first war, the classic form of aerial engagement was the dogfight.

When World War II broke out, man-to-man dogfighting still prevailed to some extent. But it was already giving way to fighter team combat. Under the pressure of war, planes were being built to fly faster and higher than any had ever flown before. Gradually the realization dawned—on both sides—that the day of the dogfight was over. There was only time for a pass, or perhaps a couple of passes. You either shot down or got shot down, or you broke off the engagement and made a pass at someone else.

But the fighter pilot needed protection while he made his pass, lest someone else make a pass at him. Thus the fighter team principle developed and with it the wing man.

Nobody knows exactly who started it. Some say the British. Some say the Germans. Some credit Claire Chennault, the boss of the famous Flying Tigers. We do know that Chennault was able to achieve a 150-to-seven ratio of enemy kills over American losses. He did it with inferior planes and terribly tired men. Skill was one reason for it. But teamwork was an even bigger reason.

Teamwork—it was a new concept of aerial warfare, and yet it was a concept as old as warfare itself. For it embodied nothing more or less than the principle of security. And, as those two old masters, "Hap" Arnold and Ira C. Eaker, remind us in their World War II book, "Army Flyer": "The principle of security was employed by the redskin who habitually sent a runner ahead to high points of the terrain. It is employed by the jungle tribes who beat drums to warn of the approaching intruder. It is employed by the camp which posts sentries to warn of the early approach of the enemy. It is used by the military commanders who send the points out ahead or who station outposts in bivouac. The principle of security is employed to circumvent the opposing commander who would employ the principle of surprise."

In Korea, then, as the jet age dawned, the fighter team flourished and reached its point of ultimate refinement. And the wing man came truly into his own. He was—and still is—the application of the "principle of security" to the swiftest and deadliest form of combat yet devised by men—combat between supersonic jets.

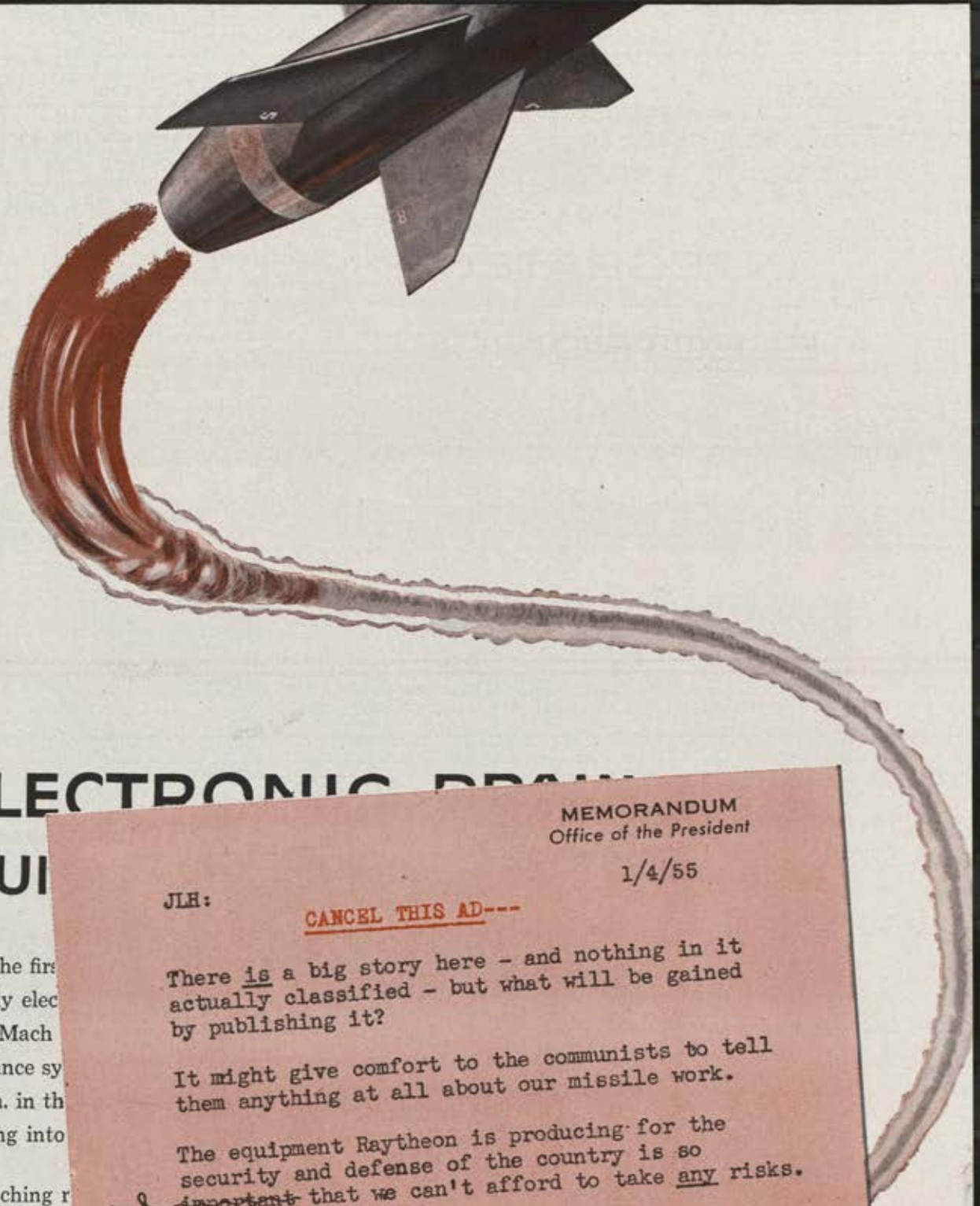
What does it take to make a good wing man? It takes guts, of course. (Can anyone excel in the art of warfare, on the ground or in the air, without them?) It takes judgment. And it takes an ability to fly by pure instinct, as you drive a car without thinking, "Now I'm going to apply the brakes," or, "Now I'm going to turn."

In point of fact, you have to be able to fly so well that you don't know you're flying. Odd as it may sound, it is all too true that you can't fly and fight at the same time. For the wing man has at least two very important things to do, all apart from flying his airplane. He needs to keep an eye peeled in all directions (remember the swivel-jointed neck?). And he needs to stick like Scotch tape to his leader.

That's not as easy as it might seem. The modern jet plane is an exceedingly swift and nimble piece of machinery. In combat it's doing 500 to 600 knots, and it's pulling five or six Gs in almost every maneuver. If your leader turns suddenly and you turn a

(Continued on page 35)

Teamwork is the key to effective fighter operations. From left, 2d Lt. Jerald D. Parker, 1st Lt. Henry Buttlemann, Flight Lt. John Dickenson of England, and 2d Lt. Frederick Mamerow chat as they walk to their F-86s in Korean war.



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second or two behind him, you can find yourself a mile or so out of position. It happens that fast.

"The wing man," explains one veteran jet pilot, "follows the wild gyrations of the leader, who follows the wild gyrations of the target. And that puts the wing man at the end of the whip."

Imagine, then, in a situation like this, what a cruel and punishing thing centrifugal force alone can be. Just because you're pulling five Gs in a tight spiral doesn't mean that you can stop looking. You have to keep looking, keep turning. Watch the leader. Watch out for bogeys. Turn and look. Turn and look. That's the very fabric of survival. And every time you turn, your head weighs eighty pounds, and the muscles and tendons of your neck are strained and tortured and tight like circus high-wires. "After every mission in Korea," said a pilot, "guys would come back with stiff necks."

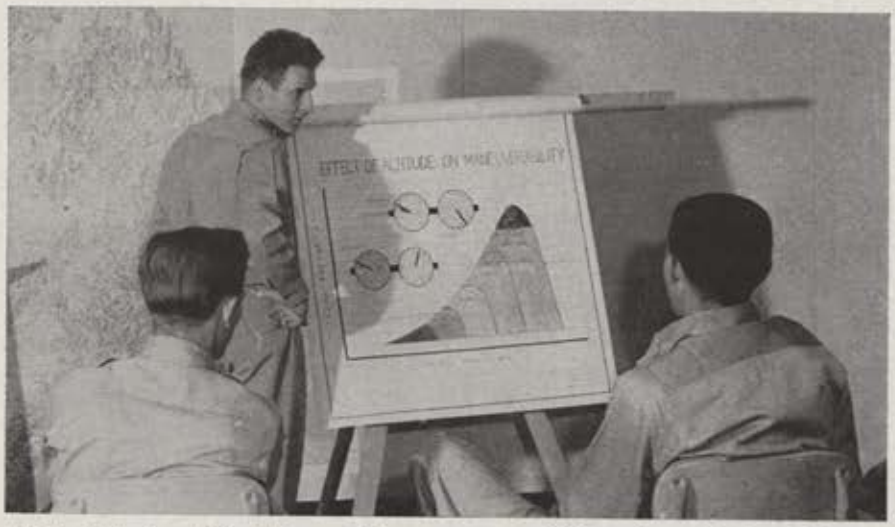
But a stiff neck is better than a bundle of personal effects shipped home on the next boat. Wrote Generals Arnold and Eaker: "Few flyers who have sore necks are shot down."

I said it takes guts and judgment to be a good wing man. Here's what I mean:

You're flying wing in the combat zone. Your leader gets on a target and bores in for the kill. He's not quite in range when you spot a couple of bandits boring in on *his* tail.

You can get rattled and scared and call the break before you have to and cost your leader a kill. Or you can stay in the saddle and assess the danger calmly and decide, possibly, that your leader has a precious second or two of grace remaining. And so you call a warning and you wait and sweat, and the second or two can seem like from now until Christmas. And then—it all happens in about the time it takes lightning to strike—your leader gets a burst squarely on his target and you call the break, and the two of you cut for safe country.

Considering, of course, the crazy way things can happen in the middle of a war, it might be well for a wing man to have a special kind of guts for special situations. Like the time when a pilot was flying wing over in the ETO during World War II. Right in the middle of a big swirl with German ME-109s, he saw his leader take a hit and bail out over enemy territory.



Pilots at Luke AFB, Ariz., study a maneuverability chart. Technical know-how pays off when the chips are down in the complex age of jet aerial combat.

He watched his leader parachute into a pasture, and then he landed his own Mustang there. He jettisoned his canopy, abandoned his parachute and took the leader on his lap. And the two of them, in an airplane built for one, managed to struggle into the air and fly home. Their clothes were ripped to shreds, and for two days neither one could have heard a 105 howitzer firing at twenty paces. But they were alive and ready to fight again, thanks to a wing man with a special kind of guts.

The tough thing about being a wing man is that you don't really learn how until you've gone into combat as a wing man. War is like that. You're simply not a finished soldier until the day comes when you have to soldier under fire. Veteran jet pilots call the process one of being "blooded."

Naturally the Air Force does everything humanly possible to teach you your business as a wing man before the chips finally go down. This sort of thing is happening right now, every day, at fighter combat training schools like Laughlin Air Force Base in Texas (jet trainers), Luke Air Force Base in Arizona (fighter-bombers), and Nellis AFB in Nevada (day fighters). The fledgling pilot is told what's expected of him as a wing man and what he can expect. He flies mission after mission, day after day—air-to-ground gunnery, air-to-air gunnery, formation flying, simulated aerial combat. He gets all the know-how the Air Force has to give him. And he gets it from the men best qualified to give it to him—from pilots who themselves have been "blooded," as wing men and as leaders.

Then he goes to war (assuming we're in a war). And on his first mission—and very possibly his next dozen or so—he flies wing. Everybody flies wing his first times out. "You can't be a good leader," said one pilot, "until you've flown wing."

If you're a brand-new fighter pilot, without combat experience, you'll probably fly your first mission as the flight leader's own wing man. Thus the least experienced man in the formation finds himself teamed up with the most experienced. The theory is, obviously, that you need some pretty expert protection until you've picked up enough savvy to protect yourself.

This—if you've never learned it before—is where you learn once and for

(Continued on following page)

About the Author

Joseph Stocker says that when he went into the Army in 1941, he was "not entirely sure which end of the gun the bullet came out of." Then, when commissioned in the infantry but transferred to the transportation corps, he was convinced the Army was as unsure what to do with him as he was about the gun. Born in Detroit 41 years ago, he's a 1935 journalism graduate and Phi Beta Kappa from the University of Oklahoma. After his Army stint (where he says his sole claim to distinction was that he and Bill Mauldin were once tentmates), he worked for the Associated Press in Denver. He moved to Phoenix, Ariz., his present home, and began free-lancing in 1948. His nonfiction articles have appeared in some fifty magazines, including the Saturday Evening Post, Collier's, Coronet, *and* Look. *He's written a book about Arizona, is married, and has a 4½-year-old son.*

all time the importance of discipline and teamwork to efficient fighter operation. "You've got to have it," is the sententious observation of an experienced fighter pilot, "or get it real fast."

Teamwork may manifest itself in many different ways, over and beyond the supplying of an extra pair of eyes by the wing man for his leader. It may manifest itself, for instance, in a willingness to forego glory for the sake of results, as it did in an incident which occurred in Korea.

Two F-86 pilots were coming back alone from a mission. The other element, short of fuel, had gone on in ahead of them. From about 40,000 feet they spied a pair of MIGs below them and whirled down to the attack. One of the MIGs broke at precisely the right instant and got away. The other—confused, perhaps—failed to respond so quickly. He sloped off, right in front of the F-86 wing man.

The Sabre leader might still have maneuvered himself into a position for the kill. It was his decision to make. And it was, after all, his job—and his privilege—to do the killing. But there was a simpler and surer way.

"You take it!" the leader yelled to his wing man.

Right there and then, in mid-combat, the two of them changed roles. Leader became wing man. Wing became leader. And the wing-turned-leader shot down the MIG. What's more, he went on to become an ace.

Someone, back during the second Great War, immortalized an expression. He said, "The battle is the pay-off." It is indeed. Up to that point, teamwork is only a word in the lexicon of military flying. But when the issue is finally joined, between opposing aircraft traveling faster than the sound they make and flying higher than the eye can see, teamwork becomes a thing of cosmic significance.

Year by year, war by war, aerial combat grows swifter and more complex. But the fundamental objective remains the same. It's as fundamental now, in the age of supersonic flight, as it was when the Spad and Fokker gallantly dipped their wings to each other and then squared off for a leisurely duel over Belgium. "Hap" Arnold summed it up succinctly in an address before a graduating class at one of our Air Force bases.

"There is only one thing that matters," he said. "Did you kill him or did he kill you?"

The answer to that question may ride on the wings—and in the heart—of the man with the swivel-jointed neck.—END

Cold Frontier

Up where summers are cold and winters colder, where days are long and nights seem longer, U. S. Air Force men in Northrop Scorpion F-89 interceptors stand all-weather guard along our northern frontier. These reliable bomber destroyers fly through icy fog, storm and blackness to give around-the-clock protection to the heartland of America. Northrop Scorpions have speed to intercept invading aircraft, the endurance and firepower to follow, harass, and destroy them long before they can reach their intended target. F-89's are one of many contributions to national defense made by the experienced engineering and production complex of Northrop Aircraft, Inc., America's first company in the vital design, development and production of all-weather and pilotless aircraft.

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C-124 and Formosan farmers in by-now traditional shot.

The old pros answer the call

FIGHTER-BOMBERS on FORMOSA

FEAF's 18th Fighter-Bomber Wing takes mounting Far East tension calmly in stride

WITH the aplomb and efficient nonchalance of a veteran fire company answering a call at Forty-eighth and Main, the old pros of FEAF's 18th Fighter-Bomber Wing took their F-86s off Kadena AFB, Okinawa, and Clark AFB, in the Philippines, and pointed the Sabres' snouts toward Formosa. Half a day later they were in business, their first sorties had been flown, and their ground crews had set up shop with the heavy equipment flown in by Japan-based C-124s of the 315th Air Division. Global mobility on a scale fitted for all-out war is still an Air Force dream, but local mobility for the brush-fire wars was convincingly demonstrated by the veterans of the 18th.

Their presence on Formosa was tangible evidence of US determination to maintain intact what President Eisenhower calls "the geographical backbone" of our security structure in the Pacific—the island chain of the Aleutians, Japan, Okinawa, Formosa, and the Philippines. While the US Seventh Fleet was seeing to it that the disputed Tachens were evacuated by the Chinese Nationalists without incident, the 18th's job was to clean the skies above Chiang Kai-shek's island bastion and keep them that way. It would be Sabre versus MIG once again, like in Korea but with a difference. This time there would be no privileged sanctuary. The orders allowed "hot pursuit."—END

Sabrejet pilot climbs in cockpit at Clark AFB, en route to Formosa

US airmen chow up around a campfire with new acquaintances in Chinese Nationalist forces.

Hangar full of bunks is temporary living quarters for Formosa-based airmen.

Globemaster flew this equipment to Formosa from the Philippine Islands

The tricycle undercarriage retracts into the fuselage and the track may be on the narrow side. However, observers report that the little fighter behaves well on the ground. The take-off roll is very short due to the amazing acceleration. Mounted one above the other, the two rocket engines—probably an improved version of the German engine, the HWK R II/211—deliver about 6,000 pounds of thrust apiece and drive the interceptor at an angle of climb of sixty degrees. The initial rate of climb is claimed to be 15,000 feet per minute, while the rate of climb above 20,000 feet is 39,000 feet per minute.

