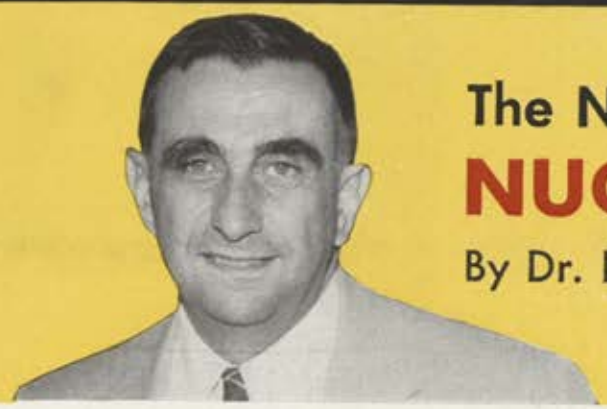
JANUARY 1957 / 35c

AIR FORCE

• THE MAGAZINE OF AMERICAN AIRPOWER



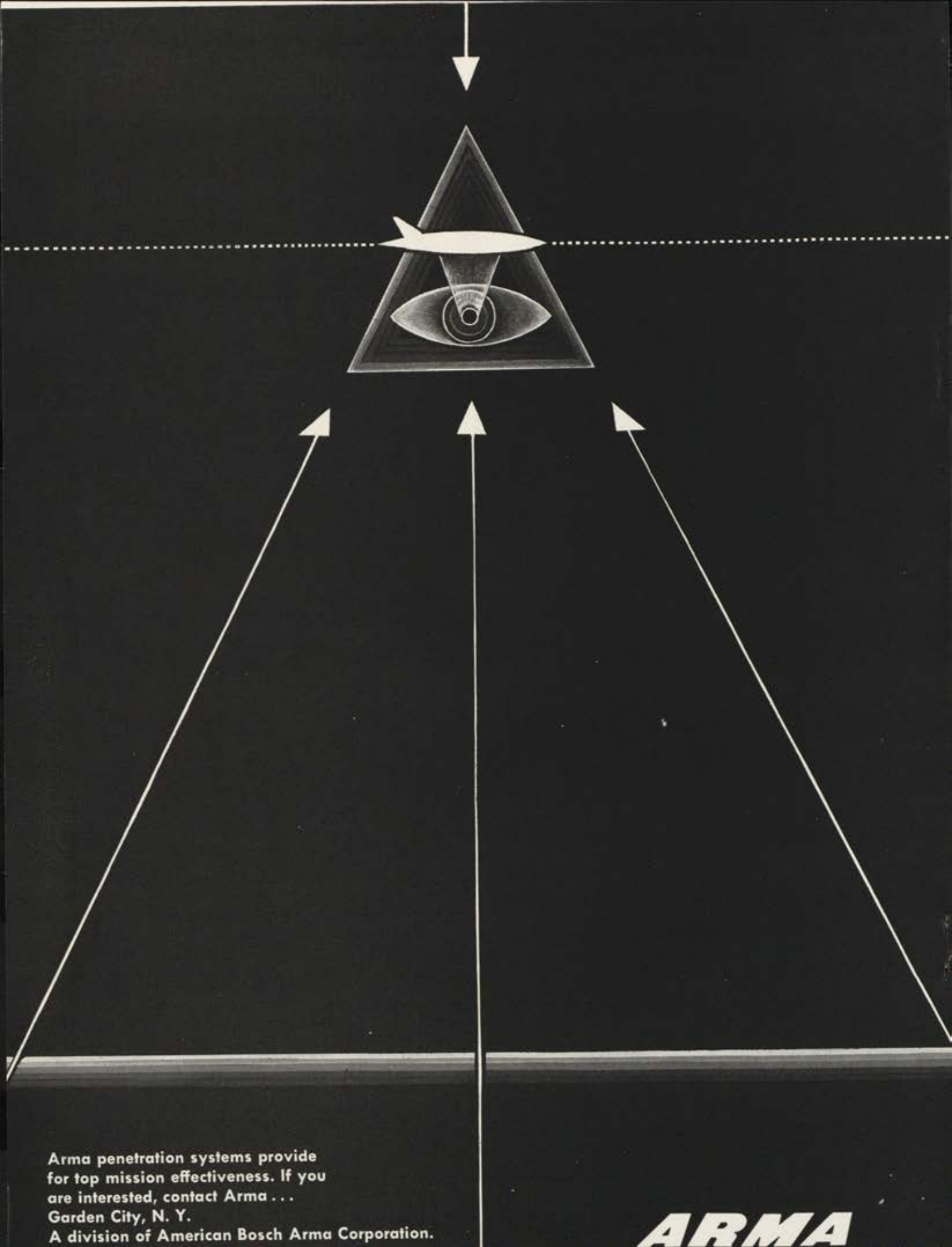
The Nature of NUCLEAR WARFARE

By Dr. Edward Teller

ALSO IN THIS ISSUE:

Col. Dave Schilling—The Man Who Gave Us a SAC-ful of Fighters

Raoul Lufbery—The AF's Man of Mystery



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When the spectacular Douglas F4D Skyray takes off from a Navy carrier, it blasts out and up at a record-setting pace.

Imagine the surge pressure set up in a longitudinal fuel cell by such a catapult take-off—or during an arrested carrier landing. It would be sudden and devastating—as much as 11,900 pounds of surge pressure that would burst a conventional fuel cell.

Obviously, this problem had to be solved before making test flights. Development engineers of the B. F. Goodrich Aviation Products division, called in by Douglas, worked out a solution.

They designed a cell containing a series of special baffles, dividing the interior into compartments. The baffles were reinforced with steel cables to soak up surge pressures and transmit them to the airframe. The resulting B. F. Goodrich fuel cell combined maximum strength with minimum weight. It is proving itself successful in every flight of a Skyray.

For the best solutions to your fuel cell problems, call upon experienced engineers of B. F. Goodrich Aviation Products.

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Ar. New York (EST)	6:45 pm	6:45 am
Lv. Los Angeles (PST)	8:45 pm	
Ar. Washington (EST)	6:45 am	
Washington Schedules		
Lv. Washington (EST)	9:30 am	
Ar. Los Angeles (PST)	2:45 pm	

AA AMERICAN AIRLINES

America's Leading Airline

AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

Volume 40, No. 1 • January 1957

STAFF

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Features

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Weight-saving magnesium sheet (white areas) is used for leading edges, empennage, wheel doors and many other parts of F8U-1 Crusader.

25% of external skin on record-breaking F8U-1 made with magnesium

In Chance Vought's F8U-1 Crusader, fastest U.S. fighter by official record, many precious pounds are saved by using magnesium. Designers called for a total of 166 magnesium external skin parts—25% of the wing and fuselage surface area. 275 magnesium sand castings ranging in weight from a few ounces to thirteen lbs. were used inside the skin.

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For example, the most powerful U. S. production turbojet, the J-75, again shows Pratt & Whitney Aircraft's ability to develop the right kind of aircraft engine at the right time. The J-75 has been selected for the newest Air Force fighters, the Navy's most advanced long-range patrol bomber, and both the Douglas DC-8 and the Boeing 707 jet airliners.

This success may be largely attributed to engineering skills and achievements. Since the beginning of the company, when the new Wasp produced the most horsepower per pound of weight, there has been no change in the reliance on these fundamentals . . . except that new talents and techniques, elaborate research facilities, and many new kinds of engineers are called for at a growing rate. At Pratt & Whitney Aircraft, nearly every field of theoretical and applied science—from nuclear physics and chemical engineering to advanced metallurgy and electronics—has a vital part to play as the science of aircraft propulsion advances.

Today, power plants of the future are being developed by Pratt & Whitney Aircraft. The Connecticut Aircraft Nuclear Engine Laboratory, for instance, will be operated by Pratt & Whitney Aircraft for the AEC and the Air Force. Whatever form the future takes . . . in new principles of propulsion, new materials or new fuels . . . Pratt & Whitney Aircraft is prepared to offer continued advancement in power plant design and production.

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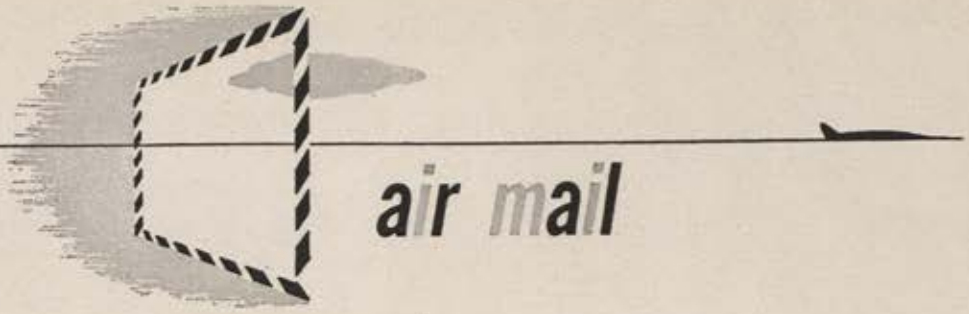


Personnel Training

Gentlemen: William Kennedy hit the nail on the head in his article appearing in the November issue of AIR FORCE Magazine entitled "Does the Air Force Need Its Own Army?"

I am afraid that since the Air Force became a separate branch of service almost ten years ago, it has overlooked some elements which are essential for its general well being. When speaking of the Air Force the tendency has been to think in terms of B-52s, '47s, etc. All well and good. But there are many smaller yet equally important elements which go into the making of an air force. I have in mind the personnel.

When I was in the Air Force I received my base defense training when overseas, after having been in over two years. Therefore, I came to the conclusion that much of this could have been eliminated by giving this to the airmen when in basic training. Once overseas, the airman should have a sound basis upon which to continue his base defense into advanced stages and peculiar to the terrain of the country in which he happens to be stationed.

I suggest then that an intensified base defense program be given to all recruits upon entering basic training. This should include use of all types of weapons and also the formation of small mechanized units as Mr. Kennedy suggested in his article. Also a good program should be initiated in anti-aircraft gunnery. We can't expect the Army to supply this in all cases as they will have their own fighting to do in another war.

While we are on the subject I might suggest that when the Air Force marches its men in national parades that they furnish them rifles to march with. I have often thought the Air Force makes itself look ridiculous by being the only military unit in a parade marching without weapons. This service has tremendous potentialities. Let's develop them.

Albert H. Wetzel
Norfolk, Va.

What Kind of Forces?

Gentlemen: Just read with interest two articles in the November '56 issue, "What Kind of Forces for What Kind of Wars?", by J. F. Loosbrock, and "Does the Air Force Need an Army?", by W. V. Kennedy. Mr. Loosbrock very ably stated good reasons why the Army does not need its own Air Army, then Mr. Kennedy proposes an Army unit in the USAF. I have no quarrel with Mr. Kennedy so far as his cavalry tactics for air base defense are concerned, but let's leave that task to the people who are in the cavalry business, the US Army. If we followed Mr. Kennedy's line of reasoning, some of our air bases, because of their seaboard locale, might well use a couple of gunboats or destroyers for defense. Thus, we in the Air Force would then also have our own navy.

If the Army hasn't sufficient personnel to provide the type of defense needed, how can the Air Force, already faced with a critical recruiting problem, secure enough additional people to handle the job?

One solution might be a Reserve or National Guard armored unit located in cities near the air bases with base defense as one of their primary functions in case of national emergency.

However, I believe the solution of the problem is one for our very able Joint Chiefs, and undoubtedly they already have a plan.

Let's have more articles on true unification and straighten out "the roles and missions muddle" once and for all.

J. E. McAdams
Beebe, Ark.

Ultimate Integration

Gentlemen: Major Berry is to be commended for her excellent, unbiased treatment of the pros and cons of unification which appeared in the October issue of AIR FORCE Magazine.

Ultimate integration of the armed forces appears inevitable. All objections thus far proposed or forecast have been far outweighed by the advantages. Such a momentous reorganization will, obviously, require large-scale planning and cooperation from all military units in order that a smooth and rapid transition may be affected without a temporal weakening of the defense structure.

More objective articles dealing with unification would be welcome by military personnel at all levels and in all branches of service. Such information would serve to create consent, cultivate understanding, and bring about an educated response to unification if and when U-Day arrives.

1st Lt. Rebecca K. Pearce
APO, San Francisco, Calif.

Tomorrow's Leaders

Gentlemen: I'm surprised that you would publish such a misconception of the Air Academy as was evidenced in Lieutenant Richmond's letter (November '56 "Air Mail").

The Academy mission is to develop tomorrow's leaders—future air commanders, not today's combat material—though this will be stressed. Academy men must be career men—with a thorough background in *all* phases of air leadership for peace or war. In addition, they will be able to cope with the fast acceleration in tactics and concepts. Indeed, they will devise many new concepts and rewrite the books we go by today. We will be very fortunate if any of them "produce" within a short eight years.

For the present, we are well stocked with aviation cadets, ROTC, and other academy graduates and there is no shortage of "fighting material." From this pool many fine leaders will develop. Those of us born too soon will always envy the "Falcons" just a bit for their many opportunities and excellent background—but we're behind them one hundred percent.

Capt. Robert G. Clithero
Portland, Ore.

His Two Cents' Worth

Gentlemen: I don't know whether I, as a mere Associate Member, should raise my voice to chip in my two cents' worth, but I shall take a chance.

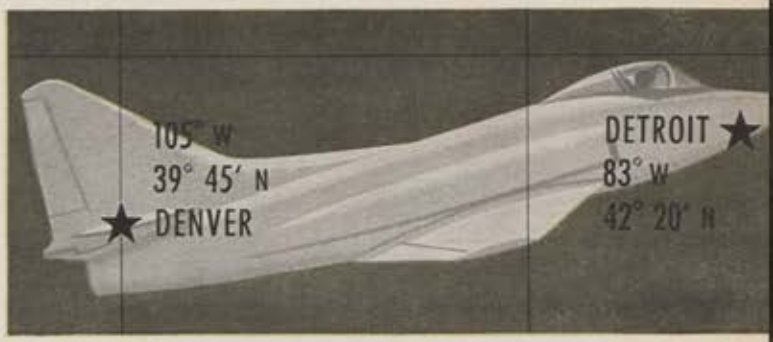
In your October issue you stated that five airlines—you named them—are all-cargo. That is not altogether correct. The fact is, at least one, or several, do a neat business—or is it, does a neat business?—in carrying passengers on chartered flights. A good deal of this business seems to be trans-ocean traffic, carrying furloughed personnel and their families.

I have wondered for a long time to what extent MATS is engaged in oper-

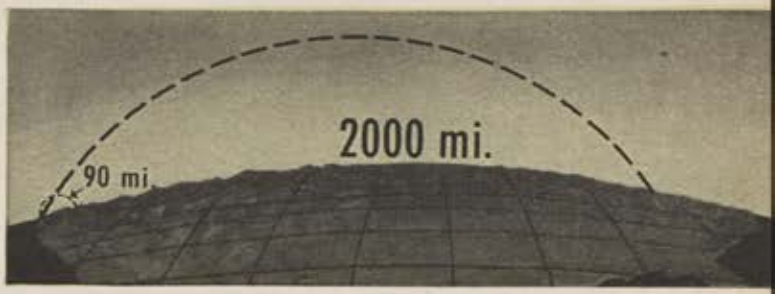
(Continued on page 11)

Here's why BENDIX SELF-CONTAINED NAVIGATIONAL COMPUTERS can master aircraft navigation problems anywhere

1 BOTH FIXED AND MOVING TARGETS. Bendix Self-contained Navigational Computers will direct the course to any fixed target . . . or a lead collision course to any moving target . . . and will continuously indicate position with respect to earth, destination, or point of intercept.



3 ALSO LATITUDE-LONGITUDE TYPE. Another basic type of Bendix Computer fixes destinations from coordinates. For rugged reliability, all designs are completely transistorized; presentation of information is by latest techniques, including cathode ray pictorial display.



4 FOR SHORT AND LONG RANGE. Effective operation of these self-contained Bendix units ranges from distances of less than 100 miles on up to 2000-mile flights. A big advantage of buying Bendix is that units can be tailored and packaged to meet any set of requirements.

2 RHO-THETA TYPE, IF DESIRED. Bendix experience is diversified and covers all types of computers—rho-theta, for example—for any desired method of navigation. So flexible are Bendix Computers that they can be built for *slaving to radio navigation aids* at the operator's choice.

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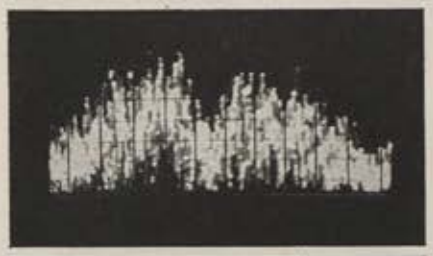
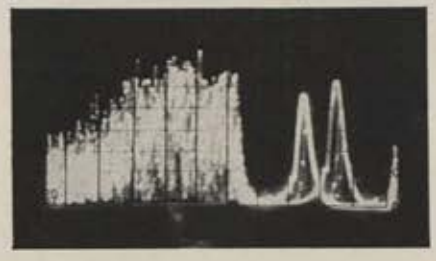
Scope pattern taken from Hoffman CV-157 showing two dualtone teletype channels on upper sideband, carrier partially suppressed. Each sideband can carry 32 teletype channels at one time.



One AM voice channel (made by continuous vowel sound) on each sideband, carrier completely suppressed. CV-157 carries two 3KC voice channels on each sideband.



AM voice on lower sideband, dualtone teletype channel on upper. With suitable multiplexing equipment, the CV-157 handles 64 simultaneous dualtone teletype channels.

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ations which, by their nature, should be in the hands of private enterprise. Has that question ever been raised before?

Another matter that has interested me is why, in view of the fact that the Army and the Navy have their respective air and marine or ground forces, the Air Force should not have its own navy and army. How about that? Sauce for the goose . . .!

I make it a point to pass AIR FORCE on to a friend who was an officer in the Army Air Force in World War II—*after* I have given it a thorough going-over myself. He may weaken yet and join AFA. We shall see.

Albert J. Franck
Richmond Hill, N. Y.

Book Club Approval

Gentlemen: I have just finished reading my first copy of AIR FORCE Magazine (November '56) and want to congratulate you and your staff on an outstanding publication. I am in the Air Force ROTC at St. Louis University and really thought that articles such as Mr. Loosbrock's "What Kind of Forces for What Kind of War?" and Mr. Rostow's "Can We Beat the Russians at Their Own Game?" were enlightening and interesting.

I am writing, however, not to praise you for a job well done nor to urge you to keep up the good work. I am writing to give my affirmative vote to the idea for an Airpower Book Club. In my estimation this is a terrific way to educate and entertain all personnel in the Air Force and civilians who are now or will be interested in aviation. I believe also that this is an excellent way to spread the gospel of the Air Force and to enlighten the people of this country on the importance of airpower. I hope you will carry this idea forward with the greatest haste.

I talked it over with some of my fellow cadets and all of them were greatly enthusiastic about it. We all look forward to the opening of the Airpower Book Club.

Robert J. Owens
St. Louis, Mo.

Gentlemen: I strongly approve of your projected plans for an Airpower Book Club. This was an unexpected reprieve after having read in the *Air Force Times* that the Air Force was abandoning the idea.

May I suggest that you send AFA members application blanks? I personally know of at least a dozen officers and airmen who would be interested.

And may I also congratulate you on the uniform excellence of each issue of AIR FORCE. Keep up the good work.

A/2C Robert J. Bettencourt
Travis AFB, Calif.

Bigger'n Texas?

Gentlemen: I think your November issue of AIR FORCE was one of your best yet. I particularly liked the cover story about beating the Russians at their own game, by W. W. Rostow, and am glad to see some credit now going to Air Force careerists. By that, I mean Flint O. DuPre's story on rocket propulsion technicians. I have some friends in the Air Force and will look forward to this series and hope their careers are covered as well.

Like they say down here in Texas, AIR FORCE is big—bigger than ever.

L. G. Robertson
Marshall, Tex.

Missionary Pilot

Gentlemen: By way of introduction let me state that I am a missionary pilot, operating at present in the State of Amazonas in the country of Brazil. The area in which I am serving is near Manaus and north and west of this city up the Rio Negro toward the

(Continued on following page)

Venezuelan border. I am operating with New Tribes Mission, offices in Woodworth, Wis.

Shortly before leaving the states last summer, a friend of mine gave me a copy of AIR FORCE. I had intended to subscribe to a magazine of a more civilian nature but have been so taken by your impressive and informative articles and stories that I should like to become one of your subscribers. Enclosed please find check for $5, which I notice is your overseas subscription price. I shall be eagerly awaiting my first copy.

Clemence G. Smith
Manaus, Amazonas, Brazil

Spread Their Wings Early

Gentlemen: As a small town airport official and associate member of AFA we proudly show our original membership framed with the signatures of Spaatz, Cochran, Kenney, Doolittle, Smith, and Stewart.

Many of our students ask what AFA does for high school age students who are interested in flying and all we can recommend is to read the fine magazine.

I had a thought that possibly now since we have so many members and since no one seems concerned about soloing sixteen-year-olds, although we teach them to drive a car (which I think is absurd), why couldn't AFA give a few high school scholarships at local airports if the airports will supply the plane, with AFA publicity being given through the schools? Something must be done again for grass-roots interest.

George L. Setman
Quakertown, Penna.

Bonus for Reservists

Gentlemen: To keep a good active and strong Air Reserve plus one hundred percent participation and excellent *esprit de corps*, the following should be adopted and strong support given for consideration:

1. Pay a bonus each year to Reservists providing that they accomplish a good year for retirement. It must be compulsory to attain a good year for retirement before a Reservist can be eligible for the bonus.

2. Such bonuses will not be payable but be accumulative until the retirement age is attained, or if the Reservist is called into active duty. Then the accrued bonus will be paid to keep the Reservists' families going.

3. Upon retirement the lump sum accrued will be paid.

4. If a Reservist completes thirty good years, both active and Reserve, he should be able to retire and draw retirement pay even if he is below the compulsory retirement of age sixty.

This is my suggestion and the Air Force Association can probably get many more.

S/Sgt. John S. Galos
Santa Clara, Calif.

Aid to Recruiters

Gentlemen: We are Air Force recruiters stationed in Wausau, Wis. Our area of responsibility is six of the northern counties in Wisconsin.

After we have absorbed all the information we can, we pass it on to our Auxiliary Recruiters who find it of great value in their recruiting program. They are always happy to receive Air Force information such as your magazine includes and would like to get hold of more copies of the Tenth Anniversary Issue which gives information on bases in the states and overseas.

I'm sure our public relations and our recruiting effort would reach a higher level.

T/Sgt. Bill T. Hickcox
Wausau, Wis.

More About Billy

Gentlemen: That's a very comprehensive piece Bill Walker turned out for the November issue of AIR FORCE Magazine on Air Marshal Billy Bishop.

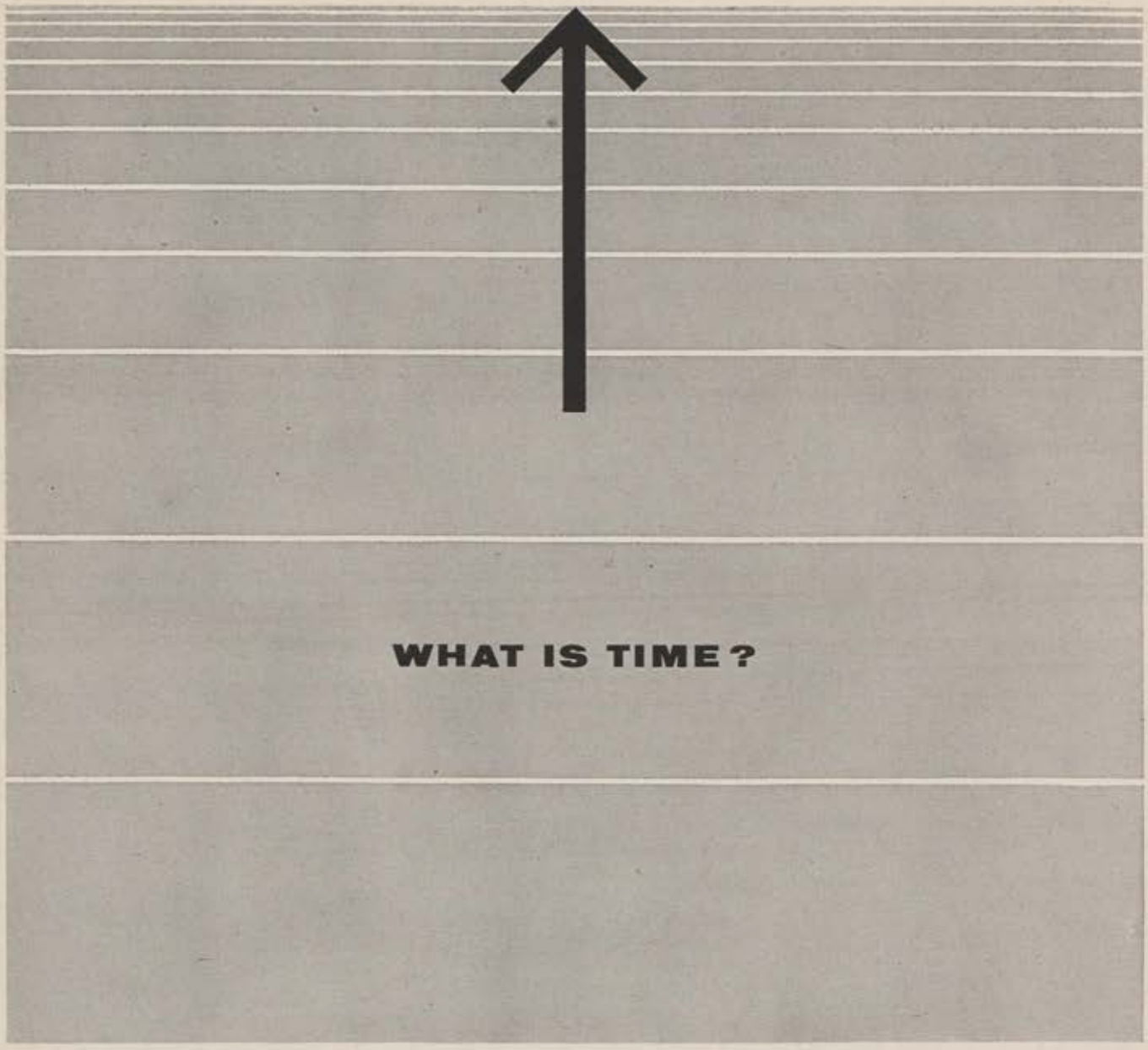
However, Bill and historians of the future should record that Billy Bishop personally arranged for the initial recruiting of American volunteers for the RCAF, which became known as the Clayton Knight Committee. I made the appointment with the President for Billy, and arranged that they breakfast together in the White House to discuss a plan whereby Americans would be trained and could be utilized à la Lafayette Escadrille Flying Corps in World War I.

Col. Chas. W. Kerwood, USAFR
Washington, D. C.

From a Mother

Gentlemen: I do not fit any of the categories on the form. I am a housewife and mother of a son in the Air Force. My son is twenty-three years old and a pilot for Air Transport Service. Naturally, I am interested in the progress and improvement of the Air Force. I read AIR FORCE Magazine and all other material I can get. I believe that a well trained, well equipped, up-to-date Air Force is a key to permanent peace. This can only be had through the interest and efforts of every able citizen of the United States.

Mrs. L. L. Hodges



WHAT IS TIME?

Anything that can be postulated is possible, says science—including *timelessness.*

The latest table-talk among the rocket and missile men has to do with the physics (and metaphysics) of photon propulsion: thrust for a space vehicle derived by shooting incredibly concentrated beams of light (photons) from its tail. Result—speeds approaching that of light! Round trips to distant galaxies could thus be accomplished in a single generation of the crew. Meanwhile, however, the Earth would have passed through a billion years—possibly into cosmic oblivion!

The space-time ratio is increasingly a factor in the calculations of a brand new field of science known as astronautics...Work in this field at Martin is already at the threshold of tomorrow.

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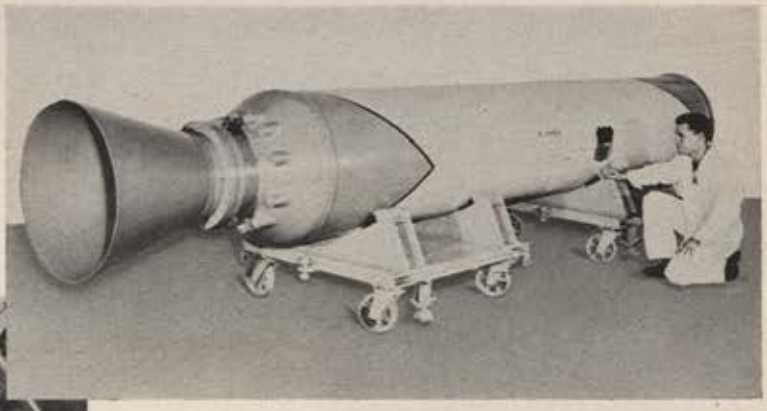
EXCEPTIONAL OPPORTUNITIES FOR SCIENTISTS AND ENGINEERS

in rocket development at Phillips Petroleum Company

The Rocket Fuels Division of Phillips Petroleum Company operates Air Force Plant 66, a multi-million dollar plant with modern facilities for research, development, testing and manufacture of solid propellant rockets. Exceptional opportunities and key positions are now open to scientists and engineers of proved experience and ability. Challenging opportunities are also available to recent technical graduates, with or without experience. Phillips Petroleum Company is a progressive, diversified company with assets of more than one billion dollars and an already *established reputation* in the rapidly expanding rocket field.

You are invited to write to our Technical Personnel Office, Rocket Fuels Division, Phillips Petroleum Company, McGregor, Texas. Your résumé will receive prompt, confidential attention. Interviews will be arranged for qualified applicants.



Booster Type Rockets by Phillips 66

Above. Giant PUSHER rocket, made from low cost, petroleum-derived materials gives tremendous thrust for short durations.

Left. The M15 JATO was the first of its kind to meet rigid Air Force performance tests. (Boeing Airplane Company photo).

Phillips 66

Rocket Fuels Division

PHILLIPS PETROLEUM COMPANY

McGregor, Texas

wing tips

By Wilfred Owen

The Southern Pacific Railroad sells United Air Lines tickets at 130 of its rail ticket offices in California, Oregon, and Nevada.

• • •

According to one of the major US airlines, one out of every 153 airline passengers has his baggage mishandled.

• • •

An aircraft "quiet room" built to detect equipment noise is so sound-proof that occupants can hear their heart beats.

• • •

Three H-21 Workhorse helicopters demonstrated their high-altitude capabilities recently by landing on the top of Pike's Peak—14,110 feet up.

• • •

Half a million pounds of the November 15 issue of Newsweek *magazine were flown from the printing plant in Dayton, Ohio, to Los Angeles for a new air express record. It took five airlines and twenty-one special flights to do it, in addition to all available scheduled service.*

• • •

During the summer months there were eighty-six civil air transport flights a day over the North Atlantic—one every sixteen or seventeen minutes.

• • •

The July and August parade of planes across the Atlantic Ocean was led by Pan American, with 1,149 trips. Trans World Airlines was second with 924 flights, Scandanavian Airlines third with 378, followed by British Overseas with 324 flights and Air France with 305.

• • •

The average weight of one airline passenger is equivalent to approximately 7,000 first-class letters.

• • •

The state of Maine announces that approximately 74,000 feet of unused runways built and used only during World War II are now available for industrial uses.

• • •

In 1945 the CAA estimated 20,000,000 air travelers by 1955. The estimate was low by 15,000,000. Next figure to watch is the current forecast of 55,000,000 air passengers by 1960.

• • •

Experiments in aerial fertilizing of forest trees indicate that tree growth may be increased from forty to sixty-five percent. This may be the answer to the problem of finding a cheaper and more abundant supply of wood to meet America's expanding pulp and paper requirements.

• • •

The Department of Agriculture estimates that the aerial application of insecticides, fungicides, and fertilizers adds about $3 billion to US farm income.

• • •

One hundred pilots now hold certificates for helicopter flying only. Another 3,000 hold helicopter "tickets" in addition to their regular flying certificates.

AIRPOWER IN THE NEWS — By Lee Klein

■ One night last month, observers within viewing range of the AF Missile Test Center at Patrick AFB, Fla., saw a **Viking rocket** rise vertically into the night sky, trailing the rosy glare of its 21,000-pound-thrust engine. While this was the thirteenth firing of the Viking—built by **The Glenn L. Martin Co.** and powered by a **Reaction Motors, Inc.**, engine—this launching was historic. It was the first in a series of tests prior to launching the US earth satellites —**Project Vanguard**—during the 1957-58 **International Geophysical Year.** The purpose of the launching was to test the delicate instruments that will give the Vanguard its brains and also to try out **new launching facilities.** Beginning with **a target date of early 1958,** about a dozen Vanguards will be fired into orbits about 300 miles high where they will relay information about that unexplored area back to earth. The artificial "moons" will be fired into the sky in three-stage, seventy-two-foot rockets. The Viking fired last month compares to the first stage of the Vanguard (*see cuts, below*).

