

ANC

RAMMING—LAST-DITCH AIR DEFENSE

AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

Also in this issue—

NEW THINKING NEEDED

By Secretary Thomas K. Finletter

AIRPOWER VS THE DEAD HAND
OF TRADITION

By James H. Doolittle

UNDER THE A-BOMB SHIELD

By General Hoyt S. Vandenberg

OCTOBER 1952 • THIRTY-FIVE CENTS

C. de M. Barnes '52



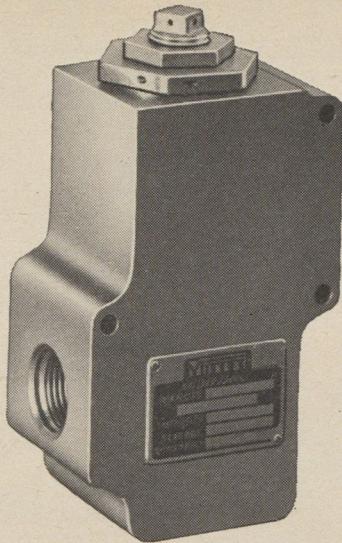


Hamilton Standard's long experience as a leader in propeller design and production is also devoted to supplying other equipment for such outstanding airplanes as the Douglas F4D Skyray jet fighter for the U. S. Navy.

Wherever Man Flies



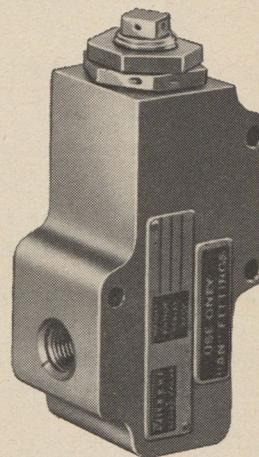
PROPELLERS ★ STARTERS ★ AIR CONDITIONERS ★ FUEL CONTROLS ★ AUXILIARY DRIVES ★ HYDRAULIC PUMPS



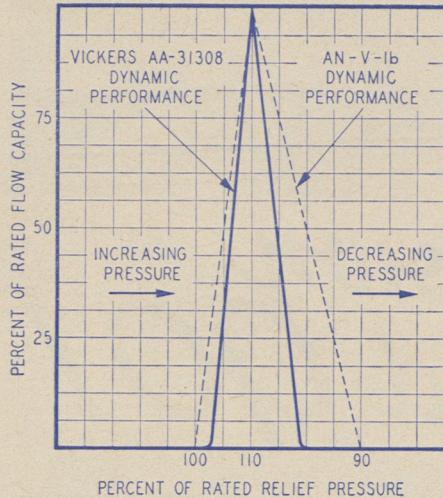
Vickers Model AA-31308-H
AN-6279-8CD



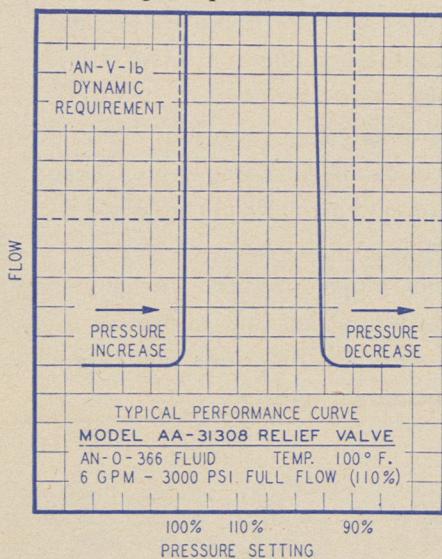
Vickers Model AA-31306-H
AN-6279-6CD



Vickers Model AA-31304-H
AN-6279-4CD



Pressure variation from cracking point to maximum rated capacity of Vickers Two-Port Balanced Piston Relief Valve is considerably less than permissible under Specification MIL-V-5523. Consequently less pressure differential is required between relief valve setting and unloading valve pressure.



Curve showing extremely low internal leakage of Vickers Two-Port Balanced Piston Relief Valve.

These **VICKERS** RELIEF VALVES

TWO PORT • BALANCED PISTON

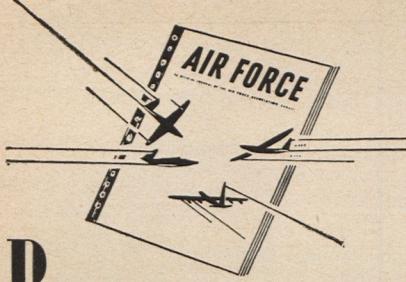
Conform to
Specification **MIL-V-5523**

The Vickers Two-Port Balanced Piston Relief Valves illustrated here conform to Specification MIL-V-5523. Their rated capacities (2, 5 and 9 gpm) are greater than required by this Specification (1.5, 3.5 and 6 gpm respectively).

The curves at the left illustrate two important characteristics of these valves: (1) very low pressure variation from cracking point to maximum rated capacity, and (2) extremely low internal leakage (less than required by Specification MIL-V-5523). Smoother operation and greater accuracy throughout a wide range of pressure adjustment are other significant advantages. Operating pressure range is adjustable from 500 to 4500 psi without parts change.

These valves are also available in four-port models and can be provided with a vent control for unloading the system pressure. For further information about the complete line of Vickers Balanced Piston Relief Valves write for new Bulletin A-5204.

VICKERS Incorporated
DIVISION OF THE SPERRY CORPORATION
1526 OAKMAN BLVD. • DETROIT 52, MICH.



RENDEZVOUS

Where the Gang gets together

CLASS 41-G: A reunion banquet will be held at Bolling AFB, Washington, D.C., on Sept. 26, the eleventh anniversary of graduation of Class 41-G from USAF Advanced Flying Schools. Members both in and out of the service who graduated with Class 41-G interested in attending should make reservations with Lt. Col. Robert H. Ficke, Hq., USAF DCS/O, Allocations Division, The Pentagon, Washington 25, D. C.

BOSTON FIGHTER WING: We are planning a reunion of the officers and wives of the BFW. If anyone has any names and addresses please send them to *Col. Harry N. Masson, 521 Fifth Ave., Rm. 803, New York, N. Y.*

WHERE'S GUS? I'd like to know the whereabouts of T/Sgt. Gus L. Mundt, last heard of in Rome, N. Y. I'd also be glad to hear from any of the old gang in the 623d Airways Communication & Warning Sqdn. on Okinawa the latter part of '46 and '47. *Robert C. Moore, 109 Hoerner St., Harrisburg, Pa.*

SERGEANTS DELAHANTY & MAYO: Would very much like to contact S/Sgt. Michael J. Delahanty and Sgt. Joseph R. Mayo who served with me in the 452d Supply Sqdn. from Aug. 1950 to April 1952. *S/Sgt. Newton E. Deiter, 4239 Goodland Ave., No. Hollywood, Calif.*

PARENTS OF BILL DRUMMOND: I want to locate the address of the parents or near relatives of S/Sgt. William (Bull) Drummond, ATC. He was killed in the crash of a B-25 at Tunis, Tunisia on Feb. 15, 1945. I have what are probably the last pictures taken of him and would like his people to have them. *Wallace V. Mansfield, 20041 Wakenden, Detroit 19, Mich.*

59TH BOMB WING & 462D BOMB GROUP (VH): I'm interested in securing a history of the 59th Bomb Wing, once stationed at Salina, Kan., and of the 462d Bomb Gp., (VH), formerly at Victoria, Kan. *Harlan L. Umansky, 6201 Boulevard East, West New York, N. J.*

43D BOMB GROUP (H): Anyone ever hear of a history of the 43d Bomb Group (H), or the 63d Sqdn. of that group? *Roy C. Belford, P. O. Box 193, Okmulgee, Okla.*

INDIANA WING MEETING: At Antlers Hotel, Indianapolis, Oct. 5 at 1 p.m. Contact Thurman J. Fleck, Jr., 1914 No. Riley, Indianapolis, Ind.



Touchdown and GO!

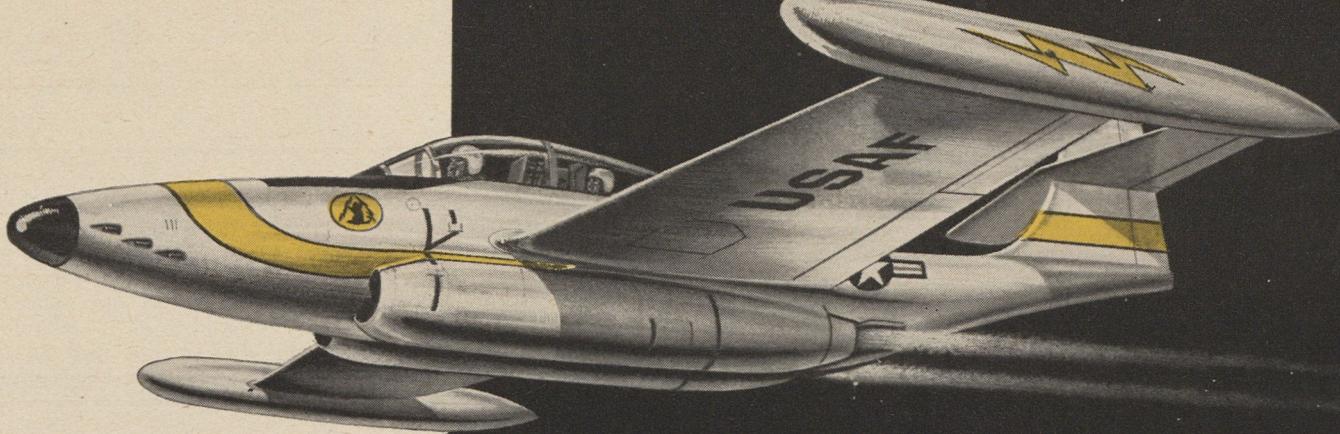
"Here is the answer..." said a distinguished military leader as he witnessed Chase Assault Transports deliver troops, vehicles and weapons to forward combat areas **by landing in unprepared fields.**

But this answer was not found by modifying existing planes; such attempts failed miserably. Chase planes are designed especially to provide the answer. They represent a noble accomplishment by the Air Force-Army-Chase team—an accomplishment which replaces, as the primary means of delivery, the less reliable, more costly, more hazardous techniques which were developed for interim use.