The author, Michael Gladych, is an experienced pilot, with service in four different Allied air forces in World War II, from September '39 to August '45—Polish, French, British, and US, in that order. Since then, he's been a consulting engineer in cockpit design and safety. He still has a valid pilot's license, says he's flown everything from a Piper Cub to a Messerschmitt-262. His hobby is piecing together bits and pieces of aeronautical information that sift through the Iron Curtain. He points out that even the intelligence experts are never one hundred percent right, but says he thinks his batting average will prove pretty high.

One observer reported seeing objects falling off the climbing plane soon after take-off. This would indicate an auxiliary booster to shorten the take-off run and conserve internal fuel. To conserve fuel aloft the Yak-21 is equipped with a cruising nozzle that delivers enough thrust to let the fighter cruise at low speed before an attack.

How many squadrons are equipped with the Yak-21 is not known, but these rocket fighters have been seen around Moscow, Vladivostok, and Leningrad. Limited production has been reported by several observers, which means that the Yak-21 is at least past the early experimental stage.

Apparently, the Russians have their own method, slightly different from ours, of proving a new airplane model. Prototype testing by the factory and military test pilots is only a part of the trials. When the experimental model passes those tests, limited production is ordered, and the new plane is then assigned to line units for operational testing on a large scale.

As far as the squadrons are concerned, the plane is considered new equipment that is there to stay. It is put through normal routine missions, and the performance reports are forwarded to the factory. Often, engineers come to discuss various shortcomings with the pilots, and some modifications are done in the field. Maintenance procedures are studied and mechanics' suggestions are incorporated in whatever changes are decided upon.

Thus, an observer may report a new model as standard equipment on the strength of a few spot observations only to realize later that suddenly the new plane is no longer seen. In several cases, limited production fighters were being tested by line units for as long as a year only to be found not up to par.

And the requirements of the Red Air Force are rigid and tough. Apart from pleasing the pilots from the handling standpoint, and fire power, every new fighter must pass the logistics test. It must be easy to manufacture in large numbers. That means few components, few operations, and few accessories. Recently, a new requirement was added—the components such as wings, empennage, fuselage sections, engines, and undercarriage must be designed so that they can be replaced with minimum trouble and possibly by non-skilled labor.

A further consideration is the type of propulsion. Jet engines are growing more complex. The simpler, centrifugal type has reached its limit and the more powerful axial types are becoming a maintenance headache for short-handed overhaul units. The Yak-21 is the first type to be equipped with a rocket motor that is simple to service. But here, propellant transportation presents a logistics problems.

The HWK R II/211 rocket motor was designed to use kerosene or jet fuel with liquid oxygen as the oxidizer. However, although the kerosene gave high exhaust temperatures and good flight performance, the combustion chambers could not be cooled effectively and the motors were cracking up. To remedy this, water-methanol fuel was used. Water-methanol mixture was pumped through a cooling jacket around the combustion chamber before being injected into the chamber. With only a slight sacrifice in the flame temperature of the rocket, the combustion chamber life was prolonged by the cooling process. But the fuel brought a new problem.

With eighty-five percent of the Red Air Force being turbojet-propelled, there was ample fuel supply for the rocket fighters that had to land and take-off from different bases during one day's operation. Now, in addition to the gasoline and jet fuel, the water-methanol mixture had to be stored in large quantities at many airfields.

To solve this and similar problems before a new fighter reaches the mass production stage, Russian plane designers are given a free hand in making experimental models. At Ramenskoye experimental field, a skillful observer recently counted fifteen different fighter prototypes undergoing evaluation tests in one day. The most interesting of the new planes is the double-delta—a turbojet with a rhomboid wing planform.

The rate of climb of the flying rhomboid is reported to be phenomenal. Immediately after take-off, the plane literally stands on its tail and climbs at an angle of over seventy degrees. The landing attitude is not as nose-high as in the orthodox delta, which might be the result of the unusual wing planform. The flying rhomboid is credited to Mikoyan who last spring gave a radio talk in Moscow in which he mentioned this new plane.

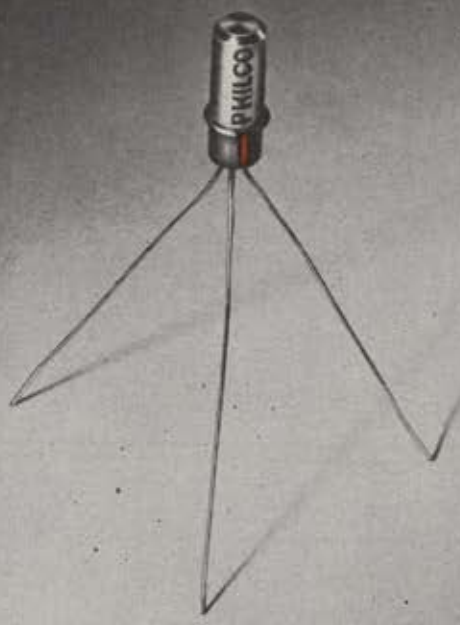
Among the queer birds at Ramenskoye and Kimry, observers report seeing a Lavochkin flying boat jet fighter, with a hull strong enough to land on grass, snow, or ice. The land take-off of this waterborne craft was from a detachable dolly. It is rumored that the new Lavochkin fighter was designed especially for operation from Arctic floating bases and the Siberian river estuaries.

Another experimental fighter modification reported for use in the Far North regions is the MIG-17 on semi-retractable skis. The skis are rather large and in flight tuck in under the belly, but do not retract fully. For shortening the landing run, a small solid-fuel rocket motor firing forward has been reported.

The old timer MIG-9 has followed the example of the MIG-15 and has currently appeared at Kimry and Ramenskoye testing establishments with extensive redesign. The fuselage is even more bulky than in the old MIG-9. The wings are swept to about fifty degrees and so is the empennage. The wings sport double-flow fences and have either small tip tanks or anti-flutter balances. The vertical stabilizer is unmistakably MIG. The nose is shorter than that of the MIG-

(Continued on page 49)

MIGHTY PERFORMANCE



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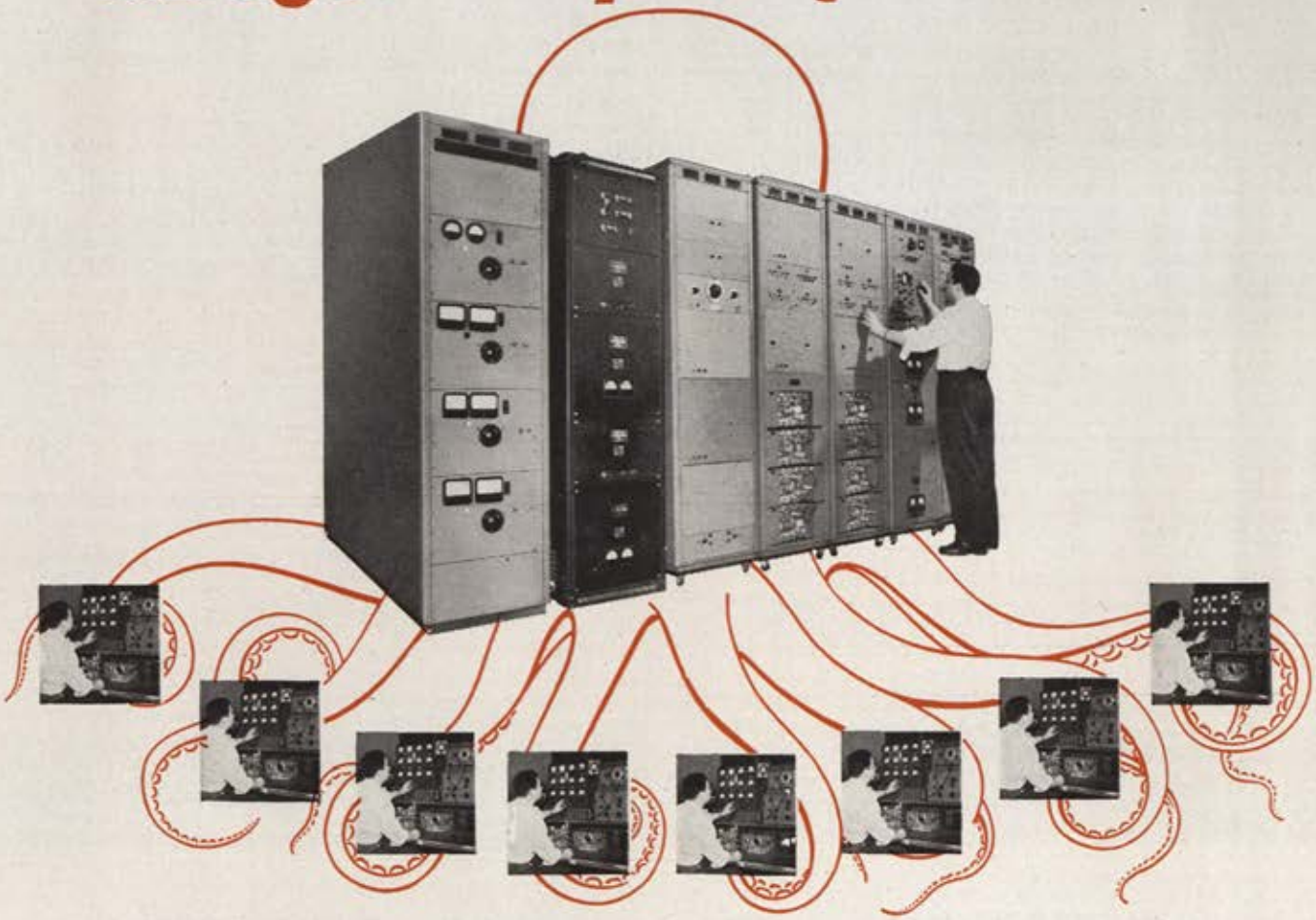

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January 21, 1955 **American Aviation DAILY** Page 128

MATS REPORTS SUBSTANTIAL SAVINGS FROM USE OF SIMULATORS

West Palm Beach AFB, Fla. -- The Military Air Transport Service is saving more than $4,000,000 per year in pilot training costs at its training center here through the use of five Curtiss-Wright flight simulators, MATS officials have disclosed. The simulators involved include three of the Boeing C-97 type and two Douglas C-124 type units, each costing about $800,000.

MATS officials said that these five simulators represent the largest single concentration of multi-engine flight simulators in existence. Although the USAF has taken delivery of 115 of 174 electronic simulators ordered to date, a large percentage of these have been single-engine aircraft simulators.

The first simulator to be installed at the MATS base, which was reactivated in 1951, was a C-97 unit delivered in November 1952. Since then, MATS has accumulated more than 20,000 hours of training time on the C-W simulators and trained more than 1000 crews. During the entire period total down time due to maintenance, during which training could not be made or completed, was only 138 hours 5 minutes. Average training time per day for the five simulators has ranged from 10 hours on the lowest time C-97 simulator to 13 hours on the highest time C-124 unit.

Comparison Values Being Developed

For general comparison purposes, MATS considers that it costs $30 per hour to operate a four-engine aircraft simulator compared with $350-$400 per hour for the aircraft. As yet it has not been possible to say that a given number of flight simulator hours are the equivalent of so much actual flight time but some specific values are expected to be developed by next summer. At present MATS is using several different ratios to gain practical experience on relative merits of the two types of training. In these tests simulator time ranges from one hour per hour of actual flight time, to 20 hours aircraft time to 30 hours simulator time, to 15 hours aircraft time to 38 hours simulator time.

Curtiss-Wright is expected to deliver the first C-118 (Douglas DC-6A) simulator to MATS this summer. It is one of five types of simulators now making up approximately $8 million dollars in simulator backlog at C-W. The other types include simulators for the Lockheed C-121 (Super Constellations), Lockheed C-130, Convair's C-131 (240) and the Boeing RB-52.

* * *

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The Frontier Is Everywhere

"Our whole sky is now the frontier we must be able to defend against the Communist giant who has vowed he will dominate the world."—Gen. Nathan F. Twining, USAF Chief of Staff

EVEN more important than the decisive role of our Air Force in war is the potential ability of airpower to prevent war.

Thus, the strength of our nation comes not only from our people, our cities, our land, and our resources. Today it also comes from the air above us.

One mountain pass is no longer the gateway to opportunity nor is it a key point in the defense of our frontier. Our whole sky is now the gateway to opportunity.

Furthermore, our whole sky is now the frontier that we must be able to defend against the Communist giant who is massing his strength in Asia. This giant has vowed he will dominate the world.

In his quest to dominate the world, he has realized that he must first rule the sky. Since World War II the Reds have built a completely new aviation industry. The Soviet Air Force outnumbers ours by thousands of combat airplanes. All of us have seen pictures of their new, long-range jet bombers—vivid indication of their progress in building airplanes. We also know of their success in developing nuclear weapons.

In their efforts to dominate the sky, the Soviets have built up statellite air strength as well as their own. As a result of this buildup, the Chinese Communist Air Force is now the fourth largest in the world. This is especially significant in view of present tensions in that area.

Of even more significance to us is the large and ever-increasing system of Communist air bases in China. They have realized that the inherent flexibility of air forces is multiplied by a wide network of air bases. Many air bases in China make it possible for the Soviets to move aircraft in quickly from Russia. Communist air strength in the Far East could be doubled overnight.

There is no doubt that all this Red airpower adds up to a definite threat to our peace and security. . . .

Why have the Soviets held back? Certainly not for lack of capability and aggressive ambitions. Their record is one of aggression wherever they thought it would pay.

They have held back because our deterrent has deterred. The Soviets have known of our readiness to strike back at them with devastating blows. They have recognized that the consequences of any attack on the United States would far outweigh any possible gains to them.

The long-range bombers of our Strategic Air Command have been like a sword over the Soviet head. We have made our sword long and sharp. The very power of this sword has kept us from being forced to use it. Of that we can be proud. I believe this is the finest actual example of peace through strength in our history.

The repositioning of forces, and our reinforcement of the Formosa area are present-day examples of our efforts to keep peace through strength. The Chinese Communists have a healthy respect for our F-86 fighter-bombers in Formosa. They know from experience that their MIGs are no match for our Sabres. They also know what these F-86s and our long-range bombers could do to any Communist force attempting invasion.

There is even more meaning in the fact that our military strength is backing moral strength. We have made clear where we stand and what we will not stand for.

It is evident that this kind of determination is as necessary as military strength when dealing with unprincipled aggressors.

Let me assure you that our mission in the Far East is protection. Our object is peace—not war. We want to stabilize the situation, not upset it. If the sparks of war are struck, they will be struck by the Communists despite all our efforts to prevent them. Our firm stand in this region is designed to discourage rather than to encourage those sparks.

In all our efforts to prevent war, our strong air offensive capability has been our most effective instrument. As such, it has been our greatest defense. And it will continue to furnish our best chance of keeping the peace.

If the Communists decide to risk attacking us, our striking force will still be our best defense.

In our preparations, we must expect that they will attempt to hit the United States. If they should head for our cities, air defense could destroy enemy airplanes one by one, over this continent. Air defense alone could not prevent the enemy from launching fresh attacks, and repeated attacks could weaken any defense. To prevent new attacks, our striking forces must stop the enemy at home. These offensive striking forces will include a variety of airplanes from our atom bomb-carrying fighter-bombers to our mighty B-52s. In any major war, the first job of these offensive air forces would be to destroy enemy air strength at its sources.

Although our offensive forces have kept the Soviets at bay, we would be foolish to ignore the possibility of an attack. Since we want only peace, we will not strike the first blow. This means that we must prepare to fend off any first blow which might be struck at us. As the Reds continue to strengthen their attacking forces, and as their behavior continues toward more militarism and hostility, the threat to our security grows. [The recent] shift in the Soviet government focuses attention on this threat.

All this means that air defense is growing increasingly important. We must provide protection for our cities, our people, and our industrial strength. We must be able to preserve our counterpunch.

Furthermore, air defense serves as an additional deterrent to enemy action. He cannot afford to lose many of his modern, expensive airplanes in a non-decisive attack. . . .

Our goal in any air defense is to achieve effective warning and control systems. Our interceptor pilots and our missile and anti-aircraft crews must know that the enemy is coming and where he is.

We are progressing in our building of these systems. Our objective is to

(Continued on page 49)

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Col. W. M. Van Sickle speaks to community leaders at an AF base in England.

1 *Here's one "How-to-win-friends-overseas" article. Another begins on page 54.*

When in Rome . . .

How Air Force commanders in England are learning that all the answers aren't in the book

By Kenneth Sams

FRESH from the ZI, the newly assigned commander of a US Air Force base in Britain faced his first problem in community relations. A fox, pursued by hounds and pink-coated riders, had found asylum on the as-yet-unfenced USAF base. And as events turned out, the fox chose wisely. The base commander, not yet wise to the nuances of community relations in Britain, halted the riders and ordered them off his base. Repercussions came swiftly. One of the huntsmen, a nobleman, contacted his representative in Parliament, who contacted Air Ministry, which got in touch with the Air Force Commander in the UK. The base commander was called on the carpet and ordered to invite the huntsmen to cocktails at the officer's club, where amends and apologies were made over some friendly toasts. A minor international incident was averted.