■ Late in November, **Secretary of Defense Charles E. Wilson** sent a memorandum to the Armed Forces Policy Council spelling out the roles and missions of the US armed forces. The new memo made **no basic changes** in present roles and missions but said that "the development of new weapons and of new strategic concepts, together with nine years' operating experience by the Department of Defense, have pointed up the need for some clarification and clearer interpretation. . . ." **For more on the memo,** see page 55.

Left—final check of a Viking rocket before it was fired last month at Patrick AFB, Fla., in the first of a series of tests being conducted for project Vanguard *(see text)*. The Viking was launched to test some of the delicate instruments that will be used in the Vanguard earth satellites as well as to try out new launching ramps.

Right—the Viking at moment of firing. It is built by The Glenn L. Martin Co., and is powered by a 21,000-pound-thrust Reaction Motors engine. It reached an altitude of 125 miles and a speed of 4,000 mph before it plunged into the Atlantic 180 miles from take-off.

■ The **longest missions** ever flown by the AF's giant Boeing B-52 Stratofortresses were completed late in November. In a dramatic demonstration that **SAC's planes are capable of bombing Soviet bases** from bases in the US, four of the planes took off from Loring AFB, Me., and another four took off from Castle AFB, Calif., to fly **13,500 to 17,500 miles** in from twenty-six to thirty-two hours. The planes flew counter-clockwise courses and crossed such points as Labrador, Greenland, the North Pole, Alaska, and California. The bombers were **refueled in the air,** but the AF would not disclose how many refuelings were required for the flights. Two of the planes landed at Friendship International Airport near Baltimore where newsmen were permitted to question the crews.

SAC's other bomber, the B-47, was also in the news. The sleek medium bomber, already approaching obsolescence in speed and range, will **gradually be transferred to the Tactical Air Command** as newer, faster bombers such as the Convair B-58 Hustler become available to SAC (*see* AIR FORCE, October '56). The transfer will give TAC a greater mobility to meet "brush-fire" aggressions anywhere in the world, and the plane could also be **used as a tanker** for TAC's fighters and bombers. It has been estimated that SAC now has 1,200 B-47s.

■ Cadets at the Air Force Academy will begin wearing distinctive **new uniforms** next fall (*see cut, page 21*). The designs were developed by **Cecil B. deMille** and his associates, **Henry Wilcoxon** and **John L. Jensen.** Mr. deMille was asked to develop the designs because, in his many years of producing motion pictures, he had studied and portrayed past and present uniforms of many countries. The famous producer is an aviation enthusiast and became a pilot in 1917.

Prototypes of the new uniforms were recently shown to Academy cadets and almost all liked them better than the present uniforms. Mr. deMille said that he thought "these are the uniforms that the cadets themselves will want to wear. If the man in the uniforms is happy with them, that is the main thing; if his girl admires them, that is even more important."

For designing the uniforms, **Mr. deMille has been awarded the Exceptional Service Award** by the AF. The citation said that Mr. deMille's experience "is abundantly reflected in the uniform designs which will be proudly associated with the Air Force Academy for years to come."

(Continued on page 21)

DOLLAR ENGINEERING—Advanced aerial weapons bearing the Northrop name are developed to achieve maximum economy through ease of production, maintenance, and operation. A notable example is the new supersonic trainer now being developed by Northrop for the U. S. Air Force. Light in weight and low in cost, this airplane embodies a basic concept which can result in a whole new family of effective aerial weapons, all linked by the same principle of simple and economical design. Since national defense dollars and national manpower are in short supply Northrop will continue to introduce the dollar into the engineering equations; will continue to employ "dollar engineering" in using the best science and technology to create the *low-cost* solution to a national defense problem and produce more Air Force per dollar of national defense budget.

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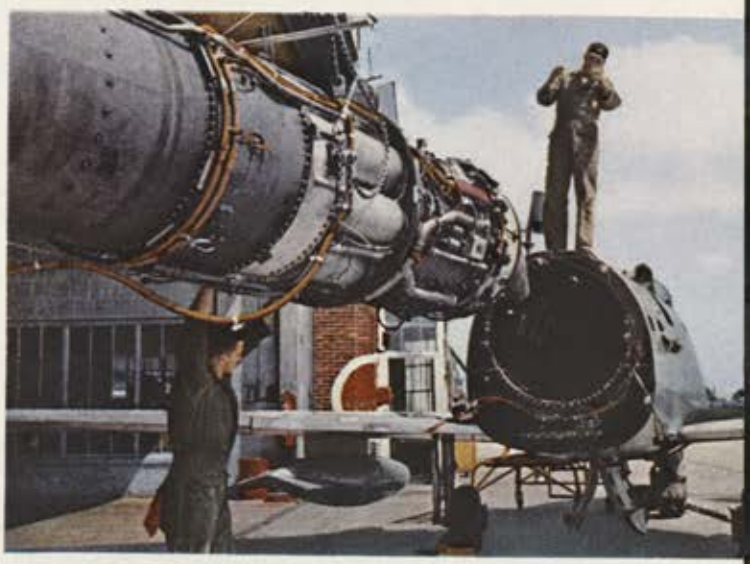
"To help prevent aggression, American airpower must be able to 'counter-punch.' We have this ability today, but only continued teamwork between the Armed Forces and industry can make it possible in the years to come."
—**ADMIRAL ARTHUR W. RADFORD,** *Chairman, Joint Chiefs of Staff*

All of the sleek jet aircraft you see on the left are powered by General Electric jet engines. In 1941, G.E. built America's first jet powerplant for the USAAF. Since then, the company has provided the "thrust" behind 11 famous jet planes —each more capable than its predecessors.

Latest G-E contribution to defense is the J79 jet engine. Already making history in the world's fastest fighter, the Lockheed F-104A, the J79 delivers more power per pound than any other jet of comparable size. Nor is the end in sight. New advances in the fields of jet, rocket, and atomic power—for instance, a space-satellite engine that flies at 4000 mph—are now coming from G-E aviation facilities.

Providing our Armed Forces with the complex equipment needed to keep peace is a continuing goal at G.E. For as General Electric sees it, progress in defense is vital if we are to preserve America's freedom, peace, and well-being. *General Electric Company, Cincinnati 15, Ohio.* 235-12

(1) USAAF Bell P-59A with GE I-A (first flight: 1942)
(2) USAAF Lockheed P-80 with GE J33 (1944)
(3) USAF Boeing B-47 with 6 GE J47s (1949)
(4) USAF NAA F-86 with GE J47 (1948)
(5) USAAF Republic P-84 with GE J35 (1946)
(6) USAF NAA F-86H with GE J73 (1953)
(7) USAF Lockheed F-104A with GE J79 (1956)
(8) USAF NAA F-86D with GE J47 (1949)
(9) USAF NAA B-45 with 4 GE J47s (1947)
(10) USAF Convair B-36 with 4 GE J47s, 6 piston (1949)
(11) Navy NAA FJ-2 with GE J47 (1952)



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A SEVEN-JET B-47?

In this case, yes. The seventh jet, in the rear fuselage pod-mounting shown above, will be Orenda's Iroquois, designed for supersonic speeds.

The Boeing B-47 is on loan from the United States Air Force for flight testing the Iroquois in the initial subsonic phases.

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Cecil B. deMille, center, receives the AF's Exceptional Civilian Service award for designing the new AF Academy uniforms. With him are General Twining, left, and AF Secretary Quarles.

Right—Training Officers at the AF Academy model the new uniforms which will go into service next fall. From left: Lt. Jerald Till wears the winter dress uniform—workhorse of the new wardrobe, in indigo blue elastique; Lt. James Clendenen wears the evening dress uniform; Lt. Carl Peterson wears the white summer parade dress uniform; and Lt. Frank Drew wears the winter parade dress uniform.

■ **HONORS AND APPOINTMENTS.** . . . **The Wright Brothers Memorial Trophy for 1956** has been awarded to **Dr. Edward P. Warner,** president of the council of the **International Civil Air Organization.** The trophy is awarded annually by the **National Aeronautic Association** for "significant public service of enduring value to aviation in the United States." Doctor Warner was cited for "continuous achievements over a broad range of aviation since 1917." . . . **Boeing Airplane Co. president William M. Allen and his associates, Gen. Nathan F. Twining, USAF Chief of Staff,** and **the USAF** have jointly been chosen recipients of the **Collier Trophy award** for "the greatest achievement in aviation in 1955." Boeing was cited for its **development of the Boeing B-52 Stratofortress** and the Air Force was honored for sponsoring and making the aircraft operational in 1955. . . . Retired AF Gen. **Orval R. Cook** is new president of the **Aircraft Industries Association,** succeeding **Adm. DeWitt C. Ramsey,** who was named vice chairman of the board. General Cook was Deputy Commander in Chief of the US European Command before he retired on May 31, 1956. . . . **Carter L. Burgess** resigned from his position as Assistant Secretary of Defense for Manpower, Personnel and Reserve in December and was **named president of Trans World Airlines, Inc.**

■ **AIRPOWER NOTES.** . . . According to *Fortune* magazine, increasing complexity of military equipment is responsible for **a new look in maintenance.** The magazine reported that last year 44.5 percent of the money spent by the AF for maintenance of heavy equipment went to civilian contractors as compared to fourteen percent in 1951. . . . **Northeast Air Command,** Pepperrell AFB, Newfoundland, will be abolished in the near future. The Command's responsibilities are to be apportioned **between ADC and SAC.** . . . A German scientist has told the **German Society for Space Research** that manned nuclear-powered rockets, traveling at **60,000 miles a second,** would make interplanetary travel possible by the year 2000. . . . The AF's **Lt. Parry O'Brien** set a new **Olympic shot put record** of sixty feet, eleven inches, for which he won a Gold Medal at the Olympic Games at Melbourne, Australia. . . . The AF has about **1,000 planes in the air every minute** around the clock, according to AF Secretary Donald A. Quarles. . . . **Myrtle Beach AFB,** S. C., was officially dedicated on December 7. The base—newest in the Tactical Air Command—is commanded by **Col. Francis S. "Gabby" Gabreski,** one of the AF's best known aces. . . . Hq., USAF, has given local base commanders the "go ahead" to purchase **dishes to replace steel trays in dining halls.** . . . **The deadline** to receive military applications and Congressional nominations to the **third class at the AF Academy is January 31.** . . . The first **Lockheed F-104 Starfighters** will be assigned to the Air Defense Command and the first **Boeing KC-135** jet tankers will be delivered to the Strategic Air Command in the near future. In December, the first turboprop transport aircraft to be used by the AF, **the Lockheed C-130,** was delivered to the Tactical Air Command. . . . The new **Convair B-58 Hustler** is reported to have outrun a North American F-100 in tests at Edwards AFB, Calif.

■ **STAFF CHANGES** . . . **Maj. Gen. Roscoe Wilson** is new Chief of the Military Advisory Assistance Group, United Kingdom. He retains his primary duty as Commander, Third AF. . . . **Maj. Gen. John A. Samford** has been assigned as Director of the National Security Agency. . . . **Maj. Gen. Francis L. Ankenbrandt,** Director, Communications Electronics, The Joint Staff, Hq., USAF, has retired. . . . **Brig. Gen. Allen W. Rigsby,** Professor and Head of the Department of Law, Air Force Academy, will become Judge Advocate, Hq., SAC, in March 1957. . . . **Brig. Gen. Albert P. Clark, Jr.,** Commander, 48th Fighter-Bomber Wing, USAFE, became Chief of Staff, USAFE, in December. . . . **Maj. Gen. Roy H. Lynn,** Commander, Western Air Defense Force, has been reassigned as Vice Commander, ADC. . . . **Gen. Lauris Norstad,** formerly Air Deputy to the Supreme Allied Commander, Europe, is now Supreme Allied Commander, Europe, and Commander-in-Chief, US European Command. . . . **Maj. Gen. Marshall S. Roth,** DCS/Materiel, ADC, has been made Chief of Staff, ADC. . . . USAF announced the appointment of three officers to the temporary grade of brigadier general. They are **Frank B. James, Glen W. Martin,** and **James W. Wilson.**—END

What's New With ★ RED AIRPOWER

Here's a summary of the latest available information on Soviet air intelligence. Because of the nature of this material, we are not able to disclose our sources, nor to document the information beyond the fact that the sources are trustworthy.

One of the planes that appeared at Tushino Airport during the Soviet Aviation Day display last June 21 was a twin-engine, turboprop, assault transport. In general outline it resembled the C-123, now being built by Fairchild in the US.

The Russians have since announced in their English-language newspaper, *Moscow News*, that the plane shown on Soviet Aviation Day was built to carry seventy passengers. "However," say the Russians, "this model did not satisfy us, and for this reason designer Antonov is designing a special four-engine turboprop plane for operation on international air routes."

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Highest flight altitude the Russians have mentioned in connection with their twin-jet TU-104 transport, NATO code-named Camel, that this column has seen is 40,000 feet.

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Here are two examples of why the Russians take a vital interest in air transport—indeed, why they have taken a great interest in air transport ever since Lenin took over the government. The trip from Moscow to Magadan, an important air base and city near the Sea of Okhotsk, north of Japan, takes thirty-two hours by air. By rail, with the trip completed by steamer, present travel time is fifteen days. And from fifteen to twenty tons of newspapers, a vital link in the Communist government's communications with its people, are shipped out of Moscow by air every morning.

° ° °

Soviet pilots stationed at the Mirny settlement which the Russians have established in the Antarctic report thirty-three flights carried out during June, July, and August. Not much flying was done during September because of ninety-mph gales. The Russians say they have flown as far as 1,240 miles north and 750 miles west and east of their camp. It is known that they have twin-engine IL-12 transports and MIL MI-4 (Hound) helicopters in use at Mirny.

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The entire meteorological service is being reorganized in the USSR to better meet the problems of jet flight, both for the airlines and the armed services.

° ° °

The doyen of aircraft designers in East Germany is Brunolf C. Baade. He is in charge of the Development Center of the East German aircraft industry at Pirna (on the Elbe River).

Baade was taken to Russia at the end of World War II where he has done important design work in the past, including twin-jet bomber prototypes whose test data contributed to the Soviet medium jet bomber, code-named the Badger.

Reportedly, Baade is paid 20,000 deutsche marks (East German), which translates into about 5,000 deutsche marks (West German), or about $1,190 per month. This is exceptionally high pay for East Germany.

° ° °

Assembly-line production of sorts has begun in East Germany on the twin-engine IL-14P (Crate) transport at the Central Aircraft Works *Industriebau Dresden* in Dresden and production of a four-engine jet airliner, the Baade-Bonin BB-152, is scheduled to get under way some time this year.

Piston engines are being made at the engine works, *VEB Industriewerk Karl Marx-Stadt*, at Chemnitz. These will go into the IL-14Ps.

° ° °

Lack of sufficiently skilled labor is hampering production of aircraft and engines in East Germany. Poster advertising is being used in East Germany to attract skilled workers into appropriate jobs. Even so, key personnel continue to flee to West Germany. Not many Germans pressed into service in Russia following World War II and who later were released to live in East Germany have in fact stayed there. Most have sought to get into West Germany at the first safe opportunity.

° ° °

One of the workhorse planes used by the military and civil service in the USSR is a sturdy biplane, the AN-2 (Colt). The designer, O. K. Antonov (now designing a four-engine turboprop transport), has reworked his single-engine AN-2 in a special version called the NRK to be used as an artillery spotter. NRK has two vertical fins contrasted to one on the AN-2. The new tail section carries some armament.

Antonov's plane is now being tested in competition with others developed for similar use by A. S. Yakovlev and Pavel O. Sukhoi, the latter a new name among Russian designers and the man credited with the new delta designs shown on Soviet Aviation Day.

° ° °

Aeroflot, the leading Soviet civil airline, has scheduled regular twice weekly jetliner flights between Moscow and Prague, Czechoslovakia. The flights will connect with Air France flights to Paris.

The East German Airline, meanwhile, has begun regular service from East Berlin (Schoenefeld) to Moscow's Vnukovo terminal. Twin-engine IL-14Ps (Crate) are used on the 1,060-mile run, taking five and a half hours, with two intermediate stops: Warsaw, Poland, and Vilna, Russia. East Germany has plans to fly on a regular schedule from Berlin to Peiping, China, by way of Moscow beginning in 1960.

° ° °

In recent months the Russians have been releasing more and more of their technical papers and periodicals so that they can be reviewed in the West. The Library of Congress has a number of such documents on file, and has translated many of them.

However, a perusal of those in the Library of Congress files and a checking of authors' names against the names of Stalin Prize winners of the past few years reveals that very few of the papers available in the West were written by the scientists and engineers "who got the money" for exceptional work.—END

Cessna T-37 designed for Jet Training

To meet jet age demands, the U. S. Air Force requires a jet trainer that makes it easy for cadet-pilots to master first-line combat airplanes.

The Cessna-developed T-37 introduces the cadet to all combat jet airplane characteristics while training on this safe, easy-to-fly jet trainer.

It is designed to provide the Air Force with a jet trainer that can be operated at substantial savings and cover the most important and longest phase of the cadet-pilot's jet training.

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Cessna T-37... safe, slow-speed landings for Air Force cadet-pilots.

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Under AFA's new plan, checks totaling $1,365 go to three flyers grounded for physical disabilities

Capt. Arthur R. Weisberg shows insurance check to Mrs. Weisberg, their two children, and family pet "Whiskey."

Flight Pay Protection PAYS OFF

THE AIR Force Association last month sent checks totaling $1,365 to three USAF flyers who had been grounded for physical disabilities, marking the first time in history that military flight pay has been provided from other than federal funds.

The three flyers were paid under the Air Force Association's new Flight Pay Protection Plan (*see opposite page*), which reimburses rated AFA members for loss of flight pay because of accident or ill health.

Largest of the three checks, for $555, representing three months' flight pay, went to Lt. Anthony Nigri (*see cut, right*), an Air Training Command radar observer from Mather AFB, Calif. Lieutenant Nigri, a B-17 bombardier with the Eighth Air Force in World War II, has been at Mather since last April. Married and the father of two, he was grounded because of an eye condition.

Referring to AFA's Flight Pay Protection Plan as "the best program ever set up for rated people," Lieutenant Nigri pointed out that under the new plan you "don't have to worry about hiding anything from the flight surgeon when you take a physical. After all, you know that even if you do get grounded, you will get your flight pay."

The second of the grounded flyers called the protection plan "a fine deal." He is Capt. Arthur R. Weisberg, of SAC's 26th Bomb Wing, Lockbourne AFB, Ohio. His check, for $400, represented two months' flight pay lost since he was grounded because of an intestinal obstruction. Like the others, Captain Weisberg will continue to receive monthly flight pay checks from AFA until he returns to flying status. Or, if he is grounded permanently, he will be paid for two years.

In a letter to AFA, Captain Weisberg noted "the courtesy and quick action taken" on his case. "None of us are anxious to collect the hard way," his letter said, "but, once something unforeseen has occurred, it's a pleasure to do business with your courteous staff."

Married and the father of two children (*see cut*), Captain Weisberg has been on active duty since 1943. He joined SAC in 1947 and is rated as a radar observer.

Lt. Anthony Nigri of Mather AFB, Calif., received $555, the largest check issued under the insurance plan so far.

The third grounded flyer—also a SAC radar observer—received $410, representing two months' flight pay. He was grounded for a duodenal ulcer.

Like the other two men, Capt. Jerome D. Perkel of Ellsworth AFB, S.D., was enthusiastic about the AFA Flight Pay Plan. "When you base your standard of living on total income," he said, "the possibility of losing around $2,400 a year is far from a nice prospect." Captain Perkel also is married and has two children.

The AFA plan was developed as a result of requests from members. It protects personnel on flying status in any of the services, who had been grounded for physical reasons. It is underwritten by the Aetna Insurance Co. Further information may be obtained from the Air Force Association national headquarters by using the coupon on the opposite page.—END

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WHEN THIS HAPPENS, YOUR FLIGHT PAY STOPS.

And it could happen to you—any time. Injury or illness can suspend your flight pay for months. What do you—and your family—do then?

Worry? Go broke? It could happen, because—if you're like most of us these high cost days—you're living right up to your income, *including* flight pay.

But now you can stop worrying. For the first time, you can guarantee your flight pay against loss through the Air Force Association's Exclusive Flight Pay Protection Plan, underwritten by the AETNA INSURANCE COMPANY of Hartford, Conn.

Clip and mail the coupon today for full details of this exclusive plan for AFA Members. If you're not an AFA Member, check the appropriate box, and we'll send you complete information about Association membership.

☐ Please rush me full information and an application form for AFA's Flight Pay Protection Plan.

☐ I'm not an AFA member. Send me information about the Association, and a Membership Application.

NAME_____

RANK_____ SERIAL NUMBER_____ SERVICE_____ (USAF, ANG, ETC.)

MAILING ADDRESS_____

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5

AIR FORCE ASSOCIATION'S

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LOCKHEED'S NEW STARFIGHTER (USAF'S F-104) — "A MISSILE WITH A MAN IN IT" — IS THE WORLD'S FASTEST JET FIGHTER, CAPABLE OF OVERTAKING AND DESTROYING ANY AIRCRAFT OF ANY SIZE KNOWN TODAY.

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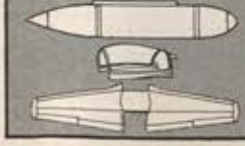	TANK-WING-MAJOR SUBASSEMBLY SUBCONTRACT PRODUCTION

Producing canopies and windshields for CONVAIR'S USAF F-102 jet fighter is a proud undertaking for Beechcraft. We're busily engaged, too, in classified engineering design studies of other F-102A and F-106A aircraft components.

For more than 24 years Beech Aircraft Corporation has served the aviation industry, earning an enviable reputation for quality products and on-schedule deliveries. Beechcraft's five major plants with 1¾-million square feet of plant area and more than 6,000 skilled employees are at work on a wide variety of prime and subcontract orders . . . including special projects for BOEING, McDONNELL, REPUBLIC, LOCKHEED and other leading aircraft manufacturers who depend on Beechcraft's capabilities.

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airman's bookshelf

"In terms of the age of the universe, geological time is but a moment. . . . Yet within that instant, that no-time-at-all, man has plumbed space in his imaginings and extended beyond predictable horizons his knowledge of his universe. In writing and in myth he has created a body of literature about the sky. . . ." So speaks editor A. C. Spectorsky in the preface to his *The Book of the Sky* (Appleton-Century-Crofts, $10), one of the most magnificent, magnetic, and beautiful literary mosaics yet seen in the library of air literature.

The Book of the Sky is an anthology, a collection of writings, photographs, and illustrations from ancient days to the "push beyond Mach" writings about all aspects of the sky and flight. This 490-page volume is divided into six sections. Men Venture in the Sky; Men Live and Work in the Sky; Men Against the Sky; Men Study the Sky; Men Fight in the Sky; and Men Wonder at the Sky. In each, Spectorsky has chosen from the vast field of literary exploration of the universe those writings which have withstood the test of time to emerge for their literary excellence. With these he has combined contemporary classics to give the book freshness and variety. The result is outstanding reading and meaningful insight into the great frontier of space, the infinite sky about which man has long wondered but only recently begun to trespass.

To the credit of this volume is the absence of the perennial favorites, the writings in which the interest of the subject matter surpasses the literary quality of its reporting, and also the "looked-for" excerpts from air fiction where the plot transcends in importance its air setting. Sixty-nine pages of beautiful and dramatic photography in gravure plus many rare line drawings supplement the writing. If we could wish for more, it might be about the men who fight in the sky and who by their deeds have written the greatest chapters in the conquest of the air. Some truly great selections are missed, especially in the field of poetry of the sky. The book includes no poetry. Nevertheless, *The Book of the Sky* definitely should be a part of every home and school library.

° ° °

Among the better air novels of the last few years is Richard G. Hubler's *Man in the Sky* (Duell, Sloan and Pearce, $4.95). This adventure-packed story is paced by the fast living, reckless, daring Gib Miller, World War II "wild-blue-yonder" fighter pilot and airman of fortune. Miller moves through a fantastic collection of unique "assignments," and combat experiences in a noble effort to find himself. First a Marine flyer in the humid, irritable Caribbean, then a Flying Tiger in China. As an Air Force captain early in the war he goes into the infant B-29 program. Downright suspicious of anything with more than one engine, he finagles an assignment as an American observer with the RAF to become one of the top RAF pilots. He later instructs in a Florida AF flying school and, after his discharge, flies a stint with the Israelis against the Arabs. Next, he's with an aircraft company in California testing equipment out of a desert research center. And on a test flight in the "XFR-9" he disappears while probing the unknown. Gib Miller is a man who feeds upon thrills and excitement. For him the jig-saw puzzle of life fits together only briefly in a small cramped cockpit behind an engine which can take him up and away from the unrealities of his life.

Man in the Sky is written with all the frankness that was the lot of the men of the air like Gib Miller—a species produced in the cauldron of war and for whom society has no pattern, because the answers which his type needs just don't exist. Whenever the plot begins to lag between scenes, interest is carried by Hubler's attractive, unusual, and arresting style. Over-all, it may be too depressing and pessimistic for many, but for the airman, it will be reliving a chapter out of history, authentically composed, and vivid for the description of an era, of a breed of men, and of a brutal war in the air.

° ° °

I Was A Chaplain on the Franklin, by Father Joseph T. O'Callahan, S. J., Lt. Cmdr., USNR (Macmillan, $2.75), tells the story of heriosm, courage, and drama aboard the aircraft carrier *USS Franklin* after it was all but destroyed by Japanese bombers on March 19, 1945, off the coast of Japan. For his acts of heroism and leadership on the stricken ship Father O'Callahan received the Congressional Medal of Honor.

° ° °

Anybody who has ever put in a tour in the Pentagon should enjoy *Winston in Wonderland*, by Maj. Winston M. Estes, USAF (Eagle Books, $3.50). A highly entertaining, humorous (though strained in spots) story of the Pentagon, its occupants, and its "way of life and business" by a former resident now safely in Europe.

° ° °

For the younger air-minded set *The Helicopter Book*, by Henry B. Lent (Macmillan, $2.75), is a simplified, clear, well-illustrated story of the whirlybirds with a foreword by 'copter pioneer Igor Sikorsky.

° ° °

And for the scientist, engineer, student, and instructor three comprehensive volumes add to the technical side of aeronautics. Two new ones are in the six-volume D. Van Nostrand series *Principles of Guided Missile Design*, edited by Capt. Grayson Merrill, USN: Volume II *Aerodynamics, Propulsion, Structures*, by E. A. Bonney, M. J. Sucrow, and C. W. Besserer ($12.50); Volume III *Operations Research, Armament, Launching*, by Grayson Merrill, Harold Goldberg, and Robert Helmholz ($12.50). This series is fast becoming a landmark in missile technology. *Supersonic Inlet Diffusers and Introduction to Internal Aerodynamics*, by Dr. Rudolf Hermann (Minneapolis-Honeywell Regulator Co., $16), is a highly technical treatise on supersonic aerodynamics.

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In the paperbacks: *Slattery's Hurricane*, by Herman Wouk (Permabooks, 35¢), tells the story (fiction) of Navy flyers who chart the big winds; *The Wright Brothers*, by Fred C. Kelly (Ballantine, 35¢), a reprint of the "classic" authorized biography; *The Navigator*, by Jules Roy (Signet, 25¢), translated by Mervyn Savill, is a novel about an RAF bomber crewman in World War II. Two excellent volumes by one of America's top writers on the air, Anne Morrow Lindbergh, are in reprint editions: *Listen! The Wind*, a magnificently written story of a 1933 flight around the North Atlantic, surveying air routes between America and Europe, and *The Steep Ascent*, a fictionalized account of an actual incident during a flight across the Alps. Both are Dell Books, at 35¢ each. The highly popular seller *Forbidden Area*, by Pat Frank (recently televised on "Playhouse 90") is now paperbacked by Bantam Books, 35¢.—END

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An Editorial

We're Heading for A 110-Wing Air Force

WHEREAS, it has become apparent that the Air Force program of 137 combat-ready wings by June 30, 1957 is an unrealistic goal under present fund policies,

Now, therefore, be it resolved: that the Air Force Association petition the President, the Congress, and the Secretary of Defense to re-assess the existing force goal of the Air Force and the funding designed to support it, and either realistically revise the force goal of the Air Force downward or its funding basis upward.

This resolution was passed by the Air Force Association Convention last August. At that time we predicted editorially that the 137-wing program was dead. We did not know then what force level had replaced it, but we felt that there should be some degree of correlation between the announced force level and the funds made available to attain it.

We were reporting the facts. Frankly, we would have preferred to see the funding basis increased, to a point where it would support the 137-wing program as the minimum our military leaders had judged necessary to meet the threat. Failing that, the next best thing is to know how large an effective force level can be supported with the available funds.

For many months it has been apparent that this level is not 137 combat-ready wings by June 30, 1957. But the facts are that we are not even coming close.

If we are lucky, we may be able to salvage from current and planned fiscal authorizations as many as 110 effective, modern, combat-ready units by sometime in 1960. At various intermediate dates along the way we may show paper strength substantially higher. But, using the basis upon which the 137-wing program was originally presented to the public, we will never come within shooting distance of that figure, short of war or some comparable emergency.

The sole positive element in an otherwise negative picture is the fact that the Air Force no longer needs to live a lie. The 137-wing program *is* dead. Its obituary is being written in the Fiscal Year 1958 budget—long after the death notice we published last August—and long after everyone acquainted with the facts knew that the program was on the ropes.

The Air Force fought valiantly for its 137 wings in the "New Look" battle of 1953—and actually had high hopes of building them, particularly when this program had received the Administration's blessing. We were not as optimistic, and we submit that history is bearing us out. Never has the Air Force been permitted to build to an agreed goal. The 143-wing program and other predecessors of the present force goal failed in the same way and for the same reasons. And, if the record of the past were not enough, there were some practical obstacles along the way that spelled certain defeat. In the build-up as planned, the key money year was FY 1957. This was the year in which there had to be a considerable increase in funds—about $4 billion—if the program was to succeed. Unfortunately, 1956 was an election year—and only those blind to the political facts of life really believed that the money would be forthcoming.

It was these selfsame political facts of life that put the Air Force in a desperate bind. It was forced to masquerade—to live a lie—and to maintain a front of the promised 137 wings. It was not permitted to admit that the goal was never to be attained. All along the way, the Air Force struggled behind the scenes with the problem of over-programming and under-funding. It was forced to work toward the paper goal of 137 wings with resources that could barely provide for 110 combat-effective wings. And that is precisely where it is headed today, 110 wings.

No one says any more that engineering genius and management experience could and would provide 137 "good" wings. But still with us are phrases like "reducing lead time," "more bang for a buck," and "we have the strongest Air Force ever in our peacetime history"—the old saws which, incidentally, were used to cut off the limb the Air Force was directed to climb.

The last four years' record of aircraft procurement alone is enough to prove that a modern, effective 137-wing force could never be realized. In 1953, the procurement program provided for more than 5,000 aircraft. In the years following 1953, procurement has averaged fewer than 2,000 planes per year—not even enough to meet attrition needs, let alone build strength. And even if

(Continued on following page)

the required aircraft had been built, the personnel ceilings forced upon the USAF would have prevented an effective build-up.

In 1953 the Air Force had 977,593 military personnel to man 106 wings, and not all of these were effective. Nonetheless, this number was forced steadily downward until mid-1956, when it reached 916,000. With 60,000 fewer men in uniform, the Air Force was programmed to man 131 wings at that time. If one takes this increase of twenty-five wings at an average of 3,000 men each, it would have required 75,000 more men. Instead the Air Force ended up with 60,000 fewer.

We have never felt that the 137 wings or any other number was a magic one. But, if it is impossible to maintain a scheduled force goal with the resources made available, then we believe the force should be reduced to some number that can be maintained effectively, instantly ready for combat. This presents another danger, however. In light of the record, our fear is that some of the fiscal-minded authorities responsible for the 137-wing debacle, will again prune the heart out of any lesser number.

Our second worry is the hoax that is being perpetrated upon the American people.

Phrases like, "Our air strength is higher than it has ever been in history," and "New weapons make it possible to reduce the size of the force" are not only meaningless, they actually delude the public. They are certain to be repeated this year, and some new ones added.

Let's take a look at phrases like, "Our air strength is higher than it has ever been in history." What difference does it make if we are twice as strong as we ever have been, if the Soviets are even stronger?

As to substituting the effectiveness of new weapons for forces, two questions are in order. What new weapons will we have in 1958 that were not foreseen, in fact counted upon, when the force plans were made back in 1953? We don't know of any. But if there are such weapons, will they be operationally ready for the combat force?