Delivery of troops is fast, safe with Chase planes. It's touchdown and **Go!**

CHASE AIRCRAFT CO., Inc.
WEST TRENTON, NEW JERSEY





**INFORMATION
ON POSITIONS AT
NORTHROP**

Northrop Aircraft, Inc. is engaged in vitally important projects in scientific and engineering development, in addition to aircraft production. The program is diversified, interesting and long-range. Exceptional opportunities await qualified individuals.

The most responsible positions will go to top-caliber engineers and scientists. However, a number of excellent positions exist for capable, but less experienced, engineers. Some examples of the types of positions now open are:

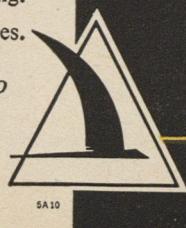
ELECTRONIC PROJECT ENGINEERS . . .
ELECTRONIC INSTRUMENTATION
ENGINEERS . . . RADAR ENGINEERS . . .
FLIGHT-TEST ENGINEERS . . .
STRESS ENGINEERS . . .
ENGINEERING DRAWING CHECKERS . . .
AERO- AND THERMODYNAMICISTS . . .
SERVO-MECHANISTS . . . POWER-PLANT
INSTALLATION DESIGNERS . . .
STRUCTURAL DESIGNERS . . .
ELECTRO-MECHANICAL DESIGNERS . . .
ELECTRICAL INSTALLATION DESIGNERS.

Qualified engineers and scientists who wish to locate permanently in Southern California are invited to write for further information regarding these interesting, long-range positions.

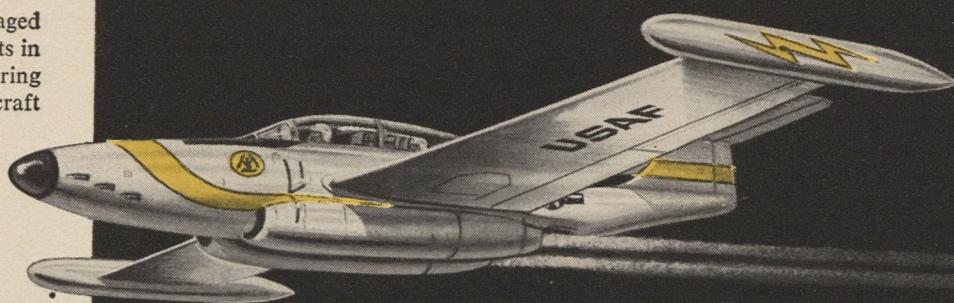
Please include an outline of your experience and training.

Allowance for travel expenses.

Address correspondence to
Director of Engineering,
Northrop Aircraft, Inc.
1045 E. Broadway,
Hawthorne, California



SA 10



ON GUARD!

Guardians of the upper reaches of the Western Air Defense Command are the men of the 84th Squadron, at Hamilton Air Force Base. The 84th flies the U. S. Air Force's new all-weather interceptors—fast, deadly *Northrop F-89 Scorpions*.

Northrop Aircraft, Inc.

Hawthorne, California

Pioneer Builders of Night and All-weather Fighters

AIR MAIL



Too Chummy

Gentlemen: In most of the news media I notice that very frequently our mortal enemies the Communists are chummily called "commies." This has much the same meaning as reference to the "Kadets" and "Middies" engaging in a football game.

If we are playing a game with the Reds, it is a damn grim one. I'd like to see our Fourth Estate do away with that comradely appellation, "commies." They are no playmates of ours. Let's call them Reds, Communists, hoodlums, or whatever else newsmen can devise, but not that half-endearing term.

How about AIR FORCE, which speaks for aviation in the free world, taking the lead in eliminating this offensively friendly word from the vocabularies of our newsmen?

Lt. Col. Charles F. Densford, USAF
Norman, Okla.

• *What say, readers?*—The Editors

\$64 Question

Gentlemen: I don't get it!

No sooner did I return home, after a second active duty tour, than a letter arrived emphasizing the importance of participation in the Reserve program.

I decided to participate, and submitted an application indicating my interest to headquarters of the numbered AF controlling the program in my area.

Two weeks later I got a response that mentioned a desirable assignment opportunity available for the asking, and the completion of an application form. I air mailed back that application, re-emphasizing my interest, and then began waiting . . . and waiting.

A month later I submitted a tracer on my application. A few more weeks elapsed, and I have not heard about either my application or the tracer. I haven't even been given the courtesy of an acknowledgement of receipt.

This, incidentally, is exactly the same type of treatment accorded by the Air Force in the 1948-50 period when:

1. My inquiries either went unanswered altogether, or resulted in my obtaining, over and over again, a mimeographed questionnaire, but no answers.

2. Even my requests to local Reserve liaison personnel for extension course enrollment blanks went unanswered.

3. When I volunteered for a short active duty course, I discovered, after scheduling my vacation as suggested by local Reserve liaison personnel, and without any notice until after the scheduled period, that my application had not been approved.

4. My request for training materials for a VART flight resulted in my ob-

taining two copies of three manuals after a lapse of months, while similar requests to the Army and Navy resulted in an adequate stock of materials for all assigned flight personnel (received in two weeks).

In talking to friends, I discover that my situation is not unusual.

The \$64 question: "Why does the AF first solicit Reserve interest, and then effectively kill that interest by a demonstrated lack of consideration?"

A Disgusted Reservist

At Last!

Gentlemen: You were right, too. The day before your letter arrived, telling me I had been accepted for pilot training, I received my orders to report to Williams AFB, Ariz., for processing. Needless to say, I was very happy to see them—finally—although I regretted having to inform my employer-of-two-weeks of the sad news.

I would like to express my appreciation for your help in this matter as I really didn't expect anyone to go to the trouble you have. Just providing me with a sympathetic audience for my gripe would have been sufficient. Again, thanks for your help—at least you've gained a steady reader of AIR FORCE.

2d Lt. William H. Lewis, AFRes
Evansville, Ind.

Possible Answer?

Gentlemen: Appearing in the July issue of AIR FORCE Magazine is an article deploring the reluctance of qualified applicants to apply for aviation cadet training. This article also states that FTAF is wondering why this condition exists and how to relieve it.

Out of every class of aviation cadets, one-third wash out. Most of the one-third are eliminated because of flying deficiency. The remainder, since academic washouts are negligible, are eliminated because of military deficiency.

So rigid are the rules and regulations governing the aviation cadet that their every action may be interpreted as a breach of regulations. The aviation cadet may be eliminated for a legitimate mistake on his part or his tactical officer's whim—in that order. Any independent action on his part is a breach of regulations by virtue of the independence of the act, and will invariably result in extended confinement or, more often, his elimination. Such rigid discipline is necessary and must be enforced, but outside influences and the sudden transition to absolute military obedience is frequently not taken into consideration. To the airman or civilian the *Esprit de Corps* is not instilled overnight.

It is my opinion that washouts of this nature constitute a serious loss not only to the student but to the Air Force and government as well. Six months of valuable training representing an approximate cost to the government of \$25,000 are lost and the student then becomes a liability instead of an asset. For the remainder of his enlistment neither his training nor his capabilities are utilized.

There is not, to my knowledge, a board to review the case of a military washout. There are, to my knowledge, many capable pilots and officers who have learned of their loss the hard way and who now have no future in the Air Force.

If there is something which is being accomplished in this direction, I would sincerely appreciate hearing about it.

A/3C USAF

Profitable Reading

Gentlemen: I went out and bought the back issues of AIR FORCE that are missing from our files in the past couple of months, and was most impressed with the June and July issues. "The Inexcusable Risk," "The Pointing Finger," "Pattern for Destruction," and "A-Bombs for Air Defense" will be definitely shared with a number of others who will likewise profit by them.

AIR FORCE is indeed to be congratulated on the excellence of its articles. I find it by far the most stimulating of the publications that come across my desk.

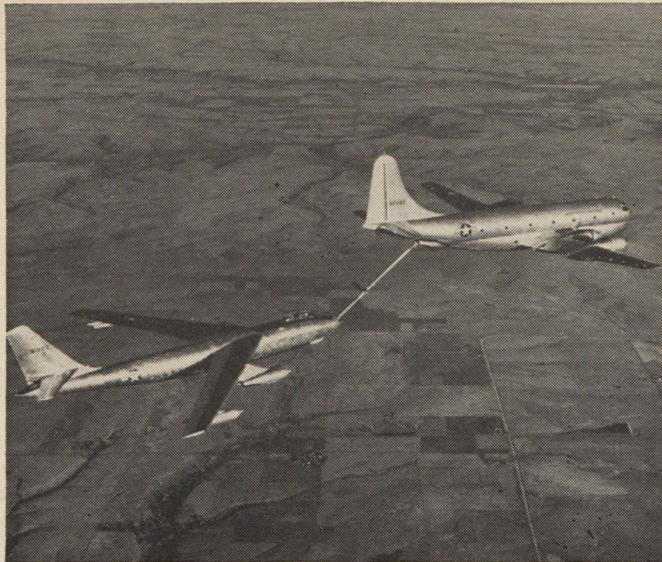
S. A. Anthony, Jr., President
The Civil Defense Research Associates
New York, N. Y.

Command Charts

Gentlemen: In your magazine, issue of July 1952, volume 37, you published an organization outline and pictures of personnel at ATRC; in previous issues you published the organization and pictures of personnel of AMC and ARDC. These charts and pictures of personnel portraying the various organizations of the USAF are particularly valuable, and it is believed it will be a major contribution to the aircraft industry if you will publish these charts and designated personnel in your magazine at least once each six months. In this manner, the industry would be provided with reasonably current information on all the USAF organizations.

AIR FORCE Magazine is continuing to fill an increasing need for providing a channel for free discussions and interchange of information for the industry. You are to be congratulated on this fine magazine.

V. C. Gillon
Manager of Master Planning
Convair
Forth Worth 1, Tex.



KC-97 Tanker refueling a B-47 jet bomber in flight



A transocean Stratofreighter on Azores' Lajes Airport



C-97 flying hospital brings home wounded from Korea



Boeing's Stratofreighter production line in Renton plant

Four air carriers for the price of one

When your Air Force adds a Boeing C-97 Stratofreighter to its fleet, it gets in effect four different air carriers. This is the most versatile aircraft now in service. It can be converted in hours into a cargo carrier, a personnel transport, a flying hospital, or a tanker for in-flight refueling.

This unique versatility makes the C-97 a bargain aircraft. With Stratofreighters, fewer airplanes are needed

to perform a number of diversified jobs. Concentration on one type means further savings in parts supply and crew training.