This was the commander's first initiation into some of the non-operational problems he would face while managing a USAF base in a friendly allied nation during peacetime. Eventually he would find out that getting along with the local populace was a must, almost as important as his operational job.

He might, for example, get a request from an archeologist to dig up his runway because Roman ruins were suspected to be underneath. He might find that, when his security fence was finished, several British families were living within the base confines. He would discover that British farmers might have rights to cultivate the land next to his runway. He would get letters from parents telling of their eligible daughters who would like to meet Americans. He might get a request from an ornithologist to supply an airplane for an investigation of the nesting habits of a rare bird in Iceland. He would be deluged with invitations at Christmas time for GIs to spend the holiday with British families. When B-47 operations commenced, he would receive hundreds of letters complaining about the noise.

After a year on the job, the new commander might be equal to almost any of these situations (all of which, incidentally, happened), but first he'd have to learn a lot of things about the Britain of the 1950s. He'd soon learn that it wasn't like the Britain of the early '40s when the red carpet was laid out for incoming GIs. He would discover a stereotype in the British minds, a picture of Americans as cigar-smoking, gum-chewing, comic-book-reading Romeos. He would learn that every Britisher, regardless of his station, was keenly aware of the place of Britain in modern atomic strategy, its nearness to Russian bases, and its vulnerability as a result of the American effort. He'd find that certain British elements, not all of them Communist, were exploiting this situation in a campaign to get American bases removed from Britain. He would learn the peculiarly British letter-writing habit, and he'd learn to look upon letters not as the work of cranks, but as legitimate and sincere messages, often from very important people in the neighborhood. He would become aware of the dense population of the British Isles, and the effects of his operations upon local communities would be forcibly impressed upon him. He would come in contact with the British press, an institution peculiarly unlike its American counterpart and one which pounces upon any incident regarding Americans to satisfy the curiosity of readers on this subject.

But understanding all these factors was only half the job. The commander, to get along with the local populace, would also have to understand his men—how they thought and acted in Britain. They were young men and they would not be in Britain long before they would discover that their GI pay could go a long way by British standards. Like all young servicemen overseas, their inhibitions might be lowered. They would, in some cases, attract camp followers to nearby towns. Some would seek out lower-grade local pubs or make regular excursions to London's Picadilly Circus. They would, in effect, contribute to the so-called "GI Problem" which British newspapers would periodically write-up in Sunday features.

However, the base commander would find that this situation could work for him instead of against him if his men were indoctrinated properly. On their own, his men would manage to get along well with local groups and would pretty much stay out of big trouble. They would marry British girls, so that in every village or town near an American base there were local GI brides with British families accepting a blue-uniformed American into their homes. GIs, on their own, would learn how to mix with local pub-goers, how to buy and be bought drinks gracefully, how to play a game of darts, and—most important—how to carry on a restrained and non-self-centered conversation.

At the same time, the intelligent base commander would work locally to improve community relations.

The case of Col. Wendell M. Van Sickle, commander of a SAC base in the British Midlands, provides a good

(Continued on page 53)

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CASS-SUST

A command performance that's popular

'On Target'

The Third Air Force's I&E show packs 'em in at English bases. Below, a scene from one skit

By Lawrence P. Bachmann

YOU'D think we had Groucho here or that we were giving away a set of dishes with a double feature," said an amazed Information Services sergeant. He was watching as the base theater emptied and another group filed in to see "On Target," part of the Third Air Force's Information program.

On a shallow stage before the fixed silver screen, six men put on a fast-moving, one-hour program that summarized the past month's world news, explained the work of one of the major segments of the Air Force, dramatized a phase of the struggle between the Free World and the Communist world, and treated Anglo-American relations.

"We're getting an average of thirty laughs in our hour show, and all in the right places," Jack Briley explained as he helped take the scenery offstage and move the next set on. "And we always get applause at the end of a show. That's not bad when you figure that we put on a command performance—the CO commands and everyone attends. When we've had the time we've given shows that weren't command performances and still the theaters were packed."

Rushing into the wings, Briley checked his costumes and props. In the upcoming show he would be the MC, give part of a discussion on world events, impersonate a harassed finance clerk, and play an airman in a sketch with a British actor.

"We're lucky at this base," Briley observed, counting the house through a hole in the curtain. "We only do five shows. Often we do six and at a couple of bases we crammed in seven, but that's cutting it too fine. We've got to get all this stuff packed, the lights down and our sound equipment out of here before the first film show starts. Then we eat a bite and drive three to five hours to the next base. If we're lucky we get there just as the last film show ends. We set up our equipment, put up the sets and hit the sack and we're ready for the first show as early as eight the next morning."

Despite a schedule that calls for playing almost sixty shows at eighteen different bases in three weeks, the troupe of "On Target" enjoys the job, the experience, and the feeling that they're doing something well in an important field—internal public relations. This is public relations on the grass-roots and most important level—the individual airman as the spokesman for himself, his Air Force, and his country.

There are no "Go Home, Ami" signs in Great Britain but there is something nearly as devastating—a latent hostility and opposition which the average airman finds in many of his contacts with the Britishers. Almost invariably it boils down to the challenging question, "Why don't you go home, Yank?" It isn't enough for the airman to reply that there's nothing he'd rather do but that he has no choice in the matter. "On Target" provides him with an understanding

(Continued on page 57)

2 *For more on service activities overseas, see "When in Rome," on page 50.*

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of why he is here, what his presence and the Air Force's mission means not only to the average Englishman, but to Europe and the Free World. It is the airman's knowledge and understanding of "why we are here" that provide better public relations and bolsters the morale.

It's one thing to put a man in a classroom and another to get him to learn. During the war all sorts of devices were used in attempts to hold the attention of the men, including one the British employed in some of their training films—a flash of an attractive, scantily-clad girl cut into the dullest portions of the picture. This kept the men on the *qui vive*, waiting for her next appearance.

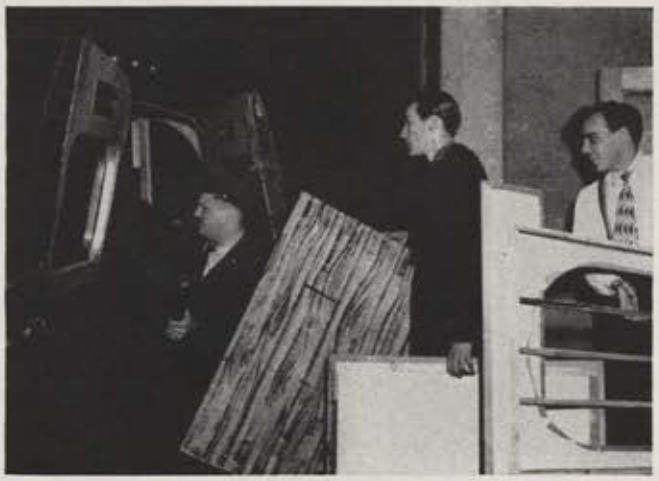
"The climate's too cold for that stunt," explained 1st Lt. Wilson P. Brydon, Chief of the Internal Information Branch of the Third Air Force. "We were told to work out some sort of format which could effectively be shown to every large Third Air Force installation in Great Britain. I majored in adult education at the University of Pennsylvania and hope to get my Ph.D. in that subject one of these days, so this assignment was right up my alley. Fortunately, A/2C George Lehr, who'd had experience in the theater, worked with me at my last post in Bordeaux. So he was transferred up here and we started developing a format. At about this time a civilian, Jack Briley, was in our office in lieutenant's uniform doing his two-weeks' mobilization assignment. Jack's getting his doctor's degree in English at the University of Birmingham, here in England, and he became interested in the program. The three of us sat down and hammered it out. Jack agreed to MC the first show and went out with George and the other four boys. It went over fine and we've hung on to Jack. He's now working as a civilian. He's thinking of changing the subject of his doctorate thesis from 'John Milton' to 'U.S. Air Force Bases I've Known in Great Britain.'"

Aubrey Woods plays Scrooge and George Lehr is Bob Cratchit in "On Target's" version of Dickens's classic.

"On Target" tours three weeks and is back at headquarters, just outside London, for the last week of the month. During that time Brydon, Briley, and Lehr write the new show. The sketches are written first because they call for some scenery and props. The sketches are turned over to A/1C Philip Sumptor of Philadelphia, who is the set designer during this period. On tour, he quadruples in brass as an actor, stagehand, electrician, and sound engineer. The complete show is tried out first at one of the smaller bases for timing, cutting, rewriting, and restaging, just as a big-time stage production tries out in New Haven, Boston, or Washington before going to New York. Ruislip, the headquarters of the Third Air Force, is the show's "Broadway."

The sketches are sharp, amusing, and informative enough to have the British Broadcasting Commission (BBC) interested in putting them on television. In one show Charles Dickens and Karl Marx were matched—in costume and makeup—to demonstrate that both men lived in the same place, at the same time and both wrote for the same reason—to reform London and England of the 19th Century. But whereas in "A Christmas Carol" (a short excerpt was staged) Dickens disapproved of filthy-rich Scrooge and had compassion for poor Bob Cratchit, he still had faith in the good of all men, including Scrooge. While Marx (Aubrey Woods in make-up and reading Marx's exact words) felt that the proletariat, as he termed the Bob Cratchits, would be "ground down forever by the ruthless capitalistic owners" unless the state took over and eliminated the owners.

Final touches on make-up before the curtain goes up. From left, Aubrey Woods, Jack Briley, and George Lehr.



The actors turn stagehand when the show moves on. From left, A/1C Krieger, Aubrey Woods, and Jack Briley pack up.

In another show a visit to NATO was enacted, including an informative and amusing briefing by a "British colonel," a "French commandant," and a "USAF major" followed by a sharp question-and-answer period of the type our visiting Congressmen hold when they visit NATO.

No attempt is made to dramatize the news roundup at the start of each show. Instead the techniques of the best radio and TV commentators are borrowed. In a simple but thorough manner, the three men, including the British member of the traveling troupe, alternate in discussing events of the past month in the world situ-

(Continued on following page)

ation, using charts and maps to illustrate the areas under discussion.

It is in the Air Force story and the Anglo-American relations sections of "On Target" that the show is at its best. There is more latitude allowed and our great tradition of kidding ourselves is demonstrated. In one show a sergeant from Personnel was quizzed by a panel of experts. Another month "The Chaplain Story" was staged. In yet another show there was a stage set suggesting a Finance Office with the Finance Sergeant handling a stream of airmen, officers, and wives, all demanding their rights—meaning money. Patiently the sergeant explained Finance's point of view in a scene that went like this:

Airman: How come my wife's allotment check didn't come through with an increase for the baby?

Finance Sergeant: When did you notify us of the allotment change?

Airman: Three weeks ago—long before the twentieth of the month, so you got no excuse there.

Finance Sergeant: Allotment checks all come from Denver, you know. We send the information there and they make the changes. But they send out over a million checks a month. They've got a battery of automatic machines that work at a fantastic rate, but it takes even them a little time.

Airman: Well, just let 'em know. I don't want to wait until the kid's chasing Marilyn Monroe.

One month the sketch on Anglo-American relations was set in a pub, that great British institution, over a game of darts between an airman and an English worker. Another time it took the form of a kidding interview between the American MC and a Britisher who'd just returned from a trip to the US. (The trip had not made him give up his bowler hat, rolled black umbrella, or striped trousers.)

When asked his impressions of American football, the Britisher replied, "I do go for the way you dress your chappies up. Rather like men from Mars. But no one seemed to run much. The player chaps just seemed to stand around drinking from jugs. But the crowd! Absolutely amazing, you know. They'd cheer and cheer, even when nobody was doing anything. But those girls on the side lines! Sometimes I cheered myself. Absolutely marvelous idea. I'd like to get a few girls for the pavilion at my cricket club." On food—"You don't seem to have any Brussels sprouts. And your cabbage—when one could get it—was never nice and moist. And your fish and chips, well!" The MC then summed it all up this way: "There are millions of people who like their beer warm, their cricket slow, their fires open, and their weather and cabbage wet. They don't want to change their country for ours and we wouldn't want to change ours for theirs. Simple enough idea. Why is it we sometimes have such a tough time swallowing it?"

Since each show does have a part for a Briton, the traveling troupe includes an English actor who is hired for a month tour. Aubrey Woods, a talented young actor, has been in two of the productions and everyone is hoping he'll be in more. Woods pitches in with the others, plays various parts in the show, acts as one of the news commentators, helps load and unload the scenery.

The other two members of the troupe are selected each month from various air bases and assigned for the duration of the show. Primarily they serve as drivers. "But we do everything," one of the airmen explained as he got ready to step on the stage and play Scrooge's clerk. "We do everything except collect money and take tickets. We were thinking of passing the hat but decided it wouldn't be refined."—END

About the Author

Larry Bachmann, who was on the wartime staff of this magazine, now is our only (though unofficial) overseas correspondent. Well traveled—he lives in London at present—he has been in Europe for the last couple of years. His byline last appeared in AIR FORCE *in May '54, with his article "Largest Campus in the World." Bachmann is also a novelist and has written for the movies.*

A/1C Krieger plays the irate airman who tries to track down his allotment check in one sketch in "On Target." Behind the pay window is Jack Briley.

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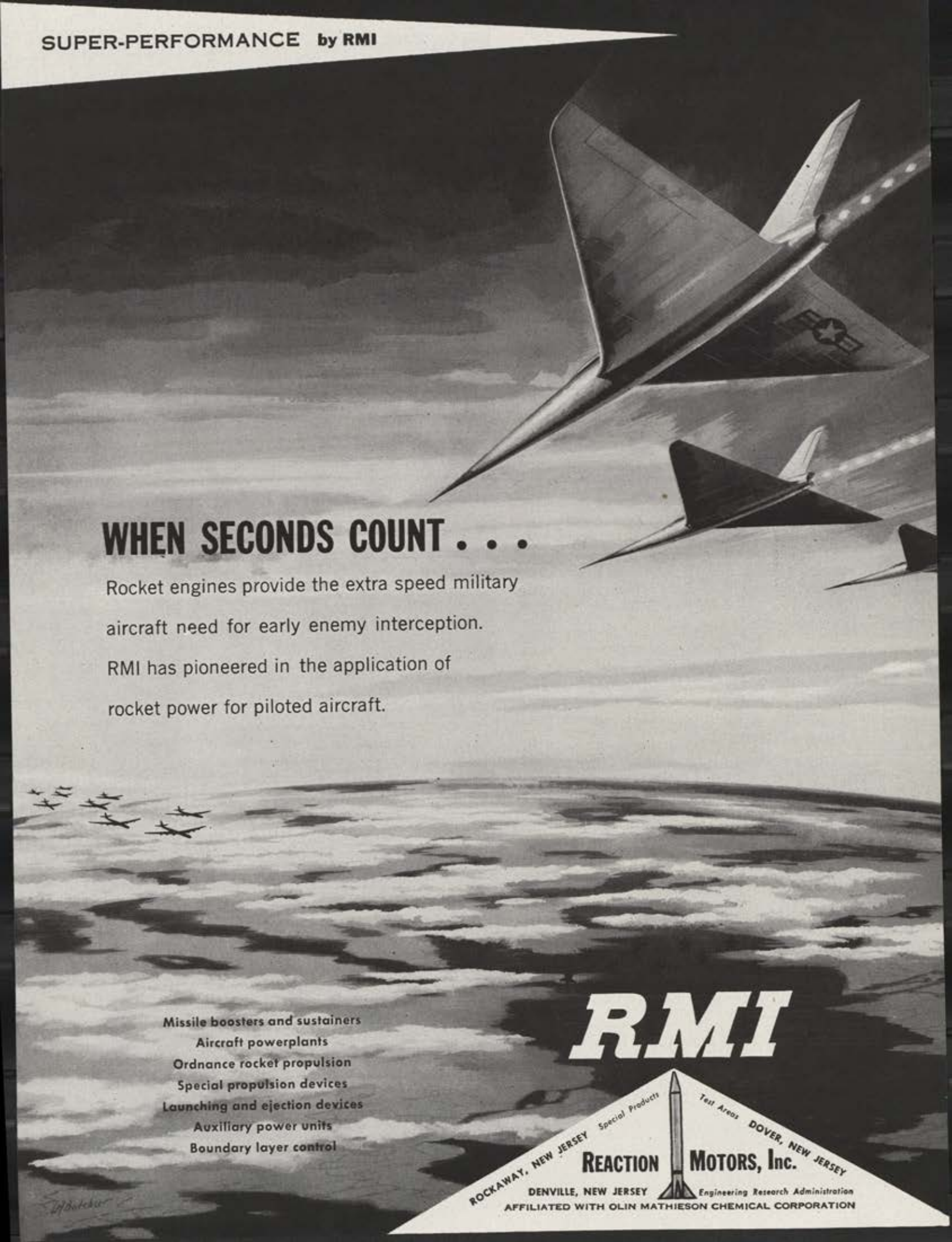

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"With the continued cooperation of the Industry-Science-ARDC Team, the United States Air Force can and will maintain its position of technical supremacy."

Thomas S. Power

Statement by Lieut. Gen. Thomas S. Power, Air Research and Development Command, United States Air Force

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JET BLASTS

AND WHERE DO WE GO FROM HERE?