These are dangerous times: Even Mr. Dulles privately admits so. Such danger can only be effectively faced with the force in being. This means that the force must be ready at all times. Weapons on the drawing board or in development are useless if war comes before they are ready. You cannot promise security today on the basis of tomorrow's weapons.

The fact is that the 137-wing planners knew all about these new weapons. And there have been only a few minor changes since that decision was made. But there have been big changes in Soviet strength. The Communists have made great and unexpected strides since 1953. Even General Twining has admitted they have outstripped our estimates. And it is our strength relative to that of Russia that we should worry about. It is not important that the US Air Force of 1957 could lick the US Air Force of 1953. We want to know how it stacks up against the Reds.

It is in this context that budget pruning must be examined and the public honestly informed of the consequences.

The testimony taken by the Symington Committee—sworn testimony of top experts—shows clearly that the Soviets are closing the gap, and the risk is increasing day by day.

The Fiscal Year 1958 budget had not been made public when we went to press. But there were many indications that it will be a repeat of the FY 1957 program—short in dollars, long in explanation.

Manpower, controlled by ceilings as well as dollars, will be too tight for comfort. Pegged at around 936,000 men, it need only be compared with the 106-wing figure of 977,000 for one to see the downhill trend. Shortage of men means a shortage of security. The crews General LeMay needs to maintain his force in a state of even partial alert requires more men than we needed back in 1953 when the Soviets did not have the long-range nuclear capability they possess today.

A continuation of the 2,000 annual aircraft procurement figure will mean a continued decline in the manned aircraft force. More money will go into missiles, but most of these weapons that are taking a bigger bite of money every year are still a long way from operational.

Last year the Air Force got $1.2 billion for public works. This is the money used to build new bases, including the funds that will enable SAC to disperse, and to provide passive protection for existing bases. General Twining called this amount too low last year. If it is not increased this year, it will mean that General LeMay's striking force is becoming less and less secure.

Not only will the effectiveness of the present Air Force decline—we are losing our desperate struggle for the weapons of the future. There is no evidence that the ceiling on Research and Development funds will not continue in force. We need not rely upon conjecture as to the result of such a ceiling. General Putt, head of AF research and Development, has already outlined the results. Basic research is proving to be the long suit of the Soviets. At the same time, America is reducing its efforts in this field to a token gesture. Without the foundation this research provides, our whole future in aeronautical development will wither. Commenting on last year's ceiling, General Putt said that the money available for studies that would influence our 1958, 1959, and 1960 programs is reduced practically to zero. If the ceiling of $600-odd million is repeated, we will have next to nothing in 1960 and 1961. The Soviets show signs of gaining every year, and we are losing.

Even the research and development programs we now have under way will suffer. Projects such as long-range radar and high-energy fuels will be set back. Work on the nuclear-powered bomber and the chemically-powered bomber will be reduced to token efforts. No one knows precisely when the new ballistic missiles will be an effective substitute for the manned bomber. Yet we face the prospect of having no other substitute for the B-52, which by 1962 will be obsolescent.

The costs of missiles, and the increasing amounts required, are reflected in a recent statement by General Twining. In 1954, missiles took only ten percent of procurement funds. In 1958, the estimate is aircraft sixty-five percent, missiles thirty-five percent. By the 1960's the Chief of Staff sees this ratio rising to a fifty-fifty split. The dilemma is that the major portion of this money will go for weapons still in the developmental stage—and which contribute not one whit to strength-in-being.

We will know more about how well the money matches the problem when the budget is published. We do know that the problem has grown, rather than diminished. We also hear that the money will grow, also, but scarcely in proportion. We know that the number of wings will be cut, officially, from a figure that they were never destined to attain. We find small cause for optimism. We have not pinned our faith to any magic number. But we find even less reason to pin it to any magic lack of numbers. We have twenty-seven years to stay alive until it will be George Orwell's 1984, when "Peace Is War" and weakness is strength. But until then, we prefer the time-honored definitions.—END

U. S. Air Force Photo

An Air Force cargo plane delivers vital Air Force supplies to an overseas base.

AIR MATERIEL COMMAND IS GLOBAL LINK BETWEEN RESEARCH AND COMBAT UNITS

Supplying the Air Force with the right equipment, at the right place at the right time is the mission of Air Materiel Command. Its procurement, supply and maintenance operations fill the area between research and development on one side and combat units on the other. It is the largest business in the country.

Because our Air Force is operating in all quarters of the earth, AMC is a globe-circling operation with its headquarters centered at Wright-Patterson AFB near Dayton, Ohio.

The vital logistic mission for the Air Force involves billions of dollars in procurement, thousands of airplanes, and more than a million different kinds of supply items. Organizationally, AMC includes fourteen air materiel areas, or major area depots, located in the United States, Europe, North Africa, and the Pacific. Geographically, air materiel operations extend throughout the free world.

Working with weapons systems contractors in private industry, AMC procures the equipment which has been developed and tested by the Air Research and Development Command, and distributes the equipment to combat units as needed. The never ending objective of the Air Materiel Command is to maintain an instant combat readiness, logistic-wise, in this era of super speeds and super weapons to support Air Force operations at any point on the globe. The philosophy of Air Materiel Command is that such readiness must be characterized by the closest interrelations of combat and logistic elements, by speed, flexibility, mobility and economy.

This is one of a series of ads on the technical activities of the Department of Defense.

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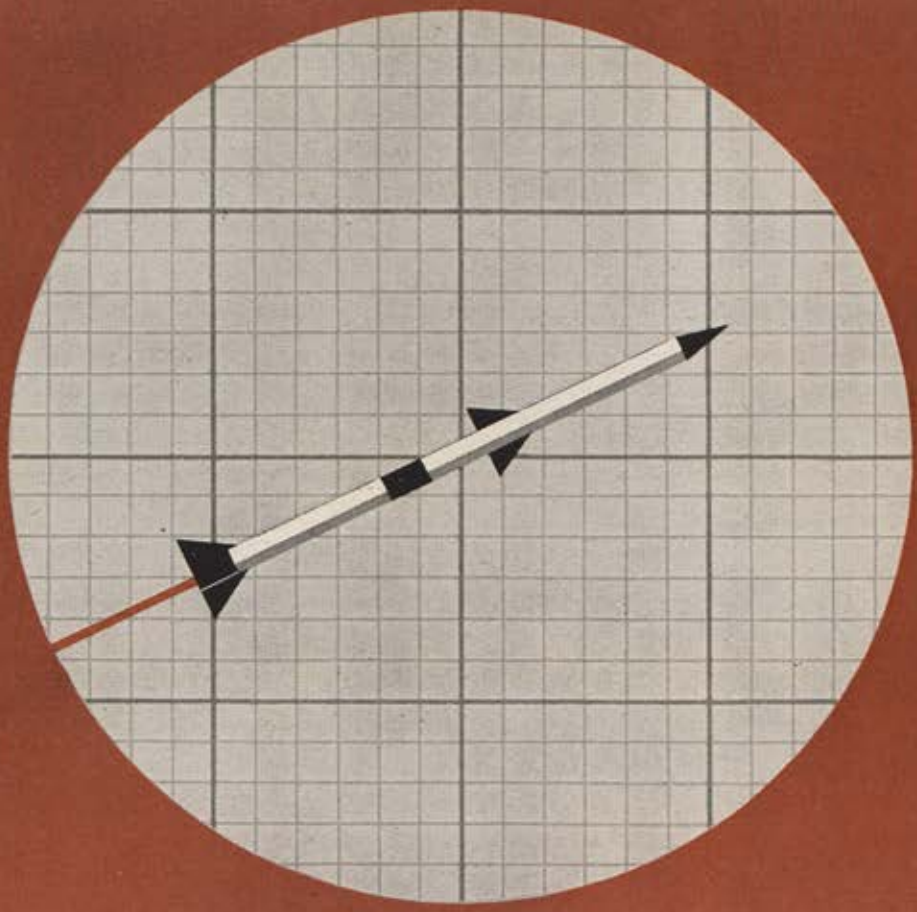

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For some time, Burroughs has been participating in the U. S. Air Force Ballistic Missiles program in the field of guidance. This program consists of two intercontinental ballistic missiles: *Atlas* and *Titan*, plus an intermediate range missile, *Thor*.

Here's more proof that in its specialized areas of computation—instrumentation, control systems and data processing—Burroughs has what it takes to shoulder the overall responsibility for defense projects from beginning to end: (1) from research to development; (2) engineering and tooling; (3) production, testing, field service and training.

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SHOOTING THE BREEZE

WITH THE EDITORS OF AIR FORCE MAGAZINE

In a speech in Washington, Adm. Arthur Radford, Chairman of the Joint Chiefs of Staff, had this to say about war and peace:

"I think we sometimes like to paint one all black and the other all white. But history has shown that not all wars have been bad, and not all peace has been good. There have been occasions when war has developed an environment for teamwork, cooperation, understanding, and greatness of spirit among nations. Peace has sometimes been the triumphant handiwork of deception, chicanery, and expediency over that which is morally right."

In England, Field Marshal Viscount Montgomery also had something to say on this subject in a lecture at the Royal United Service Institution.

"The political aim of the West," he said, "must . . . be peace, and as things stand today it has got to be peace through strength and strength through unity. But there must be a real determination to protect and maintain our way of life in the face of aggression and, if necessary, we must be prepared to fight for this aim. Certainly the surest way to prevent war is not to fear it."

☆

The 657th Aircraft Control and Warning Squadron, Houma, La., reports that a Louisiana shrimp boat recently "caught" an F-100 wing tank belonging to the squadron and returned it to them.

☆

The following is an extract from *Aviation Studies (International) Limited* which we think is significant. It was headlined "Money in Atoms and Aircraft."

"It is useful to compare the part that money plays in two Government agencies. In the AEC money is a secondary consideration to policy. Engineers establish a program of atomic weapons which involves building a number of plutonium reactors or isotope separation plants. The aim is thus fixed and the money is appropriated to realize it. In Russia it is the same—aims are established and money appropriated accordingly.

"But whereas the Russians build their aircraft in the same way as they make nuclear weapons, in the West money is the means of controlling air policy. This can be carried to absurd lengths. For instance in England the Chancellor of the Exchequer, who knows nothing about aircraft, arbitrarily decides that there is to be only one 15,000-pound-thrust turbojet and technological policy has to be trimmed according to his whims.

"The question that faces Americans is whether in the period ahead aircraft ought to be masterminded differently from atomic weapons. It might be decided for instance by the JCS that certain vehicles are required, and money

(Continued on following page)

". . . and I still say it's a mirage!"

Our Breezecake gal this month is doing her bit by attaching a poster—urging former AF men to keep active in the Reserve—to one of a fleet of semi-trailers operating in eastern states. The semi is one of the Mercury Motors fleet. The girl? We don't even know what her name is. But our guess is that she's not optional equipment.

Mrs. On Soon Whang, directress of the Orphans Home of Korea and Col. Dean Hess with one of the orphans on Cheju Island. Below, Dan Duryea and Rock Hudson as they appear in "Battle Hymn," a movie based on Colonel Hess's life.

arranged to implement the policy. Delivery systems are inextricably entangled with development of explosives and some think they should be procured in rather the same way. But decisions and hardware are removed from the public gaze.

"To extend security violation would be a new step. In other words, combat aircraft would be brought within the procurement aegis of atomic weapons and the regulations for atomic procurement would apply also to the associated delivery systems."

☆

Universal-International's motion picture "Battle Hymn," the story of AF Col. Dean Hess, an Ohio minister-turned-combat-pilot, will be released late in February. For Colonel Hess, December 7, 1941, meant even a more radical change in life than it did for many other men. Trained for the ministry, he chose to go to war as a combatant, not a chaplain.

As a fighter pilot in World War II and the Korean war, he flew more than 300 missions. In June 1950, with ten American pilots, four ground officers, a hundred enlisted men, and ten F-51s, he was assigned to develop a South Korean air force. Their experiences reveal a side of that war not told before.

Attention was focussed on quiet, modest Dean Hess because of his great efforts for Korean war orphans. He saved thousands of them in Seoul from the oncoming Communist armies. He herded the children to Seoul airport and in the famous "Operation Kiddy Car" put them on planes for the safety of Cheju Island. He has continued his assistance to these orphans, founding an institution for them. From funds he gained in speaking engagements and public appearances he has given them financial assistance, and profits from both the book, *Battle Hymn,* and the movie will go to the orphanage. Rock Hudson appears as Colonel Hess in the movie, which also stars Dan Duryea, (*see cuts*).

☆

Washington, D. C. and New York writers were guests of the Air Training Command on a recent tour of ATC installations in Texas and Florida. Maj. Gen. Gabriel P. Disosway, Commander of the Flying Training Air Force in Waco, Tex., told the writers that the AF hopes to put cadets into jets faster in the future. Early in 1958, the Cessna T-37 is scheduled to replace the prop-driven North American T-28 at USAF Contract Primary Flight schools. By using jets, the AF hopes to speed up the time it takes to make a jet jockey. The group of writers flew about 4,000 miles in visits to Laredo AFB, Moore AB, James Connally AFB, Goodfellow AFB, and Tyndall AFB.

☆

The following verses came to us by way of Col. Milton M. Towner, Professor of Air Science at the University of Notre Dame. They were written by T. Vincent McIntire, president of Toastmasters International, Zanesville, Ohio. Mr. McIntire's son, John, is an AF-ROTC graduate (Notre Dame '56) and is now taking flying training. Another son, Michael, is now a senior in the AF-ROTC wing at Notre Dame. Mr. McIntire said he got the idea as he was flying to Los Angeles and watching a jet etching its trail in the sky. We think they are pretty good.

JET JOCKEYS

The sky is their blackboard, the jet trail their chalk,
Horizons for windows, cloud carpets to walk,
Sun and stars are their playmates, wind and weather they fight,
Kids learning by doing, and doing all right!

Helmeted centaurs outrunning sound,
Celestial cavalry scorning the ground,
Learning their lessons, discovering when,
In shaming the eagles, boys become men!

☆

There were a lot of red faces among the missile men the first week in December when one of the Northrop SM-62 Snarks decided to head off toward Brazil—completely off-limits for any well-behaved missile. And where there is embarrassment, there are chuckles—to those on the outside. One of the biggest chuckles came from a New York *Times* story on December 8, headlined "Of Snarks and Things—How a Baffling 1876 Document led to the Thingamajig and the Boojum." It was bylined "Wallace (and Lewis) Carroll." With the kind permission of the New York *Times*, the story of the "Snark-infested waters of the Amazon" is reprinted below:

WASHINGTON, Dec. 7—Charles E. Wilson, Secretary of Defense, who complained this morning about leaks to

(*Continued on page 39*)

To NATO from Canada

Camouflaged in official NATO colors and proudly flying the Canadian Ensign on their tails, the first Royal Canadian Air Force squadron of AVRO CF-100's to join NATO air defence in Western Europe, departs for its base in France.

This flight, the first of several scheduled to hop the North Atlantic this year and next, is Canada's response to a specific requirement of NATO for all-weather, night fighters.

It is one more of Canada's contributions to the defence of Western Europe, while continuing round-the-clock interception alert in the defence of North America.

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Kaman built the first turborotor helicopter flown anywhere.

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Kaman again pioneered in the helicopter gas turbine field with this HTK powered with twin turbines.

Kaman Aircraft and Lycoming scored a turborotor first when this Kaman HOK helicopter took to the air powered by Lycoming's XT-53, the first U.S. free-shaft gas turbine specifically designed as a helicopter power plant.

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this newspaper on the military budget, had a new security case on his hands tonight.

Who, the Secretary wanted to know, had leaked the story of the missing Snark to Lewis Carroll?

The few known facts in the case were:

Yesterday, a Snark, one of the long-range missiles that Mr. Wilson had explicitly put under the control of the Air Force, escaped somehow from the control of the Air Force and took off thataway into the wide blue yonder.

Today the Air Force was trying to trace the missile, and the State Department was asking South American diplomats whether any of their villages were missing.

Tonight the Counter-Intelligence Corps uncovered a baffling document. Headed "The Hunting of the Snark," it described in sinister detail the launching of the missile and the effort to trace it. The document was signed "Lewis Carroll."

Mr. Wilson's operatives quickly established that this was an alias for one Charles Lutwidge Dodgson.

They also noted that, though the report was written in limpid verse that could easily be grasped by a child or a tired Cabinet officer, it contained words that obviously were code:—Thingamajig, Jubjub, Bandersnatch, Boojum.

But then they observed that the document was dated 1876. Mr. Wilson, however, was reported to have told them not to be put off by such a childish subterfuge and to press on with their investigation.

The trail immediately led to Patrick Air Force Base in Florida, where the Snark was launched yesterday. Carroll-Dodgson had put at the very beginning of his rhyming report this circumstantial account of the launching:

"Just the place for a Snark," the General cried
As he boarded his crew with care;
Supporting each man on the top of the tide
By a finger entwined in his hair.

"Its form is ungainly, its rudder is small"—
(So the General was heard to remark)
"But its steering is perfect! And that, after all,
Is the thing that one needs with a Snark."

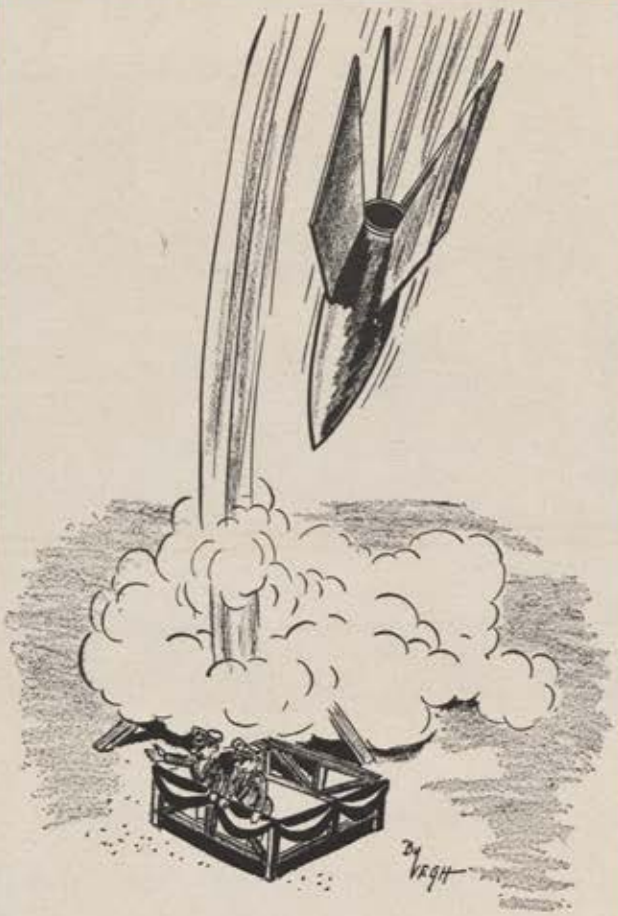
There followed an account of Mr. Wilson's own part in the launching:

He was thoughtful and grave—but the orders he gave
Were enough to bewilder a crew.
When he cried, "Steer to starboard, but keep her head larboard!"
What on earth was the helmsman to do?

Then the bowsprit got mixed with the rudder sometimes,
A thing, as the General remarked,
That frequently happens in tropical climes,
When a vessel is, so to speak, "Snarked."

But the principal failing occurred in the sailing,
And the General, perplexed and distressed,
Said he *had* hoped, at least, when the wind blew due East,
That the ship would *not* travel due West!

The disturbing thing about all this was that Carroll was accurately describing what had apparently happened in the top-secret operation. The Snark had gone west instead of east. That was why the Army was blandly asking the Air Force tonight whether it had put Wrong Way Corrigan in charge of the missile program.



"We shot a rocket into the air . . . It fell to earth, we know not where . . ."

The second part of the Carroll document described the opening of the hunt for the Snark with Mr. Wilson exhorting the hunters:

"The Snark is at hand, let me tell you again!
'Tis your glorious duty to seek it.
But one thing is certain—and tell all your men
That I'll bust the whole Corps if you leak it.

For the Snark's a peculiar creature, that won't
Be caught in a commonplace way.
Do all that you know, and try all that you don't;
Not a chance must be wasted today."

Whether the Defense Department's best cryptographers could crack the code words in the document was a matter of uncertainty tonight. They were said to be vexed particularly by the word, "Boojum," which occurred several times, notably in the final line of the report:

"For the Snark was a Boojum, you see."

Mr. Wilson, it was reported had sent his agents back to their desks with a black look when they offered him the dictionary definition:

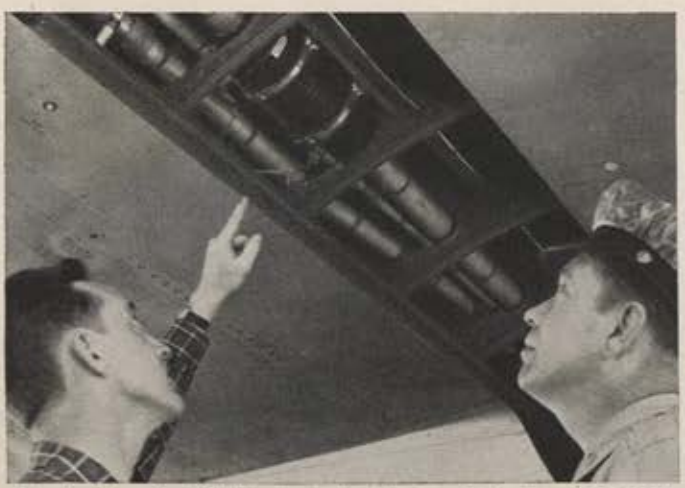
"Boojum • • • a species of Snark, the hunters of which softly and suddenly vanish away."—END

KB-50 carries out simultaneous refueling of three North American Super Sabres.

Fuel Flow Measured 50 Times Faster With New General Electric In-Flight Refueling Transmitter

Developed to help speed in-flight transfer of fuel from Air Force KB-50 and KC-135 flying tankers to bombers and fighters on long-range operations, the G-E In-Flight Refueling Transmitter is capable of measuring up to 10,000 pounds of fuel per minute as compared with the 200 pounds per minute performance of earlier models. The new transmitter unit, weighing only 17 pounds, is mounted in the fuel line leading to the line or boom which extends from the tanker plane during refueling. The transmitter complements its light weight with rugged construction to withstand the shock of peak flow surges including reverse flow—the sucking back of fuel when the refueling line or boom is retracted into the tanker. The flowmeter transmitter can operate at pressures up to 480 pounds per square inch, metering the fuel transferred with error of less than one per cent. Density compensation is not required, and the new flowmeter is insensitive to temperature and altitude changes.

For more information on this or any other aircraft fuel control instruments call your nearest General Electric Apparatus Sales Office.



Mounted in each of the three refueling lines on the tanker, the General Electric in-flight refueling transmitter meters fuel to the receiving aircraft at pressures up to 480 pounds per square inch.

This lightweight G-E transmitter can measure up to 10,000 pounds of fuel per minute. One power supply provides a constant-frequency source from which all three transmitters are operated.

10 pound transformer-rectifier has expected life of 3500 hours at temperatures to 71 C.

General Electric, unregulated transformer-rectifier will give the Douglas DC-8 28-volt d-c power. Voltage fluctuation is limited to ±7.3 percent without additional regulation.

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Four General Electric unregulated, airborne transformer-rectifiers, rated 35 amperes, 28 volts at full load, will furnish direct-current power for the new Douglas commercial jet airliners. The significant feature of the unregulated units is the minimum voltage fluctuation and one volt maximum peak ripple attained without reactors or other bulky regulation components. Within a load range of 0 to 25 amperes and 400-cycle input changes ranging from 195 to 202 volts line to line, the output voltage will remain within the limits of 25 to 29 volts. Maximum performance within these limits can be expected through 3500 hours of operation and at temperatures up to 71 C.

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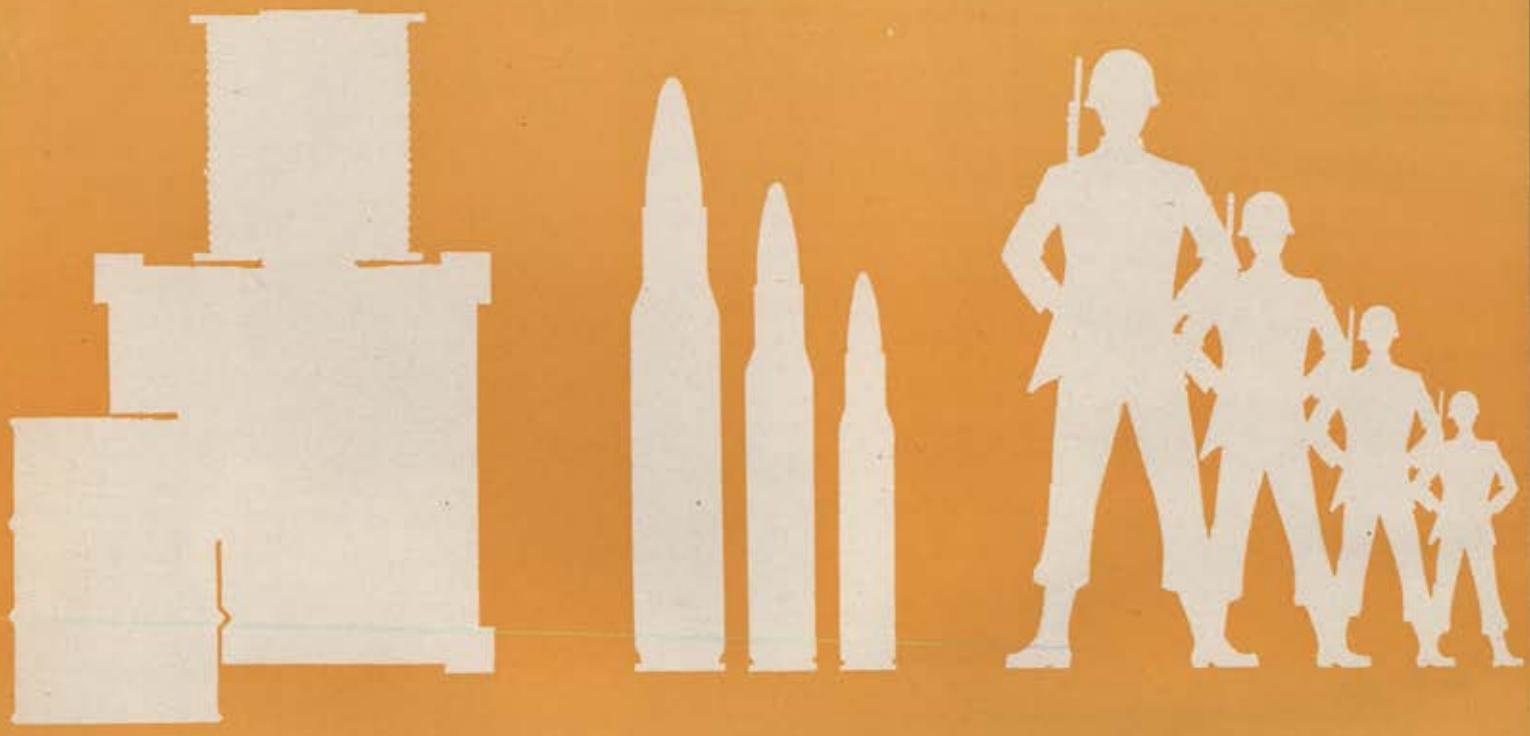

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JANUARY 1957

The Nature of NUCLEAR WARFARE

By Dr. Edward Teller

ALL OF us have become accustomed to the idea that nuclear weapons, which are so powerful, are also very scarce—that we, or anyone else, can only have a few of them. This idea has already undergone some modification. Certainly, if there is a scarcity of nuclear weapons, the scarcity is not based on lack of materials.

In this connection I would like to mention two points, both of which are matters of public record. The first is that the government makes available, for industrial use, nuclear material, Uranium 235. The price, I can assure you, is not below cost. The price has recently been reduced to about $7,000 a pound.

My other point is this: If you take this figure of $7,000 a pound and ask yourself, "Is it cheaper to make a given size of explosion with this $7,000-a-pound nuclear material, or is it cheaper to make it with conventional means, such as TNT?", the answer may surprise you. But before we get to the answer I want to make it clear that we are considering only the price of the nuclear material on the one hand and the price of the TNT on the other. We are not considering that fact that, when you want to deliver a TNT weapon, you pay much more, very much more, for the means of delivery than you do for the TNT itself.

But even without considering the wide disparity in delivery costs, TNT turns out to be considerably more expensive. Exactly how much more expensive I won't attempt to say beyond saying it is several hundred times so.

With this disparity in what we might call the effective cost of nuclear materials and TNT, it is obviously nonsense to think about nuclear materials as scarce. If they should become scarce it will be our own fault, through lack of foresight and lack of planning. If we convince ourselves that really these nuclear materials cannot, or should not, or must not be used in the future, we can behave in such a way that, at some future date, there will not be a sufficient amount. But if we plan properly, on the basis of foreseen needs, then in the long run all reasonable needs certainly can be covered.

Having, I hope, to some extent disposed of this idea of scarcity, I would like to talk about a much more difficult issue, much more difficult because it is much more elusive, and also much more charged with emotion. This is the question, "Is it proper now, or in the future, to use atomic weapons in warfare?" This is a question that has occurred to all of us, in one way or another. And no matter on which side of the issue you argue, you must certainly be aware of the other side of the issue, whether you admit it or not. Here are my own ideas.

I will start with a commonplace observation, but one to which I nevertheless will wish to return. There is no question that war itself is something which we have to try to avoid in the greatest seriousness, and with the greatest skill.

But if war comes, some people will draw a distinction between conventional weapons and nuclear weapons. They will say that the one, however dreadful, can be justified —and that the other cannot. In reply I would like to draw another kind of distinction. To my mind the distinction between a nuclear weapon and a conventional weapon is

(Continued on following page)

the distinction between an effective weapon and an outmoded weapon. Still another distinction can be drawn, but not between nuclear weapons on the one hand and conventional weapons on the other. This second distinction should be drawn between weapons used against an enemy's armed forces and weapons used against a civilian population.

This is an older distinction, a more logical distinction, a better-justified distinction.

Unfortunately, the only times nuclear weapons have been used in war so far—at Hiroshima and Nagasaki—they were used against civilian populations, and people have thereby been led to identify them with such use. Russian propaganda has exploited this theme and has made it difficult, perhaps for the time being impossible, to make use of nuclear weapons, even in situations where such use would be logical and justified.

This is a very shrewd position for the Russians to take. For it so happens that we are still ahead of them in this field, and actually ahead by quite a bit. Therefore, it is to the Russians' advantage to raise psychological objections to the use of the one weapon in which we do hold a lead, certainly a greater lead than in other weapons. As a result, I think it would be a considerable mistake for us to accept the idea that nuclear weapons are, on a moral plane, of a different nature from conventional weapons.

Against this background, I would like to discuss the nature of possible actual warfare, along the broadest possible lines, in terms of weapon systems, military services, types of actions, and types of people which may come into play in a future nuclear war. We must look the problem—this very dreadful problem—straight in the face, with the idea that a situation fully understood will be easier to handle and also easier to avoid.

Among our armed services, there is one which has taken full advantage of the possibilities of nuclear weapons. That service is the United States Air Force and, in particular, its Strategic Air Command. There appear to be three principal reasons:

First, nuclear weapons have already been used for strategic bombing purposes, at the end of World War II.

Second, nuclear weapons can produce, particularly if there are only a few of them, a most spectacular effect if used in this way. I'm not denying that this may also be the most effective use, but neither am I saying that it is necessarily the most effective use. But it is certainly the most spectacular use.

The third reason is the personality of a most excellent soldier—the Commander-in-Chief of the Strategic Air Command—who takes his duties very seriously and fulfills them very effectively. He knew how to take advantage of an important means of fulfilling the function of his command.

Following the lead of the Strategic Air Command, other branches of the Air Force have also taken up the matter. *[By other branches of the Air Force, Dr. Teller is referring to Tactical Air Command and Air Defense Command, and it must be admitted that a nuclear capability for these commands was slow in coming.—The Editors.]* As a result, it now begins to seem to some people that the Air Force is becoming so important that perhaps the best thing for the defense of this country would be to retain and expand our Air Force, and to discontinue—gently or otherwise—the services of the Army and the Navy. This may be the right solution. But I believe that a better and more practical solution would be for the other services to take advantage of the possibilities of nuclear weapons as the Air Force has done.

General LeMay—"A most excellent soldier . . . who takes his duties very seriously."

To begin with I will try to outline what some of these possibilities might be in the case of the Navy. I'm not talking about today, or even 1960. I'm talking about ten years from now, so we can be reasonably free in our imagination. At the same time, we cannot afford to pass up any good bets because there may be others who won't pass up those bets.