Stratofreighters are in service with the Strategic Air Command and the Military Air Transport Service. They have become, like their sister ships the commercial Stratocruisers, major transocean carriers.

The C-97's versatility and depend-

ability are a result of Boeing's vast experience with multi-engine aircraft, both military and commercial. Today, through the sensational B-47 medium and B-52 heavy jet bombers, Boeing has gained more experience with multi-engine jets than any other company. When America turns to jet transports, this Boeing background of experience will be directed to establishing U. S. leadership in this field.

For the Air Force, Boeing is building the

B-47 Stratojet, B-50 Superfortress, C-97 Stratofreighter, KC-97 Tanker and the B-52 Stratofortress;

and for the world's leading airlines, Boeing has built fleets of twin-deck Stratocruisers.

BOEING

Jet Development

Pratt & Whitney Continues to Expand Its Development and Test Facilities

PRATT & WHITNEY AIRCRAFT is taking another step forward to meet its heavy responsibility of providing the nation's armed forces with the best possible aircraft engines in the shortest time possible.

To keep up with our expanding role in jet engine development and production, we are undertaking a privately financed program, costing many millions, to enlarge our present jet engine development and test facilities.

As it stands today, the Andrew Willgoos Turbine Laboratory is the most complete privately-owned jet development facility in the world. This new expansion will greatly enlarge its capabilities. For example, at this time one of the Willgoos Laboratory's four test cells is especially equipped for high altitude testing. When this program is completed, three additional cells of even more advanced design will be available for testing turbine engines under

conditions simulating supersonic speeds and altitudes of up to 55,000 feet. In addition, a number of experimental test cells in our East Hartford plant, which were formerly used to test piston engines, will be converted to accommodate jet engines, providing additional facilities for testing both components and full scale engines.

This constant expansion of test facilities is only one phase of our effort to make sure that America will have the finest aircraft engines built. Just as important is the continuously increasing effort in all phases of engineering that goes into every Pratt & Whitney engine.

Our expansion program is a major effort. It has already taken endless hours of planning and hard work. But the results will enable us to do a good job better—and faster. In the end, it will be an important investment in national defense.

Pratt & Whitney Aircraft



ONE OF THE FOUR DIVISIONS OF
UNITED AIRCRAFT CORPORATION

EAST HARTFORD, CONNECTICUT

Speeding



Shooting the Breeze

Writers are notoriously absent-minded, and we are certainly no exception. We have left brief cases on airplanes, raincoats in Pullman cars, and once took a taxi home only to find that we had driven the car to the office that day. We have always pleaded, in self-defense, that we had more important things on our mind and could not be expected to keep close track of minor, mundane details.

As a result, we were extremely heartened at the Detroit Convention to find that we are not alone. For during the Airpower Preparedness luncheon, at which he delivered a stirring and informative speech, General Vandenberg's hat disappeared. We are not inferring that the general suffers from absent-mindedness. On the contrary, the disappearance of the hat is an indication that even the most efficient executive, backed by a sound staff, can run afoul of currents of fate over which he has no control. But it is consoling to know that these things can happen to others.

In a more serious vein, one can only suppose that the general's hat was misappropriated by an overzealous souvenir hunter who by now is probably wondering what to do with it. For a Chief of Staff's hat is no ordinary souvenir. It is unique, and unmistakably identifiable, encrusted clear around with silver lightning. Since there is but one Chief of Staff at any given time, the hat cannot be made up in quantity. As a result, the general is in no position to take advantage of the economies of mass production, but must shell out around \$50 for a replacement.

And the problem arises of what to do with the hat? One cannot brag about it to one's friends, nor hang it proudly over the mantle, nor wear it, even if it should fit, without proclaiming to the world one's, shall we say charitably, juvenile lack of judgment.

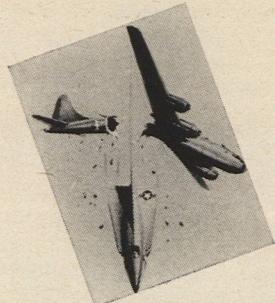
In any case, the general is willing to forgive and forget, with no questions asked and no names required. So if the person who, and again we are charitable, picked up the wrong hat by mistake will return it in a plain wrapper to AIR FORCE Magazine, we'll see that the general gets it.

FEATURES

STATEMENT OF POLICY	18
WILL RAMMING BE OUR LAST-DITCH DEFENSE?	23
THIS IS HOW IT WAS IN DETROIT	27
CONVENTION CO-SPONSORS	28
AIRPOWER AWARDS	29
ONE AIR FORCE	29
DEFENSE WITHOUT STINT	29
NEW THINKING NEEDED	33
AIRPOWER VS THE DEAD HAND OF TRADITION	
by James H. Doolittle	36
UNDER THE A-BOMB SHIELD ..	39
by Gen. Hoyt S. Vandenberg	39
AIRPOWER PREPAREDNESS SYMPOSIUM	43
KELLY GETS THE GAVEL	51
HERE WE GO AGAIN	60
by Col. Vincent J. Donahue	60

DEPARTMENTS

Air Mail	7	Wing Tips	15
Rendezvous	9	People in the Air News	17
Airpower in the News	13	Technique	56
Tech Talk		57	



THE COVER

When any one of a fleet of invading enemy bombers could knock out an American city with a single bomb, our last-ditch defense is the Atomic Age air-equivalent of hand-to-hand combat—deliberate ramming. The difference between this and Japanese "suicide" attacks of the last war is that our rammer pilots will survive, as artist Charles deM. Barnes shows on this month's cover. For details on how ramming is possible and why it is necessary, see page 23.

AIR FORCE STAFF

JAMES H. STRAUBEL, Editor and Publishing Director

JOHN F. LOOSBROCK, Managing Editor

RICHARD M. SKINNER, Assistant Editor

NELLIE M. LAW, Editorial Assistant

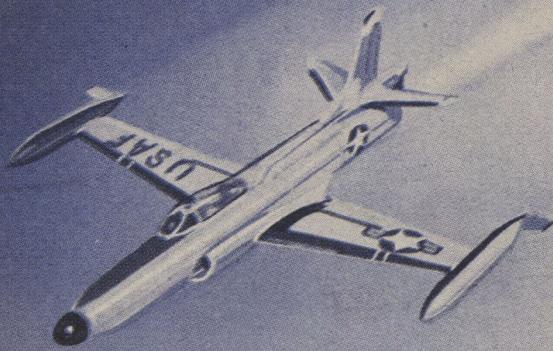
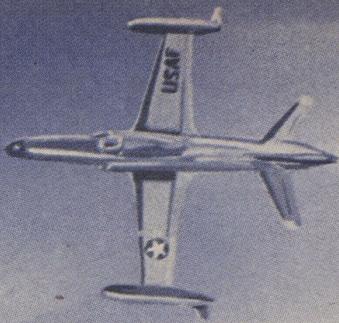
WILLIAM A. DEAN, Art Director

JAKE CULPEPPER, Associate Editor

RALPH V. WHITENER, Associate Editor

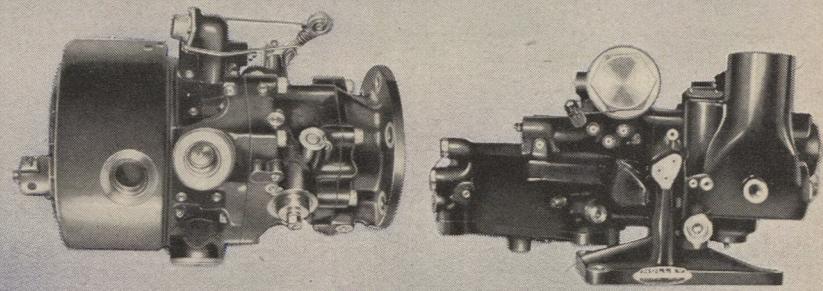
SANFORD A. WOLF, Advertising Director

AIR FORCE MAGAZINE is published monthly by The Air Force Association at McCall Street, Dayton 1, Ohio. **EDITORIAL OFFICE:** 1424 K St., N.W., Washington 5, D.C., Sterling 2305. Publisher assumes no responsibility for unsolicited material. **ADVERTISING OFFICES:** Main Office: 114 East 40th Street, New York 16, N.Y., Murray Hill 9-3817. Sanford A. Wolf, Advertising Director. Pacific Coast Offices: Keenan and Eickelberg, 638 S. Van Ness Ave., Los Angeles 4, Calif. Dunkirk 2-8458; 235 Montgomery St., San Francisco 5, Calif. Douglas 2-1323; 333 S.W. Oak St., Portland 4, Ore. Broadway 3210. Mid-West Office: Urban Farley, 120 S. La Salle St., Chicago 3, Ill. Financial 6-3074. **MAILING:** Re-entered as second class matter, December 11, 1947, at the post office at Dayton, Ohio, under the Act of March 3, 1879. **SUBSCRIPTIONS:** \$4.00 per year. Single copy, 35 cents. **REGISTRATION:** Trademark registered by the Air Force Association. Copyright, 1952, by the Air Force Association. All rights reserved under Pan-American Copyright Convention. Printed in U.S.A. **CORRESPONDENCE:** All correspondence pertaining to editorial matter and change of address should be sent to Air Force Association, 1424 K St., N.W., Washington 5, D.C.



The new Lockheed F-94C STARFIRE is designed to intercept invading bombers at altitudes up to 45,000 feet. The STARFIRE'S high speed and extreme maneuverability demand split-second compensation for continual changes in pressure, altitude, and temperature. A fuel metering control built to the utmost precision is required.

Metering controls designed by Holley are used on both the afterburner and the Pratt and Whitney J-48 jet engine.



HOLLEY
Carburetor Co.
DETROIT 4, MICHIGAN

LEADER IN THE DESIGN, DEVELOPMENT, AND MANUFACTURE OF AVIATION FUEL METERING DEVICES.