A realistic and workable plan for civilians must be developed for successful evacuation of a bombed city

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 a minimum of $10 for each one printed. Please keep letters under 500 words.—The Editors.

How long can we wait to develop adequate plans for the survivors of an atomic attack, those who are still capable of crawling out from under the rubble into the ruins of a blasted and burning city?

This situation was pointed up to us by our little girl, who is learning in school what to do in case of an air raid. She acted as our private air-raid warden during these practice raids last year. She had the emergency procedure down pat. She showed her mother and little sister how to crouch under the dining-room table with their arms folded over their heads, and even convinced our little "blonde bombshell" that she should stay that way until the "all clear" sounded. After one of these sessions we began seriously to ask ourselves, "After the all-clear signal sounds, what will we do?"

Orderly evacuation of large metropolitan areas is very difficult and is just beginning to be provided for in many of our present plans. In addition, no real provisions have been made for surrounding small communities to absorb and take care of the material needs of a mass evacuation. Unless they are guided, men, women, and children will flee the target areas as a panic-stricken mob.

Without adequate food, water, shelter, communication, and transportation, the cloak of civilization will slip off rapidly, and pillaging, theft, and worse will take over. The surrounding communities will naturally step in and help, but without pre-planning there are limitations, and within a very few days it is highly probable that the unorganized mob will be in critical need of the basic elements of survival. Where does the stricken, bombed-out American go, ill-equipped for survival as he is?

This kind of a situation has been faced and planned for, to solve different problems it is true, by our military services. Our answer to this kind of a situation is the "Emergency War Plan." This is a plan developed in great detail, tried out and checked over and over again to eliminate all possible flaws.

I sincerely believe that this kind of detailed planning must be applied to Civil Defense. It will require wholehearted support, including personal sacrifice, by our civilian population, especially those living in the large metropolitan and industrial areas. And this support must be backed up one hundred percent by federal and state laws.

Self-sufficient camp sites or dispersal centers could be set up on the outskirts of our large metropolitan areas. Prefabricated, easily assembled, dormitory-style buildings could shelter refugees until more suitable family units could be constructed or rehabilitated in the bombed-out areas. Food would be stored ahead of time in warehouses and issued to central kitchens and dining halls. Temporary clinics and hospitals would take care of the sick and wounded. Schools could be set up to go into operation with practically no delay or change in curriculum. This also applies to churches. I am sure religion will seem more important to all of us after the "all clear" has sounded.

We could provide dispersed stockpiles of construction equipment—lumber, concrete mix, reinforcing rods, pipe, wire, and the tools to put them together.

Government regulations should require the registration of all civilians so that each can be fitted into a proper job. Housewives, school teachers, nurses, doctors, storekeepers, cooks, businessmen, construction workers, heavy-equipment operators, doctors, lawyers, policemen, and firemen—each would be assigned to specific duties in the camps. This kind of regimentation is distasteful to an independent and free people, but it should be necessary only for a relatively short time. It is a small price to pay for the chance to recover from such a staggering blow. Certainly something like this must be done if we are to develop a realistic and workable civilian defense program.

When such a plan goes into action, all of us will have to move fast and react automatically. We will have to do some advance planning of our own so that small packs of emergency clothing, staple food, and first-aid kits are immediately available. Everyone would have to wear color-coded identification tags and possibly color-coded helmets and arm bands.

Any evacuation plan must be planned in detail so that each neighborhood has a rallying point for uninjured and walking wounded. Separate crews and teams, such as we have now, would be responsible for first aid and rescue work for the seriously injured and trapped victims.

Separation of mothers from their young school children will be one of the primary causes of panic. So special pains should be taken to have school children dispersed to designated collecting points and then sent to the camp to which their family is assigned. Fathers and heads of families would go to their families after completion of initial emergency duties. Many fathers will have two jobs in civil defense—one during the period immediately before and after a raid, and one at the camp.

Primary and alternate rallying points and transportation systems must be provided. Each of these must be capable of supplementing the individual emergency provisions of the group assigned for at least twenty-four hours. This, of course, will not be possible in any area contaminated by "hard" injurious radiation. Being able to occupy a rallying point for forty-eight hours would allow for possible doubling up and re-routing of transportation.

Camps should be in full operation within seventy-two hours of the "all-clear" signal. Plans should provide for coordinating emergency aid and transportation and organized relations to be established with surrounding suburban communities.

Picture the contrast between a well-organized plan and the panicky conduct of a fear-crazed mob.

Isn't it worthwhile to assure ourselves of survival and continuation of our democratic way of life after enemy attack? If we make a real American effort, each of us will know beyond any doubt that we can go on after the "all clear" signal sounds.

Maj. R. T. Duff
Dayton, Ohio

That Degree Again!

While much can be said about improving the what and how of teaching at college level, the necessity of college at all for a profession cannot be reasonably disputed [see "Bootstrap or Blackjack," AIR FORCE, December '54]. Any college graduate will agree with both of these ideas . . . providing he hasn't stopped thinking—really—with acceptance of the sheepskin.

Let's center on the thought that we are trying to make the Air Force a profession and do everything possible to provide competent, informed managers in the numbers needed. Is the Air Force less important than the medical or legal professions, to name only two? How much education is required for these jobs, and does the fact that some doctors and some lawyers aren't as expert with word or pen as most in the information business argue that doctors and lawyers do not need higher education?

College doesn't impart talent. It tries to assist it. Real talent makes its own way but, alas, most of us need a few tools just to make a living, and college gives a few tools. And it's about as nonsensical to question college for the AF officer as to opine that flying by the seat of the pants really beats instruments.

Perhaps today many hold good jobs without degrees. But check the employment ads and specifications in industry. A simple BA degree is rapidly giving way to the MA as a basic requirement. What with government-financed education for several millions, just guess what the census will show ten years from now on the subject of education and managerial positions.

I admit the college student, generally,

(Continued on following page)

doesn't get good value for his money because teaching methods are archaic—but let's not take the ridiculous attitude that college isn't necessary for the AF officer or couldn't help any AF member.

Edward J. Carlin, Jr.
Philadelphia, Penna.

A Trojan Horse?

It is heartening to have a man of the military stature of Field Marshal Viscount Montgomery speak out on the subject of Air Forces in today's defense picture.

However, I question the use of the word "airpower" in describing the thesis. It is not a proposition based on long-range nuclear power as the primary force in a national or "Western" strategy. It is a thesis of a ground general who sincerely believes an Air Force should be given a bigger share of the burden of any future war to make ground operations tolerable—but—that such a force cannot, today, be a decisive factor. The general feels endurance and weather problems must be solved . . . "then airpower will be the decisive factor in warfare. That time is not yet." Airpower can do the job. And it can do it *today*!

The air battle he envisions is won so that the ground troops may advance. Our nuclear power is to be wasted on enemy ground forces (at least in the early stages) instead of an immediate attack on the industrial heartland that makes all military effort possible. The manpower problem cannot be dismissed as something resulting from the politicians' disinclination to provide troops. We simply do not have the troops. Nuclear power must be used because it is the most effective method of denying to a thousand Soviet divisions the means and will to wage war. The purest object of war is to *disarm* the opponent.

A strategy based on airpower must be an *offensive* force. Regardless of the most advanced modern weapons and increased "cross-country" mobility (in view of recent experience the two do not appear to be compatible), a handful of soldiers cannot hold the Soviet Army at bay. In our anxiety to draw adherents into the camp of airpower we must beware of a Trojan Horse, however sincere the individual may be. The first requisite must be an understanding of the tremendous capabilities made possible by the marriage of the jet age and nuclear power.

We must, as someone has said, attack the Soviet Goliath through the air as did the first adherent of airpower, David. The air blow can and must win. A wounded Goliath with a hand or foot cut off could be a dangerous adversary. "Pax Britannica" followed the "Pax Romana" of 2,000 years ago. With the waning of sea power, perhaps with the marriage above we can give the world a "Pax Atomica."

"If the trumpet give an uncertain sound, who," indeed, "shall prepare himself to do battle?"

John Brooks Devoe
Lexington, Mass.

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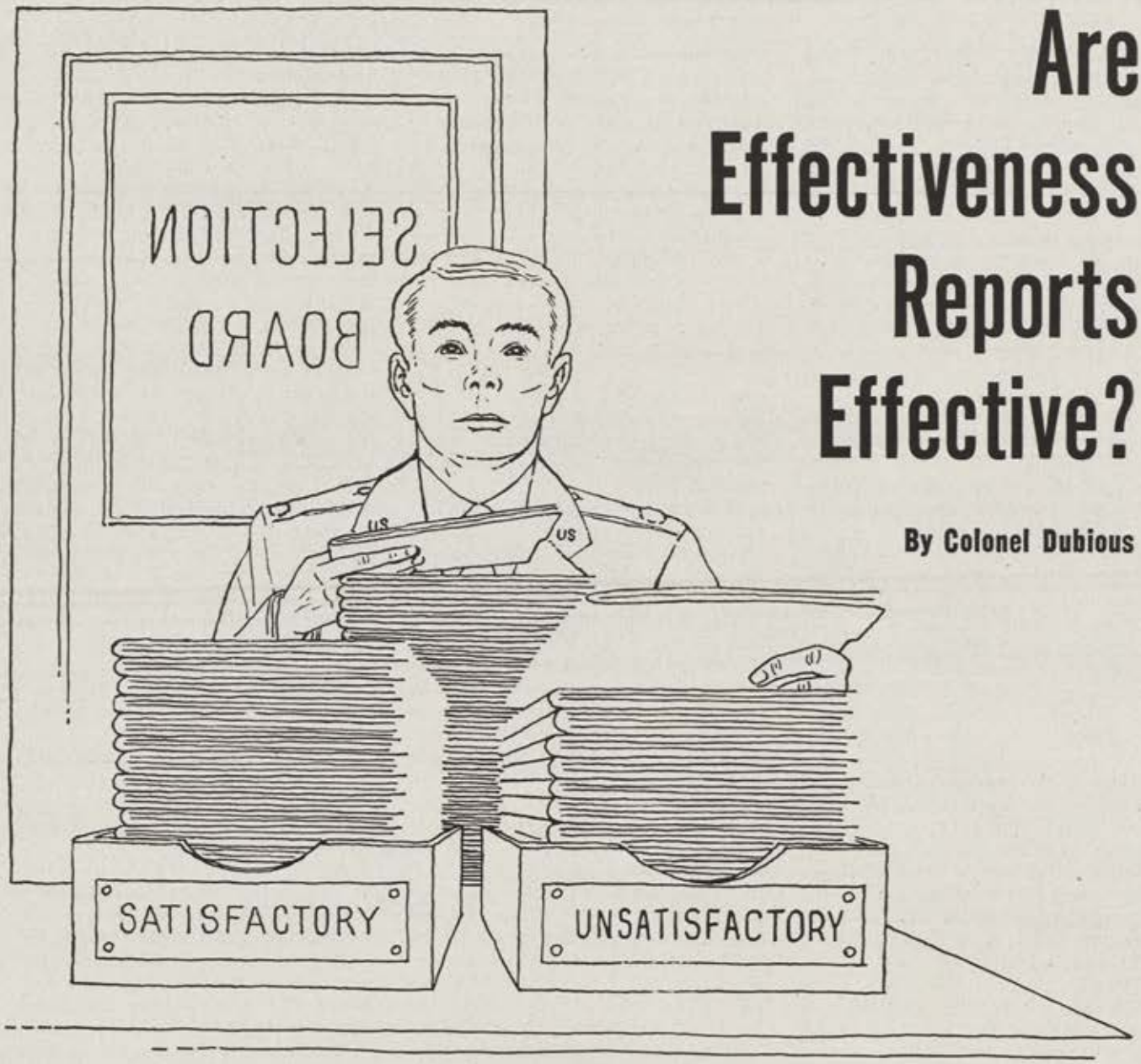
MORE POWER FOR AIR POWER

Are Effectiveness Reports Effective?

By Colonel Dubious



ONE OF THE big gripes in the Air Force today concerns ranks. Not just griping, but specific complaints, some valid, some not so valid. Where there is so much smoke there must be a little fire.

Examine any list of a given rank. You will probably find officers there who couldn't command a corporal's guard for you. You will certainly find some whom you consider less able than some of their juniors. How did this apparent inequity occur? I think it's because of the "record" from which a selection board works.

What is this "record" that controls an officer's promotions? If the record determines who shall be the generals in our Air Force, it should be dissected and examined carefully. If it can allow the selection of men not actually fit for high rank, let's see why. If it holds back or eliminates valuable officers, let us find out why that happens, too.

Your Effectiveness Reports, and the list of your assignments, decorations, and schooling make up your record. The principal ingredient is the collection of Effectiveness Reports. Derogatory charges in your Effectiveness Reports will put your file in a low-priority stack. These remarks show up in the so-called "word picture" or "Comments of the reporting officer." Under the present set-up, you can have a high numerical rating but still get low consideration for advancement because of unflattering "Comments of reporting officer." On the other hand, routine complimentary comments in that section can get a promotion for an officer who has not earned it. The "Comments" can make or break an officer's career.

Regulations say that you must be rated periodically, normally by your immediate superior. Then the report goes to the endorsing officer, who is the reporting officer's immediate superior. He studies the report, concurs or disagrees, then signs it and sends it to Hq., USAF to be put in the record.

Your collection of Effectiveness Reports is always available for your inspection in the Pentagon. Whenever you're in Washington, you can look at it. If official business doesn't take you to the Capital, you can take some leave and go there at your own expense. The records are in the subbasement. It shouldn't take you more

(Continued on following page)

than half a day to find them. If you can't get to Washington, you can authorize another officer, in writing, to audit your file for you. He may not copy any part of it, but may digest it and tell you the gist of it. In recent years, a field file of these reports has been started at the headquarters of the major command or numbered air force to which you're assigned. Now you can see half a dozen of your most recent reports without going to Washington. But you still may have to travel a thousand miles or more in order to get at the field file.

If a report calls you "Unsatisfactory," or if it alleges misuse of public funds or serious misconduct involving moral turpitude, the report must be referred to you for comment. Otherwise, even though it may contain highly derogatory comments, you'll not see it, unless the reporting officer chooses to show it to you, until you can travel either to Washington or to your field file.

If the properly designated reporting officer feels that he is not fully qualified to report on any officer, he may delegate the rendition of the report to a better qualified person, stating his reasons on the form.

This is the way an officer's value to the service is recorded, for selection boards and posterity. Selection boards study the Effectiveness Report files, rejecting those which contain unsatisfactory or derogatory entries and arranging the others in order of merit. The promotions go to those at the top of the list, as vacancies occur.

On the surface, this looks like a foolproof system. But it doesn't always work out that way. And there must be reasons. Let's look at some.

Here's one. Your immediate superior often is miles away, so that what he knows of your ability must come from infrequent contacts plus the advice of staff officers.

Herein lies a pitfall. Who hasn't had a run-in with staff officers of next higher headquarters? Sometimes to accomplish your mission or protect your men, you may disagree with a staff officer. He, in conscious or unconscious defensive reflex, gives the chief an unfavorable opinion of you. Since the chief signs your Effectiveness Report, the temptation is strong to protect yourself in the clinches by making sure that you don't anger the staff officer.

This leads us to another loophole, forbidden by regulations, but condoned by usage because "the king can do no wrong." Too many commanders delegate the preparation of Effectiveness Reports to staff officers, but sign them themselves. There used to be a specific space for the purpose of stating that the rendition of the report had been delegated to a specific person. For some obscure reason, the present form does not provide space for a statement of delegation. Thus, it is now ridiculously easy for the commander to delegate the rendition of Effectiveness Reports without acknowledging that he has done so.

A selection board, on reviewing a derogatory report, says, in effect: "We shall have to pass over this man. A senior officer has reported him in derogatory terms." The truth of the matter may well be that a glorified clerk has reported him in derogatory terms. The senior officer has only signed the report.

If this keeps up, you must kowtow not only to the general himself, but also to all of his staff. Surely no one would argue that such wholesale salaaming is healthy for the Air Force.

The endorsing officer on an Effectiveness Report has a function which, if done properly, would eliminate many abuses and injustices. According to regulations, the endorsing officer must study each report and either concur or disagree in writing. This implies that he knows what the report is all about.

But the endorsing officer can qualify his endorsement by saying, "I do not know the officer reported upon, but have confidence in the judgment of the reporting officer." This rubber-stamp phrase adds the weight of the endorsing officer's rank to the conclusions reached in the report, although he does not know any more about the matter after he signs it than before.

If we improve the Effectiveness Report system, we shall have gone a long way toward improvement of the selection system. The following changes seem in order:

- First, any Effectiveness Report containing a derogatory item should be referred to the officer reported upon, for whatever comment he may desire to make. The benefits would be manifold.

The officer reported upon would learn where he had gone wrong, so that he could mend his ways.

No derogatory item would appear unless the reporting officer were willing to support his allegations in a free and frank discussion with the officer reported upon.

The properly designated reporting officer would be more likely to write the reports for which he is responsible. How could he defend someone else's opinions against the determined challenge of an officer who felt himself unjustly injured?

It would let the officer reported upon know at once how he was being rated, rather than months or years later, so that he could take steps to refute any unfair or untrue entries.