A certain proportion of the planning, building, and money-spending in the Navy is directed toward the construction of those superb machines, the aircraft carriers. I had the opportunity, a few months ago, to be taken around one of them in a little speedboat, and to look at it from all angles. It costs some money—quite a few million dollars, I understand. There are a few thousand people in it. Looking at it, at least from a speedboat, it looked to me like quite a good target. In fact, if I project my mind into a time when not only we, but also a potential enemy, have plenty of atomic bombs, I would *not* put so many *dollars* and so many *people* into so *good* a target. Come to think of it, I would not put *anything* on the surface of the ocean—it's too good a target.

This does not mean that I want to sink the Navy! Because the Navy has some nice little machines called submarines. I understand the Russians have a few—I suspect that they have more than we do.

[Vice Adm. W. V. Davis, Deputy Chief of Naval Operations for Air, recently said that the USSR is building more submarines a year than we expect to have in total.—The Editors.]

We have a nuclear-powered submarine, which is a wonderful thing because it can go fast under water. It is the only real submarine, because it does not have to emerge. It can stay under water to the limits of endurance of the crew. A submarine Navy—a nuclear-submarine Navy—is an extremely powerful weapon.

Today strategic action would have to be carried out by manned airplanes. But we are developing in a direction where strategic bombing may be performed, to a great extent at least, by missiles. It is not easy to launch a plane from a submarine. It is easier to launch a missile from a submarine.

Assume now, for the sake of argument, a conflict in which one side has gained superiority in the air. He certainly can keep his opponent's navy off the surface of the sea. But he cannot, with any similar assurance, keep his opponent's submarine navy from doing almost whatever that submarine navy wants to do. A submarine navy can not only take action to the enemy, it can also haul supplies.

In the bulk of these supplies the submarine has the potential capability of exceeding the airplane.

[It should be pointed out here that at present air-cargo development is proceeding much faster than the development of cargo-carrying submarines. However, the feasibility of undersea logistic carriers should be explored at a faster pace, at least so the two methods can be compared. The Editors.]

These considerations are likely to obtain whether one is involved in an all-out conflict or in a local outburst of the Korea type. To my mind, there is no essential difference between the effectiveness of operating in the air or under the water. But it appears there is an essential difference whether you choose to confine yourself to two dimensions in a time when we are fully equipped for three-dimensional operations. It seems to me that, so far as planning our future Navy is concerned, the conclusion is inescapable—we should build a submarine Navy.

In the case of the Army, I am sure that ninety-nine out of a hundred people continue to think about some sort of a front-line approach. A few talk about defense in depth. But most people still think about some territory belonging to one army here and some territory belonging to the other army there. I believe that the concepts are likely to become as outmoded as the concept of a surface Navy.

World War II was fought by armies on a really massive scale. Hundreds of thousands of people were concentrated into one offensive operation. Logistic preparations were made with a rapidity and engineering skill which I am sure surprised even the people who had made the plans. Such a thing had never been seen before, and I think it will never be seen again. At a time when we will have plenty of atomic weapons, both big and small, it will be suicide to put so many people into such a small bit of territory. It will be impractical to channel so many supplies through such narrow passages. The supplies will be interrupted. The people will be killed.

It so happens that atomic weapons, which make concentration impractical, also make it possible for us to fight without concentrating. Concentration has been needed in the past because of the very massive nature of the weapons and ammunition which people have had to use and handle. The moment you have light, easily transported but effective weapons; the moment you have modern methods of transportation on the ground, over water, under water, and in the air; the moment you have modern methods of communication, where units spread hundreds of miles apart can still keep in touch with each other, then it becomes possible for small battle groups, consisting of no more than a few hundred people, to operate independently or interdependently, and also effectively. Such operations will not only be effective, they will have, in their preparation and execution, a number of important general consequences. For instance, if we proceed on this basis, there will be no need for us, in order to help our friends and allies, to quarter our forces in their territory in peacetime.

(Continued on following page)

"I would *not* put so many *dollars* and so many *people* into so *good* a target."

'HUMILITY . . . DETERMINATION . . . CONVICTION'

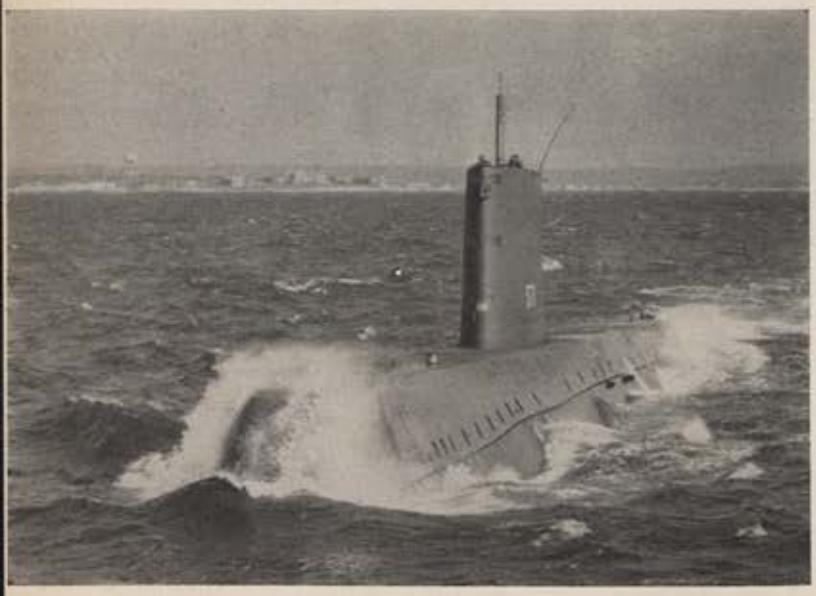
This article is the outgrowth of an informal talk by Dr. Edward Teller at a Shielding Symposium of the Naval Radiological Defense Laboratory in California in October. We heard about it, got hold of a transcript through the kind cooperation of the Laboratory, and asked Dr. Teller to turn it into an article. We were particularly interested because it antedated by several days an address Dr. Teller made before the Association of the US Army, which had been misinterpreted in some quarters—including such publications as *American Aviation Daily* and *US News & World Report*—as a repudiation of the doctrine of strategic retaliation by the "father of the H-bomb."

Born in Budapest in 1908, Dr. Teller is referred to in scientific circles as one of "the Martians"—an incredible foursome of Hungarian-born scientists whose migration to America has meant so much to all of us. Beside Dr. Teller, they are Dr. Theodore von Karman, dean of aeronautical scientists; AEC Commissioner Dr. John von Neumann, mathematician and designer of high-speed computers; and Dr. E. P. Wigner, one of the pioneer designers of nuclear reactors.

A close friend describes Dr. Teller thus: "As a nuclear physicist, Edward is among the best. He is not always wrong. He is not always right. But whatever he does is undertaken with a combination of genuine humility, a fierce determination to pursue every reasonable new idea, and a firm conviction that it is a great deal easier to do things than it is not to do them."

His avocations include playing the piano and writing poetry. He also lectures on science over a San Francisco TV station, a quick run from his work at the University of California's Radiation Laboratory in Berkeley, and the Atomic Energy Commission's Thermonuclear Laboratory at Livermore.

Dr. Teller's contributions to strategic airpower through development of the H-bomb are a matter of history. His concern about the effectiveness of ground forces in the nuclear age antedates by many months the most recent Communist crimes in his homeland. His interest in, and contributions to, tactical airpower, air defense, and sea power remain largely behind the security curtain.—The Editors.



"The conclusion is inescapable—we should build a submarine Navy."

Our forces can appear at any endangered spot within a very short time and, in peacetime, they can stay at home.

The real difficulty in building such a force is not, I think, likely to be a technical one. The real difficulty will be human. For a few hundred people to be self-sufficient will require courage, endurance, determination—all the soldierly virtues. It will require specialists. It will require professionals who can keep in repair intricate pieces of equipment in the field. It will require people who can survive in a strange country under battle conditions. This may mean that our soldiers might also have to be linguists. They may also have to know a lot about local habits and history. All this points to spending much more money per soldier. We will need a truly professional Army of the highest standards.

Thus far the discussion has been confined to offensive warfare. What about the defense? What do we do about an all-out attack on this country? I do not believe in the Maginot Line philosophy but, I think that passive defense has much merit as compared to active defense. We can hope to prevent a considerable fraction of an attacking force from finding its targets. But we cannot stop them all. Furthermore, the weapons are becoming so effective that even a fraction of them may produce a devastating effect.

Is there any possible defense in a situation of this kind? I believe that there *is* a defense. I do not think that the defense is satisfactory, but at the same time it might turn out to be exceedingly effective. It may make the difference between victory and defeat. It may also make the difference between being able to avoid a war by being prepared, and provoking a war by not being prepared.

I have in mind three phases of the defense, and I will touch on them quite briefly. Precisely these things have been studied in this Laboratory [the US Naval Radiological Defense Laboratory] with the greatest care, and by the greatest experts. At least in our country, this Laboratory is the only place where this problem has been attacked in a consistent and reasonable manner. The Civil Defense effort outside this Laboratory, as it stands today, does not measure up to the challenge of the task.

Civil Defense, or Defense, (which is essentially the same thing to me), has three phases. The first phase is to provide shelters. I have in mind deep, underground shelters which can accommodate at least a thousand persons per shelter. I have in mind such a number of shelters that in any densely populated area in this country, people can walk to a shelter within fifteen minutes. A plan of this kind is costly, but not prohibitively so.

Such shelters should be so constructed that they will stand up under the impact of the biggest weapons that we can think about. Their entrances might be destroyed, but in a big shelter of this kind it will be a relatively easy matter to have available both mining equipment and some people who know how to use it. They can dig themselves out again. These shelters could provide protection, not only against the radiation hazard, but also against the biggest immediate hazard—the fire-storm.

The shelters should have supplies of food, air, medicine, and communications equipment so that people in the shelters can be informed when it is safe to come out. With such a system of shelters, there is no need to anticipate, even under the most serious attack, that the casualties in a future war will be much greater than the casualties that have been experienced in past wars. Casualties in past wars were exceedingly heavy, and I know that what I am saying is not ultimately reassuring—it cannot be reassuring. Nothing about war can be reassuring. But at the same time we do not have to face a cataclysmic picture.

The second phase is one in which this Laboratory is again concerned. This is the question of the equipment for the clean-up job which will allow us to decontaminate, in the least possible time, areas which have to be entered again. This is a big technical problem, and this Laboratory is one of the very few places where it receives serious attention.

Then there is a third phase, hardest to visualize and most expensive. In an all-out attack, we can save all but a relatively few unlucky people, but we cannot save our industrial plant. A vital portion of our industrial plant will be wrecked, and it is possible that it will be practically wiped out. Then you may raise the question: "If this is a real prospect, aren't we licked even though we have survived for the moment? Won't we starve to death? Won't we perish from lack of organization—from trying to live in the kind of a world to which we are not accustomed?"

The necessary reconstruction and rebuilding of the essentials of civilized living is likely to be an exceedingly costly enterprise. But here there is a glimmer of hope. It is an enterprise which I believe we can successfully undertake in this country. For the time being, the Russians are *not* able to undertake it. Let me try to explain.

Today we have food surpluses. We are complaining that our food surpluses are too great. We could store these surpluses in such a way that in the case of an all-out attack, we still could feed our population for, let us say, two years. In two years we would have time enough to find out where food can be grown again, where contaminated areas can be cleaned up. We can be back in business so far as agriculture is concerned.

In many other ways we will have to look for the least vulnerable things to rely upon, and for ways to store the things with which we can rebuild. Our system of railroads is likely to be completely knocked out, at least for the moment. Our system of roads will stand up. It is probable that vital spots such as bridges will be out of commission. It is possible to store repair equipment near such vulnerable points in such a way that transportation throughout the country will not even lag. We can be back in business within a few hours of any attack. We could easily

"Concentration . . . has been needed because of the very massive nature of the weapons and ammunition."

"It will be suicide to put so many people into such a small bit of territory."

have an overproduction of cars. In fact, *let's* have an overproduction of cars. But let's put it mostly not into passenger cars, but mostly into trucks, and store them in safe places. At the same time, we should also have available spare gasoline supplies, so we would be able to carry our supplies for our military forces and essential supplies for civilian purposes from one place to another.

Our factories will be in ruins, but we can store power units in which energy can be produced. For that purpose, nuclear energy might be the best. We can store machine tools. We can store those parts that are hard to produce and are easily stored. These things will be extremely expensive—much more expensive than to make the underground shelters. I am not sure that it can be done. But I think there is at least a chance that it might be done, and we should at least investigate it.

Russia, which is struggling to build up an industrial civilization, cannot do the same thing. Its agricultural supplies are scarce. Its industry is working. In fact, it is a miracle that it is working at all. But it is certainly not working on a surplus. We can produce fat and store it. The Russians cannot.

Now, even if we would be so prepared, an attack would be terrible. But the main point is this: *If we so prepare ourselves that a terrible attack could hurt us but could not destroy us, then such an attack, I believe, will never come.* We can make sure that we can have the forces to strike back, not only to hurt an enemy but to destroy him.

Should a nuclear war come, I think its duration is likely to be inversely proportional to its size. I do have the feeling that a big nuclear war will never come. But if it comes, the period in which such a war will be most devastating will be very short, indeed. It will be measured in hours, possibly in fractions of hours. The period in which the decision is made as to who wins the war, on the other hand, will be long, such as ten years preceding the time of the war. The actual fighting will be, I think, a matter of days or weeks.

In conclusion, it would be unnatural for me to talk about the possibility of a future nuclear war without coming to the question of war itself.

I am sure there is no doubt in anybody's mind, that the purpose of all this preparedness is just one thing—to avoid a war. I believe that preparedness is absolutely necessary in order to avoid a war. In the long run, I believe preparedness is not sufficient to avoid a war. Something else is needed, and this something else is international law and order. How to establish international law and order is a question which is the business of the diplomats—which is the business of every citizen. It is the business of everybody who is thoroughly convinced that in some important matters he is, and must be, his brother's keeper, because this world has become too small to allow the functioning of completely independent and irresponsible units. It is becoming absolutely necessary that we should find some way in which all nations can live together in peace and in freedom. In some way or other, this will be accomplished, perhaps not in ten years, but perhaps within the lifetime of some of us.

If one could look back at the present period a hundred years from now, this enterprise of establishing, in some difficult and unforeseeable way, a world order which excludes war, will appear as the one and most important accomplishment of our age.

All this cannot be accomplished in complete safety. We will have to continue to live, at least for some time, in a dangerous world. But, after all, the living world has been living for 500 million years, and each individual in this living world has so far died, or faces inevitable death sooner or later. For the past few thousand years we have not only been living with the necessity of death, but also with the knowledge that each of us must die and that any one among us may be hurt—and fatally hurt—at any time.

This world is not secure, and for the individual, probably will never be secure. The fact that it has become insecure in other and additional ways must be considered as a great challenge, which, in my mind, cannot be resolved easily. It can be resolved eventually if we have intelligence and courage and understanding for people—not only for our own kind of people, but for other people as well.—END

Fox Able Four—B-29 refuels F-84 on first non-stop jet transatlantic flight.

The Man Who Gave Us a SAC-ful

SAC's Col. Dave Schilling was a fighter pilot—and he was also a fighter in the battle for recognition of the fighter plane's place in modern war

FIGHTER pilots are restless men. Their hands must be quick, for the many moves a man must make to ride ten tons of metal through the sky at supersonic speeds. Their eyes are alert, never relaxed, because it is through alertness that they are alive. And because they are fighters by nature, they have developed an inquisitiveness which makes them say, "There must be a better or a faster or a simpler way of doing this." And in finding it, the fighter business improves.

The late Col. David C. Schilling was a fighter pilot, one who left probably as great a mark upon his profession as any other. He was a colonel at twenty-four, an ace with twenty-three and a half air kills against Germany. After the war he fought, with a small group of friends, for recognition of the fighter plane's place in modern aerial warfare. More than any other American officer he was responsible for the development of aerial refueling techniques for fighter aircraft. He led the first jet fighter aerial flights over both the Atlantic and Pacific. He made the first non-stop jet flight from England to the US, for which he received the Harmon Trophy.

The word spread quickly when Dave was killed last summer. It spread from England, where the accident happened, to fighter groups in France and Germany, to the Far East, and to the States. Services were at Arlington Cemetery in Washington, and, the night before, the fighter clan gathered in a suite at the Carlton Hotel. They had come from every part of the world.

It wasn't a wake. Death was no stranger to this group. They talked a bit too loud because most fighter pilots are slightly deaf. They remembered, and their reminiscences usually centered around Dave, whose name they brought in without self-consciousness. They remembered him as a wingman, a squadron leader, and a commander of the Eighth Air Force's 56th Fighter Group because he had grown up with it. They remembered December 23, 1944, when he shot down five enemy planes, and they remembered his skill at tactics and leadership and just plain flying.

"He used to say," one recalled, "that the only time for sloppy flying was when someone was shooting at you."

The names in the room were as legendary as Dave's, some of them from the old 56th, known as Zemke's Wolfpack. Col. Hub Zemke, first commander of the 56th and an ace with nineteen and a half kills, was there himself. Hub used to tell his pilots:

"A fighter pilot must possess an inner urge to do combat." And, "When attacked by large numbers of enemy aircraft—meet them head on."

Zemke turned command of the 56th over to Dave on August 12, 1944. Under Zemke and Schilling the 56th produced more aces and shot more enemy aircraft out of the skies than any other group in the European Theater.

From the 56th also, there was Col. Francis S. "Gabby" Gabreski, ranking ace of the Air Force with twenty-eight victories in the ETO and nine plus in Korea. There were Col. Gerald W. Johnson with eighteen, Col. Dingy Dunham with sixteen, and Lt. Col. Frank Klibbe with seven.

There was Col. Art Salisbury, who commanded the 57th Fighter Group in the ETO, youngest Air Force officer ever to make full colonel. And Col. Bill Ritchie, a Ninth Air Force type who flew a Republic F-84 with Dave on the first non-stop jet flight from England to the US. Col. Albert Schinz, veteran of the Pacific fighting, was there. His sharp, analytical brain directed the non-stop flight and he, Ritchie, and Col. Bill Bacon shared in the Harmon Trophy honors won by Dave. Bacon was there. He had flown the refueling tanker. The fighter guys always referred to him as a "bomber pilot who thinks like a fighter pilot." Actually, he may be a little too big to fit into a fighter cockpit. Col. Dave McKnight was there. He did a tour in bombers in Europe, then a tour in fighters, plus an additional fighter tour in Korea.

There was Ken Ellington of Republic Aviation, who probably knows personally more fighter pilots than any man alive. And Charlie Blair, whose Pan American bosses loan him to the Air Force occasionally as a navigation expert. He flew the first fighter plane (a North American P-51) over the North Pole and worked with Dave in

On March 16, 1957, Smoky Hill AFB, Kan., will be redesignated Schilling AFB in honor of the late Dave Schilling. The base, under the Strategic Air Command, is near Salina. Colonel Schilling was a native of Leavenworth, Kan.

# of Fighters

By Lt. Col. Clarke Newlon

trying to solve the long-range navigation problems of the fighter with its limited space for equipment.

Dave Schilling was born in Leavenworth, Kan., just after World War I, on December 15, 1918. His family moved to Kansas City, Mo., where he went to high school. He was graduated from Dartmouth College with a B. S. degree in, oddly enough, geology in June 1939 and became an aviation cadet three months later.

During the war he spent twenty-eight months overseas, flew 132 missions totaling 360 hours, and emerged the sixth ranking ace of the ETO and the twelfth of all the American Air Force. It also brought him the Distinguished Service Cross with cluster, the Silver Star with two clusters, the Distinguished Flying Cross with eight clusters, the Air Medal with nineteen clusters, the British Distinguished Flying Cross, the French Croix de Guerre, and other honors.

When he returned to the States at the age of twenty-eight, streaks of gray were already showing in his black hair, and his restless energy fought against the constrictions of a new order. The years of 1946 and 1947 were hard ones for the flyers who elected to stay in. The Air Force was still part of the Army. There was a tendency to go back to the days of the rifle and the bayonet, to tradition and, especially, seniority. Dave, along with scores of other young flying colonels, was knocked down one grade in rank. Even worse, perhaps, he and the other dedicated fighter pilots felt themselves submerged by the necessary emphasis on bombers.

(Continued on following page)

Dave Schilling left a deep mark upon the profession of aerial arms. He was a colonel at twenty-four, an ace with 23½ air kills against Germany. Along with other dedicated fighter pilot types he was responsible for the development of aeriel refueling techniques for fighters. He also led the first transoceanic jet fighter flights.

Fox Peter One was the first mass movement of jet fighters over the Pacific. Here Colonel Schilling briefs his men in Hawaii, a stop on the way to Japan.

DAVE SCHILLING

For a while after the war Dave served as liaison with the RAF in England and then returned to command his old love, the 56th Fighter Group, then at Selfridge AFB, Mich. Then, late in 1948, as the Army Air Forces became the United States Air Force, he was assigned to Air Force Operations in the Pentagon, Headquarters, USAF.

Here he found many of his old crowd—Ritchie and Schinz and Majors Monty Montgomery, Bill Ellinger, and Barney Barnhart, all working for Col. Joe Moore, another stalwart of the fighter pilots. And here he got back the eagles of a full colonel.

There was no Fighter Section in Operations at this time, nor was there to be for several years. There was a Bomber Section with eight or ten officers and a lot of weight. The honeymoon with Russia was well into the cooling-off period. People were already talking about "the deterrent force." B-50s came out of mothballs, and the B-36 came off Convair's production line at Fort Worth. The Air Force began to gather back some of the great strength it had demobilized after the war.

But little of this seemed to reach the fighter people. The bulk of production money was going into heavy bombers. There were at this time only seven fighter groups, mostly equipped with World War II P-51s and P-47s. The new jet F-80 was just making an appearance in some of the groups. In headquarters there was no real fighter representation—or so Dave and his group felt. So, operating largely surreptitiously, frequently out of channels and occasionally almost illegally, they set about to correct this—to them—almost criminal deficiency.

They were trying to create a Fighter Section with monitoring responsibilities, to insure the same objectives for all the fighter groups. They wanted to build one office where commanders could get answers—the right answers. Most of all, they believed passionately in the purpose and the role of the fighter aircraft.

Dave worked furiously. He wooed anyone in authority who would listen for a moment to his song of the fighter pilot. He took Air Force Secretary Stuart Symington for his first jet ride in a Lockheed T-33. He got on a first-name basis with Assistant Air Force Secretary Harold Stuart (and they remained close friends). He courted Chief of Staff Gen. Hoyt Vandenberg and other high-ranking personages with all the charm he possessed—and this was considerable.

Meantime, with the blessing of Col. Joe Moore, who backed his boys when they were risking his own career along with theirs, Dave was running the Air Force operational side of air shows—the National Air Races at Cleveland in 1948 and 1949, and the Presidential Air Show in 1949. It was to this latter unprecedented display of air might that President Truman came for ten minutes and stayed two hours, joining the crowd's gasps when squadrons of giant B-36s lumbered past in formation, their bellies almost dragging the ground. He probably didn't know that many of the Air Force gasps were pure fright.

About this time, too, Dave conceived, and with his little group carried out, the idea of the Air Force gunnery meet at Las Vegas. Here the best Air Force gunnery, rocketry, and fighter-bomber teams meet in bitterly-fought competition. Even more, it is a place they can put different systems and techniques in competition, find which is best, knock out the bugs and, in general, swap ideas.

The first gunnery meet in 1949 was national. The second, in 1950, was for Air Force units on a world-wide basis as have been all the meets since. And SAC has since taken up the idea and now holds its own bombing competition.

These things—the gunnery meets and the air shows—were all a part of the times. The airmen of the US military were first fighting for a separate Air Force and then for its public recognition. Aerial exhibitions sold airpower and the fighter pilots saw to it that fighter aircraft took top billing.

While still at Selfridge in early 1948 Dave conceived the idea of Fox Able One: Fox for Fighter, Able for Atlantic, and One because it would be the first. One more blow in the fight to improve the range, mobility, and navigational capabilities of the fighter plane.

When a US fighter group in Germany was rotated, or when spares were sent over, they traveled on, of all things, an aircraft carrier. The F-80, first of the jets, had a range, with wing tanks, of about 900 miles. This was almost exactly two hours flying time.

The Air Staff at this time thought it was impossible to ferry jet fighters across the Atlantic and it was a logical enough fixation. The fighter pilots, however, didn't figure the same way. It was that old probing curiosity—"there must be a better way to do this."

Dave was always a "gadget man." He liked to work with his hands in a never-ending search to find that better way.

For instance, when jets came to Selfridge, the flyers had trouble with snow and ice on the runway. The propeller of a small aircraft helps considerably in its braking operation and, without this, the fighter pilots were having difficulty stopping their landing craft on the wintry runways.

Dave, after getting permission, mounted a jet engine on the back of a six-by-six truck, rigged a hydraulic lift for directional guidance and used the heat from the jet blast to blow off light snow and to melt ice on the runways.

Schilling attacked the ferrying problem in the same spirit. He and Ritchie, with the other pilots at Selfridge, schemed days—and nights, while patient wives talked children and housework—and came up again with a plan. This time Dave took it direct to Gen. Carl Spaatz, then Air Force Chief of Staff.

General Spaatz told him, somewhat paraphrased:

"Do you think you are the only ones who worry about these things? I am just as anxious to get over this ferry hump as you are. If you can prove on paper that you can ferry F-80s to Europe, get it to me and we'll get some action."

Said Dave Schilling:

"I can't get it to you direct, sir. I'd get fired."

Said General Spaatz:

"Then slip me a carbon."

So, the plan went on paper and a copy got to General Spaatz.

"It took a hell of a lot of doing," said Dave after his plan was approved, "but it worked."

Colonel Schilling gets the Harmon Trophy as "world's outstanding aviator for 1950." In 1951 photo are, from left: President Truman, Col. Bill Bacon, Col. Bill Ritchie, and Schilling. Bacon and Ritchie were also honored *(see text)*.

As part of the operation, the USAF invited the RAF to send a squadron of jet Vampires to the US, and Dave, with an assist from Gen. Curtis E. LeMay, then commanding the US Air Forces, Europe, was invited to Germany.

The flights were carried off without mishap. With Dave leading, the F-80s of Fox Able One flew from Selfridge, near Detroit, to Dow AFB in Maine, to Newfoundland, to Greenland, to Iceland, to Scotland, to England, and to Germany where they ended up at Furstenfeldbruck as replacement aircraft for the US fighter group there. The British followed the same route to America and the two units met in Iceland for a celebration.

Bear in mind that most of the hops on this route are just about 900 miles, some of them right on the button. The flights used B-29 orbiting navigational aiming points over the water hops, and cargo planes with spare parts also went along. There were no mishaps, no miscalculations, no errors. Every plane made it.

A year later Dave led a second flight over the same route, Fox Able Two, with eleven F-80s and four T-33 jet trainers. Dave flew one of the T-33s and I flew as a passenger in the back seat. Going into Iceland we caught the B-29 navigation plane at the far side of its orbit and flew an extra few miles getting down. We landed with less than four minutes air time left.

These two flights proved the feasibility of such a ferry route. With NATO rapidly coming into being, the need was obvious for we would be and have been furnishing our European allies literally hundreds of fighter aircraft.

The next year, 1950, Fox Able Three was staged. Col. Cy Wilson, since killed, led 190 jet aircraft over the same route in two flights. They were F-84s, sent over as replacements for the US fighter groups at Furstenfeldbruck and Neubiberg, Germany. And—the route is still in use. (*In mid-November, an F-100 Super Sabre touched down in Europe and became the 2,000th jet fighter to cross the Atlantic unescorted.*)

With one great step in their mobility fight established by the Fox Able flights, the dreams of the fighter pilots went further. Why should there be a practical limit to the range of a fighter plane? Aerial refueling was a logical step. With their own tankers the fighters could range anywhere in the world and fight indefinitely by refueling from aerial filling stations, so to speak.

About this time, the British were at least as interested in the subject as were the Americans, and Schilling, using his old RAF connections, went to Manston, England, where a British firm, Flight Refueling, Limited, was testing the probe-and-drogue system. Here he flew a British jet in a refueling operation, landed, and said:

"Couldn't have been simpler."

He returned to this country and personally sold the Air Force on a research and development contract to modify two F-84s to utilize the British probe-and-drogue system.

When the job was done he and Col. Pat Fleming, since killed in the first B-52 crash several months ago, flew the F-84s to England over the same old route. Here Bill Ritchie joined Dave and the two spent months remodifying and flying the American jets in practice refuelings with British Lancaster and Lincoln tankers.

At the same time a B-29 already in England had been modified into a tanker and now Col. Bill Bacon, the bomber pilot who thought like a fighter pilot, went to England to fly it back to refuel Schilling and Ritchie in the first nonstop jet transatlantic flight—Fox Able Four.

It was a tremendously complicated operation, with the first refueling to take place off the coast of Scotland and the second over the tip of Iceland from British tankers, with the third off Labrador from Bacon's B-29. Both weather and navigation were obstacles, with the then almost uncharted jet stream also figuring into the planning.

When the flight was about ready to take off, Al Schinz set up a special room with special weather, navigation, and communication assistance. He was in direct radio contact with Schilling and Ritchie from their take-off at Manston through the finish of the historic flight.

Their first refueling contact off Prestwick came off without difficulty, and they both took on full loads. Over Iceland they ran into difficulty. Trouble with the radio homing beacon equipment in the planes cost them more than an hour's delay and here Ritchie had trouble. A valve stuck as he was topping off his tanks.

At their third contact point, between Greenland and Labrador, Dave was able to get a full load but Bill Ritchie, on his first try, found the

(Continued on following page)

Colonel Schilling where he most liked to be—in the cockpit of a fighter.

valve still stuck. He got nothing. He called to Dave.

"Shall I try again?"

"Have you got enough fuel to reach land now?" This from Dave.

"Just about."

"Ritchie, there's a lot of water down below." From Bill Bacon.

And from Dave. "If you try again and miss you'll be in the ocean. Don't try it."

So they went on. Ritchie was 130 miles east of Goose Bay at 43,000 feet when the tanks of "Lovely Lynn," his F-84, went dry. He started a long glide for the coast of Labrador and jumped at 3,000 feet, just thirteen miles short of the air base.

Air-Sea Rescue helicopters picked him up from the sparse Labrador coastal forest in the darkness and returned him safely to the base.

Dave went on and landed at Limestone just ten hours and one minute after take-off. He had flown 3,800 miles with three in-flight refuelings.

Fox Able Four brought Dave the Harmon Trophy and the tenth cluster to his DFC. Ritchie got a twenty-fifth cluster to his Air Medal and Al Schinz got a commendation.

Al got his promotion to full colonel before Ritchie, and became chief of the long-sought Fighter Section when it finally was established. Schinz later went to Korea, was shot down, and walked out safely, thirty-nine days later and fifty pounds lighter.

Somewhere along about this time came Dave's association with Charlie Blair, another Harmon Trophy winner. Navigation in fighter aircraft on long-range missions had always been a problem. Due to both size and weight complications, it simply wasn't possible for a fighter to carry even a small part of the navigation equipment which is standard for the bombers.

Dave, who didn't know Blair, read in a newspaper that Blair, a Pan American pilot, had bought a P-51 Mustang with his own money, fixed it up, and made the first fighter plane flight over the North Pole. Schilling got in touch with him, hired him as a consultant, and put him to work developing the present navigational systems. These include the use of autopilots, fighter-sized sextants, and Borti computers, now all standard equipment in strategic fighters.

The last of the great flights which Dave led came in the summer of 1952—Fox Peter One. Fox for Fighter, Peter for Pacific, One for the first.

On June 24, the order came from SAC Headquarters to move the 31st Fighter Wing, which Dave commanded, from Turner AFB, Ga., to Misawa Air Base in Japan.

The base mobility plan, previously worked out, was put into operation. Thousands of men were processed on a round-the-clock basis with maintenance and operations personnel working on the same schedule. Control, communications, and supply men went on ahead in cargo planes. On July 4, while thousands of other Americans were happily holidaying, Dave led the first flight of Thunderjets off the Turner runway. Midway, all sixty of the F-84s made a successful rendezvous with a fleet of tankers and refueled. Six hours and forty-five minutes after take-off they touched down at Travis AFB in California.

On July 6 they left Travis for Hawaii. On the first refueling over the Pacific, Dave's plane and another were damaged and both had to turn back. The next day they continued with the second flight and Dave resumed the leadership spot on to Midway, Wake, Eniwetok, Guam, Iwo Jima, Yokota, and Misawa. At Iwo Jima Lt. Col. Elmer G. DaRosa's plane exploded as he came in for a landing. DaRosa was killed—the flight's only casualty.

It had been the first mass movement of jet fighters over the Pacific, the first mass mid-air refueling movement of jet fighters, the longest mass movement of a jet fighter wing by air, and the longest non-stop overwater flight of jet fighters—San Francisco to Honolulu.