New Aero Commander

**Joins list of planes
100% equipped with
Goodyear tires,
tubes, wheels,
brakes**



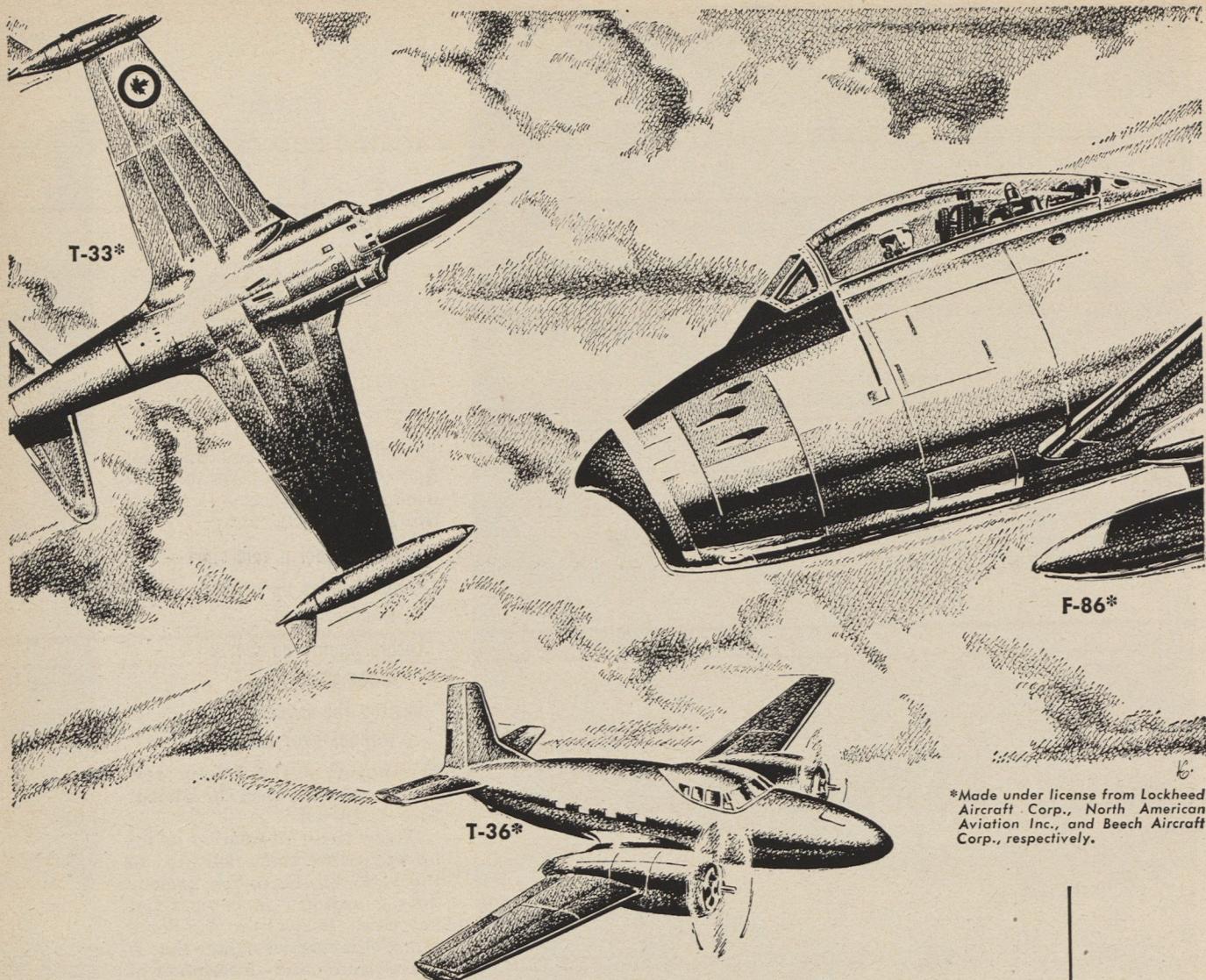
LATEST executive-type aircraft to go into production, the Commander is a new plane produced by a new manufacturer—Aero Design and Engineering Company. Like many other leading aircraft of all types, the Commander relies 100% on Goodyear for tires, tubes, wheels and brakes.

From the first design stages in 1944, Aero Design and Engineering has worked closely with engineers of Goodyear—veteran in the design and manufacture of aircraft and aircraft components. It is this long experience—plus the highest quality standards—that is responsible for the fact that more aircraft, the world over, land on Goodyear tires, tubes, wheels and brakes than on any other kind. For further details, write:

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



Aero Commander, new high-wing 5-6 place twin cruises at 197 mph—lands safely and surely on Goodyear equipment.



*Made under license from Lockheed Aircraft Corp., North American Aviation Inc., and Beech Aircraft Corp., respectively.

What are we building at Canadair?

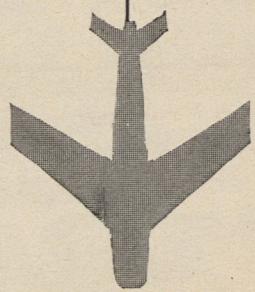
Canadair is building high speed "T-33" jet trainers and "T-36" trainer transports . . . while accelerated production of F-86 'Sabre' jet fighters continues unhindered.

In the production of three types of aircraft, Canadair exhibits the high flexibility of this enterprising plant. It is this ability to handle varied assignments *simultaneously* that has aroused such interest in military and civil aviation circles.

Watch Canadair: its versatility, its production capacity, its ability to deliver aircraft on schedule, its high quality of workmanship: — all merit the attention of astute buyers of aircraft throughout the world.

Canadair
LIMITED, MONTREAL, CANADA

A subsidiary of
GENERAL DYNAMICS CORPORATION
(Formerly: Electric Boat Company)
New York, N.Y. — Washington, D.C.



CA52-21UST

Leadership demands constant achievement



Faster
than a cup of coffee

Lockheed Starfires

destroy an air
invader

Incredible—but in less time than the few minutes it takes to drink a cup of hot coffee a Lockheed Starfire (F-94C) can

Take off from a cold start—

Climb 7 miles up in any
weather—

Locate enemy bomber
automatically—

Destroy the invader,
without ever seeing it.

Furthermore, the 2-man crew need never have seen the bomber they destroyed.

Today these all-weather jet interceptors are being delivered to the U.S. Air Force for 24-hour duty guarding U.S. borders and key cities. It gives the Air Force a fast-climbing jet fighter that is almost automatic—forerunner of planes that may actually fly and fight by themselves.

The Starfire's brain center can locate invading bombers on the darkest, stormiest night. Its unique all-rocket armament can destroy the biggest bomber built.

The Starfire is another example of Lockheed design "stretch"—an engineering achievement of creating a more advanced model out of an existing airplane. This speeds development and production, also cuts cost. Forerunner of the Starfire is the Lockheed F-80 Shooting Star of Korean fame. Lockheed is the world's leading builder of jet aircraft.

Lockheed
Aircraft Corporation

Burbank, California, and Marietta, Georgia

*Look to Lockheed
for Leadership*

Lockheed

F-94C STARFIRE MAKES NEWS

Here's a sample of what the press says about the *Starfire*...

NEWSWEEK: "A mechanical marvel... with built-in brain."

CHICAGO TRIBUNE: "A flying mechanical brain armed only with automatically fired rockets."

ATLANTA CONSTITUTION: "The *Starfire*'s role: automatic doom for invading bombers."

KANSAS CITY TIMES: "New jet has crew built in."

LOS ANGELES EXAMINER: "Starfire—new nemesis of enemy A-bombers."

AMERICAN AVIATION: "Nearest thing to a guided missile."

More important than what is said about it is how the *Starfire* performs and why.

It has a take-off weight of more than 20,000 pounds; length is 41 feet, 5 inches; wingspan, 37 feet, 6 inches; height, 13 feet, 7 inches. The *Starfire* is the first production aircraft to fly with the new Pratt & Whitney J-48-P-5 jet engine, which produces a 6250-pound thrust. With afterburner it has the greatest power of any single-engine plane in production.

INNOVATIONS AND SPECIAL FEATURES

The *Starfire*'s brainlike fire-control radar system was developed and produced by Hughes Aircraft Company and enables the *Starfire* to spot the enemy miles away, lock onto the target, track, close, aim and open fire. Its all-rocket armament consists of twenty-four 2.75-inch aerojet rockets.

Certain special features contribute to *Starfire* performance. A ribbon parachute can be released from the tail compartment for landings in short space. A thin wing with straight rather than swept contour allows extremely high speeds without sacrifice of either stability during firing or maneuverability. Placement of rockets in a ring around the radar nose achieves maximum accuracy because of freedom from windstream turbulence. Its integrally stiffened single-spar wings are stronger but lighter, saving weight by eliminating numerous small parts and hundreds of speed-reducing rivets.

Because the *Starfire* is the result of design "stretch" (based on the F-80 *Shooting Star* and T-33 jet trainer) its development cost was drastically reduced and production time cut by many months.

Starfires are now being delivered to the U.S. Air Force for 24-hour all-weather defense of key cities and military boundaries.

AIRPOWER IN THE NEWS

PRE-FLIGHT phase of AF Pilot Training Program will double, from six to twelve weeks, and will be administered by TechTAF; flying time will increase to 145 hours but in same 24-week span as present 130-hour course. Light, low-powered aircraft will be used in first six weeks of flying phase instead of standard high-powered T-6.

PERSONNEL: AF strength now stands at 937,500 officers and airmen; civilian employees total 310,000... About 1,000 nurses are urgently needed by AF... During FY '52, AF called to active officer duty 1,435 airmen who had Reserve commissions... Col. Millard C. Young has succeeded Brig. Gen. O. L. Grover as chief, Psychological Warfare Div., Directorate of Plans, USAF... Brig. Gen. Monro MacCloskey, who has been US Air Attaché in Paris for last three years, has assumed command of the Air Resupply and Communications Service... NACA test pilot Herbert H. Hoover was killed when a wing panel of his B-45 failed at Langley AFB, Va.

INSPECTION: USAF's Directorate of Readiness Inspection at Kelly AFB, Tex., and Directorate of Technical Inspection, Norton AFB, Calif., were consolidated at Norton... AF reports new low in major aircraft accident rate — 29 for every 100,000 hours flown.

B-36 PROGRAM will continue to be emphasized at Kelly AFB, Tex., despite AF cancellation of B-36 orders and awarding of contracts for Boeing B-52... GE recently began delivering armament systems for AF's B-47 bomber... RCAF has received three C-119s, first Flying Boxcars delivered outside the US... Logistical support functions for Army aircraft have been transferred from Ordnance Corps to Transportation Corps.

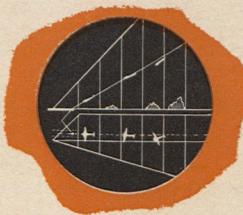
TEXAS ranks second to California in aircraft production with an annual payroll of more than \$200,000,000... CAA predicts 40,000,000 US air passengers by 1960... About eighty-one percent of the active civil non-carrier aircraft fleet is engaged in operations essential to the national economy and defense.