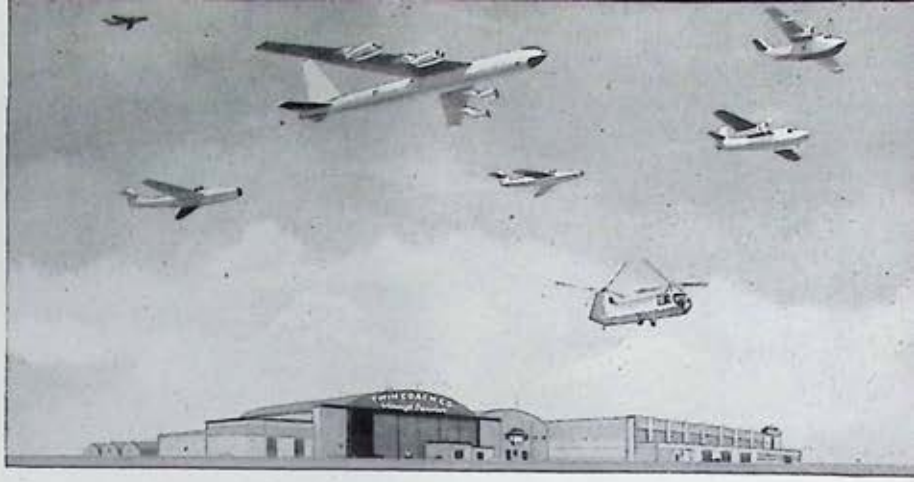
- Second, abolish the meaningless phrase: "I do not know the officer reported upon, but have confidence in the judgment of the reporting officer." Substitute for it the following certificate: "I am familiar with or have investigated the performance of the officer reported upon and concur in the report or disagree for the following reasons: . . . etc." Then the function of the endorsing officer will mean something. Now it means nothing.
- Third, tell each officer who his properly designated reporting officer is. Then overloads can be avoided, each officer will know whom he must satisfy, the officer may feel free to do his job as his sense of duty dictates, without fear of displeasing some minor functionary who may cut his throat later.

These reforms would eliminate many of the injustices in our present Effectiveness Report system.

Selection criteria need but little change, once a reliable yardstick is furnished the selection boards. However, three specific changes in procedure would help.

- We should allow board members to discuss cases with one another, instead of following the present rule by which members agree not to try to influence each other. Through such discussion, a member who knows an officer up before the board can share his information.
- We should abandon the practice of having subordinates arrange the records in stacks based on any basis other than seniority. The high-ranking officers on selection boards should be able to masticate their fodder without having it predigested.
- Let the board members weigh the good against the bad in the candidate's record, instead of the present procedure of setting aside all records containing derogatory entries until after those which do not contain derogatory entries have been considered. Let the candidates take their turns by seniority and either succeed or fail without regard to those who are to come along later on the promotion list.

With the changes in effect, the time would not be far off when the "best qualified" method of selection would advance the truly best qualified officers into the positions of responsibility in our first line of defense.—END



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Allison T40 Turbo-Prop lifts Navy fighter straight up

When the Navy's revolutionary new interceptor — the Convair XFY-1 — takes off and lands, it gets all its lift from its dual rotating propellers which are driven by Allison T40 Turbo-Prop engines.

That means the power package produces greater thrust than the weight of the aircraft for take-off and slightly less thrust than weight for landing. This delicate landing operation requires the engine to deliver positive and dependable power in the exact amount called for by the pilot.

The Allison T40 engine twin power sections deliver a mighty 5850 horsepower for take-off. In level flight the pilot can shut off one power section to efficiently cruise or he can open the throttle wide on both power sections for maximum power and speed.

This VTO fighter was designed to take off and land from a destroyer's fantail or a freighter's deck which means that each ship in a convoy can carry her own defense against attacks for the entire voyage* — promising greater safety for these surface craft.

Along with Convair and the U. S. Navy, Allison takes great pride in the spectacular success of this new type aircraft and in the simple accolade — "Well Done."

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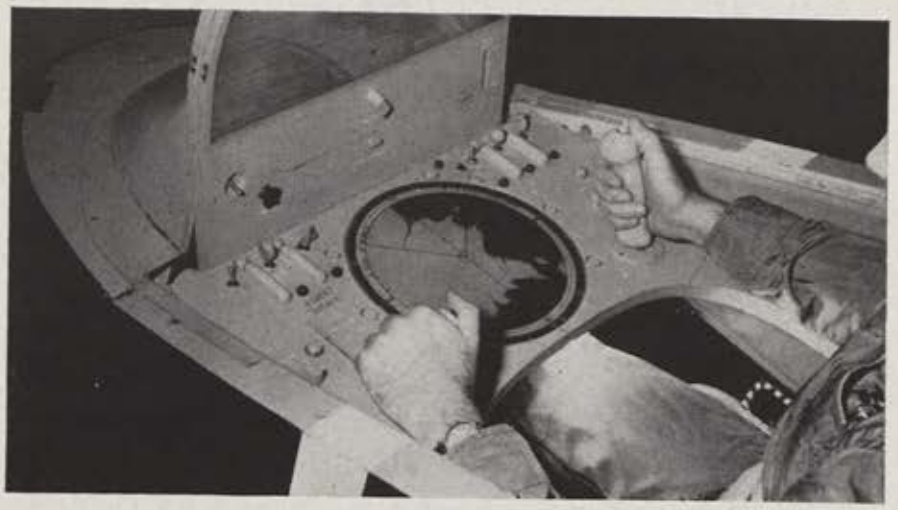
Tech Talk

By Lee Klein

At Mather AFB, Calif., **student navigators** step onto a platform inside a twenty-two-ton **tubular steel sphere** and navigate a make-believe plane through a star-studded, make-believe sky for some very **realistic training.** They can, for example, "fly" an accurate course from southern California over the North Pole to Bengal, India—a distance of nearly 8,000 miles—without leaving the concrete building that houses the mammoth globe. The device that makes this possible is the **D-2 Navigation Trainer,** developed for the Air Force by **Link Aviation, Inc.,** Binghamton, N. Y. The students, training in high-altitude, high-speed, celestial navigation, take fixes on two or more of the **500 tiny lights** positioned on the inside surface of the thirty-seven-foot dome to duplicate the major stars of thirty-one constellations over the northern hemisphere. The dome is set on two axes and

Interior of the Link High-Speed Navigation Trainer, looking up toward the "stars" of the northern hemisphere.

rotates above the student to simulate the plane's motion. A recorder in the instructor's area plots the ground route of the simulated plane to check the accuracy of the navigators in plotting their positions and courses.



The instrument panel of the future may look something like this. Vertical and horizontal flat-plate television tubes may replace conventional dials.

Veteran fliers have seen **aircraft instruments** evolve from a couple of primitive gauges to the complex maze of dials that confronts the pilot of a modern jet. Now, thanks to a flat, transparent television tube developed for the Navy by **Willys Motors, Inc.,** pilots of the future may go back to a **simple instrument panel** but still receive **all the information** needed for high-speed flight. Developed in connection with a long-range Navy program for simplifying aircraft instruments, the tube is said to make possible an instrument panel consisting of **only two basic instruments.** One would be a **semi-circular plate** mounted vertically and directly in front of the pilot showing altitude, speed, and attitude as well as such physical features as mountains (depicted artificially). This instrument—transparent to permit forward vision during contact flight—would tell the pilot all he needs to know to fly the aircraft about its three axes. The second instrument would consist of a **round plate** mounted below the first (see cut), just inside the cockpit rim. Broad physical features of the earth below would be depicted by analogy—somewhat similar to that of a radar map. Information necessary for navigation or traffic control would also be shown on this instrument. The two instruments would integrate instruments now necessary to determine fuel consumption, power settings, and other data. Another aim of the program is to reduce the control system to two basic controls: **a control stick** and **a throttle.** The Navy expects that the first experimental aircraft using this instrument and control system will be flown **about 1958.**

Two giant motors, said to be the world's most powerful, will soon be whipping up winds of **3,000 miles per hour** in the Air Force's new transonic and supersonic wind tunnels at the **Arnold Engineering Development Center,** Tullahoma, Tenn. The two motors were built by **Westinghouse Electric Corporation** and are rated at 83,000 horsepower each. When the tunnels are in full operation, man-made gales will race around two separate closed courses inside a huge pipe that is nearly wide enough to hold both tubes of New York's Holland Tunnel.

A 25-year-old Army private stationed at Fort Devens, Mass., has invented a **new jet engine** that he claims is **lighter and more powerful** than any now in use. **Pvt. Si Waitzman,** a graduate architect

(Continued on following page)

This jet-prop combination is a Boeing XB-47D, a standard B-47B modified to test the Curtiss-Wright T-49 turboprop engine. The engines are mounted in place of the four General Electric J-47 turbojets at the inboard pod positions.

This net was developed by Britain's Royal Navy to rescue injured or unconscious survivors who might be further injured by use of conventional sling.

from the University of Pennsylvania, has been granted a patent on an engine incorporating features of both the **ramjet** and the **turbojet.** Waitzman claims that engineers have ignored the simpler ramjet for the more involved turbojets because the present ramjet is useless below about 375 mph.

From left: the YQ-1B jet drone and its predecessors—XQ-1A; XQ-1 (Modified); and the XQ-1. They are products of Radioplane Co., a subsidiary of Northrop.

Two years ago (see "Almost Is Not Enough," AIR FORCE, March '53), we talked about a **ballistic missile** with a range of 5,000 to 6,000 miles and speeds of 10,000 to 15,000 miles per hour. A recent report by high Defense Department officials indicates that the US is **well on the way** to possessing a similar missile. The report disclosed that the US is now developing intercontinental guided missiles that will travel distances as great as **5,000 miles at speeds up to 9,000 miles an hour.** The weapons are designed to carry **nuclear warheads** and to hit a target area within a radius of ten miles. Besides the ballistic missile, the US is working on a jet-propelled type that is slower but can be more accurately controlled. The first clue that a long-range missile was in such an advanced stage of development came several weeks ago with the announcement that the US was making arrangements to set up a 5,000-mile **missile test range** from Florida to Britain's Ascension Island in the South Atlantic.

The Bell HSL-1 anti-submarine helicopter that appears to be standing on its ear (see cut) is undergoing armament tow attitude tests at Bell's Texas Division. The whirlybird is tied to a specially designed tilting platform, enabling it to be operated with one end elevated as much as forty-five degrees. Neither Bell nor the Navy would give any details of the tests.

The **US Army** has ordered eighty-four DHC3 **Otter** aircraft from the **de Havilland Aircraft** of Canada, Ltd. The first six Otters were to be delivered early this month, to the Corps of Engineers as supply aircraft on topographical survey operations in Alaska and the Carribean area. Subsequent planes will go to the Transportation Corps troop companies. The DHC3 was designed to operate in forward areas under rugged conditions for carrying **cargo, troops, paratroops,** or for **evacuation.** The plane has a fifty-eight-foot wing span, a one-ton payload and room for twelve passengers. It was designed for a short take-off run, has a low stalling speed, and cruises at 135 mph.

A Bell HSL-1 undergoes armament tow tests while tilted at a crazy angle.

The equipment used for the **fighter launching** technique developed by **ARDC** and **Martin** (see "Shooting the Breeze," February '55), includes a thirty-nine-foot, 35,000-pound launching platform, a fifteen-foot, 15,000-pound transport semi-trailer, a five-ton truck tractor, and a twenty-ton, truck-mounted crane. The fighter is rolled up a ramp on a vehicle about the size of that used to haul the Army's 280mm atomic cannon. When raised to the "launching angle," the pilot runs his jet engine at full speed and fires a **booster bottle.** The booster, says the AF, kicks the fighter off so swiftly that it is "immediately airborne." The booster bottle can be dropped when the propellant is exhausted.—END

The US Army has ordered 84 of these DHC3 Otters, built by de Havilland Aircraft of Canada, Ltd. They will be used for cargo, troops, and evacuation.

Friend or Foe?

RADAR is the central nervous system in today's supersonic planes. It identifies friend or foe; it flies the plane; it scans the skies; it fires the guns; it directs the landing. Stewart-Warner Electric is developing new techniques to meet all the requirements of rapidly expanding electronic devices and equipments.

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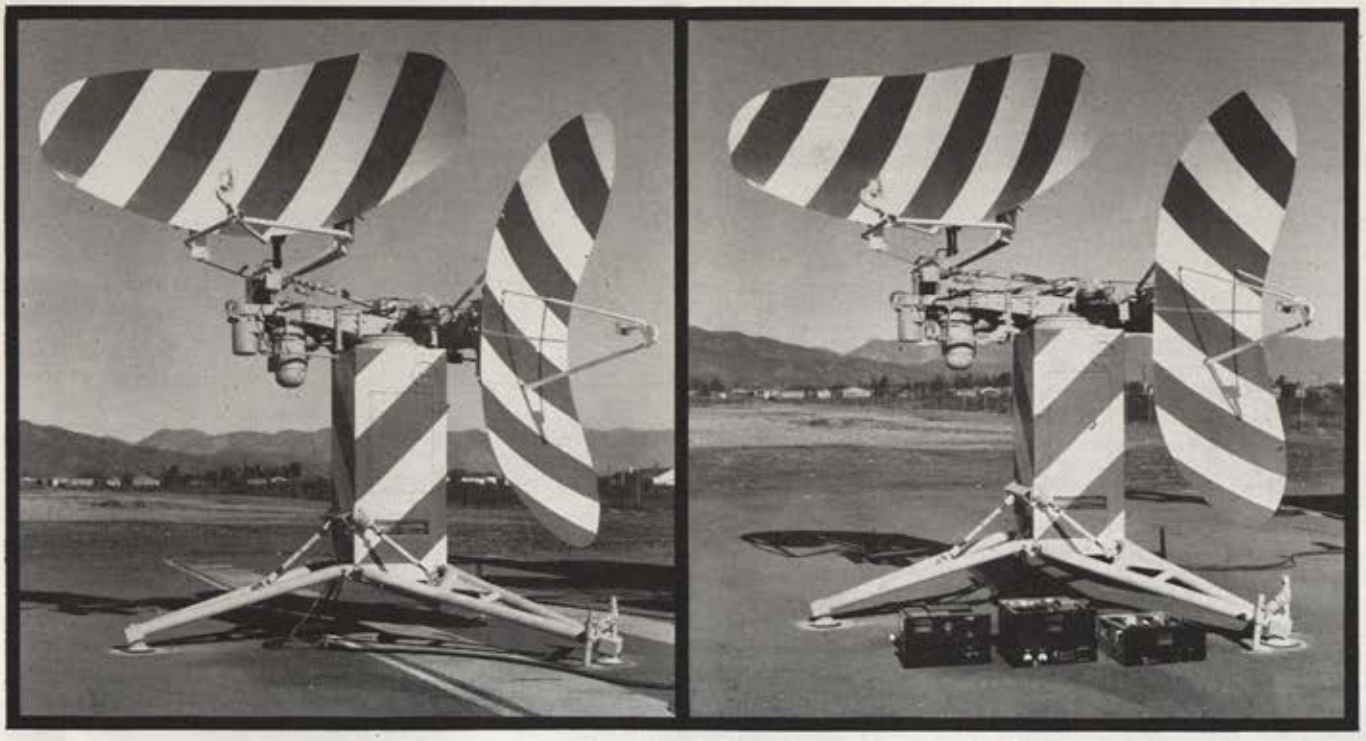
New higher power GCA **QUAD RADAR** unveiled by Gilfillan

Two Models Now Meet Complete Range of Air Traffic Problems

Over two hundred international aviation visitors to the successful demonstrations of the 50 kw. GCA Quadradar during November and December 1954 in Los Angeles were also shown a completely new higher power 200 kw. Quadradar.

The 50 kw. Quadradar in field demonstrations and during the U. S. Air Force and U. S. Army operational evaluation tests now under completion exceeded both military and civil airport requirements. Now the 200 kw. Quadradar provides even greater performance capabilities with 40% increased range and altitude coverage over the 50 kw. equipment.

Both the 50 kw. and the 200 kw. Quadradar have complete remoting controls and instant multiple runway coverage.



50 kw. Quadradar operated perfectly during several recent California rainstorms. Successfully tracked F-86 jet fighters beyond 30 miles and above 20,000 ft. Both 50 kw. and 200 kw. models (at right) include proven circular polarization to eliminate rain and snow clutter.

GCA RADAR AND ELECTRONICS

Gilfillan

LOS ANGELES

GCA

AROUND THE WORLD

200 kw. Quadradar provides 40% additional coverage in range and altitude. Both models are identical except for three small components — transmitter, receiver and high voltage power supply — as shown. These 3 components quickly plug in to replace the 50 kw. components.

The READY ROOM

RESERVE AND AIR GUARD NEWS

New chairmen have been selected for the Air Force Association's **National Air Reserve Council** and **Air National Guard Council.** Association President John R. Alison has named **Theron B. Herndon** of Baton Rouge, La., to head the Reserve Council and **Alfred C. Schwab, Jr.,** of St. Paul, Minn. (see cuts), to lead the Air Guard Council.

Herndon succeeds Frank T. McCoy, Jr., of Nashville, Tenn., and Schwab replaces Willard W. Millikan of Washington, D. C.