Dave Schilling was a man who frequently stepped on toes. His continual driving force aroused resentment at times in superiors. He had a tremendous impatience with delays and obstacles. Incompetence was unforgivable. Any frustration was an immediate challenge. He lived, his friends said, two years for each one the calendar showed.

But there was never a real failure in the Air Force to recognize his ability and accomplishments or to trust his great leadership. Nor did he fail in his dedicated mission of getting recognition for the essential role of the fighter plane in the US posture of defense. Modern-day fighters are equipped to carry nuclear weapons, and no one disputes the role assigned to them in our military picture. After Fox Peter One, Dave was selected by SAC Headquarters to be deputy chief of staff for operations of the Seventh Air Division, a B-47 unit in England.

A serious illness, which for a time looked as though it might halt his Air Force career or at least his flying, sent him to the hospital for weeks and a long convalescence. Recovered, he went on to England and to a revised assignment with the Seventh. During his days at Turner he had become interested in sports-car racing and bought an English custom-built Allard sports model. He was driving it back from Mildenhall to Lakenheath when the accident happened. Of his death his friend Bob Considine wrote:

"Dave Schilling, who couldn't be downed by the Luftwaffe nor swallowed by the oceans he successfully challenged, was killed in an automobile accident on a peaceful road in England. SAC's gruff, tough Curt LeMay, deeply moved, said of him, 'He was one of the most able and fearless air commanders I have ever known.'"

—End

ABOUT THE AUTHOR

Frank Clarke Newlon, Chief of the Public Information Division, Office of Information Services, Hq., USAF, is a native of Griswold, Iowa, and a graduate of Grinnell College in that state. Before joining the AF in July 1942 he worked as a newspaperman and during World War II served in Europe. He assumed his present job in October 1956.

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THE WILSON MEMORANDUM . . .

Decisions on Weapons, Not Roles and Missions

EVER SINCE the end of World War II, the new weapon systems developed by all three services—Army, Navy, and Air Force—have been pointed in one direction—into the air.

The result was inevitable. Everybody is in the air business. The Army, starting with a few hundred light aircraft at the time the Key West agreement outlining roles and missions was signed, now has a fleet of almost 4,000 planes.

The Navy has reached peak strength for peacetime, with more than 10,000 planes.

The Air Force strength has been at 20,000 aircraft for the past few years.

Each of the services has an expanding missile program. More and more, all three are heading toward the same kind of weapon systems. One observer of this trend toward sameness remarked, "All we have to do, if we want a single service, is to let this process continue for another two years. By that time all three services will have about the same weapons, the same missions, and the same capabilities. All we would need then is a one-paragraph directive saying 'henceforth all services will wear the same uniform.'"

But, failing such a directive, this trend could not continue. Not because it was contrary to the roles and missions bible, the Key West agreements, or that it was operationally unsound. It was halted because it hit the touchiest news in the Pentagon—the defense pocketbook.

Secretary Wilson had asked the Joint Chiefs of Staff to come up with agreements that would stop this duplication, but they were unable to do so. The impasse could have dragged on if there had been no unusual money pinch for the Fiscal Year 1958. But when it became apparent that all three services were asking for money for the same kinds of weapons, someone had to make a decision. Mr. Wilson did just this by issuing a directive. Although the Secretary's action was forced primarily by financial considerations, the word "money" does not appear on any of its nine pages, and the word "funds" only twice.

Although it is entitled "Clarification of Roles and Missions to Improve the Effectiveness of Operation of the Department of Defense," the Wilson directive deals with roles and missions only incidentally. It is mainly concerned with the individual weapons, weapons that are requiring more money each year. The long-range fundamental implications are, perhaps, deliberately ignored.

It is to Mr. Wilson's credit that he is candid on this point. He says that the Key West agreement and its 1953 modifications continue to be sound. Broad in its terms, the Key West document has been variously interpreted in many ways over the years. But with all its generalities, it contains far fewer loopholes than the new directive which attempts to clarify and pin down some of the broad clauses of the basic agreement.

The memorandum treats with five problems.

- Organic Army aircraft
- Adequacy of airlift
- Air defense
- Air Force tactical support of the Army
- Intermediate Range Ballistic Missiles (IRBM).

Within this curious mixture of missions, tasks, functions and weapons, areas which the directive states "need to be cleared up," here is what the document provides:

(Continued on following page)

Army Aircraft. Mr. Wilson held to the present weight limitations on Army planes—5,000 pounds empty—but broadened that restriction to include convertiplanes and vertical/short take-off and landing types. These had not been mentioned in previous agreements. He also fixed a 20,000-pound limit on rotary wing aircraft.

These restrictions, at first reading, caused bitter resentment in the Army. But after reading the fine print, Army planners now feel that their wings have not been clipped as short as they had feared. There is an escape clause which reads: "Specific exceptions to weight limitations for specific aircraft for specific purposes may be granted by the Secretary of Defense after consideration of Army requirements and appropriate Air Force functions and capabilities." This is obviously an open door, and the Army is heartened by recent experience in the very field. Secretary Wilson has already approved Army requests to test and evaluate the deHavilland Twin Otter, a plane that exceeds this weight limitation.

The directive also defined the battlefield for Army aviation operations in combat. Their combat area is prescribed as "not more than 100 miles forward of the general lines of contact between the US and enemy ground forces. Its extension to the rear of the general line of contact will be designated by the appropriate field commander, and normally extends back of the front line about 100 miles."

These limits dimmed Army visions of combat responsibilities that would extend all the way to the distant enemy troop concentrations, marshaling areas, and communication centers. It also quashed their repeated contention that the battle zones of Army responsibility range from several hundred to 1,000 miles in depth.

Airlift. The problem of airlift—its adequacy and its command and control—has been a bone of contention between the Army and the Air Force for ten years or more. Despite the fact that the Wilson directive devoted several paragraphs in several different sections to this issue, it is doubtful that the matter has been settled.

The adequacy of airlift got brief and ambiguous treatment. The memo says that "the present Air Force structure has been carefully examined, and it appears that it presently provides adequate airborne lift in the light of currently approved strategic concepts."

This leaves several questions unanswered. Will the future structure of the Air Force, under increasingly restrictive budget ceilings, continue to provide the lift required? Do the "currently approved strategic concepts" include the so-called "little war" airlift needs that have been the continual theme of Army spokesmen from General Taylor on down?

These questions need answering and they are certain to come up when Congress examines the budget and force structure, with the specter of Suez fresh in its minds.

Adequacy of lift aside, the directive was somewhat clearer on the issue of which service would continue to have the primary responsibility for providing it—the Air Force. In discussing the Army's growing fleet of small aircraft, the directive warns that "Provision of this limited [Army] airlift capability will apply only to small combat units and limited quantities of material to improve local mobility and not to the provision of an airlift capability sufficient for the large-scale movement of sizeable Army combat units which would infringe on the mission of the Air Force."

In a surprise proviso that could mean a cut in autos, trucks, and jeeps, the new agreement added that "as limited Army aviation airlift capability becomes available to active Army forces, provision should be made for compensating reductions in other forms of Army transportation designed to operate within the combat zone."

Air Defense. The bland language with which the directive discusses air-defense tasks and control of air-defense missiles does not reflect the really deep-seated conflict that exists on this issue.

This came to a peak early this year after Army representatives began to howl publicly about the Air Force invasion of the Army's "air-defense mission." When asked about these Army claims in the presence of General Taylor, General Twining snapped, "Let's get one thing straight. The Army has no air-defense mission." Pressed for clarification of why the Army persisted in its claims that its responsibilities were being invaded, he said, "You'll have to ask General Taylor." The Army Chief of Staff's response shed little light on the question.

The facts are that the Army does not have an air-defense mission. It has a responsibility for providing forces for air defense. So does the Air Force. So does the Navy. But the mission of air defense rests squarely on the Air Force.

Mr. Wilson's new directive does not change this. Rather, it deals with the provision of weapons and forces, which were really the root of the trouble in the first place.

The Army had developed Nike, a short-range, point defense weapon, for which it has ambitious plans. The Air Force, impressed by the Navy Talos (also short-range) laid plans to procure it and integrate it into the defense network, chiefly to guard SAC bases. It was to be the forerunner of Bomarc, a longer range area defense missile.

The Army saw its Nike program being jeopardized, Congress saw duplication, and Air Force plans were halted until the matter was cleared up. Mr. Wilson's memo clears the air.

Both Nike and Talos are given to the Army, with the added responsibility for developing, procuring, and manning land-based missile systems for point defense. However, the Defense Secretary laid down an important restriction in range—not more than 100 miles. This upped the former limitation of fifty miles set some years ago.

The Air Force is given a similar responsibility of area-defense missiles, including Bomarc, without any corresponding limitation in range.

Important, however, is command, control, and the decisions as to how many of what kind of installations and where. In the North American continent, this is made the responsibility of the Commander in Chief, Continental Air Defense Command, a command for which the Air Force is executive agent, and which is now headed by Air Force Gen. Earle E. Partridge.

Overseas this responsibility rests with "air component commanders."

The Navy was given an open hatch in ship-based missiles for its assigned air defense functions, and the Marines were given similar leeway for organic use.

Air Force Tactical Support. The Air Force, while retaining responsibility for tactical air support, moves out of the ground battle zone. Army surface-to-surface missiles are directed to take over much of the close-support task with weapons that include the new Redstone ballistic missile. However, these Army operations will be confined within 100 miles of the ground forces front, with a total range limitation of 200 miles. This was undoubtedly a severe blow to the Army and its plans for weapons that would destroy enemy missile sites, atomic stockpiles, air fields, and other targets as much as 1,000 miles away.

(Continued on page 59)

Observe the resourceful little prickly pear cactus. Tempting, green and juicy, it blossoms unmolested and thrives uneaten on the hungry, arid desert, because it has the good sense to be prickly first and succulent second. Some say you must eat or be eaten in this world. There is a third way to live. Keep some stickers showing and you, too, can take time to grow flowers. Republic makes a very efficient brand of stickers . . . they're called THUNDER-CRAFT.

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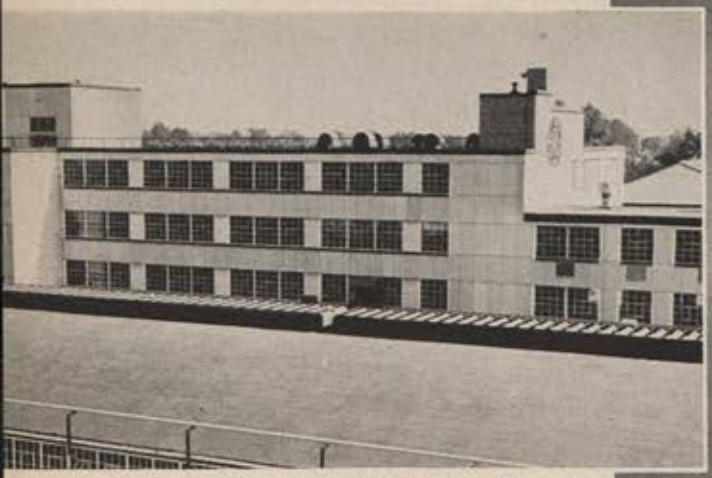
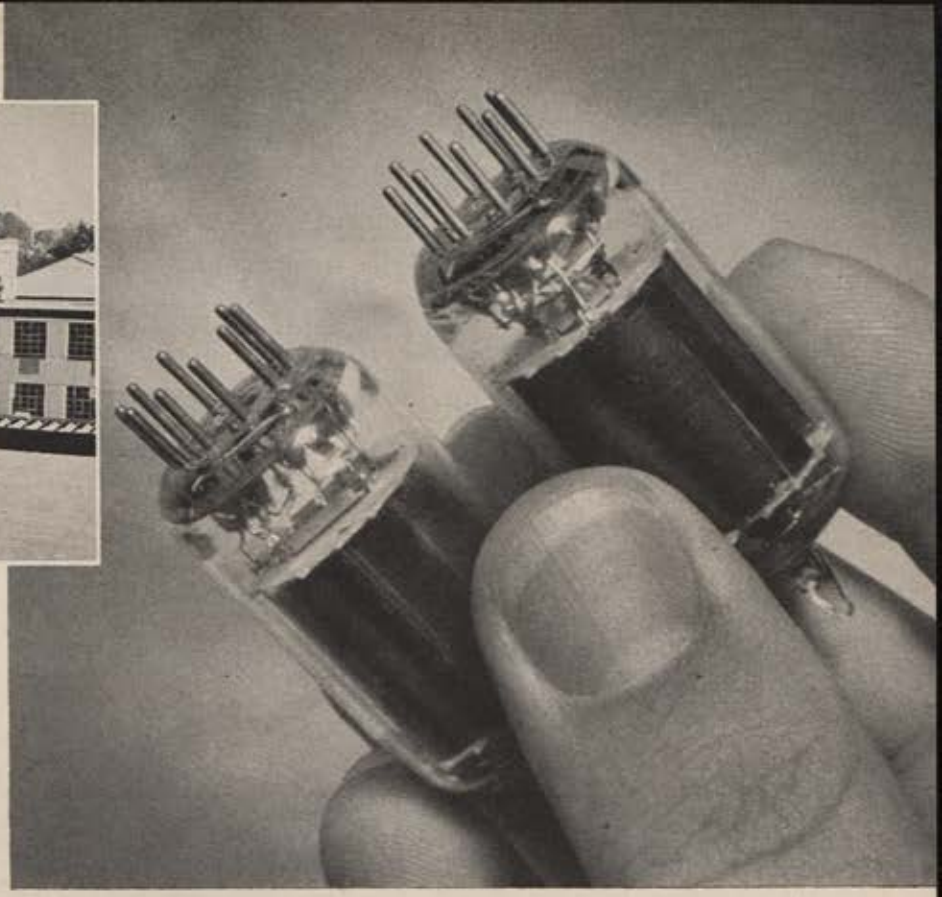


"OPERATION SNOW WHITE" describes all manufacturing in General Electric's separate large factory building at Owensboro, Ky., where 5-Star and other military tubes are built. Hospital cleanliness applies throughout. Premises are air-conditioned and pressurized to keep out dust or dirt that can cause inter-element shorts. All employees wear lint-free Nylon or Dacron garments.

TUBE PINS before and after cleaning. This ▶ is an unretouched photograph.



General Electric "Sand-Blasts" military tube pins for better electrical contact, added reliability!

General Electric military tube pins are "sand-blasted" clean, further extending the Snow White program of impurity-free manufacture. Miniature tube stem-making and bulb-sealing require high temperatures that leave oxidation on the pins. The special pin-cleaning process developed by General Electric scours all oxidation from pin surfaces, assuring efficient socket contact.

Twin guns force streams of abrasive emulsion over the pins. The abrasive scrubs off all non-conductive material and the pins then are rinsed in clear water and dried by infrared lamp. When a tube is plugged in, electrical contact is complete and lasting.

Abrasive cleaning of pins is only one step in General Electric's extensive Snow White program to produce high-reliability tubes for military applications. Tube parts are precision-made, and the tubes assembled and inspected, under immaculate conditions which ban any impurities that might cause early-life failures or unstable electrical performance. Snow White cleanliness is a principal reason why 5-Star and other General Electric military tubes have the dependability and long life so vital in critical sockets.

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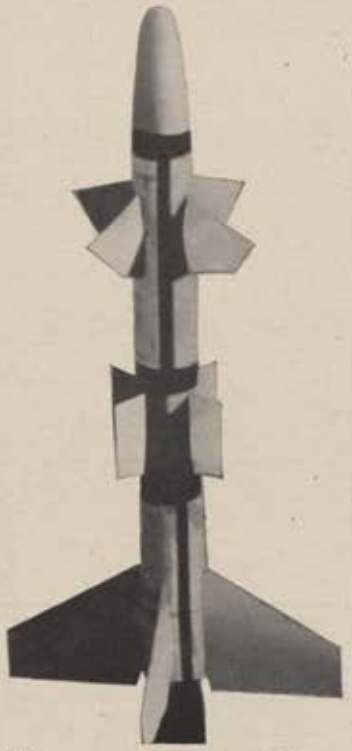
Land-based surface-to-air missile systems for point defense (Nike above) went to the Army.



Talos, another point defense weapon assigned to the Army.

The Redstone takes on some of the close-support work.

The numbers and types of these close-support Army weapons will be a matter for recommendation by the Joint Chiefs of Staff. The JCS are also to recommend the number of Air Force tactical wings which may be eliminated by missile substitutes. This will be a difficult decision, particularly in view of the range limitation on Army missiles. The tactical air wings can cover not only the battle front, but also all areas beyond it for 500 or even 1,000 miles. The problem facing the Joint Chiefs is how to compare 100-mile range missiles with weapons carrying an almost infinite variety of warheads over a well-nigh infinite variety of ranges.

Intermediate Range Ballistic Missile. (IRBM). Both the Army and the Air Force have been working intensely on the IRBM. Winning this developmental race meant much to the Army, as a tool to pry loose a larger share of tactical support. The range limitation imposed by Mr. Wilson dashed this hope. In fact, the Air Force was given sole responsibility for the operational employment of all land-based ballistic missiles of more than 200 miles range. Thus, both the IRBM and the long-range Intercontinental Ballistic Missile are destined to become part of General LeMay's strategic striking force.

However, the Army efforts in the IRBM field have not gone for naught. Mr. Wilson has directed a review of the capabilities of both IRBM's now under development, the Army's Jupiter and the Air Force Thor. He implies one or the other will be selected to be added to the US arsenal. A paramount consideration in such a choice will be which can be ready first. If reports that the Air Force is ready to test-fire, or has already test-fired, the Thor are true, the Air Force would seem to be out ahead. Which missile wins it may seem not so important to the nation, but it is important to the Army and Air Force, both vying to establish a reputation in the development of guided missiles.

The provisions of Mr. Wilson's memorandum will be argued for a long time. Army spokesmen have already said they will not let the matter rest here. Congress, out of session, has been informed of these decisions, but not consulted. It is certain to have plenty to say, and Capitol Hill would appear to be the next battleground.

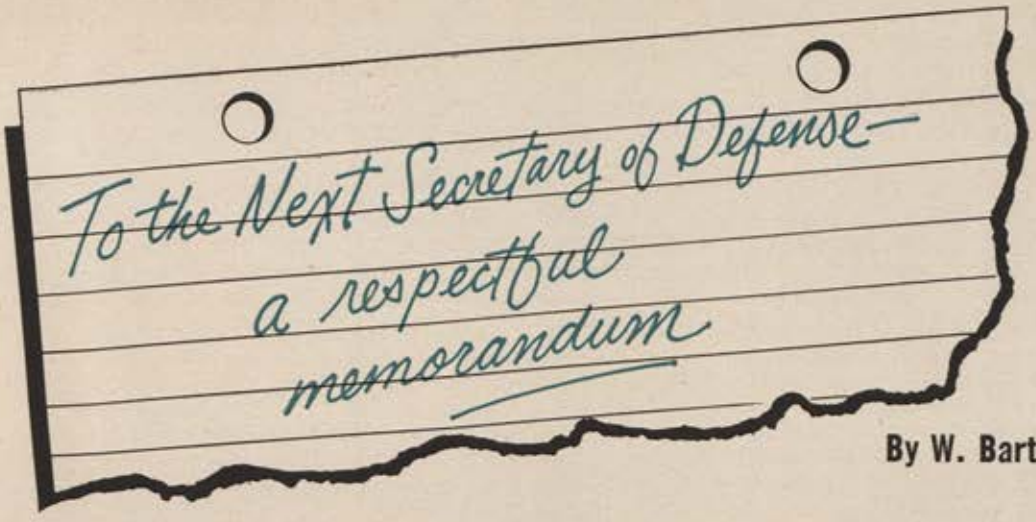
Mr. Wilson should be commended, not so much for the wisdom of his decisions, but for the fact he made them. Under the pressure of the tremendous expenditures involved in new weapons, he took the first steps to curb duplication in resources and effort. His action to pinpoint responsibility for development may also relieve to some extent the terrific pinch in scientific personnel and facilities.

Many problems in these areas are yet to be solved. While the directive failed in this respect, it at least highlighted the remaining issues. It singled out weapons as the basis for clarifying roles and missions. Admittedly, weapons govern strategy to a great degree. But the fundamental issue of roles and missions was sidestepped. And these questions will again arise when the next generation of weapons make their appearance.

It has been obvious since World War II that weapons responsibilities cannot be laid down on the basis of operating medium—land, sea, and air. A new kind of denominator, based on mission rather than medium, must be devised. Without it we will fritter away vast funds at a time when there is not even enough to carry on the programs we must have if we are to survive.

We repeat the AFA Statement of Policy, adopted in New Orleans last August:

"The three-service system can no longer be tolerated. The goal must be one program for utilizing national resources in the national defense. We must have one defense plan. We must have a single military service with one secretariat, one Chief of Staff, one promotion list."—END



By W. Barton Leach

AS THIS article is written it is not known when a new Secretary of Defense will be required. But the time will come. Experience suggests that it is not too early to set forth some attributes and attitudes the appointee should have.

The job of the Secretary of Defense is defense. This might seem too obvious to argue, were it not so often ignored. It is tempting for the master of the Pentagon, especially if he comes from a business background, to conclude that his principal job is to bring under tighter control the expenditures which so affront his commercial instincts.

He is likely to be hypnotized by the power inherent in his position as Secretary with its exclusive control over secret information. There are few who can effectively dispute him if he declares that "the nation never had stronger peacetime defenses than it has right now," that "we must not spend ourselves into bankruptcy and thus let our enemies conquer us without firing a shot," that "there is no such thing as 100 percent defense but we are building forces of increasing strength designed to achieve maximum practicable security," and that "we are cutting fat out of the military establishment without cutting muscle."

All these statements were made during the Louis M. Johnson so-called economy era that preceded the Korean war with its expenditure of 33,000 lives and over $50 billion. Similar statements were uttered by the Stanley Baldwin government during the mid-1930s when Britain was so weakening herself that Hitler was emboldened to set forth upon his ventures.

In all government departments prudent management practices are a matter of constant concern in Republican and Democratic administrations alike. But beyond the small management savings there can be substantial savings only through cutbacks of departmental activity. The difference between other departments and Defense is that in the former (Agriculture, Interior, Justice, or the Treasury) the effects of cut-backs are immediate and can be evaluated, but in Defense the effect is concealed, becoming apparent only when we are challenged and cannot respond —and then it is too late.

On popularity. A Secretary of Defense who assures his colleagues that all is for the best in the best of possible Pentagons is a popular man with the Treasury, the Bureau of the Budget, the appropriations committees on the Hill, and the chairman of the national committee of his party. All of these are overjoyed at a head of this big-spending department who will open the door to a tax-cut with its beneficent effect on the electorate.

But a Cabinet member should not be engaged in a popularity contest. It is helpful to think how popular the Stanley Baldwin government was with Hitler and Goering in the 1930s, and how gratefully Moscow, Peiping, and Pyongyang viewed the economy policies of the Truman Administration as these three Communist capitals plotted the invasion of the Republic of Korea. There is such a thing as being popular in the wrong places.

State, Defense, and the Treasury. Now and then it is useful to strip down to essentials the missions of our government departments, particularly when the strongest personality in the Cabinet is the Secretary of the Treasury.

The job of the State Department is the effective leadership of the Free World, a mission which we did not seek but which fate has thrust upon us.

The job of the Department of Defense is to assure to State that we have the armed forces to protect us from disaster and to serve our interests throughout the world as State may determine them. The Secretary of Defense should have on his walls in large letters a truism from Churchill:

"NO FOREIGN POLICY CAN HAVE ANY VALIDITY IF THERE IS NO ADEQUATE FORCE BEHIND IT."

And the job of the Treasury is, like that of any treasurer, to pay the bills.

The Treasury is also one of the guardians of the national economy. At times, as in present-day England with its precarious gold/dollar balances and its unfortunate dependence on Middle East resources, the Treasury must warn that internal peril is the price of external security. But it seems far-fetched to suggest that the burgeoning economy of the United States justifies any risks with our national safety in this crucial phase of history.

The Service Secretaries and the Assistant Secretaries of Defense. There is often good reason to choose service secretaries from among the Assistant Secretaries of Defense, provided the appointee is informed in unmistakable terms that he is no longer an Assistant Secretary of Defense but is expected to take independent responsibility for the adequacy and readiness of the force he controls. Just as it is the proper job of the Secretary of Defense to insist

(Continued on page 63)

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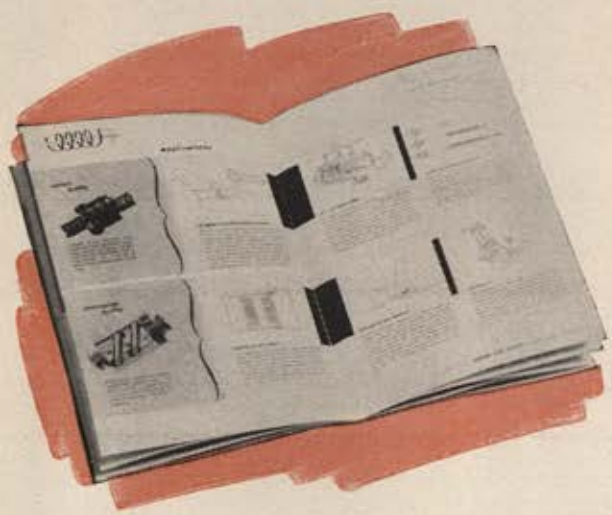

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upon the needs of national defense in the highest executive councils, so it is the proper job of the secretary of a service to insist upon the needs of his service to perform its assigned mission; he is not solely an executive instrumentality of the Secretary of Defense, but has the responsibility both to higher echelons in the executive establishment and to Congress to state fully and frankly the needs of his service.

The Secretary of Defense should make it clear to his Assistant Secretaries that they are not merely the holders of repressive authority. It is their job, to be sure, to see that public money is not needlessly spent; but it is also their job to see that within the areas of their respective responsibilities the military establishment is adequate.

Congress and party politics. The Secretary of Defense should really believe in the coordinate authority of Congress under the Constitutional principle of separation of powers. It would be well for him to examine the annual *Statements on Defence*, submitted to Parliament by the British Minister of Defence, to observe the frankness and simplicity with which the recurrent problem of adapting national defense to fiscal and manpower limitations is handled. The new Secretary should deal alike with Republicans and Democrats on the Hill. He should recognize that Secretaries George Marshall and Robert Lovett adopted a non-partisan attitude toward Congress with the result that the increase in armed forces that repaired the military establishment from the disastrous Johnson policies was sponsored by a bipartisan movement in which then Sen. Henry Cabot Lodge, Jr. (R., Mass.) and Rep. Carl Vinson (D., Ga.) were the prime movers.

The Secretary should not play favorites in Congress on the basis of political party. He should not give information to Republicans which he denies to Democrats, or vice versa. He should not offer staff assistance to his party in Congress unless he does the same thing for the opposition party. It will be a great help to him if he is allowed to make a reasonable number of appointments from the opposition party. Few would dispute the contention that during the Truman Administration nothing but good came from the appointment of John A. McCone, a strong Republican, as Undersecretary of the Air Force, and that such firm Republicans as Henry L. Stimson, Frank Knox, and Robert A. Lovett worked effectively with Democratic presidents in both war and peace.

Attitude toward staff work, including intelligence. The Secretary should not substitute hunches for staff work, including national intelligence estimates. Staff work, like any other, is of varying quality—and some of it is bad. The Secretary should have no hesitation in rejecting inadequate staff work and requiring that it provide him with the assistance he needs to do his job properly. If he finds he cannot get adequate staff work from any particular agency, he should see that the direction of that agency is changed through replacement of top personnel. But, with these qualifications, he should not dismiss the results of staff work, including intelligence.

Attitude toward the military. The Secretary should be one who likes and respects members of the military profession. This does not mean that he accepts everything they tell him; but it does mean that he recognizes their right to independent opinions and the expression thereof, even when these are at odds with his own. He should seek from his principal military advisors the expression of forthright professional views.

Attitude toward the press. The Secretary should believe in a free press and the beneficent influence of an informed public opinion. He must be forthright as to what his policies are, what his actions have been, and the reasons behind these. He must be prepared to have his policies and actions subjected to the test of public discussion, including hostile criticism; and he must recognize that such discussion and criticism are a normal part of the processes of democracy. He should resolutely resist the temptation to use security classification as a means of withholding information and avoiding discussion and criticism. This is particularly true with regard to those decisions which reject or reduce on fiscal grounds requests of military leaders for additional resources which they consider to be military requirements.

On making studied decisions. The Secretary is given "direction, authority, and control" over the military establishment. This means that he must have three qualities: (a) a temperament that does not shrink from decision, (b) the capacity for patient study commensurate with the difficulty of the problem, and (c) the courage to accept responsibility for a decision when made. None of these three can be taken for granted, for any or all may be lacking in a given individual. It is not unknown for a Secretary to refuse to decide an issue by insisting on "agreement" in the Joint Chiefs of Staff when it is known that service differences are so wide that any agreement can only be a horse trade; or, impatient at the complexity of a pile of staff papers, to brush them aside and issue an order on hunch; or to seek to divide responsibility by pressuring subordinates into supporting a decision as their own idea. Such devices are not sound administration.

A clear voice for Defense. One may assume, we hope, that any appointee will have the physical and mental vigor to meet the pressures of an exacting schedule, sufficient knowledge of defense matters to avoid spending most of his tenure in on-the-job training, such understanding of the federal government as will enable him effectively to manage his executive and legislative relationships, and a single-minded dedication to the public service.

But these basic attributes are not enough. The Secretary must realize that he is in the Cabinet and the National Security Council as the embodiment of national defense, the determined advocate of such armed strength as his studies convince him represent a military requirement. His voice must be as strong for defense and its necessary expenditures as are the multitude of voices clamoring for economy and tax cuts. He may not get all he believes he needs, for his is not the ultimate authority; but when he is cut there should be no fogging of what has happened. He obeys; but, when he is tempted to pretend that an element of force is no longer required because others are unwilling to pay for it, he might ponder the present repute of one of his predecessors named Johnson. In an inner sanctum he might well have another quote on the wall, this from William Lloyd Garrison:

"I Will Not Equivocate.
I Will Not Excuse.
And I Will Be Heard."—END

ABOUT THE AUTHOR

W. Barton Leach, a former AFA national director, conducts the Harvard University graduate seminar in Defense Policy Administration and is also a professor at the Harvard Law School and the Graduate School of Public Administration. During World War II he served in the AAF as Chief of the Operations Analysis Division and later represented the Air Force in the "B-36 hearings." He is now a brigadier general in the Air Force Reserve.

Survivor Benefits

Public Law 881—one of the most far-reaching pieces of personnel legislation that has ever been enacted by Congress

By Logan Earl Hysmith
ASSISTANT TO CHIEF, PERSONAL AFFAIRS BRANCH, HQ., USAF

THE Servicemen's and Veterans' Survivor Benefits Act, Public Law 881, Eighty-Fourth Congress, which went into effect on January 1, 1957, is probably one of the most far-reaching pieces of legislation on this subject ever enacted by the Congress.

Under the laws that were in effect before January 1, 1957, survivors of military personnel whose death was attributable to service might be eligible for five types of survivor benefits, plus government insurance payments. Those benefits were (1) the six months' Death Gratuity; (2) $10,000 Servicemen's Indemnity—$92.90 per month for ten years; (3) Veterans' Death Compensation payments of $87 per month for a surviving widow based upon wartime rates or $69.60 per month peacetime rates, with additional benefits for minor children; (4) Federal Employees' Compensation Payments for survivors of Reservists who died or were killed on active duty during peacetime—forty-five percent of his total pay for a widow, fifteen percent additional for each child, with a maximum payment of seventy-five percent; and, (5) Old Age and Survivors' Insurance, based upon a "free wage credit" of $160 per month for all personnel. This produced $52.90 per month for a widow at age sixty-five and from $106 to $128.10 per month for a widow with minor children. In addition, payments could be made from US Government Life Insurance (issued during World War I and until 1940) or National Service Life Insurance (issued during World War II and up until April 26, 1951), providing the total insurance from either of these plus the Servicemen's Indemnity did not exceed $10,000.

The administration of this complex benefit structure often led to delays in receipt of benefits, lawsuits, and other administrative bottlenecks.

The new law seeks to simplify administration, to equalize benefits over the lifetime of survivors and to partially relate the benefits to pay.

Indemnity Compensation. Basically the law provides a life income for surviving widows of $112 per month plus twelve percent of the member's base pay. This is called "Indemnity Compensation," and is a combination of the Free Servicemen's Indemnity and Death Compensation, both of which were administered by the Veterans Administration. Indemnity Compensation provides for a minimum of $122, for the widow of a basic airman, with no maximum. For example, in the case of a major with twelve years' service, the Indemnity Compensation is $172; a colonel with eighteen years' service, $199; and a major general with more than thirty years' service, $242 per month.