T-SHIRTS are now permitted to show at an airman's throat during summer months, AF has announced... USAF has denied rumor that AF is going to convert to a new blue summer uniform.

Pioneered by Gilfillan



1942
first GCA Radar



1945
first Azel Scope



1947
first MTI



1948
first GCA "Streamlining"

...developed by Gilfillan in collaboration with the Radiation Laboratory at M. I. T. in World War II. The war's most complex radar development. The original Gilfillan GCA weighed 22 tons, required a 5-man crew.

...exclusively the product of Gilfillan research. This 3-dimensional scope shows position of the aircraft in altitude, azimuth and exact range. Azel changed GCA radar from a five-man to a simplified one-man operation.

...The Gilfillan-developed Moving Target Indicator eliminated ground clutter, and need of tedious concentration of a special radar operator—shows position of aircraft instantly to all CAA tower personnel.

...Gilfillan's world-wide experience in the field has resulted in many operational and mechanical improvements such as the present compact desk-size GCA console, compared to the 22-ton wartime trailer.



today's Gilfillan GCA Radar

...is the only GCA now proven and in operation in both U. S. Civil and Military airports. It extends search coverage to 10,000 feet altitude over a 50-mile radius — a twenty-fold increase over original GCA surveillance!



tomorrow's Radar Developments

...now in progress at Gilfillan — further GCA improvements — other top secret projects in varying stages ... research, design, mock-up, production. In radar, now as for four decades past, the first name is Gilfillan.

In GCA and Radar
research, design and production
— the FIRST name is...

Gilfillan
Los Angeles

GCA

Wing Tips

A gentle rain means heavy weather for a large transport plane. The moisture adds as much as 200 to 300 pounds to the weight of the aircraft.

One of the newest cargo planes has as much space for freight as three railroad refrigerator cars.

The light plane has a distinguished record of coping with emergencies, rescuing marooned families in flood areas, and dropping feed for snow-bound livestock. In Kansas a private pilot flew a doctor to the aid of 300 passengers isolated for two days on a snow-stalled Santa Fe train.

Without refrigeration today's hot pilots would really be hot. It takes the equivalent of twenty family-size refrigerators to cool the cockpit of a supersonic aircraft. At 670 mph, the inside temperature of the plane is increased eighty degrees by the friction of the air it moves through.

On the North Atlantic run, 100 percent of all airline aircraft are of American manufacture.

One runway designed to support aircraft the size of the Boeing Stratocruiser costs about a million and a half dollars.

In eight hours a flying farmer can plant, fertilize, or control the weeds on 1,500 acres of land.

Forty years ago, Army aviation consisted of two officers, nine enlisted men, one airplane, one airship, and three balloons.

A collision between an airliner and a bird is reported every twenty-three hours on the average. But during spring and fall, when birds are migrating, strikes are ten times as frequent as in winter. The largest number of collisions with birds involves ducks, gulls, and buzzards.

Chickens and turkeys weighing up to sixteen pounds are shot from a compressed air gun at velocities up to 450 mph to test windshield resistance to collision. They are first electrocuted to maintain their elastic properties as closely as possible to those of live birds.

The hundreds of rivet heads protruding from the outside surfaces of a DC-3 create drag that requires 200 hp to overcome.

The little biplane of 1920, with its wind-resisting struts and wires, required ninety pounds of pull from the propeller for every 1,000 pounds of aircraft weight. Today a giant airliner like the Constellation, with the protuberances removed and the flush-riveted skin you love to touch, takes only fifty-seven pounds of pull to 1,000 pounds of weight.

The light plane is both the friend and foe of the fish. Lakes are seeded with fish from the air, and light planes are used to keep an eye out for illegal catches. But planes are also used to spot schools of fish for commercial operations.

In Utah the light plane proved its versatility by taking off after a winter storm and skimming over 200 miles of telephone wires to clear the ice from the lines with its slip stream.

—By Wilfred Owen

PAY LESS NOW

GREATER COVERAGE FOR LESS MONEY:

Complete Auto Insurance



IMMEDIATE SAVINGS UP TO . . . 30%

from prevailing board rates which apply in your territory can be YOURS on this complete, low cost Automobile Insurance Policy. GOVERNMENT SERVICES INSURANCE UNDERWRITERS can reduce costs to you because they deal direct with a highly selected and specialized class of policy holders. Protection against loss from bodily injury and property damage, liability medical payments . . . accidental death, comprehensive fire and theft coverage. Covers collision damage to your car. Covers towing. Remember once a policy holder, INSURANCE is always available to YOU! Former Air Force men who know your problems handle your policies.

HOUSEHOLD CONTENTS FLOATER POLICY

This Floater Policy covers everything personal anywhere in the U. S. or abroad. It protects your household goods, clothing, uniforms, furniture, jewelry and valuable personal effects. Insures you against 14 named perils. Greatest coverage protection at lowest cost.

GOVERNMENT SERVICES INSURANCE UNDERWRITERS

Not Affiliated With United States Government

MAIL
THE
COUPON
FOR
FULL
DETAILS

GOVERNMENT SERVICES INSURANCE UNDERWRITERS
214 BROADWAY SAN ANTONIO, TEXAS

NAME.....

ADDRESS.....

AGE..... RANK..... MARRIED..... SINGLE.....

Car Description..... Annual Mileage.....

Business Use..... AGES OF DRIVERS.....

2 Great Policies for Preferred Air Force Personnel

IN CASE YOU HADN'T NOTICED . . .

Christmas

IS JUST AROUND THE CORNER

Here are some gift suggestions. Order now for yourself and your friends.

1. **THEY FOUGHT WITH WHAT THEY HAD**, by Walter D. Edmonds—The Airpower Story of the Year—the tale of men outnumbered but not outfought—\$5.00

2. **THE AAF IN WORLD WAR II, VOLUME III**, Europe, January 1944 to May 1945—\$8.50

3. **GLOBAL MISSION**, General "Hap" Arnold's own story, now available at 50 percent off—\$2.50

4. **AIR FORCE Magazine**, The Magazine of American Airpower—twelve big issues—\$4.00

Air Force Book Department

c/o AIR FORCE Magazine

1424 K Street N. W., Wash. 5, D. C.

Please send me the books I have circled below:

1 2 3 4

Name

Street

City..... Zone..... State.....

I enclose check or money order for.....
SORRY, NO CODs

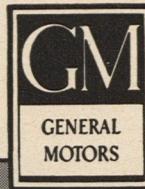
Allison jets power first mass refueling flight

Confidence in the dependability of Allison jet engines is again demonstrated by history's biggest transoceanic jet plane flight. Three squadrons of Republic F-84G Thunderjets completed the 10,895-mile movement, across vast expanses of the Pacific, from Turner Air Force Base, Georgia, to Tokyo. En route, pilots of the Thirty-First Fighter Escort Wing successfully completed air-to-air refuelings—first ever attempted on a mass flight.

This history-making flight, including 2,400 miles nonstop from California to Honolulu, demonstrates the mobility of American air power—and adds new laurels to the battle-proven record of the famed Allison J35 engine.

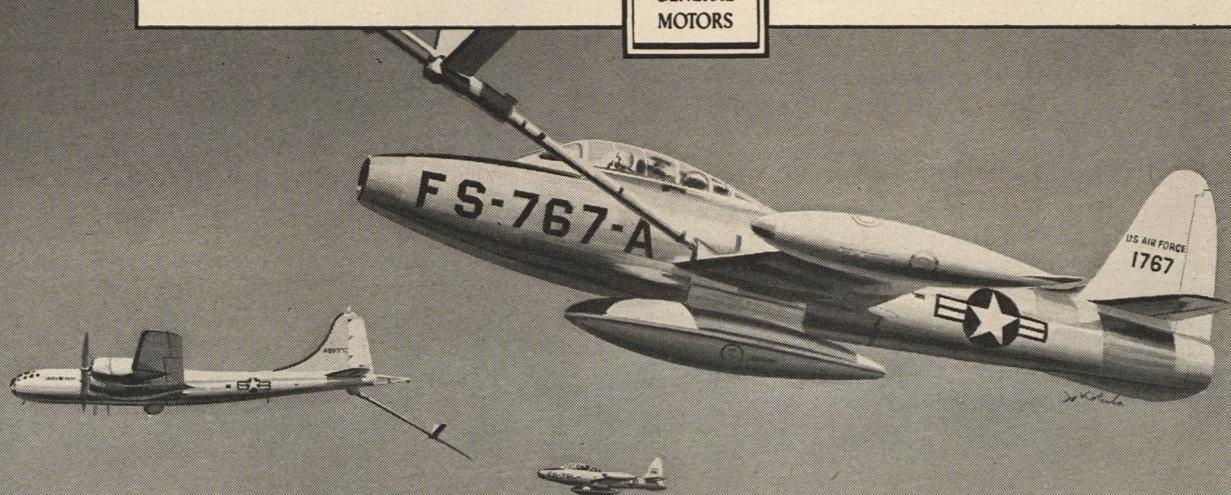
**Another
Allison First!**

Designers and Builders of J35 and J71 Axial,
J33 Centrifugal Turbo-Jet Engines,
T38 and T40 Turbo-Prop Engines



Allison
DIVISION OF GENERAL MOTORS

INDIANAPOLIS, INDIANA



PEOPLE

In The Air News

M/Sgt. Charles E. Hilt will think twice before hitch-hiking another ride in a jet. He caught a hop in a T-33 between Korea and Japan and, when the pilot blacked out from lack of oxygen, found himself flying the plane. The jet flamed-out and dropped from 37,000 to 13,000 feet before the pilot regained consciousness and was able to land safely. It was Hilt's first jet ride.



Maj. Donald E. Adams, 13th jet ace of the Korean war, was killed when his F-89

crashed at the Int'l Air Exposition, Detroit, during a speed run. Adams, 31, chose to remain at the controls in an effort to miss the crowd rather than bail out. Flying Mustangs in WW II,

he downed four ME-109s in Europe and later got 5½ MIGs in Korea. His home was Mt. Clemens, Mich.

Capt. William Gutchess, first person in American air history to complete 500 combat missions. He's now home (Wallington, N. J.) on leave from Korea. There he flew night recon and search missions in B-26s. In WW II he flew 425 missions in the CBI. He's come through two wars without a scratch, is 29, married, and has one son.