The new Air Reserve Council chairman, a command pilot, is a brigadier general in the Air Force Reserve and holds a mobilization assignment as Deputy Commander of the Fourteenth Air Force. The Air Guard Council chairman, a senior pilot, commands Minnesota's 133d Fighter Group and in civil life is sales promotion manager for a pharmaceutical foods company in Minneapolis.

Herndon, a consultant to the Louisiana State Aeronautics Division, has been an active pilot for thirty years. During World War II he served principally with Air Transport Command in all theaters of operations and for one year was a special assistant to the late Undersecretary of War Robert Patterson. One of the country's most active reservists, he served as president of the **Air Reserve Association,** which merged with the Air Force Association in 1953, and is currently a member of USAF's Air Staff Committee on Reserve Policy.

Schwab won his wings in 1942 and flew fifty-seven tactical missions in the Mediterranean theater during World War II. He was one of thirteen original members sworn into the reactivated 109th Fighter Squadron of the Minnesota Air Guard in September 1946.

The new Air Guard Council chairman was recalled to active duty for the Korean war on March 1, 1951, with the 133d Fighter Wing and assigned to Air Defense Command. When the wing was absorbed by the 31st Air Defense Division, he became director of combat operations for the division.

Released from active duty on December 1, 1952, Schwab was appointed commander of the 133d Group and has served since in that capacity. He received his eagles one year to the day after his release from active duty for the Korean war.

* * *

The Administration's long-awaited **National Reserve Plan** has been submitted to Congress. It is spelled out in **H.R. 2967,** introduced by **Rep. Overton Brooks,** Democrat from Louisiana, a member of the House Armed Services Committee.

Alfred C. Schwab, Jr.

Theron B. Herndon

This legislation is aimed at producing a total reserve strength for all services of approximately **3,000,000** by the end of Fiscal Year 1959. It contains a number of options as reported in AIR FORCE Magazine (January '55), including one that is anathema to Air Force people.

This option permits **up to 100,000 young men** to elect **six months of active duty** followed by nine and one-half years of service in a reserve component. It is an open secret that the active Air Force is opposed to this option on the grounds that it will **affect recruiting adversely.**

The Air Force position received **solid support** last month from both the Air National Guard and Air Force Reserve Policy Committees.

Summoned to the Pentagon for a weekend meeting, the committees were briefed for a full day on the National Reserve Plan before they decided they did not like those provisions of H.R. 2967 which directly affect Air Force.

The National Guard Committee simply announced its oppo-

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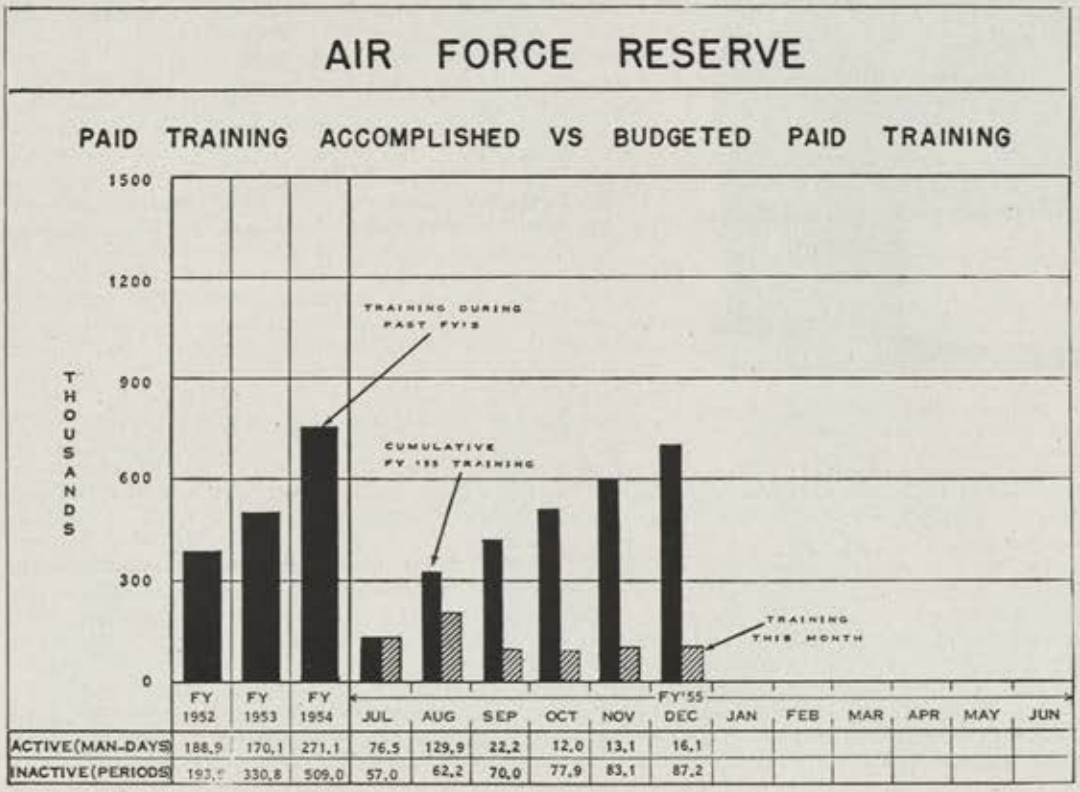

Participation in the Air Force Reserve training program is definitely on the upswing, as this chart shows. Because of the unexpected growth in the numbers taking part in pay status from July 1 to the end of December, the program was revised upward by ten percent in drill status and 26 percent in the number of man days allocated to the active-duty portion of the program. The number of persons who took part in paid training the first half of Fiscal '54 just about equalled the number for the complete previous fiscal year.

sition. The Reserve Committee recommended that the Secretary of the Air Force attempt to have deleted from the bill the six-months option.

Airpower people are not the only ones opposed to the National Reserve Plan. As soon as the program was sent to the Congress by Defense Department, the **American Council on Education** criticized it sharply.

This group insisted that the six-months feature of the plan would keep young men away from their college work for at least one year and possibly two. It also complained that the program was confusing, pointing out that when the numerous options under H.R. 2967 are added to those already available under existing laws, the avenues of service become so myriad that young men will find it difficult to elect the proper choice.

Straws in the legislative wind indicate that the National Reserve Plan will encounter severe turbulence in the Congress. Even before the introduction of NRP, **Sen. Richard B. Russell,** Democrat from Georgia, chairman of the Senate Armed Services Committee, offered the American Legion-sponsored plan which, in essence **substitutes** a training program of 1,000 hours for the Administration's six months and calls for a reduction of active-duty forces to two million as the reserve components build up with thousand-hour trainees. This plan is outlined in Senate bill No. 2.

Further, the House voted a four-year extension of the present Selective Service law.

Another factor that must be considered is **cost.** The Department of Defense estimates it will cost an **additional $123 million** a year just to train the 100,000 young men in the six-months category. Further, the National Reserve Plan contemplates reserve forces with much more modern equipment than they now possess. No cost estimate has been announced for the equipment phase of the program, but many statisticians insist that all-out modernization would mean adding **about $4 billion annually** to the budget.

The Administration and Defense Department, however, are committed to an all-out effort to have the National Reserve

Dr. Howard K. Rice (with pointer), Dean of Long Island University's Business Administration College, explains first military management course for inactive AF Reservists to, from left, Adm. Richard Conolly, president of LIU; Maj. Gen. Roger Browne, 1st AF cmdr.; Dr. Gordon Hoxie of LIU; and Col. Bernard Rose of the NYC Reserve Center.

Plan passed by this session of Congress and this effort will be made.

° ° °

The **Reserve Officers Personnel Act** of 1954, best known by its abbreviated title of **ROPA,** apparently will be permitted to go into effect **July 1** as it is now written.

Addressing a gathering of reservists in Washington last month, **Carter L. Burgess,** Assistant Secretary of Defense for Manpower, announced that the Department of Defense would not send a number of amendments proposed by the various services to this session of Congress.

Defense Department, Mr. Burgess said, has decided that the law should have a chance to work before changes are proposed. Air Force had proposed several changes, most controversial of which concerned date of rank.

° ° °

Community **opposition to jet operations,** long a problem for both the Regular Air Force and the reserve components, has now reared up in the cradle of the American Revolution—Lexington and Concord.

The 89th Reserve Fighter Wing is based at **Hanscom Field** in Bedford, hard by Lexington and Concord. Area residents have been holding meetings and circulating petitions complaining of the jet wing's flying activities and calling for its transfer.

Maj. Gen. Roger J. Browne, First Air Force commander,

Lt. John H. Doyle, falconer and 136th Niagara Falls ANG jet pilot, introduces his newest goshawk hunter.

last month made a **personal appeal** at a meeting of some 300 of the local citizenry for greater understanding of the wing's mission. At almost the same time, the **New Jersey Wing of the Air Force Association** launched a campaign for public support of a move to permit that state's 118th Air National Guard Squadron to operate jet aircraft at **Newark Airport.**

The squadron has been denied permission to fly jets out of Newark by the **New York Port Authority,** a joint New York-New Jersey group which operates the airport. The Authority's stand, however, reflects public opinion in communities bordering the field.

° ° °

Notes on the back of a Form 175 . . . Field training schedules for Air Guard tactical flying wings and their support units during this calendar year have been published by the National Guard Bureau. The first wing encampment will begin June 5 when the **136th of Texas** moves into **Gulfport, Miss., Municipal Airport.** The first separate squadron encampment, however, is scheduled to open the twentieth of this month—for **Alaska's 144th Squadron** at **Elmendorf Air Force Base.** In all, seven training sites will be used in the States. Besides Gulfport these are: **Otis Air Force Base,** Mass.; **Hancock Field,** Syracuse, N. Y.; **Travis Field,** Savannah, Ga.; **Collins Field,** Alpena, Mich.; **Natrona County Airport,** Casper, Wyo.; and **Gowen Field,** Boise, Idaho . . . Annual summary of **ANG activities,** this one for Fiscal Year 1954, is off the press. It points up the tremendous strides taken toward converting the Guard to **jet operations.** The document is not classified . . . NGB still requires reports of **squadron gunnery exercises** as outlined in **ANGR 50-04.** . . . ANG officers receiving **administrative function pay** have received a veiled hint that this money can be withheld if reports for which they are responsible are submitted **inaccurately** and/or **late.** NGB is particularly interested in aircraft status and combat readiness reports . . . Six spaces have been set aside for ANG in the **Joint Military Packaging** courses between April 11 and June 17.—END

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Reserve navigators get a break

New Tricks for Old Dogs

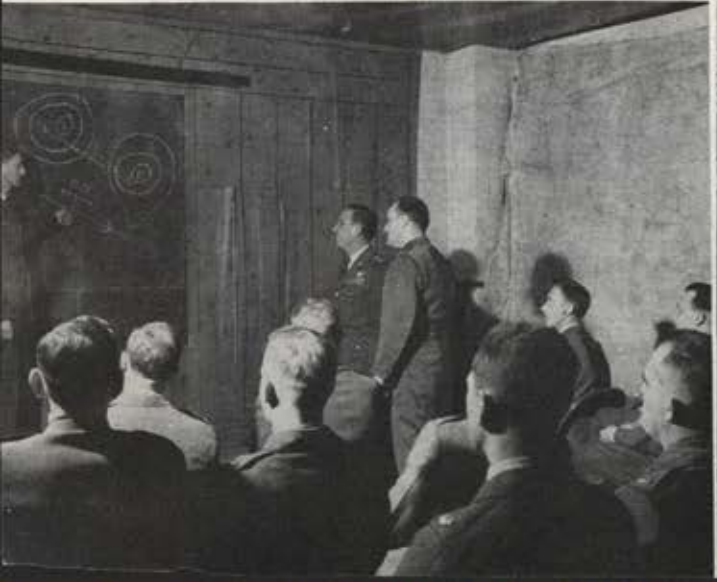
The first recruit in ConAC's new Navigation Training program uses an A-15 sextant as he takes a fix on the sky through a TC-47's astrodome.

THE Air Force has undertaken to chip some of the rust off a number of its Reserve navigators whose training was of World War II vintage. On the sound theory that in case of all-out mobilization there wouldn't be time to check out the many thousands of these navigators in the new skills the jet age demands, the AF this winter kicked off its Aircraft Observer-Navigator Training plan at Mitchel AFB, N. Y., home of ConAC. Nineteen other ConAC Air Reserve Flying Centers across the country will start the new program this spring. Reservists in both the Ready and Standby categories will get intensive training during drill weekends and summer tours for three-year periods. They'll work with qualified instructors and up-to-date equipment. TC-47 "flying classrooms" are now being made available to the centers, and a plan is afoot to use the more modern Convair T-29s later. The training is designed to provide a reserve pool of trained navigators for air-logistic duty—passenger and cargo airlift and air evac—in case war should come. To find out if you're qualified for the training, contact your nearest Air Reserve Center for details on how and where to sign up.—END

A pair of Reservists, Maj. George McInerney and Capt. Mathew Redding, are briefed on the Loran Supersonic Trainer by S/Sgts. Albert DeRienzo and Arthur Gagne.

The three-year navigator-refresher course covers everything from dead-reckoning to flight planning. Here trainees renew acquaintance with T-4 Loran.

1st AF's Maj. Gen. Roger Browne and Lt. Col. Robert Drum, of Mitchel Training Center, drop in on class discussing the principles of pressure pattern flight.



Interior of the TC-47. The trainer has nine navigator positions, each with its own instruments, plus three Loran stations, astrodomes, other gear.

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Youth Air Education in Michigan

DETROIT'S VANDENBERG SQUADRON BEGINS NEW PROGRAM WITH A TOUR OF SELFRIDGE

SQUADRON OF THE MONTH

Hoyt S. Vandenberg Squadron
Detroit, Mich.

CITED FOR

an outstanding Youth Aviation Education program. The Squadron co-sponsored a tour of Selfridge AFB, giving some 500 area high school seniors a close look at American airpower in action.

The young men of America have often been accused of a lack of interest in aviation. **Detroit's Vandenberg Squadron** now is doing something to remedy that situation in Michigan. The first of this series of **Youth Aviation Education** programs, in cooperation with the Office of Information Services at **Selfridge Air Force Base,** was on January 9.

On that day, buses loaded with more than **500 seniors** from area high schools left downtown Detroit for the base. The students were treated to a day-long tour of Selfridge, including luncheon with Col. William A. Tope, the Base Commander. Also on the agenda were briefings on the new **Air Force Academy** and the present **Aviation Cadet** program, a demonstration of the **equipment** jet pilots use and wear, and a "**scramble**" by pilots of the 56th Fighter-Interceptor Squadron, an Air Defense Command unit stationed at Selfridge.

Co-chairmen of the program were **Morton Hack** of the Squadron, and **Maj. Maxwell Gurman,** Selfridge Information Services Officer. For the success of this program, the Michigan unit has been named "AFA Squadron of the Month" for March.

Some sort of record for a turn-out representing all levels of AFA was set in Seattle last month when these men attended a regional meeting there—National President **John R. Alison,** Board Chairman **George C. Kenney,** Regional Vice President **Winfield Young,** Wing Commanders **Harold Hansen** (Washington) and **Robert Mitchell** (Oregon), Squadron Commanders **James Nelsen, Gunnar Sather,** and **Jack Wallace,** and past Regional Vice Presidents **Ashley Green** and **Hillford Wallace.**

The event was the dinner-dance honoring **Lt. Gen. Alfred A. Kessler, Jr.,** Fourth Air Force Commander, on the eve of his retirement (see "Airpower in the News," February '54). Three hundred persons gathered at the Sand Point Naval Air Station Officers Club, where area Air Force Reservists meet regularly, to pay tribute to General Kessler, and to hear the address delivered by President Alison. Referring to the state of readiness of the nation's airpower, Alison said, "Russia has already outstripped the United States quantitatively. If she further manages to gain the upper hand qualitatively, barring a miracle the Free World will succumb."

Neil Hines, Ranier Squadron member, was program chairman and toastmaster. Sather was one of the organizers for the dinner, which was co-sponsored by the 9086th Air Force Reserve Group.

Earlier, forty Regional leaders had met to discuss AFA developments and problems in the four-state area. At this meeting, Hansen announced the formation of a **new Squadron in Yakima, Wash.,** under the leadership of Henry Wagner.

Maj. Arthur Murray, altitude record holder, is welcomed home to Harrisburg, Penna., by E. F. Russell, publisher of the Harrisburg "Patriot," Mayor C. R. Robins, and Jack Gross, of the Olmsted Squadron.

The organization of the **first AFA Squadron in Delaware** is proceeding satisfactorily, according to a report from **Philip Elkin,** chairman of the organization committee. The unit, to be known as the **Delaware Valley Squadron,** is made up of members of the 512th Troop Carrier Wing (AFR), located at Newcastle County Airport, near Wilmington.

(Continued on page 81)

Col. William A. Tope, Commander of Selfridge AFB, tells a group of prospective pilots and WAFs what makes an F-86 tick, during high school seniors' visit to the base.

Lt. John C. Morrison, a pilot with the 56th Fighter-Interceptor Squadron, uses a visiting student as a model in a demonstration of flight equipment worn on missions.