With no ceiling, if service pay is increased, there would be an automatic increase for the survivors, similar to escalator clauses in industry.

There has been some concern expressed over the fact that the Servicemen's Indemnity is no longer in effect. This is not a loss of benefits, however, as it was merely merged with death compensation to provide for the increased Indemnity Compensation. Under the old system, the Servicemens' Indemnity was payable to a widow, child or children, parent or parents, or brothers and sisters of a member who died or was killed while on active duty —in the order named—or to the one or more of them who happened to be designated as beneficiary. Payments were made in 120 equal monthly installments. Thus, ten years after death of a member a widow would have only $69.60 or $87 monthly, depending upon whether her husband died during wartime or peace.

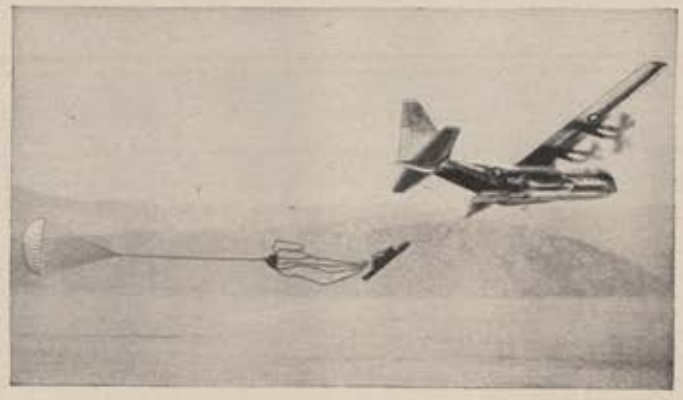
The Indemnity Compensation benefit is also available to dependent parents, on a flat rate basis without regard to the pay of the member, and with a graduated income limitation.

The basic benefit for children comes from the Survivors' Insurance program of the Social Security Administration. However, Indemnity Compensation is also payable to minor children where there is no eligible widow. (Widows lose eligibility upon remarriage.) The children's compensation is on a flat rate basis and without regard to the pay of the deceased member. The amounts are as follows: one child, $70; two children, $100; three children, $130; more than three children, $25 for each additional child. Payments stop when a child reaches age eighteen except in exceptional circumstances spelled out in the law.

Same Benefit for all Components. The loss of Federal Employees Compensation Coverage by members of reserve components is more than offset by the fact that they are covered by the Indemnity Compensation while on active duty, or participating in active- or inactive-duty training, either with or without pay. Coverage starts from the time they depart their residence to commence the training and terminates when they complete the return trip. It is applicable also to members of the National Guard. A prerequisite in all cases is that the training duty is pursuant to competent orders. In effect, Reservists are covered "portal-to-portal."

Six Month Death Gratuity. The Six Months Death Gratuity, payable in cases of death while on active duty to certain eligible beneficiaries, was continued with modifications. Public Law 881 fixes a minimum and a maximum payment to the widow, child or children, parent or

(Continued on page 67)



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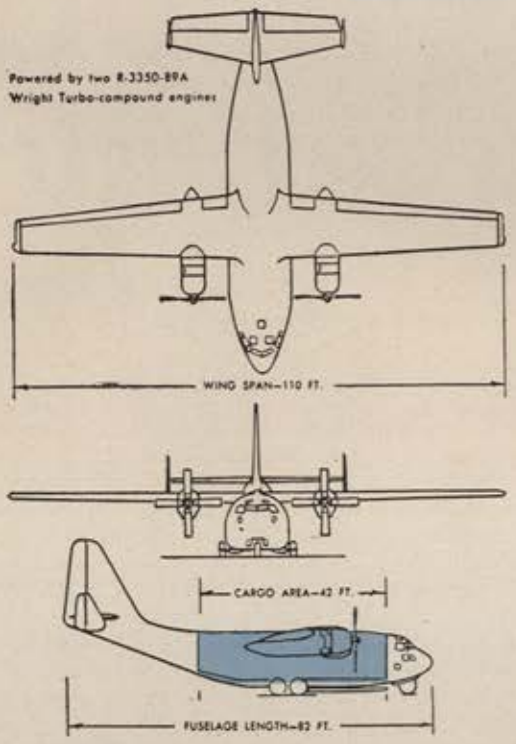

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parents, or a single parent, or brothers or sisters when designated. If there is a widow or a child or children surviving, they are mandatorily considered as legal beneficiaries and in the order listed. Where there are none, then parent or parents or brothers or sisters or any combination may be designated. The minimum payment is $800, the maximum $3,000. The death gratuity also applies in the case of Reserve personnel undergoing active or inactive duty for training, either with or without pay, and in the case of members who die within 120 days after separation, discharge, or retirement of service-connected causes.

Contributory Social Security. Beginning January 1, members of the armed forces were placed under Social Security on a contributory basis. This means that members and their survivors are now eligible for Social Security benefits on a permanent contributory basis. The amount of the coverage depends upon the base pay of the individual, and contributions of two and one-quarter percent will be deducted from all pay up to $4,200 per year—the maximum for which any person may earn benefits under Social Security. Retirement benefits are payable at age sixty-five, and are based upon average wage computed to that date. Disability retirement benefits are also available to the member as early as age fifty if he is totally disabled. The coverage is essentially the same as for an individual in civilian employment.

You must attain an insured status—six or more calendar quarters of Social Security coverage before you or his survivors are entitled to any payment. This means that you must have six or more calendar quarters of social security coverage, quarters in which you made contributions on earnings of at least $50. After you have made contributions on at least forty quarters you are fully and permanently insured. And at retirement or in case of death at least the minimum benefit provided by the law would be paid.

Members of the armed forces who have been on continuous active duty since January 1, 1951, and who are on active duty on January 1, 1957, may count all quarters between those dates in attaining a *fully and permanently insured status*. On January 1, 1957 all personnel who have been on continuous active duty since January 1, 1951, will have six years or twenty-four quarters of coverage toward a fully and permanently insured status. Those who have earned Social Security coverage in private employment before entering the service may also count those quarters in earning permanently insured status.

By a savings clause written into the law, members first entering on active duty who have had no employment under Social Security and are not insured (have not worked six quarters), are still covered through increases in the amount of Indemnity Compensation payable to survivors by the Veterans Administration, in a sum large enough to compensate for their failure to qualify for Social Security payments. The payment is based on a presumed $160 monthly wage.

Social Security Survivor Benefits are paid to a widow with minor children so long as the children are under eighteen. At that time payments stop until the widow reaches sixty-two, when she may qualify for retirement benefits. Payments are also made for minor children where there is no widow or when she forfeits entitlement through employment or remarriage. Payments may also be made on account of dependent parents.

Government Insurance. In the enactment of Public Law 881, Congress carefully preserved the rights of members who were carrying US Government Life Insurance and National Service Life Insurance. It also provided for the reinstatement or repurchase of cash-surrendered, expired, and lapsed policies when such occurred on or after April 26, 1951. Since that date the government has not entered into any new insurance contract with members on active duty, except those who already had insurance in force and were entitled to reinstate or change their policies. The only new insurance contracts that have been issued since that date were non-participating National Service Life Insurance post-service policies to veterans.

The Servicemen's Indemnity Insurance Act also contained a provision which permitted holders of USGLI and NSLI policies to waive the "pure insurance risk" portion of their premium. In the case of term policies, this amounted to the entire premium, and on permanent plans it was an actuarial figure based upon age and type of insurance.

The new law permits members to continue these waivers in effect after April 30, 1957, but in cases of death after that date, if waivers are in effect, the new Indemnity Compensation will not be paid to their survivors. Instead, the proceeds of the insurance will be paid plus death compensation based on rates that were in effect on December 31, 1956—$69.60 for a widow and additional sums for minor children. Once a policy is placed on a premium-paying basis, both the proceeds of the policy and the new Indemnity Compensation may be paid. The reason for this provision is that the Indemnity Compensation represents the combination or merger of the Servicemen's Indemnity Compensation and derives its name from both.

IF YOU HAVE A WAIVER IN EFFECT, OR IF YOU ARE NOT CERTAIN OF THE STATUS OF YOUR INSURANCE, YOU SHOULD REVOKE THE WAIVER EFFECTIVE NOT LATER THAN MAY 1, 1957, if you desire your survivors to receive the new Indemnity Compensation computed on the basis of your pay.

Certain other options are available to individuals on active duty who have policies of USGLI and NSLI that have lapsed, the five-year term of which expired or which were cash surrendered after April 26, 1951. If your insurance situation falls in one of these categories, you may reinstate or replace a policy at any time while on active duty, or within 120 days after separation or retirement.

Individuals who are reinstating or replacing policies should give consideration to the purchase of the Total Disability Income Rider, which, in cases of total disability, would provide a monthly income to the disabled member. This is in addition to the waiver of premium feature that is "built in" to all policies of USGLI and NSLI.

This article has been rather a "broad-brush" treatment of the subject of Survivors Benefits under the new law. Our effort has been to cover the general situation, to *emphasize the positive aspects* of the law and provide general information as to how the new system of benefits works. Remember this—no one has lost any substantial benefits, in fact, from the standpoint of income level provided for survivors and equalized over their lifetime, there is a substantial dollar increase in almost every case.

For further information on your own particular case:

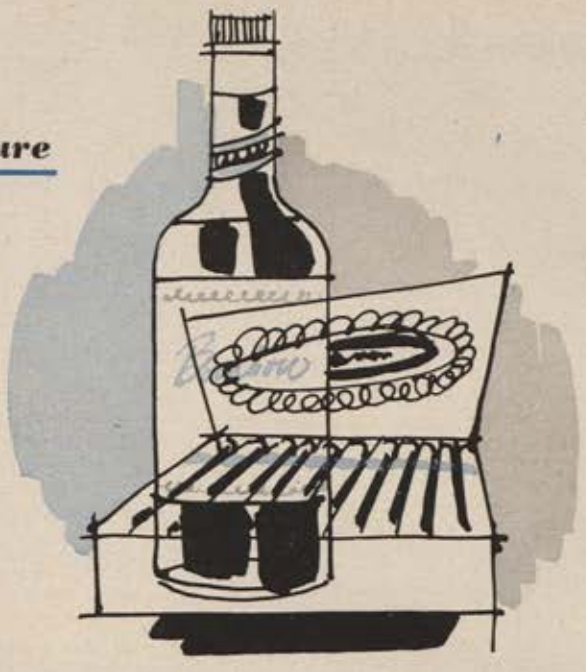
1. Consult your base or unit Personal Affairs Officer, if you are on active duty.

2. Inquire of your unit commander, if you are a Reservist or Air National Guardsman not on active duty.

3. Consult your nearest Veterans Administration office or the Personal Affairs Officer of the nearest Air Force base, if you are an Air Force veteran not in either the Reserve or Air National Guard.—END

An Air Force Magazine Fiction Feature

Against Regulations



A/2C Don O'Brien

STAFF Sergeant Clifford "Cards" Cole called the office meeting at 0835, just five minutes after Master Sergeant Cassidy had left the Information Services Office to attend a special conference for headquarters section chiefs.

"I'll lay it on the line," Cole addressed the ten-member staff (they were known as a "fat" office). "You all know that our NCOIC is shipping to Greenland next month. Some of you have come to me with the idea of getting Sergeant Cassidy a going-away present. The idea's fine, but . . ."

"Let's getim a bottla bourbon anna boxa cigars," said Airman Third Class Steele.

"Nah," objected Airman Second Class Moses. "He's goin' to *Greenland*. Let's get him something *warm*."

"Bourbon's warm," argued Steele.

"All right, at ease!" Cole interrupted. "As I was saying, the idea's fine. We all know the sarge is a great guy—and I don't say that merely because he's never won a penny from me in our frequent poker sessions."

"Whoever has?" asked Airman First Class Borski.

"The point is this," Cole continued, ignoring the remark. "We all know how the sarge is about Air Force regulations. And AFR one-twenty-two-dash-three specifically states you can't give gifts to personnel of higher rank."

"You're the authority on regs," said Airman Borski. "Tell us how we get around it, Cole."

"Thank you, Borski. I've been giving the matter my usual serious thought. I figure we can give Cassidy a present without him knowing where it came from." Cole paused for effect and scanned his audience for reactions to his scheme.

"Doesn't sound good to me," said Moses, scratching his head. "If you *give* him the gift like you say, then he'll *know* it's from us, won't he?"

"Airman Moses," said Cole after a drawn-out sigh of patience, "you're bucking for a permanent transfer to Arlington Cemetery. Listen to me, boy. We can mail the gift to his home without any card or message or we can just leave it on his desk when he's not in the office. Do you understand, boy?"

"Roger," said Moses. "But what are we going to get him?"

"How about a bottla bourbon anna boxa cigars?" asked Steele.

The men argued among themselves for a couple of seconds and then Cole shouted for silence.

"How does this strike you?" he asked. "I've been invited to the Cassidy's tomorrow night for a friendly little game of poker."

"Friendly, he says," put in Borski.

"While I'm there," continued Cole, "maybe I can sound out Mrs. Cassidy on what the sarge really needs. And during the game, I might be able to get an idea or two from Cassidy himself without letting on what I'm up to." Cole employed the effective pause again. "How does that strike you?"

"Sounds OK to me," said Borski. The others slowly nodded their agreement, except Steele, who held out for bourbon and cigars. He was overruled.

"Then it's agreed," said Cole. "We'll meet again Monday. Be prepared to cough up a couple of bucks for a collection. All right, back to the salt mines."

° ° °

The following week, the "salt mines" were shaken by the sand-blasting voice of Sergeant Cassidy.

"Cole! Come in here!" he shouted from his office. When Cole entered, Sergeant Cassidy was pacing in front of his desk.

"What's the trouble, Sergeant?" asked Cole.

"Trouble? *That's* the trouble," grated Cassidy, pointing to a tan leather briefcase on his desk. "Well, don't just stand there, Cole. What is it? What does it mean?"

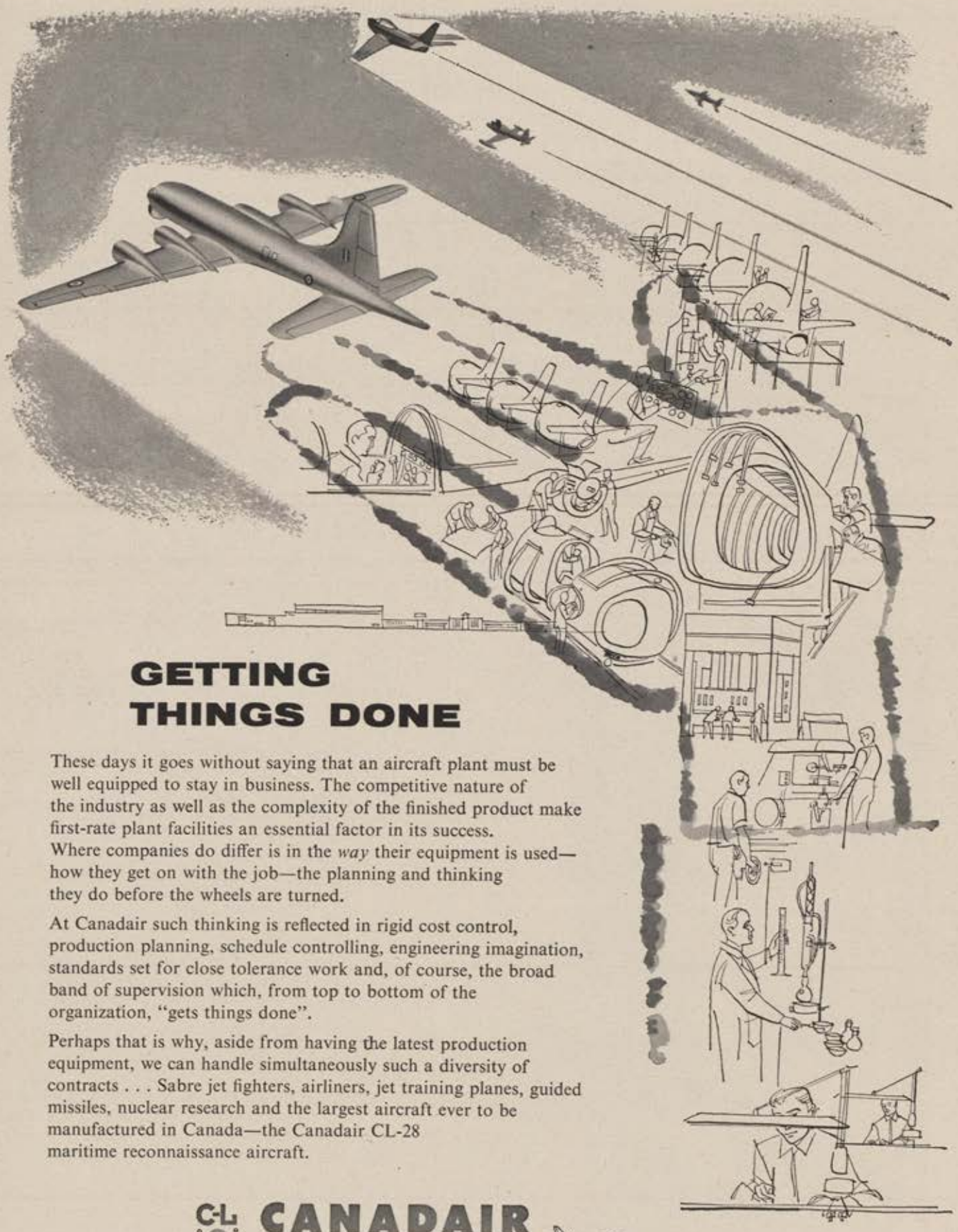
Sergeant Cole stepped to the desk and examined the briefcase, lifting it by its handles and testing the lock latch. He put it down and stepped back.

"Sergeant Cassidy, I am unable to determine the object's meaning but I believe it to be a briefcase." He looked at the object again. "Yes, Sergeant, I'm sure it's a briefcase."

Cassidy had to sit down. He put his head in his hands, then looked up at his chief clerk, wondering what this man's Air Force was coming to.

Cole and Cassidy had two things in common: both were NCOs and

(Continued on page 71)



GETTING THINGS DONE

These days it goes without saying that an aircraft plant must be well equipped to stay in business. The competitive nature of the industry as well as the complexity of the finished product make first-rate plant facilities an essential factor in its success. Where companies do differ is in the *way* their equipment is used—how they get on with the job—the planning and thinking they do before the wheels are turned.

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both loved a good poker game. There the similarities ended.

Cassidy's uniforms were always GI issue while Cole sported gabardines in summer and winter. Cassidy's favorite smoke was a strong-smelling, crooked cigar whereas Cole enjoyed smooth, mellow Havanas. It was always *Sergeant* Cassidy from higher- and lower-ranking personnel while most everyone used only "Cole" or "Cards" in dealing with the chief clerk.

Where Cassidy lived by the book, Cole's military existence rested very much on deals and connections. More than once, Cassidy had marveled at his chief clerk's ability to obtain supplies with a well-placed phone call—supplies that Cassidy had formally requisitioned weeks earlier.

Straight bourbon was Cassidy's drink. Cole mixed his. *But poker,* thought Cassidy, *there's where we're on mutual ground—even though he always seems to beat me.*

"Cole," said Cassidy, "as a poker player you're unbeatable—and wipe that smile off your face—but as an actor you don't even rate with Lassie."

"Thanks for half of that remark, Sergeant Cassidy."

"Cole, you know this sort of thing is strictly against regulations."

"Pardon, Sergeant?"

Cassidy covered his face again.

"Will that be all, Sergeant Cassidy?"

"Oh, what's the use? Yes, Cole, that will be all."

Sergeant Cassidy shipped out two weeks later—with the briefcase.

• • •

With the air-mail letter from Cassidy was a check in Cole's name for $25. Cole's eyes skimmed over the first few paragraphs and moved more slowly as he started to read the last paragraph:

The enclosed check *(it said)* represents the cost of the briefcase. I priced the case in the base exchange. Split it up among your office crew or throw a party for them. If you decide on a party, keep a paternal eye on Airman Steele. He can't handle bourbon. Could use you here. Lots of time for poker.

"Sincerely," Cole read aloud, "Sergeant Cassidy."

He took the problem to the office staff.

"Ol' Cassidy's gone off his rocker," said Moses.

"I've heard tell Greenland is rough," offered Borski, "but it's not like Cassidy to get nervous in the service."

"I *told* you guys we shoulda gotim bourbon," said Steele.

"Beats my pair," said Cole as he threw in four kings—face down.

Cole wrote Cassidy that night, ending his letter with: "The boys in the office were alarmed about your condition. They can't figure out why you want to throw your money away. Airman Steele said he appreciates your suggestion of an office party but he thinks it's against regulations. I'm returning your check. Sincerely . . ."

Cole didn't have to skim over any paragraphs when he received Sergeant Cassidy's next letter. It consisted of hardly a paragraph:

Cole *(it said)*, knock it off. You know what to do with this check. Sergeant Cassidy.

"Not even a 'sincerely yours' from the sarge," Cole said, fingering the check and staring out the window. The phone rang.

"This is Sergeant Cole. What?!? You're kidding. Greenland? When? This the straight poop? Well, I'll be . . ." He hung up.

He looked at the check again and smiled. "Of course I know what to do with this check," he said aloud.

• • •

Seated around the table in the Information Services Office at Thule AB were Sergeants Cassidy, Cole, Hurtle, and Clapp. On the table were a bottle of bourbon and a box of cigars—brought to Greenland by Cole.

The game was poker—five-card draw—and it was the last hand of the night. Hurtle and Clapp had dropped out of the betting the first time around. Cole, playing a cautious game, was even for the night. On this last hand, with betting limits lifted, he had already donated $10 to the pot. It was his bet now.

"It'll cost another five to stay," he said as he tossed the home-made chip into the pot. Cassidy studied his cards briefly. "I'll stay," he said and tossed in his own chip.

"Cards?" asked Hurtle, the dealer.

"I'll take three," said Cole.

"And I'll take one," announced Cassidy, throwing his discard and adding the new card to his hand. He peeked at the corner of each card, one by one.

"It's your bet, Cole," said Hurtle.

"I'll bet five," said Cole. Cassidy looked at Cole's face for some kind of giveaway. He found none.

"I'll see you and raise you another fin," said Cassidy.

Cole studied his cards for a full minute. *I've got exactly twenty-five bucks riding on this hand,* he said to himself. *Well, I had to get it back to Cassidy some way.*

"I'm forced to call you," said Cole. "What are you holding, Sergeant Cassidy?"

"A flush in spades," said Cassidy, showing his cards.

"Beats my pair," said Cole and he threw in four kings—face down.—END

ABOUT THE AUTHOR

"Airman Regg," military cliché expert in A/2C Don O'Brien's first story for us ("Next Witness," AIR FORCE, October '56), had this to say about regulations: "I am in accordance with them." Not so the principals in this article, who use some devious methods to get around the regs. Airman O'Brien is in Information Services at the 3500th USAF Recruiting Wing, Wright-Patterson AFB, Ohio.

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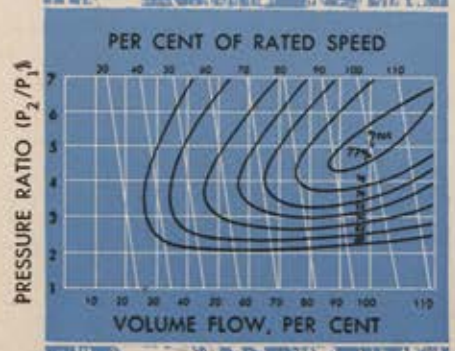

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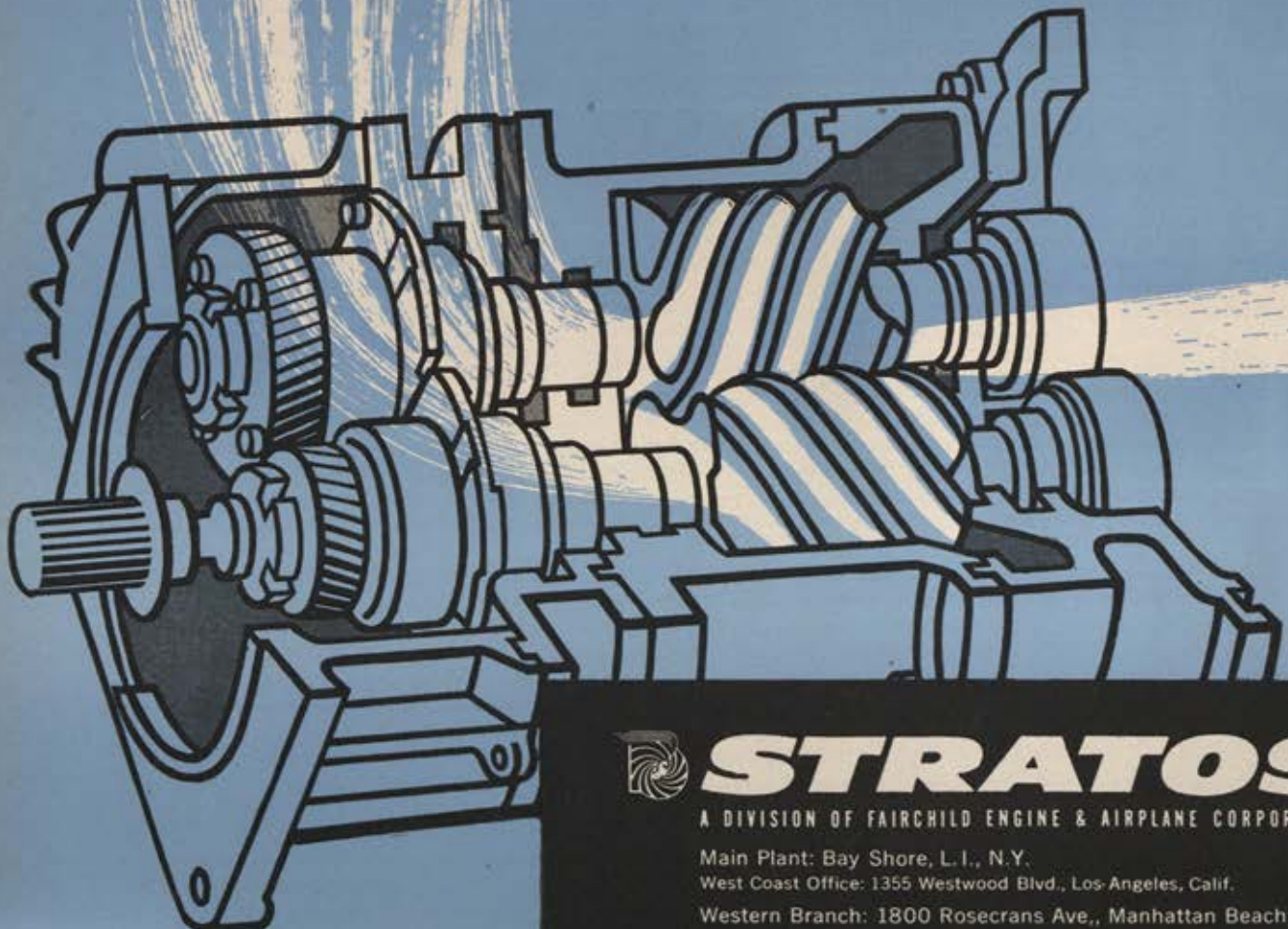

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Scientists and Engineers Can Preserve Freedom

With the increasing importance of rocket and atom arms in the future of mankind, the welfare of freedom-loving people depends more and more on their scientists and engineers. This dedicated core, which represents an unbelievably small percentage of the population, provides both the military and political factions the weapons which can either forestall or win a war and preserve the freedom of their people and those of other endangered countries. Human beings as well as world politics, therefore, are under their tremendous influence, one which will grow increasingly more important with time. Knowing this, the United States, as the most powerful country of the Free World, both economically and militarily, must maintain its technology at the highest possible standard. But this is only possible if there is a great number of skilled scientists and engineers available.

Dr. H. Guyford Stever, then Chief Scientist of the US Air Force, writes in AIR FORCE, October 1955: "We are all confident that we now possess a superior Air Force. Yet we cannot forget to recognize the difficulty of maintaining this position in the future. Russia is now challenging us on the vital elements of development of future strength such as education and training of scientists and engineers, conduct of basic research, rapid conversion of aeronautical engineering knowledge into military weapon developments, and the rapid production of these weapons. It is the problem of maintaining superiority. . . ."

Maj. Gen. Leslie E. Simon, Assistant Chief of Ordnance for Research and Development, says in his paper presented to the Seminar on Guided Missiles, meeting of the American Ordnance Association in New York City, December 1954: "The most important element in any research and development program is the people. They are the heart and soul of this most promising weapon program. . . ."

Those and other statements of similar meaning clearly show the deep concern of civilian and military leaders about maintaining superiority of American weapon development, especially air weapons, over Russian weapon development. The problem seems to be more one of not having enough properly trained scientists and engineers, than one of finances. This obvious deficiency so important to the Free World is deplored by all, but no one has found a satisfactory answer or has taken any constructive steps in this direction.

In view of the present world situation it is very important to find at least a partial solution to this problem. Since time is a most important factor, we cannot count on the youth that is still in college. The extra effort, therefore, must be expended by those who are already working on the development and production of weapons; that means that everyone has to do more in the same amount of time. A must in this kind of operation is that supervisors employ their subordinate workers according to their knowledge and capability. This is the only way to get the highest possible efficiency. More emphasis has to be given on the training of scientists and engineers in certain fields. Some aircraft firms have already started this kind of training on their own initiative.

Many qualified workers could be won for new important developments if parallel developments were stopped and the freed funds diverted to other defense purposes.

The shortage and need of scientists and engineers cannot be discussed without saying a few words to the people who give the orders for development, and to the scientists and engineers who have to do the work, men who carry the responsibility for their country's welfare. There should be a clear definition of the new weapon that is to be developed—which is not as simple as it sounds—so the scientist and engineer will understand the purpose of the weapon.

As to the management, scientists and engineers of the plants which develop the new weapons, they should always keep in mind that the important points about a weapon are its highest reliability through simple design and construction, and that it is not an interesting new object to be tested until it becomes a technical toy for scientists. The development of weapons means the development for a very special purpose. That should always be paramount! The new weapons, of course, should be operated by trained personnel, but never by scientists and engineers who will be needed for the next development. In this manner, industries effectively using their scientists and engineers can help solve their own shortage problems.

And what about hiring highly qualified scientists and engineers of friendly nations? Isn't it important at this critical hour to unite or coordinate the development of weapons of the Free World under American leadership? Of course, the difficulties of such an operation are well known, but it could give the Free World in a short time the supremacy that is the only guarantee to peace, the protection of western civilization and the preservation of people who believe in their freedom.

During the past several years, American industry, not engaged in weapon development and production, was tremendously increased in volume of capital as well as the volume of scientists and engineers. It follows that private industry has the same problem: the shortage of scientists and engineers. In January 1954, more than 100,000 scientists and over 400,000 engineers were employed in industry, not counting all the highly qualified employees in government agencies, colleges, and other fields. A recent survey report of MCA's annual meeting ("Industrial Laboratories," July 1956) states that in 1956 the nation has 884,000 scientists and engineers, of which 713,000 are at work in industry. This report estimates the average "production" of graduate scientists and engineers at 61,000 per year, of which 30,000 leave the technical working force annually. Furthermore, the report says that the 31,000 available to

(Continued on following page)

JET BLASTS——CONTINUED

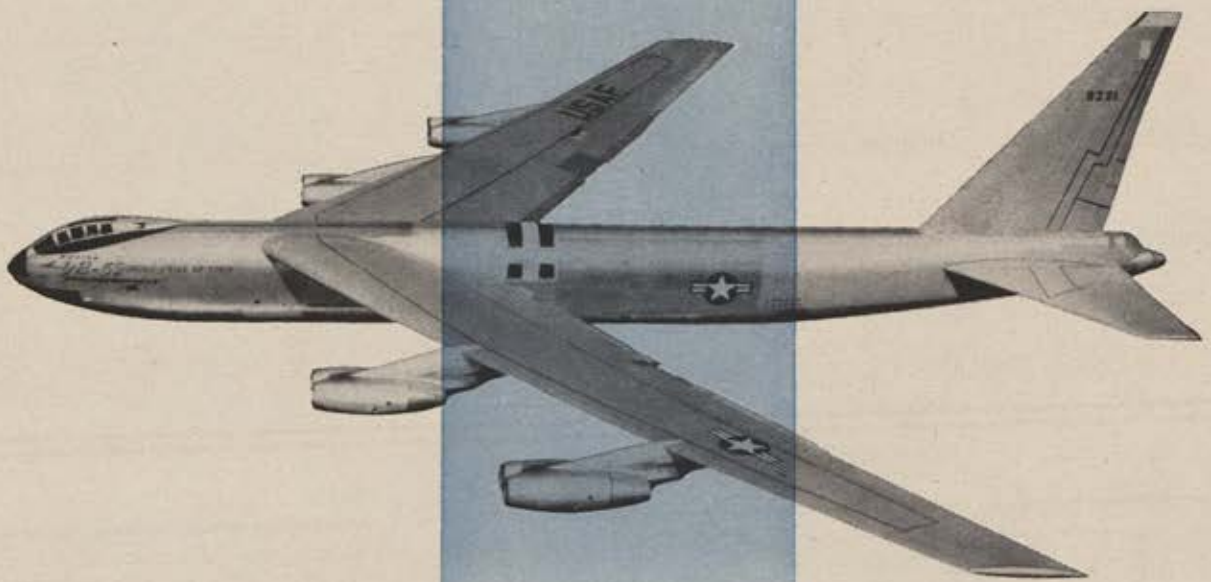
industry is 41,000 short of those needed. These figures represent the highest scientific and engineering employment ever recorded in American industry. Indisputably, private industry is enormously important to the welfare of the country in peace as in war. The shortage of scientists and engineers in any industry, therefore, retards technical progress and endangers the peace and the freedom of the country. But when the Communist countries know that the western world under America's leadership has developed weapons of high reliability which are manufactured in large number, and furthermore, when they know that the American industry possesses the highest efficiency possible, freedom and peace will be certain.