Roland P. Beaumont had breakfast in Ireland, lunch in Newfoundland, and was

home for tea the same afternoon. The pilot of the Canberra that made the first double crossing of the Atlantic in a single day, Beaumont is the chief test pilot of the English Electric Co.

Two men accompanied him. They averaged 411 mph (including ground time), set a new west-east record of 3½ hours.



Which
part
interests
YOU?..

Perhaps that's one question that rightfully belongs with your *future* planning.

For, like ourselves, your manufacturing divisions may be toiling night and day in the interests of America's safety.

But to research scientists—seeking the solution to some intricate problem of instrumentation and control—Kollsman offers an experienced hand. A reputation based on inventive ingenuity, precision craftsmanship and world-over acceptance of its products.

In manufacture or research, there is no finer name than Kollsman—designers, developers and makers of:

Aircraft Instruments and Controls
Miniature AC Motors for Indicating and Remote Control Applications • Optical Parts and Optical Devices • Radio Communications and Navigation Equipment



KOLLSMAN INSTRUMENT CORPORATION

ELMHURST, NEW YORK

SUBSIDIARY OF

Standard COIL PRODUCTS CO. INC.

GLENDALE, CALIFORNIA

STATEMENT OF POLICY

AGAIN we gather in a moment of urgency. Again we are concerned over the lack of understanding, and the consequent lack of action, regarding the threat posed to our freedom by aggressive communism.

We are concerned over the general tendency to regard this threat only in terms of all-out war. Such an interpretation, in our opinion, is not only inconclusive, but dangerous.

Our nation must be ever ready for all-out attack. Indeed, our vulnerability to air attack is so great that we deplore the national complacency in this regard, as evidenced by our failure to measure up to the requirements for our civilian defense and Ground Observer Corps programs.

However, all-out war may well be the last item on the Russian agenda. The issue at stake is world balance of power. Russia already has tipped the balance in her direction without armed attack on this country or on Western Europe. Russia could conceivably tip the balance entirely in her favor merely through the threat — rather than the act — of all-out war. This is possible because of the influence of atomic weapons on the alignment of nations.

We deplore the tendency to interpret the race for atomic supremacy in terms of our superior stockpile of atomic weapons. We urge our leaders to impress upon our people that the danger point will be reached when Russia has enough atomic weapons to destroy our target system — regardless of the size of our own atomic stockpile. It is our duty to build a force which will prevent Russia from blackmailing vulnerable nations of the world or attacking the United States.

Repeatedly since the end of World War II, this Association has called attention to the fact that the United States is not fulfilling the obli-

gations inherent in this duty. We again warn our leaders and the people that, as a nation, we are failing to measure up to the task confronting us. We have stretched out our airpower program at a time when the international situation called for a step-up in the production of air weapons.

We have not built our NATO defenses with full regard for the role of airpower in modern war. We are sadly lacking in planned air cover for our troops, and the troops of our allies, in Europe. We have little hope of achieving command of the air over Europe — based on our present defense plan.

In the Far East, where we are fighting a limited war for misty objectives, we are prevented — by policy barriers — from exploiting the air weapon.

We have lost, or are fast losing, the prime asset of all in the struggle against aggressive communism — a national sense of urgency, and a consequent popular singleness of purpose.

We have lost our perspective regarding the military requirement. We have permitted tradition and the unilateral desires of the military services to compromise our strategy and our preparedness effort. We cannot afford the luxury of dividing our defense dollar equally among the three services. Let us not be misled by the division of funds in the current defense budget. The high proportion of money going to the United States Air Force does not necessarily mean that the wasteful balanced-force concept has been broken.

The archaic surface strategy concept of national defense still obtains in America, and it also has been true that the Air Force has been primarily a paper organization, while the other services have, in fact, had much of their needed strength in reserve. Thus, the Air Force has

Unanimously adopted by the National Convention of the

Air Force Association, Detroit, Michigan, August 30, 1952

needed more money merely to bring it to the point where it should have been backed by a sound long range strategic plan which assures airpower the logical preeminence it should have in our military program for the future.

Unfortunately, our enemies do have a long range strategic plan — and they are resolutely building their airpower as well as their political power to execute it.

We cannot afford the waste inherent in our military strategy. We believe billions of tax dollars could be saved if the roles and missions of the several services were based solely on the military requirements needed to defend us against the specific threat, rather than upon the traditional assignments of the services.

The Congress has made valuable investigations of military waste, but has long refrained from investigating what it considers to be purely military matters, including the roles and missions of the services. Without giving attention to this subject, Congress can only hope to scratch the surface of the military waste problem. We think the time has come when more specific Congressional attention should be paid to the military's plans for spending, as they do, the majority of our tax money.

We call upon the Congress to conduct a full-scale investigation of the proper responsibilities of the military services, as they are weighed against the over-all military requirement and the weapons at hand and in development. We realize that Congress is not properly staffed for this job. We urge Congress to establish a staff of qualified specialists to concentrate on the defense budget and the military requirements of the nation.

We call upon Congress and the Administration to adopt a program of selective mobilization — a program based on first things first — a

program which gives jet interceptors priorities in resources and manpower over, for example, minesweepers and other second-line weapons. This priority does not obtain at the moment. It must be in effect if we are to build the military establishment required without wasting our resources and inviting economic collapse.

We must count the pennies in our defense dollar. If the Executive branch is unwilling or unable to re-evaluate our roles and missions and reassign military tasks solely in terms of the military requirement, there is only one alternative to follow in behalf of the taxpayers — to demand that Congress perform its constitutional function, which is to determine the size and composition of the military establishment. The Air Force Association believes that this requires the consolidation of the duplicating structures of our military services and the creation of one Air Force for the nation.

Having launched upon this more practical and economical approach to the establishment of a strength equal to that of the Soviets, we urge the Congress and the Administration to concurrently develop and exercise a foreign policy which will not only counteract but contest the political aggression of the Soviets. Unless we are to be forced one day to resort to the suicidal use of atomic force against atomic force, we must, as a Nation, develop such an affirmative diplomatic program throughout the world.

Above all else, our national leaders must stimulate a sense of urgency on the part of the people — a firm realization that freedom is in danger, from atomic blackmail as well as from all-out war or limited war. The people must be told that we are at present losing the arms race with Russia and that only a new and practical approach to national defense will give us the security desired.



COL. P. GENAIN
Director General
TAI French

ORVIS M. NELSON
President
TRANSOCEAN U.S.

W. A. PATTERSON
President
UNITED U.S.

T. C. DRINKWATER
President
WESTERN U.S.



DR. W. BERTHOLD
President
SWISSAIR Swiss
SWISSAIR

THOMAS L. GRACE
President
SLICK U.S.
Slick airways inc.

PER A. NORLIN
President
SAS Danish
Norwegian Swedish
SAS

GILBERT PERIER
Chairman
SABENA Belgian
SABENA



JUAN T. TRIPPE
President
PAN AMERICAN U.S.
PAA

ANDREW B. SHEA
President
PANAGRA U.S.
PAA

Depend on **DOUGLAS**



ANDREW B. SHEA
President
PANAGRA U.S.
PAA

A. SORIANO
President
PAL Philippines
PAL

G. T. BAKER
President
NATIONAL U.S.
NATIONAL AIRLINES



DIRK WESSELS VAN LEYDEN
General Manager
AA Argentine



CONTE NICOLO CARANDINI
President
ALITALIA Italian



C. R. SMITH
President
AMERICAN U.S.



CAPT. A. A. BARLOW
General Manager
BCPA Australian,
New Zealand



T. E. BRANIFF
President
BRANIFF U.S.



LIC. AARON SAENZ
President
CMA Mexican



G. W. G. McCONACHIE
President
CANADIAN PACIFIC

ROBERT F. SIX
President
CONTINENTAL U.S.



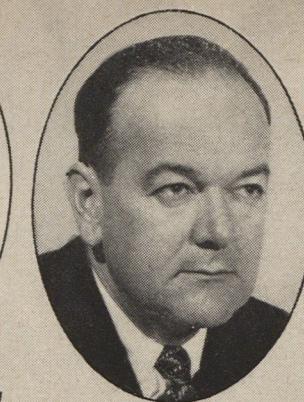
C. E. WOOLMAN, President
and General Manager
DELTA U.S.