NEW A-C CIRCUIT BREAKER

Military specification numbers as used herein are for purposes of product identification only and do not necessarily imply specification conformity.

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make J&H unit ideal for aircraft application!

An important component in the complete Jack & Heintz a-c system "package," the new J & H Type GC86 Circuit Breaker is designed to MIL-C-8379. The new breaker meets dimensional and performance requirements of the specifications and *weighs but 4.5 pounds.* It can be supplied as an individual component if desired.

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Latch employs "over-center" principle with roller bearing as latching surface. This design reduces energy necessary to trip latch and insures that breaker remains latched in extreme shock conditions.

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Main contacts are connected directly to plunger of closing solenoid. No levers or highly loaded bearings are required for contact actuation. Wear is eliminated through absence of both fulcrums and plastic contact-actuation points. The contact's long operating stroke eliminates frequent adjustment for accuracy.

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Interlock relay provides positive anti-pump circuit. Adjustment of interlock contacts is noncritical.

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Florida Wing officers include (rear) Bill Byron, Tampa; John Most, St. Petersburg; Alan Cross, Miami; Francis Brady, Miami Beach. Seated, James Hall, Tavares; Alex Morphonios, Miami; and George James, Daytona Beach.

The original contact for the Squadron was made by **Maj. James E. Walker,** Commander of the 2237th ARFC, who is lending valuable assistance to the program. Other key figures in the plan are Col. John S. Bagby, 512th Wing Commander, and Ralph Daugherty.

At the first meeting of the new Squadron, Regional Vice President **Willard Millikan** outlined plans for the Delaware Wing, and described briefly his record speed run across the country in an North American F-86 last year.

AFA's "Squadron of the Year" for 1954-55, **Santa Monica,** is lending its talents to the formation of a new **Los Angeles-area Squadron.** In January, Commander **James Czach** announced plans for the new unit, and the first meeting was held in Hawthorne on February 11. The new Squadron will be composed of AFA members in the Hawthorne-Glendale-Inglewood area.

Joseph D. Myers, Los Angeles Group Commander, 3727 Centinela Avenue, Los Angeles 66, or Czach will supply more information on request. The aim of the Group is to have the new Squadron chartered before Wing convention time, next month.

On January 15, members and friends of the **New York City Squadron #1 (WAF)** gathered at Manhattan's Sulgrave Hotel for a dinner marking the **eighth anniversary** of the Association's first all-girl Squadron. Honored guests at this annual event included National Secretary **Julian B. Rosenthal,** Regional Vice President **Randall Leopold,** and Wing Commander **David Levison.** Squadron Commander **Clara Haubrich** presided at the head table.

This Squadron is not only the first AFA Squadron formed exclusively of former WAFs or WACs but also the first unit formed in New York. It has consistently maintained a high caliber of programs, including its now-famous veteran's hospital parties at Christmas time.

Starting its ninth year of operation, the squadron's new officers, installed at the dinner, are **Alice Fischelis,** Commander; **Peggy Carr,** Vice Commander; **Amelia**

(Continued on following page)

The Battle Creek, Mich., Squadron gives new USAF recruits a send-off at the railroad station. Standing at far right are Oscar W. Brady, Squadon Commander, and Glenn D. Sanderson, Great Lakes Regional Vice President.

Wege, Recording Secretary, **Dorothy Wadsley**, Corresponding Secretary; and **Edna Schenk**, Treasurer. They will take office at the March meeting.

At a recent **Wing Executive Committee** meeting in **Toledo**, the Ohio Wing discussed details of the 1955 Wing Convention. As convention chairman, Commander **Fred Goulston** has appointed **Mrs. Mary Gill Rice**, who is setting out to make this the most successful meeting in Ohio since the National Convention there in 1947.

AFA President **John R. Alison** will be the featured speaker and principal guest at the banquet during the convention, and **Joe E. Brown**, a native of Toledo, has been asked to be Toastmaster. The Toledo Squadron, commanded by **Dean W. Huffman**, will be host to the two-day meeting on **May 7-8**, at the Hotel Secor.

Others at the committee meeting, besides Goulston, Huffman, and Mrs. Rice, were Bob Cranston, Wing Treasurer; Ken Vetter, Wing Secretary; and Jack Jenefsky, Wright Memorial Squadron (Dayton) Commander.

Detailed plans for **other Wing conventions** are not yet available, but the dates and sites of those announced are: **California**—April 30-May 1, The Hacienda, Fresno; **Illinois**—April 30, Sheraton Hotel, Chicago; **New York**—May 21, New York City; **Pennsylvania**—June 4, site not yet announced.

Glenn Yaussi, Commander of the **Lincoln, Nebr., Squadron**, has been appointed **Wing Commander** by J. Chesley Stewart, Midwest Region Vice President.

Yaussi has been the sparkplug of the excellent membership program of the Lincoln Squadron. He promises that his first goal as Wing Commander will be the formation of at least **two more Nebraska Squadrons**, each of which will copy the Lincoln membership plan.

A vice president of the National Bank of Commerce in Lincoln, Yaussi has been active in the Squadron programs since its formation early last year.

CROSS COUNTRY . . . New York City Squadrons held the third in a series of **combined Squadron meetings** on February 25 in the Wings Club. **Col. Bernard C. Rose**, Air Reserve Center Commander, spoke . . . **Explorer Scout Troop 444**, sponsored by **Santa Monica Squadron**, recently toured the facility at Long Beach Municipal airport . . . Toledo's **Richard Girkins** has been appointed Chairman of the city's **Aviation Committe**, after serving as a member of that body for several years . . . **Richard Trainor**, City Editor of the *Detroit Times*, was made an **Honorary Squadron Member** in ceremonies recently . . . Head of the organizing committee for the **Yakima Squadron** is **Henry M. Walker**, Lemon Real Estate Service, Yakima . . . The **New York Wing** is making available a perpetual **trophy** to the 1st AF Reserve Wing with **best recruiting** programs.—END

SAN FRANCISCO · AUGUST 10-14

Showcase for Airpower

1955 Airpower Panorama

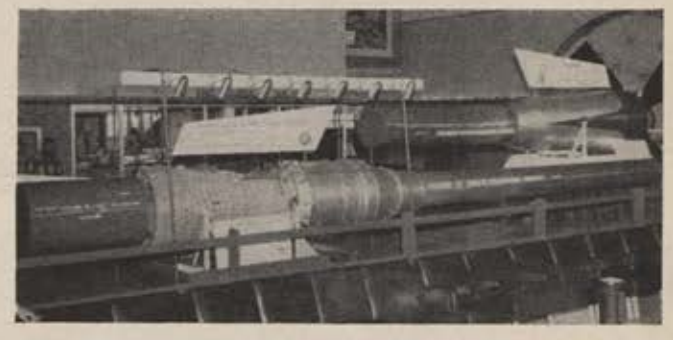
a Feature of AFA's 1955 CONVENTION

THE *Airpower Panorama*, a featured event of the Air Force Association's 1955 national Convention and Reunion in San Francisco August 10-14, will be a "showcase for airpower." More than 50,000 square feet of aviation exhibits will be on display for Convention delegates and visitors and air-minded citizens of San Francisco to view.

The Cable Car City's block-square Civic Auditorium has been leased by the Association to exhibit the latest airpower weapons and equipment. At least 100,000 persons are expected to view the displays, with no charge for admission to the hall.

To date, forty companies have purchased more than half of the industrial section of the exhibit hall. The US Air Force will display hundreds of its latest weapons and items of equipment. The scheduling of several Convention events in the exhibit hall will let Convention-goers see the latest in airpower.

Ten San Francisco hotels have set aside rooms for the AFA Convention. Reservations must be made through the AFA HOUSING BUREAU in San Francisco—not AFA in Washington. List first- and second-choice hotels. A $10 deposit is required on each room, and will be credited to your account. Room requests for the Fairmont will be acknowledged but not confirmed until April 1 in order to assure AFA officials and delegates maximum accommodations at the headquarters hotel. Reservations for other AFA hotels will be confirmed upon receipt by the AFA HOUSING BUREAU.



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Huntington			8.00-15.00
Sheraton-Palace	8.00-13.00	10.00-15.00	12.00-17.00
Sir Francis Drake	9.50-13.50	11.50-15.50	13.00-19.50
St. Francis	8.00-18.00	10.00-15.00	13.00-20.00
Chancellor	5.50	7.50	8.50
Plaza	5.00- 7.00	7.00- 8.50	8.00-10.00
Stewart	4.50- 7.00	6.00- 8.00	7.00-12.00
Whitcomb	5.00- 9.00	7.00-12.00	8.00-12.00

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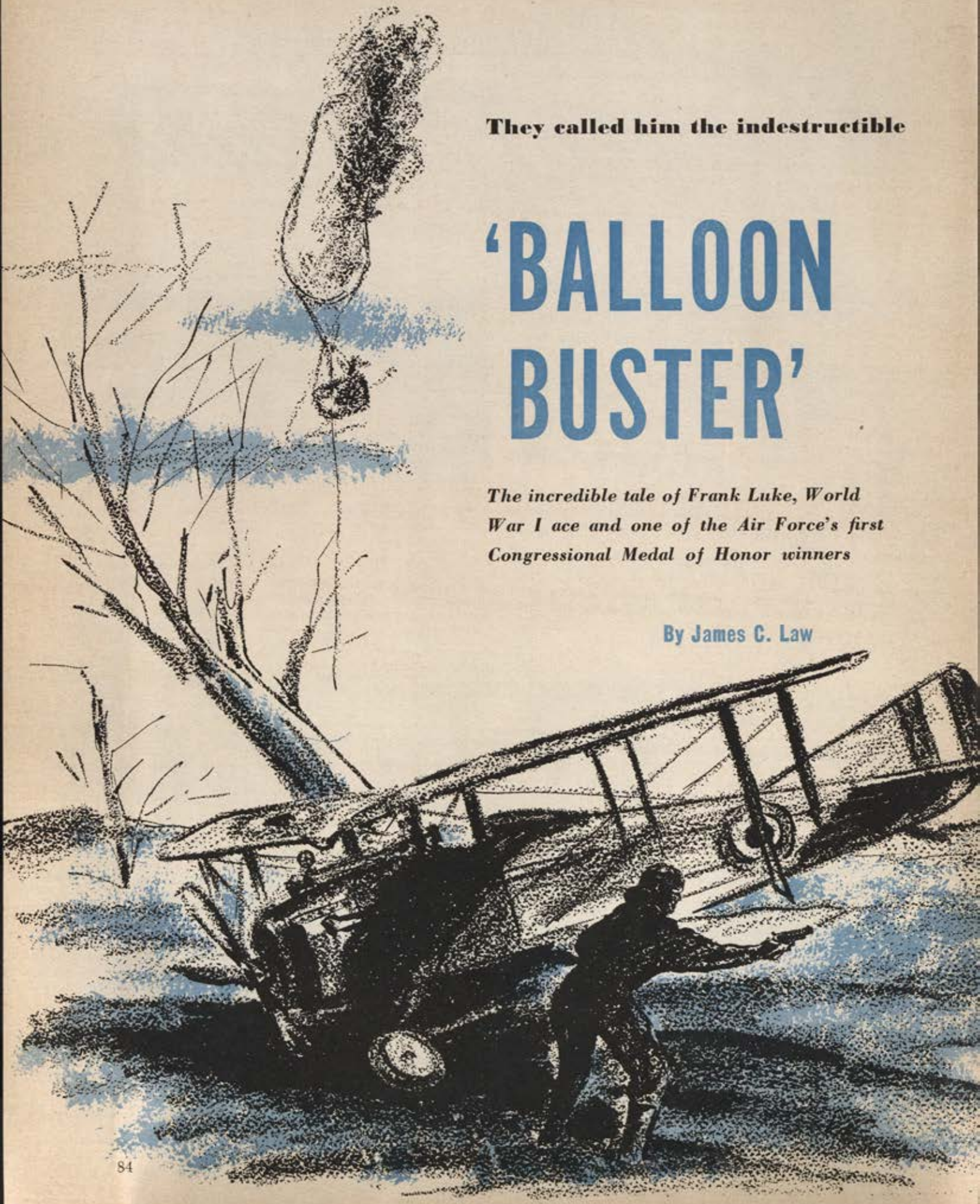
They called him the indestructible

'BALLOON BUSTER'

The incredible tale of Frank Luke, World War I ace and one of the Air Force's first Congressional Medal of Honor winners

By James C. Law



ONE wheel nearly touched the sandbag of the gun emplacement as the American pilot flew in and flipped the last grenade over the side of the cockpit.

He was heading back for another strafing run when it finally happened. He kicked left rudder and stood the Spad on its wing. There was a rip in the fabric by the cockpit and the force of hot metal tearing through his shoulder twisted him around in his seat. The airplane fell off and headed for the ground. But now the immediate shock of the wound was over, and the pilot eased back on the stick, sweeping over the still-blazing enemy gun emplacements. His own machine guns chattered in return as waves of nausea began to well up in his stomach.

He emptied his guns in this last diving pass and pulled up just high enough to spot the closest clearing. An open field lay dead ahead. The high whistle of the wind abruptly replaced the engine's roar as he cut the throttle and side-slipped down, fighting off the throbbing dizziness.

The little plane bounced off the uneven surface of the field, then settled back, and rolled to a shaky stop.

It was late in the afternoon of September 29, 1918, near the village of Murvaux, France. The American pilot was a twenty-one-year-old second lieutenant from Phoenix, Arizona, whom Eddie Rickenbacker called "the most intrepid air fighter who ever sat in an airplane." His name was Frank Luke, and he had just made aerial history.

Earlier at Austin, Texas, School of Aeronautics he had finished the regular nine weeks' course in seven weeks. At North Island, San Diego, he was first in his class to solo. And he finished final flight training in France at the head of his class in flying, number-two man in gunnery. But the big test was yet to come.

He was assigned to the 27th Aero Squadron, operating near Chateau-Thierry, in early August 1918. During the first week he flew only routine patrols, for new pilots were ushered away from areas where there was likely to be trouble. So Frank Luke learned early that to fight the way he wanted to fight, he would have to go it alone. And at the first opportunity, he headed straight for the enemy lines.

Until this day in mid-August, he had not even seen an enemy plane, so his idea was to head for the one spot

Frank Luke

where they were sure to be found. He pushed the little biplane to its ceiling and headed for the nearest German airfield.

He throttled back while crossing over the front to avoid detection, but once he was deep into enemy territory, he eased the Spad down, scanning the earth. Finally he saw a cluster of hangars and the dirt runway of the field near the horizon. And ahead of him, at a lower altitude, were six enemy Albatrosses. They were flying in formation, heading toward the field from the same direction as Luke.

He pushed the stick forward and dove down to their altitude. Then he opened the throttle and began to close the gap. The German fighters continued serenely on, confident of their safety this far behind their own lines.

Finally Luke was within twenty yards of the closest German ship. He was actually part of their formation and they still had not noticed him! He unloaded a long burst of incendiaries into a startled German's gas tank, then stood the Spad on its nose.

He had drawn his first blood, and yet, because he was so far behind the lines that no other Allied planes or observers could confirm the action, he could not officially claim the kill. There were later occasions, when he fought deep in enemy territory, where there could be no official confirmation of his victories. This was only part of the

(Continued on following page)

price he paid for his brand of fighting. But that is the unofficial record. The official record began on September 12, 1918, and it became a fighting record that has never been equalled.

From his first official victory on this date to his last day in action, ending in the field near Murvaux, just seventeen days passed. And yet in this short time, Frank Luke became the leading American ace in the war. In this seventeen day period he had eighteen official victories! Rickenbacker flew at the front for more than eight months and was the leading American ace with twenty-seven victories at the end of the war, yet even then, Frank Luke's record in only seventeen days of fighting placed him second.

September 12 marked the opening day of the St. Mihiel offensive, and Luke's squadron was busy patroling its prescribed sector of the front. The ground troops had begun their advance at dawn, but were immediately slowed by accurate German artillery fire.

Frank Luke spotted the observation balloon that was directing the deadly fire. It was strung up about two miles behind the front at the right of the American lines, just outside of his patrol sector. He returned to the airfield to report his find. Here he was told that the balloon had already been seen by the squadron in whose patrol sector it was located. It had, in fact, been under constant attack for most of the day, but without success.

About the Author

James Law, who is 23, tells us that before he acquired the sports-car bug, most of his spare time was spent writing and reading. He admits his reading has suffered since he acquired an Austin-Healey, but that his wife Pat and 2-year-old son Steve enjoy the change. A native Californian and a '53 graduate of the University of California, he became interested in writing while studying magazine production in college. He says he's always been interested in WW I aerial combat and the "fabulous personalities that it produced."

Luke asked permission to enter the neighboring patrol sector and attack the important balloon. A good friend of his, a Lieutenant Wehrner, had just landed to refuel. When he heard about Luke's request, he asked to go along to fly cover for the attack.

Balloon attacks were rarely made on a volunteer basis, simply because there were rarely any volunteers. The observation balloon was the most dangerous target in the air.

It measured about fifty by two hundred feet, a huge, sausage-shaped bag filled with highly flammable hydrogen. The observer hung below in a wicker basket. With powerful binoculars and radio communication to the ground, he was an effective observer, usually operating at about 2,000 feet. A lorry on the ground, with a winch on its flatbed, would reel out the balloon at dawn, tow it to wherever it was needed, and pull it back in at sunset.