This is the task of scientists and engineers, men entrusted with a responsibility staggering in its proportions!

DR. GUENTHER W. A. HAASE

Since 1945 Dr. Haase has worked for Bell Aircraft's rocket division. Born in Germany, he served at Peenemuende during World War II, as a chemical and rocket engineer. The older of his two boys is now in the US Air Force.

for SAC's new B-52 Stratofortress...



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To meet changing control requirements of the B-52 at various speeds and at altitudes up to 10 miles or more, Sperry engineered a new design concept into the MA-2. Called "parameter control," this new development automatically determines and applies to control surfaces the exact amount of force necessary to execute any maneuver required by pilot or bombardier.

Remarkable as is the performance of the advanced MA-2 system, it is only one of many Sperry automatic flight control systems in the air today. Other Sperry systems are in use on many of the world's leading airlines, on hundreds of business planes and thousands of military aircraft. Tomorrow, new Sperry systems will be flying many of the multi-jet and turbo-prop transports now going into production.

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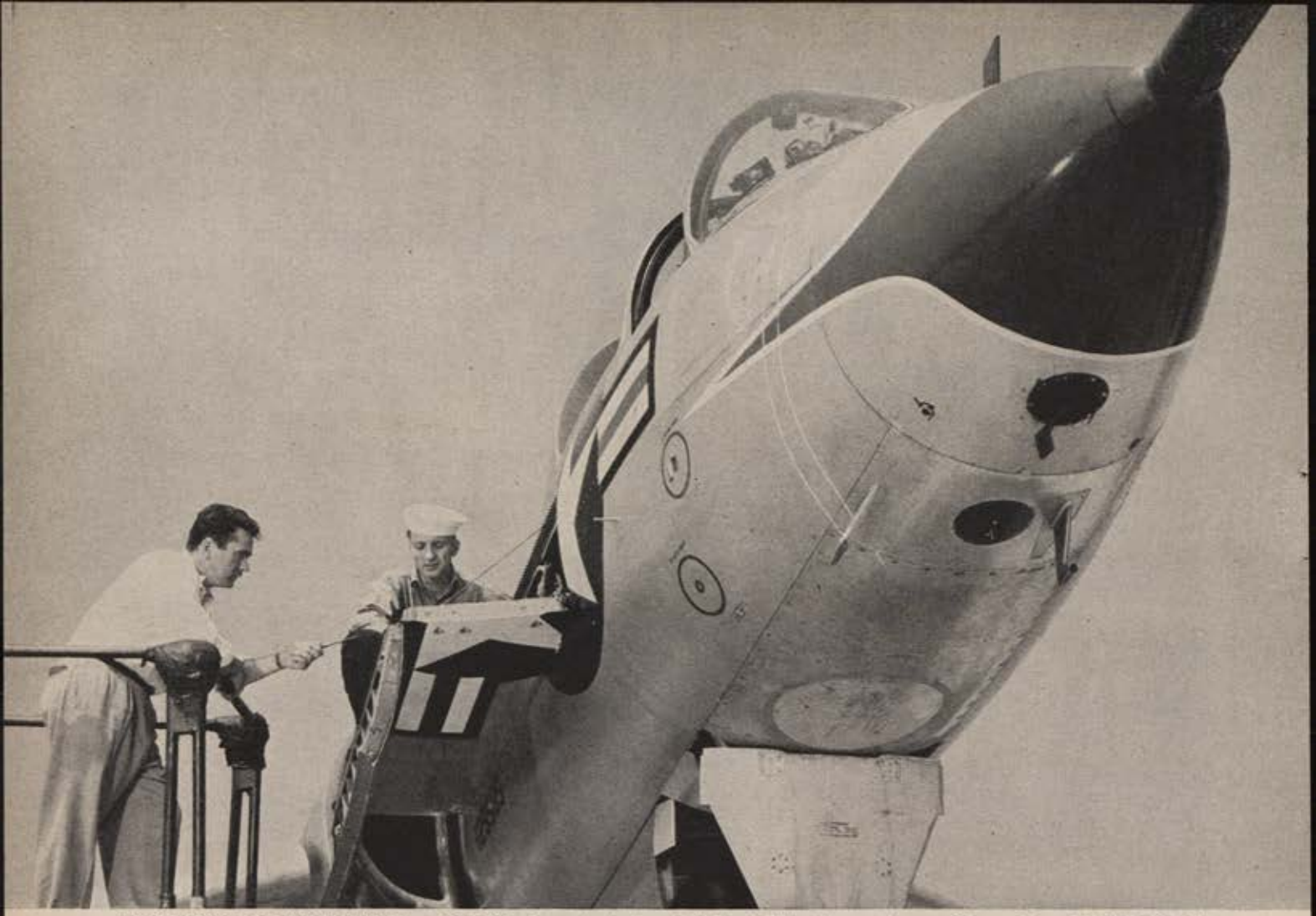

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Photos courtesy of the Air University.

Aerial photographs were being taken from military planes as early as 1910. This observer uses a hand-held camera.

An operator between two huge aerial cameras in an RB-29 sets intervalometer that controls time between exposures.

AIR FORCE CAREERS

NO. 4 OF A SERIES

By Flint O. DuPre

They Watch the World

AERIAL PHOTOGRAPHERS

One of first aerial photographs is this balloon shot of Boston in 1860.

AIR FORCE S/Sgt. John W. Myers, of Richmond, Ind., and President Eisenhower, of 1600 Pennsylvania Ave., N.W., Washington, D. C., share a common interest. Each has a profound respect for aerial photography and actively urges its wider use.

The President, for more than a year, has advocated a world-wide "Open Skies" inspection plan as a means for nations to control disarmament. He has proposed that United States and Russian planes be free to inspect each other's territory by means of aerial photography.

Last October Italy dramatically demonstrated the practicability of using modern aircraft for this purpose. A picture of St. Peter's Cathedral in Rome, taken from a plane traveling 400 feet above the ground at 550 miles an hour, shows amazingly clear detail, including what people are wearing and carrying.

President Eisenhower and Gen. Alfred M. Gruenther, then NATO Commander, both hailed the photography of the Italian Air Force's reconnaissance planes as proof of the feasibility of "Open Skies."

Sergeant Myers is one of a select group of airmen and officers in the United States Air Force now making a career of aerial photography. By the numbers this is career field 23150, the Air Force Speciality Code for aerial photography. Myers and his fellow specialists have photographed just about everything an airplane can fly over. They have triggered their cameras over the jungles of the Amazon, the desert sands of the Middle East, and the ice caps of the frigid North.

Last summer the 1370th Photo-Mapping Group of Palm Beach AFB, Fla., made an aerial electronic survey of the vast Greenland Ice Cap and corrected some geography compiled on the basis of ground surveys made over a long period of years. This survey determined the exact size and shape of the Ice Cap, which covers an

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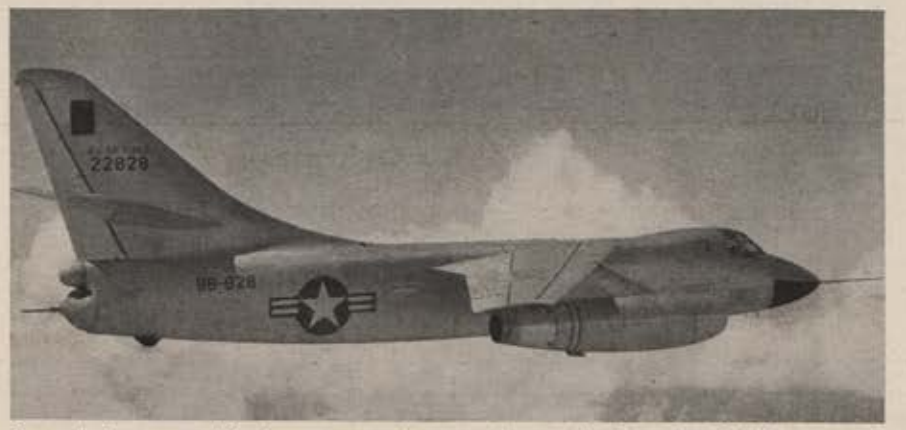

One of the newer AF photo-reconnaissance planes, the Douglas RB-66, carries a three-man crew and is powered by twin jets that put it in 600-700-mph class.

New eye for the AF—a 36" f/4.0 Perkin-Elmer lens gets final adjustment.

area three times that of Texas, with some parts of it rising to 10,000 feet.

This aerial electronic survey group, the only one of its kind in the Air Force, has corrected the position of Grand Bahama Island. Even though the island is only one hundred miles from Florida's east coast, it was eight miles out of position on existing charts. The correction will set seafarers straight.

Projects like braving the Greenland Ice Cap are the more glamorous jobs for these Air Force specialists. Their bread and butter routine is to help provide accurate charts and navigational aids to the Air Force. Pilots depend on handbooks and charts covering land and water areas, jet navigation, plotting, radio facilities, and thousands of items important to safe flying.

Photo-mappers of the Air Force keep pertinent information up to date. Under the Military Air Transport Service, the Air Photographic and Charting Service operates from its headquarters at Orlando AFB, Fla. The 1370th Group is the principal field unit, commanded by Col. George W. Humbrecht.

Prior to the Korean war aerial survey flights were a chief activity of the Far East Air Forces, and almost all that part of the world was "shot" from above. The Air Force collected on its investment in the air phase of that war with detailed information on North Korea and the Yalu River boundary available to its operational forces.

During World War II photo reconnaissance became a practiced combat art and was essential to the successful strategic bombing attacks on Germany and in Pacific operations. It had become full grown since World War I.

The art actually goes back to almost one hundred years ago. A navigator, Samuel Archer King, and a photographer, J. W. Black, combined their talents to shoot the first picture from a balloon 1,200 feet above Boston. They called their picture "Boston as the Eagle and the Wild Goose See It." The date was October 13, 1860.

The first "shot" from a powered aircraft was taken over San Diego, Calif., in January 1911, by Maj. H. A. (Jimmie) Erickson from a Curtiss biplane piloted by Charles Kenney Hamilton.

Gen. H. H. Arnold, World War II head of the Air Force, led ten Boeing B-10s to Alaska in 1934. He stayed there long enough to map thousands of miles of that vast country from the air. In 1940 Arnold returned on another aerial inspection of that locale, flying 10,000 miles in a Douglas C-41. By then he and other Army pilots were making aerial color photos, used later to detect camouflage.

Today, airmen with some knowledge of cameras and film may find photo-mapping, charting, or reconnaissance missions a good career bet. Some knowledge of air crew duties such as use of interphone communications and survival techniques is also important.

In this career field other duties consist of maintenance of the cameras and auxiliary equipment, processing film, and supervising aerial photography personnel.

Air photos, to be used in preparing newer maps, are checked for accuracy.

The airman who becomes expert in this field may even win a prize because there are high- and low-altitude photography contests. In Europe recently, TAC's Second and Fourth Tactical Air Forces staged an international reconnaissance competition. The high-level phase, above 30,000 feet, was won by a Frenchman, Lt. Michel Duhaumônt, in a Republic RF-84F Thunderflash. The Air Force won the low-level trophy for pictures taken under 1,000 feet, by Lt. John L. Roberts, also in a Thunderflash. In the three-day event, pilots flew over unfamiliar territory, located and "shot" targets while flying more than 500 miles an hour.

Dozens of photo reconnaissance specialists took part in this contest—which demonstrated pinpoint navigation over hundreds of miles. They got some outstanding shots under realistic wartime conditions.

These men, and their counterparts on duty throughout the world, share a common interest in this important, sometimes dangerous, but nearly always exciting, career field.—END

ABOUT THE AUTHOR

Flint O. DuPre, a writer in the Office of Information Services, Hq., USAF, has been connected with AF information—as an officer and a civilian—since 1942. He was born in Fort Worth, Tex., on November 15, 1909, and grew up in Dallas. From 1928 until he enlisted in the AF in 1942, Flint worked as a reporter for the Dallas Journal *and the* Dallas News.

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The READY ROOM

RESERVE AND AIR GUARD NEWS

The Air Force revised the **structure of Reserve and Guard flying wings** last month in a move aimed at aligning both components more closely with the gaining **Tactical Air** and **Air Defense Commands.**

Two Reserve tactical-bomber wings and three fighter-bomber wings were redesignated as **troop-carrier** and two Air Guard tactical-bomber wings were redesignated **fighter-interceptor wings.**

The new line-up gives the Reserve **eighteen** troop-carrier wings and **six** fighter-bomber wings. The Air Guard now will consist of **eight** air-defense wings, **seventeen** fighter-interceptor wings, and **two** tactical-reconnaissance wings.

In announcing the revision, Air Force said the expansion of troop carrier in the Reserve was in line with the program to meet **continuing airlift requirements;** while the growing need for **more air-defense units** prompted the switch of the two Air Guard tactical-bomber wings to fighter-interceptor outfits.

The Reserve flying wings involved in the change-over are:

The **452d,** based at Long Beach, Calif.; **94th,** based at Scott AFB, Belleville, Ill.; **440th,** based at Minneapolis-St. Paul International Airport; **445th,** at Niagara Falls, N. Y.; and **349th,** at Hamilton AFB, Calif.

The Air Guard wings are: **106th,** at Floyd Bennett Field, Brooklyn; and **131st,** at Lambert Field, St. Louis.

The Air Force also announced that by next October 1 the Reserve will have more than **350 Fairchild C-119s** assigned to the troop-carrier units and that the fighter-bomber wings will be equipped principally with **North American F-86H** Sabrejets by that time.

Within two years the Air Force Reserve will be equipped exclusively with **C-119, C-46, and F-86H** aircraft. The Air Guard inventory by that time will include **F-86Ds, F-89Ds, F-94Cs,** and, in all probability, a limited number of supersonic **F-100s.**

• • •

The revision in the structure of the Reserve and Guard wings came at a time when the entire Reserve Forces program was being reviewed by an Air Force board headed by **Lt. Gen. Charles B. Stone, III,** Commander of Continental Air Command.

The board was set up to "examine current and long-range mission requirements of the Air Force in order to determine those functions which can be accomplished to a substantial degree by the Air Reserve Forces."

The committee, officially known as the **"Air Reserve Forces Functions Review Committee,"** will make recommendations to the Chief of Staff on how the Reserve and Guard can best be employed in the future. Its principal concern will be with organized units.

In addition to General Stone, the committee is composed of:

Maj. Gen. Daniel F. Callahan, Maj. Gen. John B. Cary, Maj. Gen. William E. Hall, Brig. Gen. Elvin S. Ligon, Jr., Brig. Gen. Charles M. McCorkle, and Brig. Gen. Maurice A. Preston, all of Headquarters, USAF; Maj. Gen. Kingston E. Tibbetts, representing Air Materiel Command; Brig. Gen. Joseph G. Hopkins, MATS; Brig. Gen. William L. Kennedy, Tactical Air Command; Brig. Gen. Romulus W. Puryear, Air Defense Command; Brig. Gen. Ethelred L. Sykes, Strategic Air Command; and Maj. Gen. Winston P. Wilson, chief of the Air Division, National Guard Bureau.

Col. Robert Ahern of the office of the Assistant for Programs, Deputy Chief of Staff Operations, heads a working group composed of Air Staff and major command officers.

The Stone Board is scheduled to give its formal report and recommendations to General Twining next month.

• • •

Another group working in a similar direction is the **Air Force Association's Air National Guard Council.** The Council, composed of **thirteen active Air Guardsmen** and headed by **Alfred C. Schwab** of St. Paul, broadened its study on the future direction the Air Guard may take with briefings last month on the Century Series of aircraft and missiles.

The group spent a week in the **Los Angeles area,** visiting with representatives of **North American,** manufacturers of the F-100; **Convair,** manufacturers of the F-102; and **Lockheed,** manufacturers of the F-104.

Two weeks later the Council shifted its attention to missile-training research, with a visit to **Lackland AFB,** Tex., and a briefing by officials of **ARDC's Personnel and Training Research Center.**

The Council, which submitted an interim report on its study at the Air Force Association convention in New Orleans last August, will draft a **completed report** this month. The final report will be given to General Wilson, for use by the National Guard Bureau.

• • •

Continental Air Command, meanwhile, has stepped up training of its **troop-carrier wings** and has called in representatives of **Air Training Command and MATS** to review and evaluate the training being given Reserve navigators.

The troop-carrier wings are actually performing aerial drop missions during their weekend inactive-duty training periods in conjunction with Army airborne units.

The first such mission was performed last month by the **375th Wing** of Pittsburgh and **514th** of Long Island, when C-119s of both units flew a paradrop operation at Fort Bragg, N. C., in conjunction with the Army's 82d Airborne Division.

On succeeding weeks the **435th** "Flamingo" Wing of Miami, and **512th** of New Castle County, Del., conducted similar operations in support of the 82d Airborne.

The month-long program concluded with the 375th and 514th Wings flying additional paradrop missions in support of the Army's 77th Special Purpose Forces Division.

The navigator training review covered such items as **enrollment objectives, equipment, and active-duty training.** Approximately 1,400 Reserve navigators, most of whom are veterans of World War II and Korea, are enrolled in ConAC's three-year training program designed to bring them up to date on modern navigation procedures.

Effective immediately, ConAC announced, qualified navigators will be permitted to request an active-duty tour **with MATS** at any time during the year. This decision is expected to alleviate many of the problems presented by the heavy influx of navigators seeking active-duty tours during the summer months.

• • •

Last year was one of the **most successful** the Air National Guard has enjoyed since it was formed ten years ago, according to a report just released by the National Guard Bureau.

The year found ANG pilots piling up almost **400,000 flying hours,** principally in jet aircraft, and raising the level of their combat proficiency.

The Guard's **school program** was given credit for much

(Continued on following page)

of the upswing in proficiency of individuals and units. During the year more than **8,200** officers and airmen attended Air Force schools. Of this number, some 7,500 took service or technical courses, while 660 officers and airmen entered aviation-cadet training. Some 4,000 new airmen were sent to Lackland and Sheppard AFBs for basic training, and estimates are that the number will increase to 6,500 this year.

The **Air Defense Command alert program,** in which the ANG participates, found seventeen Guard units flying almost 20,000 hours under direct ADC control. An average of 300 pilots participated monthly. Designed as a test operation when it was begun more than a year ago, the program has achieved such success that the Guard will increase the number of squadrons participating to twenty this year.

In this connection, one Air Guard unit—the **109th** Aircraft Control and Warning Squadron in Hawaii—has gone on a **twenty-four-hour alert** status to augment Pacific defenses.

The Guard program also showed decided improvement in the **reenlistment area.** Of almost 10,000 three-year enlistments which expired during the year, **eighty-three percent** reenlisted immediately. This contrasted to a reenlistment rate of seventy-one percent in 1955 and fifty-nine percent the previous year. In addition, more than 3,000 Guard airmen enlisted in the Regular Air Force.

The year also saw an increase in the number of full-time technicians to **10,462,** which represents ninety-nine percent of the programmed technician strength.

The only area in which the Guard failed to meet projected strength was in **observer manning.** The Guard program called for 340 observers at the end of the year. Only 278 actually were on the rolls. All of the fighter-interceptor squadrons and two of the eight tactical-reconnaissance squadrons have requirements for observers.

The Bureau report attributed failure to meet the observer program to a **shortage of these officers** in the Reserve pool and to a **lack of incentive** in the training program. A new program permits World War II observers to attend a special eight-month course at an Air Force school, and the Bureau expects this telescoped course will help solve the deficiency.

The Guard seemingly has **no trouble finding pilots** to offset attrition. It had 3,451 pilots assigned at the end of the year and another 660 officers and cadets in pilot training. The report forecast that the Guard would have 4,050 pilots by the end of this year, or approximately seventy-five percent of the ultimate authorization.

To support the entire program, the Bureau **obligated $184.5 million.** Another **$13 million was saved** when the Air Force turned over needed ground radar equipment on a non-reimbursable basis.

Some **$24 million** was spent to speed up **construction** of ANG facilities. Of this, $7 million went to three locations—Martinsburg, W. Va., Baltimore, Md., and Louisville, Ky.—so that squadrons in these places could convert to full-scale jet operations.

As a result of these expenditures, the Air Guard now can operate jets from **sixty-eight bases,** making it in effect a widely dispersed fighter air force within itself.

The year was significant, too, in that more than **200 late-model jet aircraft** were added to the inventory, including thirty-eight **Lockheed F-94Cs,** the first rocket-firing aircraft assigned to the Air Guard. In addition, the Guard took delivery of **Republic RF-84F** aircraft, the first time in history that ANG units had received aircraft direct from the production line.

The Guard spent about **$39 million** for equipment and supplies used in direct support of aircraft operations and while the equipment situation improved, year's end still saw shortages of ground handling and test equipment for some types of jet aircraft in the inventory, and shortages in GCA and other electronics equipment. Over-all, the average unit equipment level in the twenty-seven tactical wings ranged between fifty percent and eighty-five percent.

This year the Guard will **deactivate forty-five replacement training squadrons.** But, as this occurs, pilot strength will be increased in the parent squadron at each location where a replacement squadron is wiped out. The Guard program ultimately calls for 547 units and these are scheduled to be completed sometime in 1960. Unless the mission changes in the meantime, all twenty-five Guard fighter-interceptor wings will be organized under the Air Defense Command structure by that date.

• • •

The relatively new **"match-merge"** program for the Air Force Reserve, once believed scheduled for a delay in implementation, apparently will be carried out by the June 30 deadline, after all.

This program is designed to **match Reservist** against a **definite mobilization assignment** by grade and skill. Those selected would be given a mobilization assignment with an active-duty unit. Those in excess of assignment needs would be transferred into non-pay categories of the Reserve program.

The initial matching has been completed by Continental Air Command's numbered Air Forces. When the initial matching began, however, it was contemplated that a second matching would be completed, based on future requirements, before orders affecting assignment of any individual would be published.

ConAC now has informed the numbered Air Force commanders it plans to publish orders based on the initial matching either next month or in March. The second matching was washed out because Air Force has not established firmly its future requirements.

As a result, Reservists will be notified whether they have been selected for mobilization assignments long before the **June 30 deadline** originally set for concluding the "match-merge" project.

• • •

Notes on the back of a Form 175. . . . Air Force has established a number of **comptroller refresher training courses** at Sheppard AFB, Tex. The courses cover most Air Force comptroller specialties, including personnel accounting, mission analysis, and the like. ANG comptrollers are eligible but strict quotas require that applications reach the National Guard Bureau as soon as possible. . . . NGB has announced that a variety of **communications vehicles** for which ANG units have been waiting are at the Memphis Air Depot and should be shipped out this month. . . . Air units are being asked to do all they can to lengthen the life of **aircraft tires.** Shortages in various sizes exist at Wilkins Air Force Depot. . . . Air Force has advised that AFR #65-20 is being amended to require that all **aircraft engines** be reported by serial number on AF Form 1338. Auxiliary engines also must be included on the report. . . . ANG units have been told to notify the prime Air Materiel Area of aircraft scheduled for **IRAN** at least sixty days before the aircraft is to be delivered. Kits, identified by aircraft serial number, must be shipped to the IRAN facility two weeks before the aircraft is flown in for inspection and repair.

—Edmund F. Hogan

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Curtiss-Wright's subsidiary, Aerophysics Development Corporation – working with the Wright Air Development Center of the U.S.A.F. Air Research and Development Command – has provided an ideal tool for this research in the just-announced HTV Hypersonic Test Vehicle. Reaching several times the speed of sound in only two seconds, this two-stage, ten-foot missile is topped with a two-foot nose cone where data on heat and air pressure are recorded.

The HTV is only the first in a family of such rockets on which Curtiss-Wright task scientists are at work. It is a dramatic example of Curtiss-Wright's developmental leadership in every advanced category of airpower.

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Tech Talk

By Bob Strobell

A new eight million dollar testing device, **which "thinks" faster than a guided missile,** will be put into operation in 1958 by the AF at Holloman AFB, N. M. Developed by the General Electric Missile and Ordnance Department, it is known as a "real time" closed loop analysis system, and it will gather as much data from a single flight test as that now gained from several tests. The new technique will reduce the data from the first few minutes of a missile's flight and compare it with the estimated performance of the missile. On the basis of this comparison, it will be possible to select new settings and variables and transmit new instuctions to the missile still in flight. By using a pair of high-speed computers and careful planning before flight, it will be possible to do in half a second what is usually done between flights. This will allow much **greater use of each missile** in the development program and result in a savings in time and money.

Looking like a proud father and his young son, this Boeing B-52 Stratofortress jet bomber and the Cessna T-37 jet trainer represent the largest and smallest jet aireraft now in production for the Air Force. The jet trainer is powered by two Continental J-69 engines, each of which develops 920 pounds of thrust while the bomber is powered with Pratt & Whitney J-57s, each producing more than 10,000 pounds of thrust. The trainer weighs 6,100 pounds and the bomber grosses more than 400,000 pounds. The Boeing B-52 has a top speed of 650 mph.

The "longest duration" (continuous firing) ever achieved by a large, solid-propellant rocket has been announced by the **Rocket Fuels Division of Phillips Petroleum Co.** The rocket incorporates an entirely new design concept being investigated for the AF at the McGregor, Tex., plant operated by Phillips under contract with the USAF. The Rocket Fuels Division previously announced the test firing of a solid-propellant rocket that produced the **"highest known thrust"** ever attained in a single-motor rocket, either liquid or solid. Both achievements are the result of five years of experimental work developing a family of solid propellants for rockets which are manufactured from readily available petroleum raw materials. The plant at McGregor, Tex., includes a completely instrumented proving ground of test facilities for static and environmental **tests of rocket engines up to 1,000,000 pounds of thrust.** The Phillips development of long-duration rockets is a significant advance toward overcoming the inherent short life of solid propellant rocket motors.

Radiosonde weather station dropped by planes over oceans and polar regions transmits weather data back to plane.

A gunnery monitoring device which will enable an instructor to advise students immediately of their errors has been devised by **North American Aviation's Columbus Division.** Called NAGIM—North American Gunnery Instruction Monitor—the system makes use of a transistorized television circuit by which the instructor can see the student pilot's gunsight reticle and target while gunnery passes are being made. Without NAGIM it is impossible for the instructor to see the target and reticle from his rear seat position; therefore, the student's efforts must be assessed at a later time after viewing gun camera film. With NAGIM the target and gunsight reticle are viewed by a small TV camera and are simultaneously superimposed on the instructor's screen through a closed-loop TV—allowing the instructor to call **immediate corrective advice** to the student.

A greatly **improved "weather station"** that is ejected from an airplane to determine weather characteristics in inaccessible parts of the world has been developed by the Air Research and Development Command. The radiosonde, a weather-sensing radio transmitter (*see cut*), consists of two dry-cell batteries, a radio transmitter, and a parachute assembly, and is so

(Continued on following page)

designed that the delicate radio is not damaged by the shock of the airstream or the opening parachute.

Six seconds after leaving the airplane the "weather station" automatically extends an antenna and **starts to transmit coded data** on temperature, humidity, and pressure back to the airplane. The data is decoded and forwarded to a central weather station. Some 25,000 radiosondes are dropped each year by seven weather squadrons flying daily in the northern hemisphere and the information gathered by them enables forecasters to make weather predictions two to three days in advance. For several years the Air Weather Service has used this method to determine weather characteristics over oceans and polar regions where permanent weather stations are not practical.

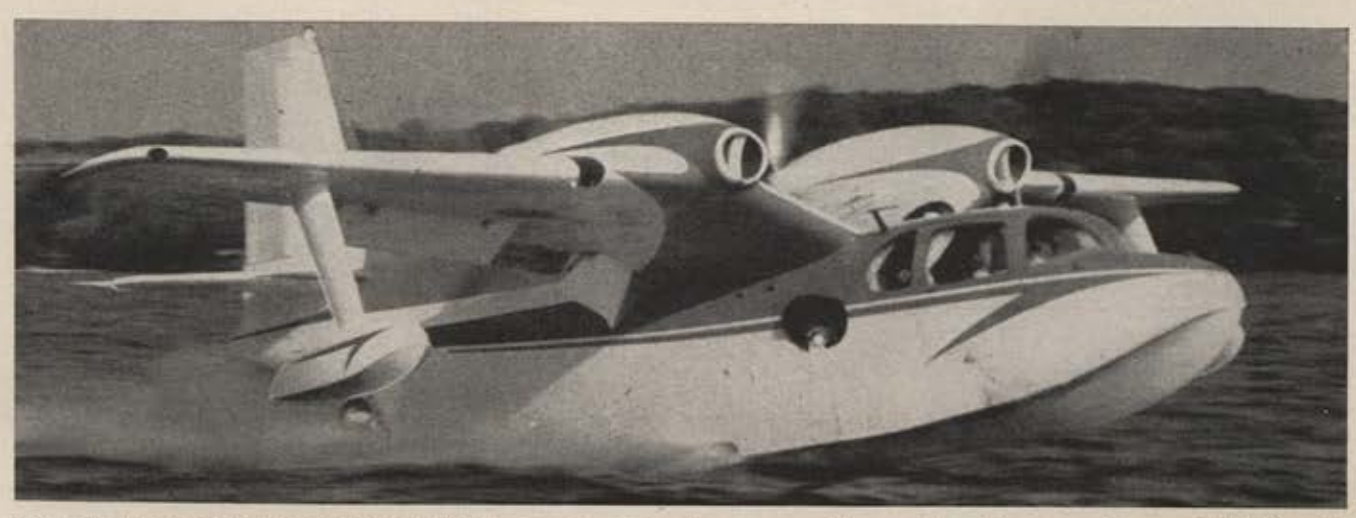
Newest addition to the Air Research and Development Command's research track family is the **"Daisy Track,"** a short 120-foot track (*see cut*), installed at ARDC's Holloman Air Development Center, N. M. The track is designed **to investigate the effects of impact on the spinal column** and the physiological and psychological effects on human beings during abrupt impact deceleration. The sled will use an air gun type of propulsion, thus the name "Daisy Track."

The 350-pound sled, made of tubular steel, rides on tubular steel rails and can be accelerated to a desired maximum velocity of more than one hundred miles per hour. The sled is stopped by a piston-type water inertia brake at the deceleration end of the track. A man lying on his side during the test run can be **rotated to different angles** with respect to the line of motion to determine tolerance to impact in various positions.

Subject on ARDC's "Daisy Track" (*see text*), can be rotated to different angles to determine the human tolerance of abrupt deceleration in various positions.

The project is part of the program which includes the 3,500-foot rocket sled rack research in which **Lt. Col. John P. Stapp** rode a sled 632 miles an hour and then was stopped abruptly in a little more than one second. Through these tests on the "Daisy Track" the AF believes it will find the best position to endure the greatest amount of jolt with the least amount of damage. This will determine the **best position for a man to assume** when he is ejected from a jet plane at high speeds.

A new supercharged model of the **Royal Gull amphibian**—the "Super 200"—was recently demonstrated in Florida by the Trecker Aircraft Corp. Its two 340-hp. Lycoming engines give it a top speed of 208 miles per hour—making it today's **"fastest commercial amphibian."** It can climb from sea level to 9,000 feet in just seven minutes, according to the company. Its service ceiling is more than 25,000 feet and its range is about 900 miles when using "economy cruise" settings of fifty percent power. The plane has exceptional visibility for both pilot and passangers, according to the manufacturer, a "spray-free windshield" for water take-offs and landings, "outstanding stability in flight," and, says Trecker, **can land anywhere**—major airports, gravel strips, or on any of the countless lakes and rivers that dot the countryside.—END



The new "Super 200" Royal Gull amphibian can carry a one-ton cargo or five people and baggage. Top speed is 208 mph.

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The ACHIEVER—a new type of inertial guidance system —brings fantastic accuracy, ruggedness and dependability to Air Force ballistic missiles.