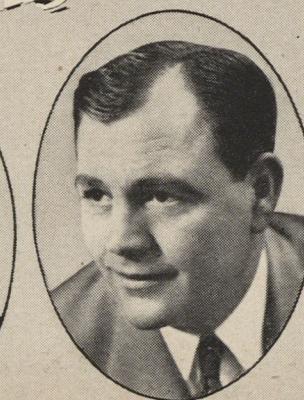
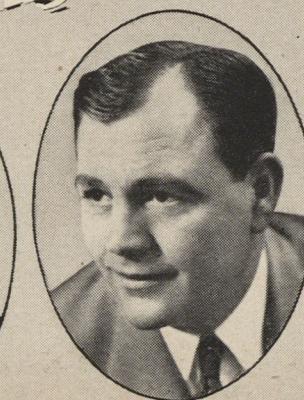
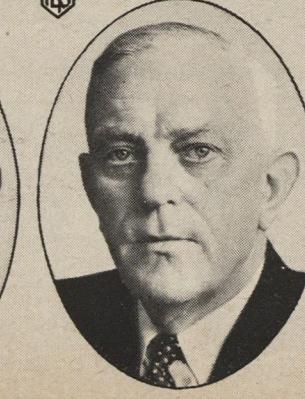
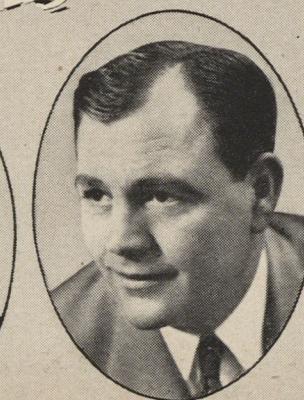
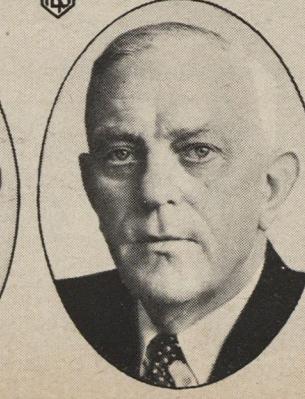
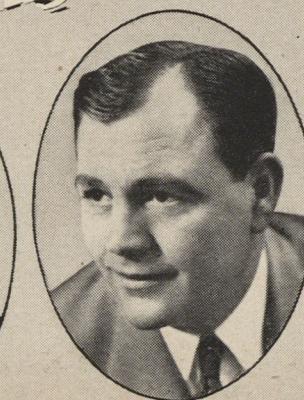
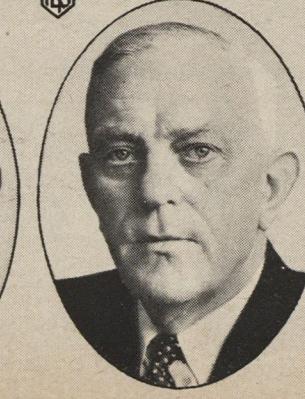
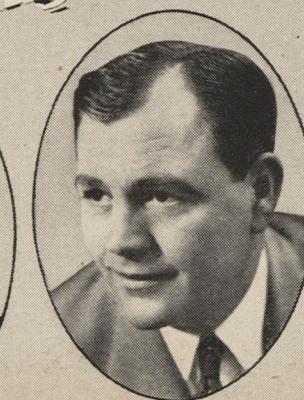
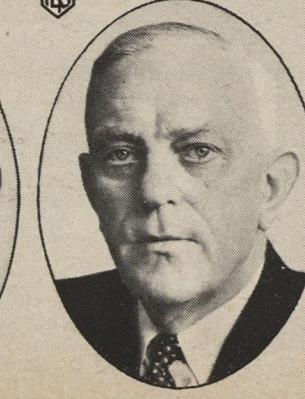
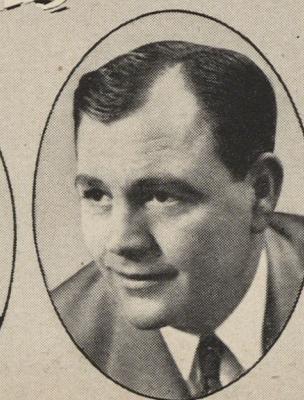
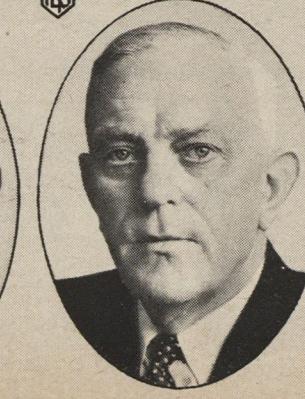
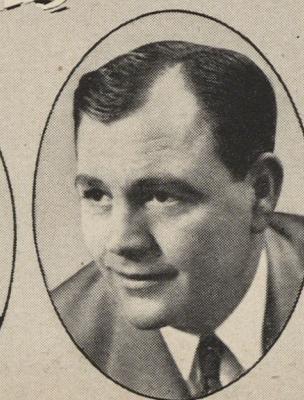
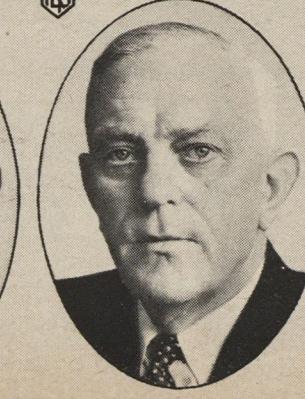
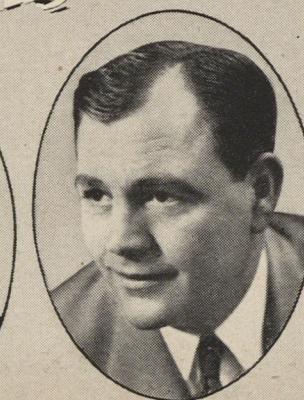
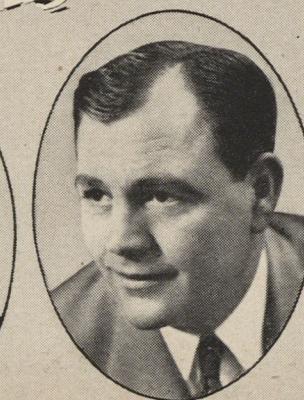
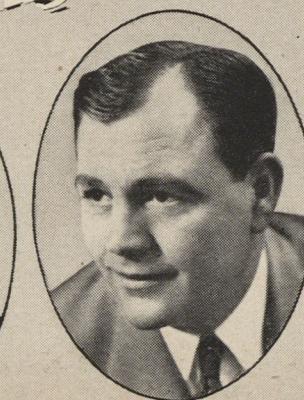
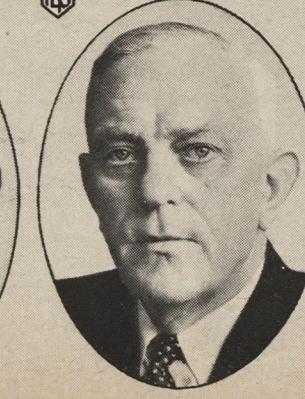
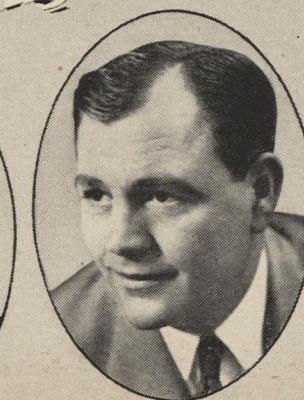
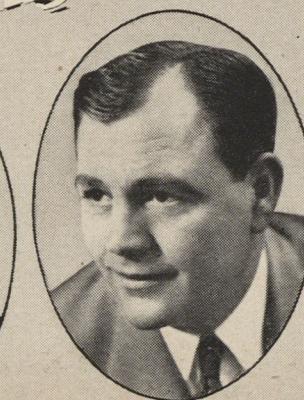
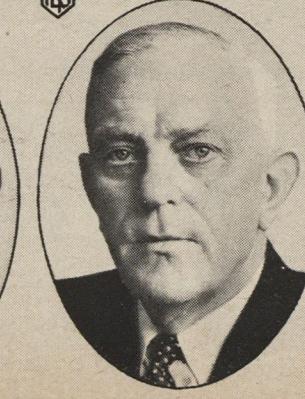
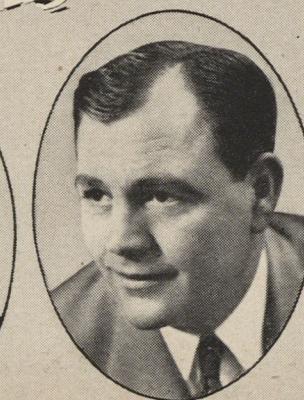
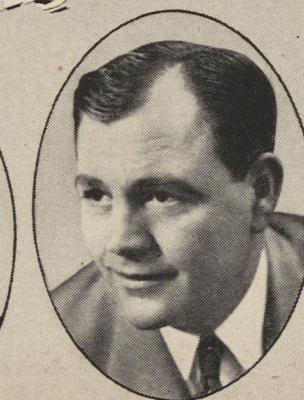
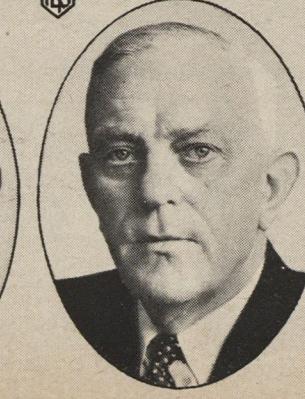
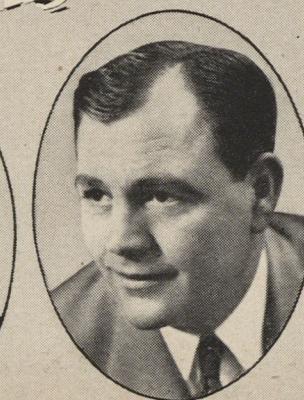
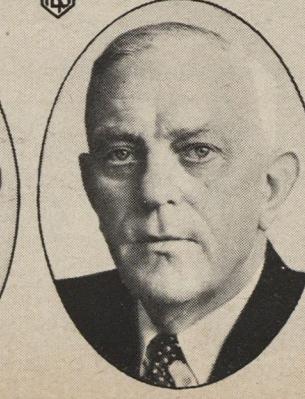
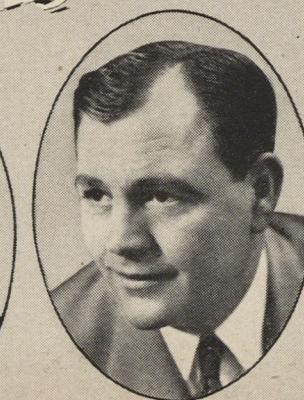
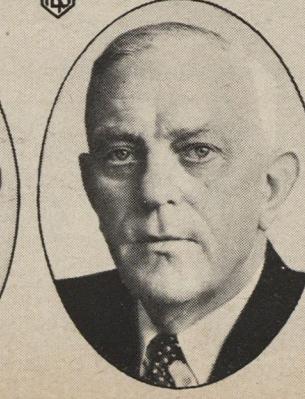
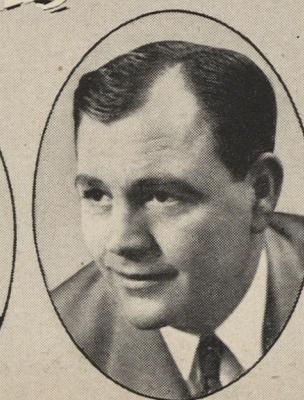