It was a big, stationary target, to be sure. But few who attacked it survived and of those who did, few repeated the attempt. For on the ground, around the balloon in a huge ring, were batteries of anti-aircraft and machine guns. Knowing the exact height of the balloon, they set their shells to explode accordingly. So an attacker had to fly through a wall of exploding shells and machine-gun bullets, pour a long burst of incendiaries into the balloon, since a short burst would seldom ignite the gas, then fly through the fiery wall again on the way out. In addition, enemy fighters were usually hiding in the sun somewhere above, and in any encounter they would have the advantage of altitude on the balloon attacker.

The requests of Luke and Wehrner were granted immediately.

When they reached the balloon, Luke peeled off and Wehrner began to circle above to cover him from fighter attack. Luke pulled out of his screaming dive beside the balloon and opened fire, but a machine gun had jammed.

He pulled up over the balloon and found himself in the midst of a ring of fire. His plane was jarred by explosions on every side but he whipped around and came back at the balloon, his remaining machine gun chattering. The balloon burst into flames and Frank Luke headed out through the ground fire while his first official victory dropped to earth in flames.

His first success at fighting the *drachen* was a solid confirmation of his fighting skill. Therefore when he volunteered two days later, September 14, for another balloon attack, he was given a flight of planes to fly cover for him. But his job wasn't easier. For there was not one balloon, but a cluster of three!

They were strung up near Boinville and were important to the Germans. They hung at an exceptionally low altitude to discourage attack. In fact, they were so low that the observers in the balloons could not use their parachutes, only recently developed at this time, to save themselves. Because the balloons were so valuable to the Germans it was almost certain that fighters were on guard.

As Luke and his escort approached the target, Luke rocked his wings at the flight leader, pulled away from the formation and nosed his Spad down. He had just begun his dive when a pack of Fokkers dropped through the broken clouds, jumping Luke's squadron mates with blazing guns, trying to break through to stop his one-man attack.

Luke made his run, pouring tracers into the gray bag, but the balloon did not ignite. He came back for a second, then a third pass, and the sky was filled with the smoke of shell bursts. With each dive the ground fire came closer, but he ignored repeated hits and bored through the withering curtain of steel. This was the killing assault and the balloon collapsed into a mass of flaming canvas. Now he turned on his attackers. He defiantly hurled his Spad back into the deadly perimeter and proceeded to strafe the gun positions with his remaining ammunition.

Finally he headed for home, struggling to keep his battered Spad airborne. When he landed, the ground crew shook their heads in amazement. The plane was completely riddled, no longer fit for flying. One slug was found buried in his headrest, not six inches from Luke's head.

A new plane was made ready and the covering flight returned and was reformed. By late afternoon they were heading back for the two remaining balloons. On this attack, because the first balloon had proved so stubborn, Wehrner was to follow Luke down. The quicker you could get in and out of the zone of fire, the better your chances to live and tell about it. And this way, the chances of any dangerous return passes would be lessened.

Again enemy Fokkers engaged their protecting group, and again Luke continued toward one of the balloons, this time closely followed by Wehrner.

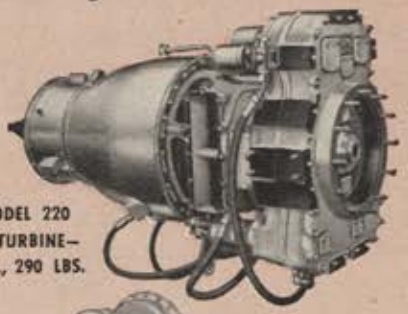
As they drew nearer the balloons they spied still another enemy formation. The Germans had figured they would break away from the covering planes for the balloon attack. Eight Fokkers were bearing down on them.

Luke and Wehrner pushed their throttles wide open and

(Continued on page 89)

CONTINENTAL... Out in Front in Helicopter Power

Outstanding Engines of Both Types... Piston and Turbine... Embody Results of Experience Dating from 1902



CAE MODEL 220 SHAFT TURBINE— 425 H.P., 290 LBS.

CMC MODEL FS0470 SUPERCHARGED AND FAN-COOLED HELICOPTER ENGINE—260 H.P.

New, modern helicopters are finding it increasingly beneficial to make use of the latest Continental developments for power production. Two examples of recently tested engines built around Continental power plants are shown. One—the Sikorsky XH-39 at left, above — employs the CAE Model 220 shaft turbine; the other — Cessna's CH-1 at right — uses CMC Model FS0470 piston engine. Both are unique.

The XH-39—first helicopter with completely retractable landing gear — holds the world's record for helicopter altitude (24,500 ft.) and in addition, the world's record for helicopter speed (156.005 m.p.h.). The CH-1 features simplified design, using one-third fewer gears. Location of engine in the nose makes for ease of access, promotes efficient cooling, and frees the center of gravity behind the cockpit for use in disposable load.

Thus Continental supplies each type of power plant to suit the peculiar requirements of two widely different modern helicopter design concepts. Additional power plants engineered for their suitability for helicopters will be forthcoming from the Continental organization within the near future, and great things can be expected.

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Remember the service skills you learned in the Air Force? Now's the time to put that schooling to work *to your best advantage*. The experience and know-how you gained in service makes you a valuable man – and continued service will add to your earning capacity.

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Why give up your investment? Why not make the Air Force a career? Each year you spend on active service will build a retirement fund that will insure you of a comfortable income for the rest of your life upon completion of length of service requirements.

YOU GO PLACES–FASTER AS AN AIRMAN IN THE

U.S. AIR FORCE

dived, racing the Germans to the balloon. Even before they got within range the balloon's observer jumped, pulling his ripcord in spite of the hopelessly low altitude.

They were beating the Fokkers to the balloon but there was time for only one pass. The ground fire was blistering on all sides of the balloon, but they were diving from almost directly above. Luke had time for only a short burst before he had to pull out, but with the first bullet the great gas bag exploded. They passed through the billowing, expanding smoke, leveled off on the deck and flew for home, leaving the burning balloon and their eight pursuers somewhere behind.

At dawn the next day Luke was in the air again, scouting the Boinville area and planning his attack on the third balloon. While doing so, he spotted a new balloon that the Germans had hurriedly sent up at Bois d'Hingry.

He reported back at the field, told what he had seen, and a new attack was quickly planned. Three five-plane patrols were to rendezvous near the target as he began his first dive. Then, within sixty seconds of his attack, they were to dive after him. So that any victories resulting could be confirmed, our own observation balloons in the area were alerted to watch for the attack. The time was set for 5:05 that afternoon.

As the time drew near, our observers began their watch of the lone remaining Boinville balloon. Suddenly the German anti-aircraft gunners jumped into action. Out of the clouds above them came Frank Luke, five Fokkers on his tail. On time to the second, he dived straight at the balloon. According to plan, the three flights of Luke's escorts appeared, diving after him. This placed them on the tails of the German planes, just as they had anticipated.

Meanwhile, Luke had once again successfully penetrated the deadly ground fire and our observers saw the sausage-shaped outline of the Boinville balloon disappear in a ball of fire. But then they saw his plane still heading toward the ground. It vanished below the horizon.

It seemed impossible that he had not crashed. Actually he had pulled out of his dive only a few feet from the ground. Rather than climb up into the still-blazing anti-aircraft fire, he immediately landed on the uneven battle field.

His wheels had hardly stopped rolling when he spied the Bois d'Hingry balloon faintly visible in the distance. He jammed the throttle forward and dodged shell craters and ditches to take off.

He held his Spad a few feet off the ground, flying between splintered trees and over barbed-wire entanglements until he reached the balloon post.

He flashed over the muzzles of the surrounding guns and took them completely by surprise. He pulled back on the stick and climbed upwards toward the balloon, firing as he went. The second balloon to appear in his sights that day, not twenty minutes after the first, fell in flames. Frank Luke headed out through the now angrily awakened anti-aircraft fire and started for home.

He landed to find that this plane also had been practically shot out from under him. But a patrol had just returned with news of a new balloon, north of Verdun. There was a little daylight left so Luke headed for Verdun in a new plane. He arrived over the balloon at dusk and for the second time that day surprised the Germans. They were hauling the balloon down for the night when Luke's tracers ripped into it.

Two more balloons had gone up at Reville and Romagne-sous-les-Cottes, the next morning. Luke and Wehrner decided to try the twilight attack once more. Between them, they shot down both balloons in just twelve minutes.

There was no flying the next day. The whole front was closed in by bad flying weather, but the day following, September 18, the weather began to break. Luke and Wehrner took off together and began scouting the front.

They spotted a group of three balloons just going up. It was unusual for the balloons to be launched this late in the morning. They were normally sent up in the last minutes of protecting darkness before dawn. But there was good reason for the change in procedure. The Germans knew that the balloon killer, who appeared suddenly and was dropping their valuable balloons like over-ripe plums, would not pass such a tempting target.

Luke took the bait, and Wehrner headed for his covering position above the first balloon. Luke's Spad got one balloon and headed immediately for the second. Meanwhile Wehrner was in a scrambling, falling dogfight. When Luke began his first dive, six Fokkers dropped from their hiding place beneath the clouds and headed after him.

Frank Luke and his Spad. In two days of combat, two of his Spads were riddled so badly they were total losses.

Wehrner charged in and broke up their dive. Now, as Luke exploded his second balloon, Wehrner was slowly losing the one-sided fight he had entered.

As Luke hurried to reach him, Wehrner's Spad burst into flame and spun into the ground.

Wehrner was dead, and Luke continued his climb towards the other four Germans now diving to meet him. His engine sputtered. His main fuel tank was empty. He switched to his reserve tank—ten minutes of fuel, which had to be hand-pumped to the engine.

Luke held his climb towards the diving Germans. They were all firing at him now. In another second, they would meet head on. Luke didn't budge from his course. The Germans had to break formation and roared on past.

Luke half-rolled his Spad. Pulling the stick back, he split-S'ed after them. As the Fokkers pulled out of their dive, Luke caught the lead ship with a long deflection shot and the pilot slumped forward. Luke's dive had carried him through their formation. Pulling the nose up, Luke tried to line up the second ship in his sights. The Fokker went into a tight turn to the right and Luke turned inside of him, sending a shower of bullets through the Fokker's top wing and into the engine. The plane fell off sluggishly on one wing, then started to spin to the ground. But the two remaining Fokkers were closing in on Luke. He quickly cut his engine, pulled up sharply, and the

(Continued on following page)

'BALLOON BUSTER'—CONTINUED

Germans flashed past and headed for home. Almost as suddenly as it had begun, the battle was over.

On his way back to the field Luke spotted a white cluster of exploding anti-aircraft shells. Allied gunners were firing at a German LVG, a two-place reconnaissance plane. Luke headed for the enemy plane, though he expected to run out of gas at any moment.

The German rear gunner opened up but Luke dived below the tail of the LVG and out of the line of fire. He then pulled up and raked the bottom of the ship from nose to tail, killing the German pilot.

The two balloons and three planes brought his total to eleven positive victories. Six days had passed since his first confirmed kill. He had passed Rickenbacker. His buddies began to call him indestructible, and the way he fought, it seemed as though they were right.

As the leading American air ace, Luke had earned a seven-day leave to Paris. He returned to combat on September 26, when the Meuse-Argonne offensive opened, and he added another plane to his score.

Two days later he failed to return to his field. He had shot down a two-place Hanover, then landed at the French airfield at Toul. The French treated "the indestructible" royally that night.

Next morning he walked out into the cold dawn and climbed into his ship. The 220-hp Hispano-Suiza engine was already warmed up and idling. The French mechanics had refueled the plane and armed the twin Vickers machine guns. They had even left a bag of hand grenades on the floor of the cockpit for him.

Later that day he flew low over an advanced American outpost on the Meuse. He dropped a note telling them to watch three German balloons that were floating a few miles back of the front, near Murvaux.

The observation post watched him nose over for his attack. Suddenly the air was full of Fokkers. There were ten of them. They had been patroling in relays at 12,000 feet, waiting all day for him. First one, then another of the Fokkers dropped out of the fight in flames. Luke was kicking the little Spad in and out of the swarming Germans like a wild man. For a full five minutes he fought them off. Then his Spad appeared to go out of control and tumble toward the ground.

His plane was falling directly over the three balloons at Murvaux, but Frank Luke wasn't dead. The German gun crews stopped their cheering and watched in stunned silence as he leveled out and opened fire.

The first balloon had already burst into flames before the gun crews recovered. The air around him began to explode as they angrily opened up. Luke hit the second balloon, then the third, and the three thick columns of smoke began to rise. Then the ack-ack caught him.

He knew his war was over as he waited for the German troops in the little field outside of Murvaux. He had emptied his machine guns, and the hand grenades were gone. The pain in his shoulder had eased a bit, but he couldn't fire up the engine by himself. He could only wait.

As German troops spilled into the field Frank Luke pulled himself out of the cockpit. He stood by his Spad waiting for them. They surrounded the ship and the German officer called out to him to surrender. Frank Luke drew his sidearm and emptied the .45 at the enemy.

That was his answer and a signal to the Germans to cut him down with small-arms fire.

He had fought with all he had, and won the Congressional Medal of Honor posthumously for what he did at Murvaux that day. He wasn't quite indestructible, but Frank Luke came as close to it as anyone can get.—END

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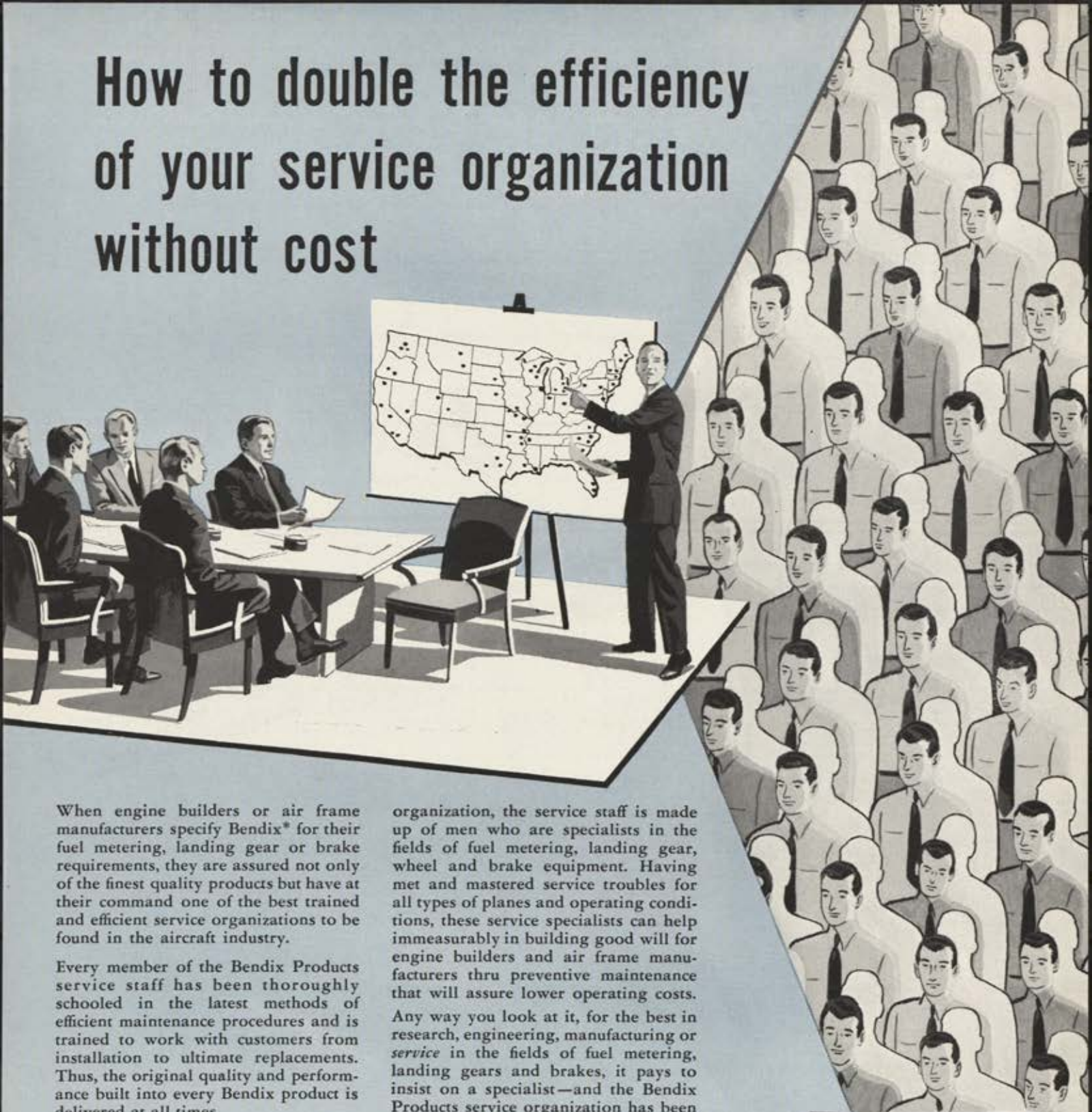

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