Heart of the system is a remarkable gyro stabilized platform of such stability that the slightest variation in windage or missile velocity can instantly be sensed and precise corrections made.

This great new development is one phase of AC's work as a prime contractor for the Air Force Ballistic Missile Program. It is one more example of AC's leadership in the field of electro-mechanical research and development.

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AFA NEWS

SQUADRON OF THE MONTH

San Francisco Squadron, San Francisco, Calif., Cited for its programs to educate the community on the problems of Jet Age, and instill in the area a feeling of responsibility toward the military-community relationship.

The **San Francisco Squadron,** which takes a back seat to no one when it comes to sponsoring programs, has done it again. The Squadron's Jet Age Conference, on October 30, attracted almost two hundred interested Bay Area participants.

The program—with **Thos. F. Stack, Jr.,** acting as chairman—featured morning and afternoon presentations of San Francisco's opportunities in the Jet Age, and the problems it must face. **Dr. John F. Victory,** Executive Secretary, NACA, Washington, D. C., spoke at the luncheon.

Maj. Gen. Henry K. Moody, Deputy Commander of SAC's 15th AF, spoke on the military requirements. Other speakers, and their topics, were: **Stanley Selzer,** Air Transport Association, "Jet Air Lanes of the Future"; **Maj. Gen. Roy H. Lynn,** Commander, WADF, "San Francisco and the Air Force—Partners in Defense"; **George E. Fouch,** GE Aircraft Gas Turbine Division, "The Airpower Business—San Francisco's Brightest Challenge"; and **Alan K. Browne,** San Francisco Chamber of Commerce, "San Francisco Meets the Jet Age."

AFA President **John P. Henebry** delivered the keynote address, and Executive Director **James H. Straubel** served as moderator.

One aim of the Squadron in sponsoring the conference was to impress upon the citizens of the community the importance of modernized facilities. The San Francisco International Airport is one of the nation's newest, but to ideally meet the coming Jet Age requirements, it needs further improvement. It is interesting to note that a week after the conference a bond issue on the ballot for a large expenditure for airport modernization was overwhelmingly approved.

The Squadron has also sponsored the second of its tours of nearby military installations for civic and business leaders of the community.

On October 11, one hundred guests of the Squadron were also guests of

(Continued on page 91)

Pittsburgh radio broadcaster Ruth Young accepts honorary Sqdn. membership from Chester A. Richardson.

Some of San Francisco guests at McClellan AFB, Calif., inspect an RC-121 radar plane. From left: Lawrence Barrett, W. Lansing Rothschild, W. B. Voreyer, Col. W. R. Richards, Dana Clark, and Maj. W. A. Furman, 8th Air Division.

C. C. Walker, General Electric vice president, gets a citation from Tom Stack (left) in San Francisco, Calif.

Participants in fifth USAF Fighter Weapons meet are greeted by Las Vegas AFA Commander Ray Culley. From left: Capt. Billy Ellis, member of the Thunderbirds, the AF's flying team; Col. Bruce Hinton, captain of TAC's Day Fighter team; Culley; Brig. Gen. W. W. Momyer, captain of TAC Special Weapons team.

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AND

Airpower Panorama

Celebrating the GOLDEN ANNIVERSARY of the United States Air Force

TWELVE Washington hotels have set aside 2,500 rooms and 350 suites, all air conditioned, for the Air Force Association's 1957 National Convention and Airpower Panorama, which will climax the celebration of the Golden Anniversary of the United States Air Force.

Convention Headquarters will be the Sheraton-Park Hotel (formerly the Wardman Park), with the Shoreham Hotel, located across the street, as co-headquarters. Both are located in uptown Washington, overlooking beautiful Rock Creek Park.

Since more than 3,000 delegates, participants, and guests are expected to attend the Convention, it will not be possible to accommodate everyone at the headquarters hotels. Therefore, rooms and suites at the Sheraton-Park and suites at the Shoreham will be limited. Every effort will be made to assign accommodations as equitably as possible, with priority being given to AFA National Officers and Directors, official Convention delegates, and Industrial Associate Companies of AFA.

A special AFA Housing Office has been established at the Washington Convention Bureau, which will handle all reservation requests for the Convention.

The listing of hotels below is in the order of their distance from the Sheraton-Park Hotel, with the Shoreham nearest, the Windsor Park next, etc.

★ WASHINGTON, D. C. ★ JULY 30-AUGUST 4 ★

MAIL YOUR RESERVATION REQUEST NOW!

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HOTEL	SINGLE	DOUBLE	TWIN
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Shoreham*	9.00	14.00	14.00
Windsor-Park*	9.00	12.00	12.00
Dupont Plaza*	9.50	12.50	12.50
Woodner*	None	13.50	13.50
Mayflower*	9.00	14.50	16.50
Statler*	11.50	15.00	16.50
Lee House	8.50	12.00	12.00
Burlington	7.50	10.00	10.00
Ambassador	7.50	11.00	12.00
Hamilton	7.00	10.50	10.50
Continental	7.00	9.00	10.00

* *Suites available—one bedroom, $25; two bedroom, $40. Rates are averages—lower and higher rates available.*

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CITY & STATE _____

HOTEL _____ (FIRST CHOICE) _____ (SECOND CHOICE) _____ (THIRD CHOICE)

_____ (TYPE ROOM) ( ) Low ( ) Average ( ) High (DESIRED RATE)

ARRIVAL DATE & HOUR _____

DEPARTURE DATE _____

OTHERS IN ROOM _____

Globe Aerostatique . . . 1783

Montgolfier's vanguard project

A sheep, a duck, a rooster—the first payload carried aloft for atmospheric research. Louis XVI, his queen and his court, were astonished witnesses as Joseph Montgolfier's smoke-filled balloon rose in majesty 1500 feet over Versailles. The passengers? unharmed (except the rooster, kicked by the sheep).

Project Vanguard, 1957, is an equally momentous "first"—an attempt to place a 21-pound satellite in an orbit 300 miles up. Aerojet-General, designer-builder of the famed Aerobee-Hi, will supply vital second-stage propulsion systems for Vanguard launchings during the International Geophysical Year.

Aerojet-General CORPORATION

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THE GENERAL TIRE

PLANTS AT AZUSA AND NEAR SACRAMENTO, CALIFORNIA

Col. Peyton Gibson, Commander of the 436th Troop Carrier Wing, Floyd Bennett Field, N. Y., accepts the New York Wing's Trophy as top 1st Air Reserve Unit. Bill Stein, far right, AFA Wing Commander, made the presentation. Maj. Gen. Roger Browne, 1st AF Commander, is at extreme left. The trophy, donated by Fairchild Engine & Airplane Corp., is shown at the right. Winner is selected by the Continental Air Command and is based on achievements during the year.

the commanding officers of **McClellan and Mather Air Force Bases,** and also visited the plant of the **Aerojet-General Corporation** near Sacramento.

The **Boise Valley Squadron's** first big public program was a Jet Age Conference, held November 2. Squadron Commander **Chauncey Reese, Don Adams, Holly Moore,** and **Chuck Rountree** planned and staged the program, which featured a banquet at which **Gen. George C. Kenney,** a past President and Board Chairman of AFA, spoke.

Among the guests were **Sen. Henry C. Dworshak, Gov. Robert E. Smylie, Mayor R. E. Edlefsen,** AFA Director **John R. Alison, John Tate,** President of the Boise Chamber of Commerce, and **Maj. Gen. John E. Walsh,** Idaho Adjutant General.

Speakers on the panel included **Dr. H. E. von Gierke,** Aero-Medical Laboratory, Wright-Patterson AFB, Ohio; **Col. Harry W. Shoup,** Director of the Combat Operations Center, ConAD; **Frank W. Wiley,** Montana State Aeronautics Director; and **R. E. Dake,** Regional Director, CAA.

AFA's **Board of Directors** met in the Broadmoor Hotel, Colorado Springs, Colo., November 9-10. Twenty-six Directors attended, in addition to members of national committees and staff members; and meetings of the **Airpower Policy** and **Executive Committees,** and the **National Wing Advisory Council,** preceded the board meeting.

Included in the actions of the board were: approval of the procedures of applying for Vice Presidential expense allocations; discussion and approval of the agenda for the 1957 Jet Age Conference, to be held in Washington February 14-15; approval of a plan whereby each Regional Vice President would have a personal consultation with the President concerning the problems of his particular region; and approval of the plans for the 1957 National Convention, to be held in Washington July 30-August 4.

The fifth annual convention of the **Colorado Wing** at Colorado Springs, November 10, was the most successful in the Wing's history. Highlight of the one-day program was the annual banquet, attended by more than two hundred people, including the AFA Board of Directors, who met the same weekend at the Broadmoor Hotel in Colorado Springs (*see above*).

Gwynn Robinson, Regional Vice President, toastmaster for the dinner, introduced the many guests, including **Gen. Earle E. Partridge,** Commander, Continental Air Defense Command; **John P. Henebry,** AFA President; **Gill Robb Wilson,** AFA Chairman of the Board; **Gen. Joseph H. Atkinson,** Commander, Air Defense Command; **Brig. Gen. A. H. Schwichtenberg,** ADC Surgeon; and **Thayer Tutt,** a past Vice President and recipient of a special national award presented by President Henebry.

Herbert Stockdale, retiring Wing Commander, presented Wing awards

(Continued on following page)

Col. Glenn Duncan at Detroit luncheon welcoming him to Selfridge AFB, Mich.

to **General Partridge, Wilson Palmer,** Pueblo, and **Harry Glick,** Denver, for their contributions to AFA in Colorado in 1956. Theme of the convention was "Airmen for Airpower," and a special citation was presented to **M/Sgt. Arthur Geise,** Colorado Springs Reservist, for his efforts in the past year.

Paul Canonica, Vice Commander of the Wing, was elected Commander to succeed Stockdale. Other officers are **Paul Potter** and **Ted Stell,** Vice Commanders; **Buff Abell,** Secretary; and **Tony Biondini,** Treasurer. The new Councilmen are **Stockdale, Mort Hopper, Lawrence DeMuth,** and **Arthur Kroell.**

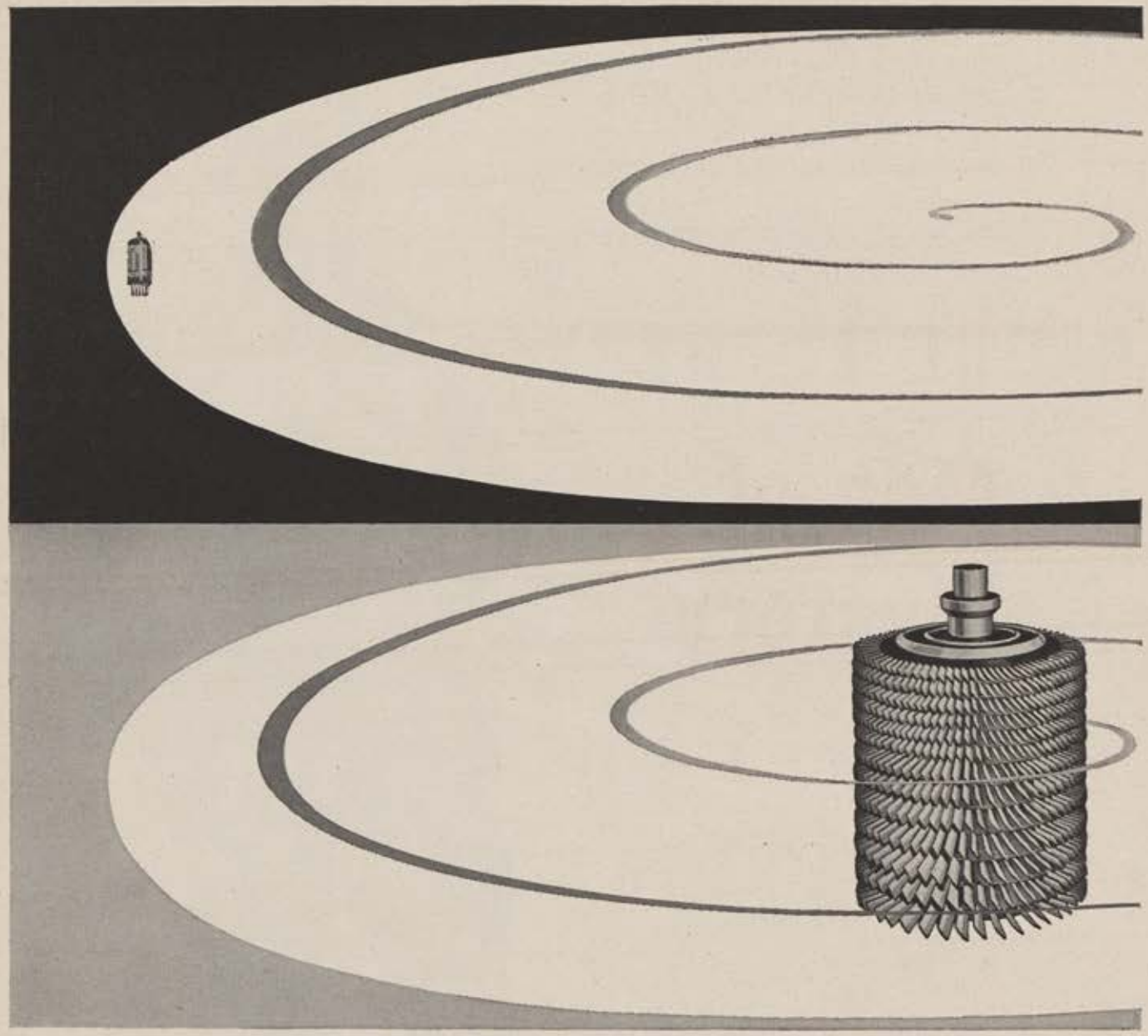
The **Metropolitan Philadelphia Squadron** sponsored a **"David McCallister Testimonial Dinner"** on November 2, for the ANG pilot who won the 1956 **Ricks Memorial Trophy** event—a jet flight from San Francisco to New Orleans. McCallister, who is a member of the Squadron, accepted the Ricks Trophy from Board Chairman **Gill Robb Wilson.**

Guests at the speaker's table included **Mrs. McCallister; Milton Caniff,** a previous AFA National Award recipient; **Mrs. Mary Wilson; William W. Spruance,** and **Leonard Work,** both AFA Regional Vice Presidents; and **Robert Cox,** Pennsylvania Wing Commander.

Frank Steiber, past Squadron Commander, was Program Chairman.

Detroit's **Vandenberg Squadron** was host at an offieial welcome luncheon for the new Base Commander of Selfridge AFB, **Col. Glenn E. Duncan,** when he took command in October.

The luncheon was held at the Statler Hotel, and was attended by leading industry, press, and civic representatives from Detroit, all out to extend the official welcome to Colonel Duncan. **Russell Lloyd,** Vandenberg Squadron Commander, was chairman of the program.—END



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RAOUL LUFBERY

Man of Mystery

By Ed Mack Miller

ONCE his name was on every American's lips. But that was long ago—early in World War I. Now he is almost forgotten.

Ask an old P-40 fighter jockey who Raoul Lufbery was, and he may remember the horizontal squirrel-cage maneuver called the "Lufbery circle," done in the days when day-fighter combat was a duel of skill instead of a high-speed pass at a speck on the windscreen. But most likely he won't even remember that.

Some people will scratch their heads and say: "Wasn't Raoul Lufbery a French ace in World War I, along with Georges Guynemer and René Fonck?"

Yes, he was French and he was an ace of World War I, but he wasn't a French ace—he was as American as baked beans, Keokuk, and the Model T.

A painting of Raoul Lufbery adorns an upstairs wall in the officers' club at Bolling AFB in Washington, D. C., but no field honors his name, and sad it is, for Raoul Lufbery is a big part of the tradition of our American Air Force.

Indeed, Raoul Lufbery, soldier of fortune, modest to a fault, gentle with children and animals, whose favorite pastime was to hunt mushrooms in shadowy forests, did as much as any

Lufbery in 1917 when he was an ace in the Lafayette Escadrille.

While Lufbery was in French air service, Hispano-Suiza gave him this car.

one man to pioneer the early techniques of combat flying and to pass on to another generation of pilots the knowledge he learned as a pilot in the Lafayette Escadrille in the skies over Germany and France.

At the time that he was killed, Lufbery had the greatest number of aerial victories of any American pilot. He had seventeen official confirmations and probably twice that score of airplanes shot down behind the German lines or damaged—and all his official victories had been confirmed *by at least three witnesses.*

Lufbery was born in France. But when he was a year old, his mother died and his father remarried and came to America. After settling in Wallingford, Conn., the father left the boy in care of his grandparents, never to see him again. When the boy was old enough, he set out on his own. Always self-sufficient, quiet, never seeking anyone else's counsel, he was consumed with a desire to roam the far corridors of the world.

By the time he was of college age, Lufbery had waited on tables in a Greek restaurant in Constantinople, had collected custom levies for the Chinese, and had punched tickets on the Indian railways. He had also soldiered in the Philippines. He was a true soldier of fortune.

Luf was a small man, 5'5" at the most, broad of shoulders, spike-tough, and seemingly without fear or emotion of any kind. Although he was inclined to be morose, he did have a fine, flashing smile, but it was an occasion when anyone heard him laugh.

It was in Calcutta in 1912 that Lufbery, out of a job, met the man who changed his entire destiny. The man's name was Marc Pourpe. He was a Frenchman, an airman, and he was touring India making exhibition flights in a Bleriot monoplane.

Young Lufbery, who had always had a great interest in the air, offered his services to Pourpe in erecting a hangar. He stayed with Pourpe for a long time, becoming his mechanic, and for two years the team toured India and the Orient. When Pourpe made his famed flight from Cairo to Khartoum and back, Lufbery followed him on the ground, traveling by canals, steamers, and cargo boats, on donkeys and camels, by trains, and many times on foot with his tools and a little food on his back. Seemingly he was happy to be a mechanic. Modest as he was, he probably doubted his own ability to fly.

In the summer of 1914, the two men returned to France to get a new type of airplane. They arrived just as the war did, and they both enlisted, Pourpe as an aviator and Lufbery as a mechanic. Within a few weeks the heroic Pourpe was dead—killed in air battle, and young Lufbery's world crashed with Pourpe's plane. He swore a terrible vendetta against the Germans—and immediately asked that he be given flying training.

He arrived at the Lafayette Escadrille at its inception, about May 24, 1916. On July 30, he shot down his first enemy plane in the Verdun sector, east of Etain. The next day he got his second victory, and on August 4, a third, also near Verdun. On August 8 he shot down an Aviatik, and during the history-making bombardment of the Mauser works on October 12, he destroyed a three-passenger Aviatik. This was his fifth official victory. He had become an ace in four months and was beginning to get revenge for the death of his comrade, Pourpe.

Lufbery's technique of combat was merely a translation of his own personality into flight—a combination of absolute fearlessness and a remarkable ability to analyze situations. When he accepted or was forced into combat, he was always in the most favorable position. His narrow escapes were legion. One day he returned with four neat bullet holes in his instrument panel, two on each side, and aligned so perfectly with his body that had he wriggled a fraction of an inch either way, he would have been hit.

He was the first man to find that the Boche were using armor plates on some of their big ships (a German innovation that was, eventually, to be Luf's undoing), when he tangled with a triplane in the spring of 1917 and fired over two hundred rounds from a distance of less than one hundred yards. He never dented the German, whereas is Nieuport was riddled like a tattered target.

He had an abiding passion for mushrooms, and on days when the weather made flying impossible he would take a can or basket and start out on the trail of the delicacy. As in everything else he did, Lufbery always came back with his share.

The Escadrille's mascot was a lion named Whiskey. And Whiskey was Luf's pal. Wherever he was, Luf would only call his name and the lion would bound to his side. A female cub, who was brought along as a companion for Whiskey, was called Soda. Soda was a fang-baring, growling, spiteful little rascal and Luf was the only pilot who could tame her.

Cachy Somme, 1916, Lufbery in the cockpit of his Nieuport about to take off while a squadron member plays with "Whiskey," the squadron's lion cub mascot.

Lufbery was a man no one could get to know. He was the greatest enigma of the war. Only occasionally did he speak of himself, his past, his present, or his future. When he went on leave to Paris or the south of France, no one ever saw him, knew where he went, what his relations were, or who his associates were. He was totally uncommunicative on the subject of self.

He took flying and war very seriously, but if he did have a close call it was seldom recounted and rapidly forgotten. It was the same with victories in the air. War was war to Lufbery, and you either fought it in bars or in the air. He preferred the latter.

In his last months with the Escadrille, now—with sixteen victories—the foremost American ace on the Western front, Lufbery suffered an attack from a quarter he had never suspected.

Several years of living in cold barracks and colder cockpits had served

(Continued on page 97)

Mobile communication . . .
Rock-of-Gibraltar type

The short-wave radio transmitter and receiver illustrated above is known as GRC-19, and we build it for the U. S. Army Signal Corps.

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to bring on rheumatism, which now knotted him up painfully. He tried on several occasions to bake the affliction out of his bones with enforced leaves on the south France coast, but each time on his return his painful affliction would beset him.

Lufbery never complained, though—about the rheumatism. But he did complain when the Escadrille was transferred to the American Army, recently arrived on the fields of France. Not that he didn't like his own country's army; it was just that the commanders forbade Luf to fly after the transfer, saying his loss would be too great a blow to the country. They didn't realize what kind of a blow being grounded would be to Luf's quiet but intense spirit.

And so they served him up a desk at Issoudun, with gasoline tanks in the drawers and a safety belt on his swivel chair—or so Lufbery joked, when he could talk about it at all.

A fellow Escadrille pilot turned author, Edwin C. Parsons, said of the situation: "The crass stupidity of certain American brass hats failed to recognize his value as a fine fighter. They gave him the rank of major in American aviation and equipped him with a pretty uniform and a pair of spurs; then they left him to eat his heart out, sitting for months at a desk doing nothing."

Finally, however, the American authorities gave in and sent him to the 94th Pursuit Squadron (to become famed as the "Hat-in-the-Ring" squadron) at Villeneuve in the Champagne sector.

The 94th and 95th had a few airplanes but no machine guns, and for nearly two months Lufbery, happy again in the clouds, spent most of the time teaching boys combat tactics and aerobatics. He even flew gunless across the lines, until the armament came in April of 1918 and the 94th started pursuit work in earnest in the Toul sector. In the first thirty days there was little doing, and much flying time was logged in the hunt for enemy ships. Few Germans were aloft, and those few would turn tail and run when a sally was made in their direction.

Lufbery was a born instructor. He was quiet and let the student learn to fly the ship by getting the feel of it, yet he always seemed to know what the student was thinking. And when he did speak, the student listened, for Luf did not suffer fools gladly.

Many of the younger pilots of the Escadrille had their lives saved by Lufbery. Both Edwin C. Parsons and Eddie Rickenbacker testify to the fact that their skins were spared by the ubiquitous Lufbery. As one writer has said: "He always seemed to come galloping along just at the right time, either to take a crack at a German or to help some buzzard who had gotten himself into a tough spot."

Lufbery repeated over and over again to his pilots that it was impossible to shoot down Germans by sitting home in the billet with one's feet before the fire, and he had little regard for those who "flew big" in town and "flew little" in the air. He was one of the first to train pilots to "stick together" in the air, a tactic now SOP with fighter pilots.

In his book, *Fighting the Flying Circus,* Eddie Rickenbacker says that when he first came to the front in France, Maj. Raoul Lufbery was the most famous of our American flyers.

"Lufbery was very quiet in manner and very slow when he wanted to be," Rickenbacker says. "He had seen almost four years of service in the French Air Service and the Lafayette Escadrille and had shot down Hun airplanes before the American Air Service began active work at the front. Every one of us idolized Lufbery."

A blow to Lufbery came on May 6, 1918, when he learned that the famed flyer, Capt. James Norman Hall (in later years a famous author) had crashed. Hall was beloved by American aviators in France as one of their most daring air fighters. Every pilot

(Continued on following page)

"His friends at the field saw him climb out of the cockpit and almost back to the tail . . . then they saw him jump."

RAOUL LUFBERY — CONTINUED

who knew the ebullient Hall burned with a desire to avenge him, and especially Hall's great friend, Lufbery. Rickenbacker had been with Hall when he spun in after his top wing collapsed in a combat with a German plane. After Rickenbacker landed, he saw Luf walking toward his Nieuport in battle gear, off solo to chalk up a Hall for Jimmie.

For many months Hall and Lufbery had flown together in the famous old Lafayette Escadrille, so the account to be squared was a personal one for Luf.

Lufbery flew for an hour and a half without encountering an enemy plane. Then, with only a half hour's petrol remaining, he flew deeper into Germany in pursuit of three German planes which he had spotted north of Saint Mihiel. With blood in his eye, Major Lufbery roared into the trio, blasting one from the skies as the others took to their heels. The following day his victory was confirmed by an advanced post which had seen Lufbery attack the three Germans and put two to rout and one to earth.

All over America the word of Lufbery's seventeenth victory was shouted. Jimmie Hall, who had lived through the crash and was a prisoner of war in Metz, was avenged.

But Hall and Lufbery were not to see each other again, for time was running out for the gallant Maj. Raoul Lufbery.

It was a sunny spring morning in the lovely country around Nancy, and the war seemed very far away. The calendar said May 10, 1918, and it was lilac time in Lorraine.

Then, at about ten o'clock, the anti-aircraft guns on top of Mount Mihiel began firing, the smoke from the ack-ack shells blossoming at what seemed a tremendous altitude.

The word came through fast: A German photographic plane was on the prowl. "In the air!" came the order to all pilots. But a young lieutenant named Gude was the only pilot on the field ready for flight. He started his plane and went up alone—high on courage but low on experience—to attack the intruder. It was his first actual combat.

Below, work stopped in the fields and on the tarmac as people dotted together to watch the drama. Just as Gude left the ground, the French ack-ack batteries ceased firing, sure that they had plastered the German plane, which was now winding up in a long, slow spin toward the ground. But the maneuver was only a deceptive move, for just above the trees the Albatross recovered and started to streak toward the German lines. Lieutenant Gude, however, was now coming into position. But, through inexperience, he began firing too soon and fired until he ran out of ammunition without seemingly damaging the Albatross. The partisan onlookers groaned in disappointment until they saw another Nieuport arching up the sky to the attack. It was Lufbery who had commandeered a motorcycle to get to the flight line and borrowed the nearest plane to pursue the German.

It was typical of Lufbery to leap in while others waited, wondering if there was still time. But the odds were not in his favor. He was unfamiliar with the borrowed plane; its guns undoubtedly hadn't been sighted as accurately as the carefully adjusted ones on his own plane (which was out of commission).

But the courageous Lufbery did have a mount and guns of some sort—and in seconds he was ready to attack.

In plain view of those on the ground, he swarmed on the Albatross at two thousand feet, firing several short bursts by way of warming up. Perhaps those first bursts confirmed his suspicions that the Albatross had armor plate. No matter, he attacked again—only to have his guns jam. He circled to clear the jam, and dove again to the attack. Then his plane was seen to burst into flames. He passed the Albatross and proceeded for three or four seconds on a straight course. Then his friends at the field saw him climb out of the cockpit and almost back to the tail. The tiny figure on the blazing plane rode there for several seconds, and then they saw him jump.

(Continued on page 101)

ABOUT THE AUTHOR

In last month's author note about Ed Miller, with his story "Window Into Space," we mentioned that Ed and his wife had six children. Since then, another redhaired daughter has appeared. Miller and his brood live in Denver. In addition to his free-lance writing, Ed's a flight instructor for United Air Lines, and still finds time to fly for the Colorado Air National Guard. He's a major who to date has logged more than 7,000 hours of flight time.

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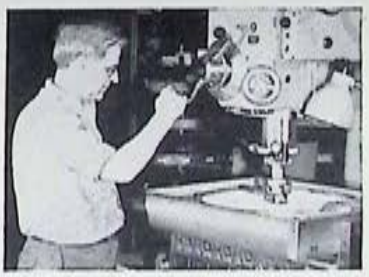

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They found Major Lufbery's body in the garden of a peasant woman's home in the little town of Maron, just north of Nancy. There was a small stream about a hundred yards distant, and his flying buddies felt that seeing just a slight chance left, he had jumped in the hope of falling into the stream.

Captain Rickenbacker arrived at the scene of the tragedy thirty minutes after Lufbery had fallen; but, according to his account, "loving hands had already removed the body."

The townfolk had carried the remains of the heroic major to their little town hall. And there Rickenbacker found him, his charred figure entirely covered with flowers from the nearby gardens.

Rickenbacker could not help but remember the conversation he had had with Major Lufbery on the subject of catching fire in the air a few days prior to the accident. Rick had asked Luf what he would do in a case of this kind: Jump or stay with the machine? All of the younger pilots had vast respect for Major Lufbery and his experience and they all listened eagerly to hear his thinking on the question.

"I would always stay with the machine," Luf had responded. "If you jump, you certainly haven't got a chance. On the other hand, there is always a good chance of side-slipping the airplane down in such a way that you fan the flames away from yourself and the wings. Perhaps you can even put the fire out before you reach the ground. It has been done. Me for staying with the old bus every time."

Parsons, in his version of Lufbery's death, says, however, that the great ace had always said that if his airplane ever caught on fire, he would never stay with it and die a lingering death. When he had to go, Parsons said Lufbery was emphatic that he wanted to go fast. "Out like a light."

It was a day of tragedy. The leading ace of a French Escadrille nearby had witnessed the death of Lufbery and had immediately taken off in an effort to down the Albatross. But that pilot, too, had been shot through the heart at first encounter, his machine crashing quite close to where Lufbery had fallen.

The Albatross and its crack-shot crew had almost made it home, only to be jumped by an Allied plane which had better luck. The German plane was shot down and crashed, but its crew survived the crash and were made prisoners.

On May 20, the last remains of Major Lufbery were laid away in the little "Airman's Cemetery" at Villeneuve.

General Gerard, Commander of the Sixth Army, led his entire staff to the place of burial shortly after noon. General Liggett, the 26th Division's commander, came with Col. Billy Mitchell, the chief of the American Air Forces. It was a stirring and touching sight. There were mountains of bright spring flowers and the day was a sparkling one, but in the hearts of everyone present, there was the great pain of loss.

"I watched the great assemblage gather," Rickenbacker wrote. "Their flowers covered the casque of the dead airman and formed a huge pyramid over it. At 1:30 I headed back to the airdrome. I had one last flight to make in conjunction with my comrade of so many patrols.

"The pilots of Flight Number One were strapped in seats and awaiting me. Our mechanics silently handed us our baskets of flowers.

"Leaving the field in flight formation we circled until five minutes to two. The last two processions passed up the short stretch of road, and the aviator's last resting place was filled with Lufbery's friends.

"I flew my formation twice across the mass of uncovered heads below and glided with closed engine down to fifty feet above the open grave. As his body was being slowly lowered I dropped my flowers, every pilot behind me following in my wake, one by one.

"Returning then to our vacant airdrome we silently faced realization that America's greatest aviator and ace of aces had been laid away for his last rest."—END

THIS IS AFA

The Air Force Association is an independent, non-profit, airpower organization with no personal, political or commercial axes to grind; established January 26, 1946; incorporated February 4, 1946.

OBJECTIVES

• To assist in obtaining and maintaining adequate airpower for national security and world peace. • To keep AFA members and the public abreast of developments in the field of aviation. • To preserve and foster the spirit of fellowship among former and present personnel of the United States Air Force.

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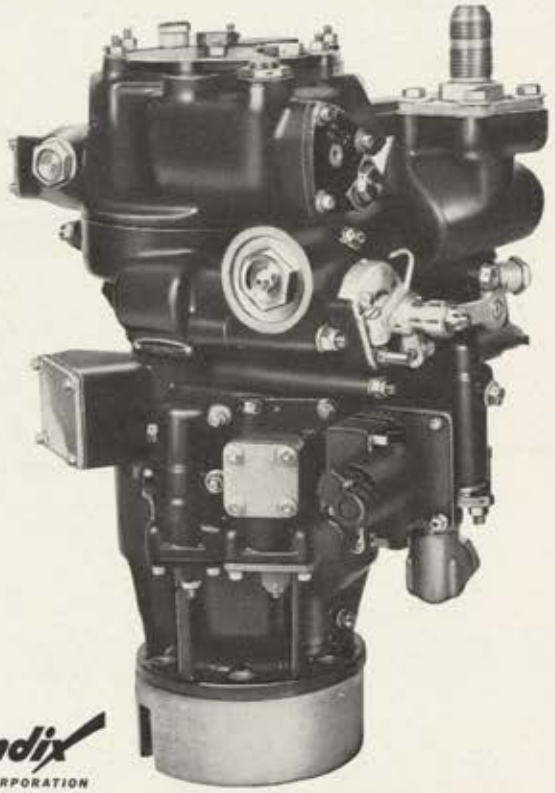

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