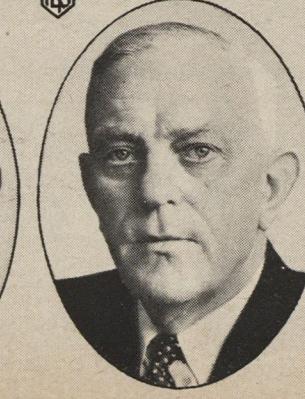
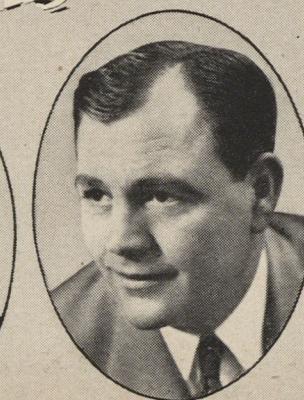
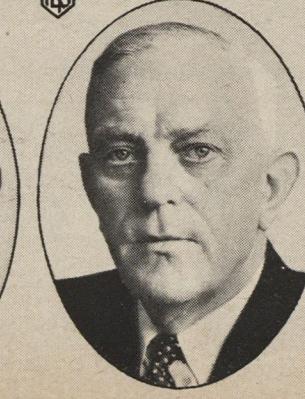
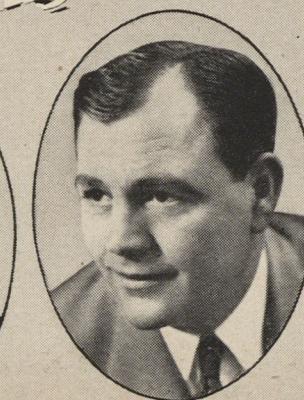
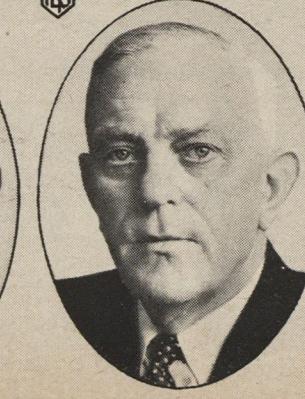
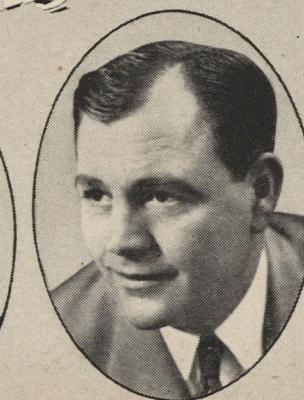
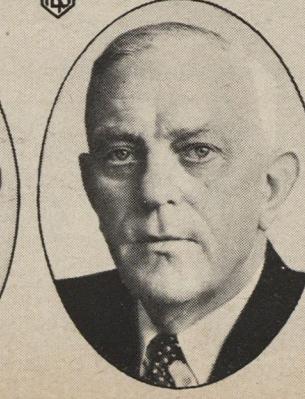
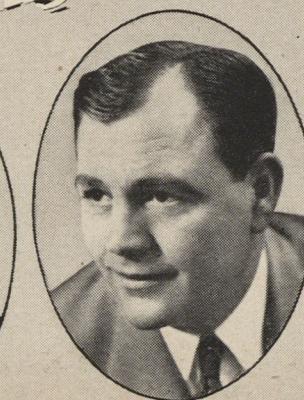
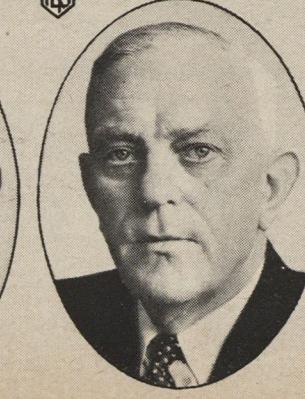
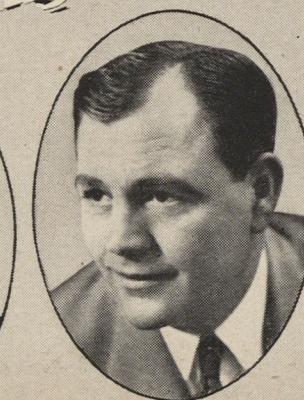
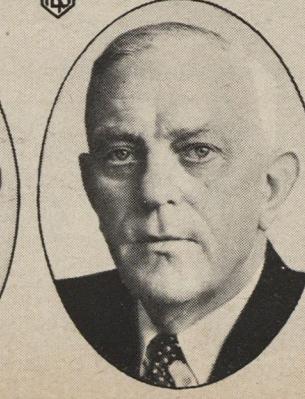
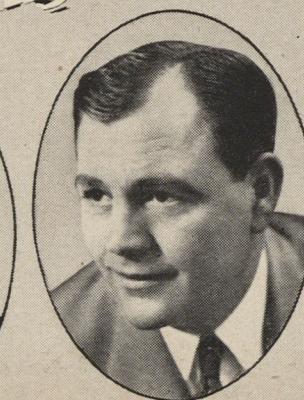
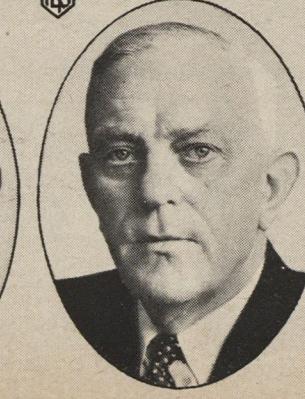
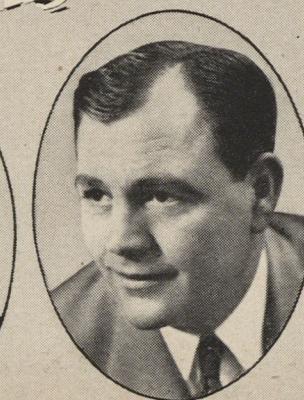
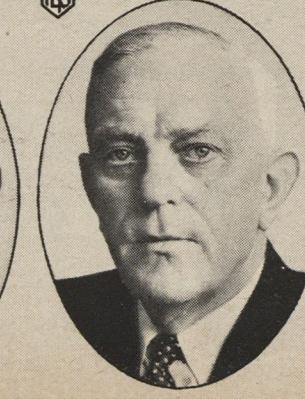
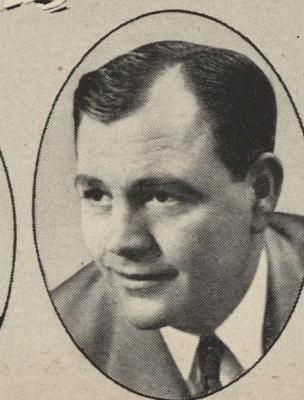
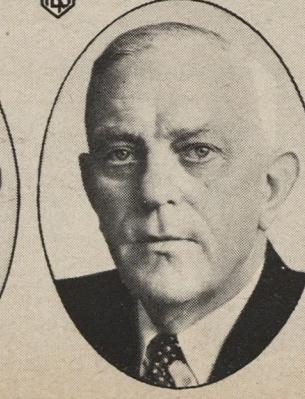
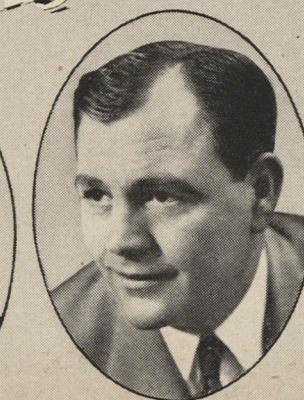
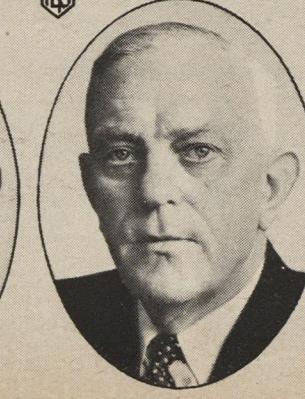
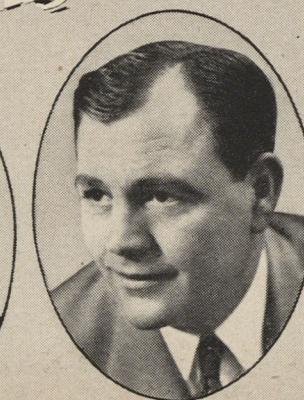
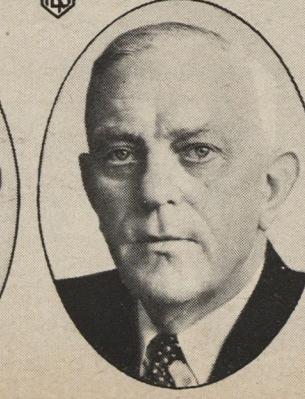
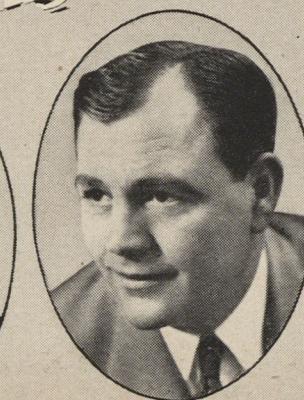
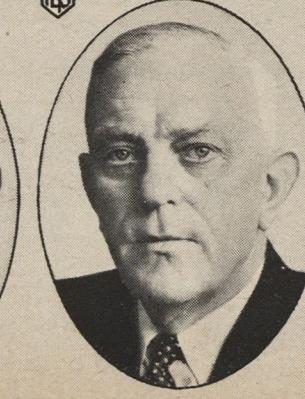
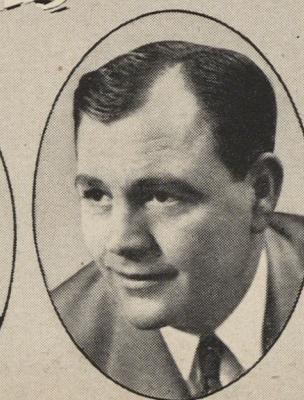
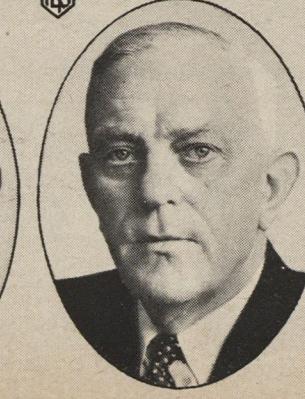
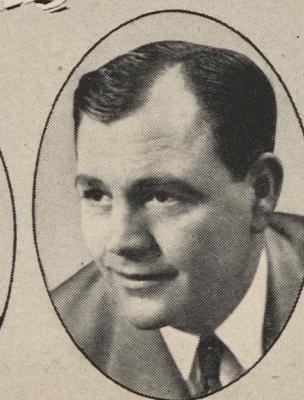
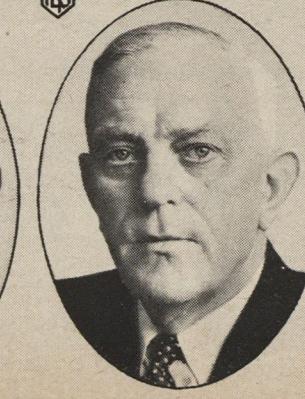
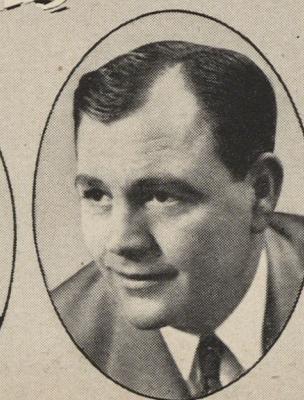
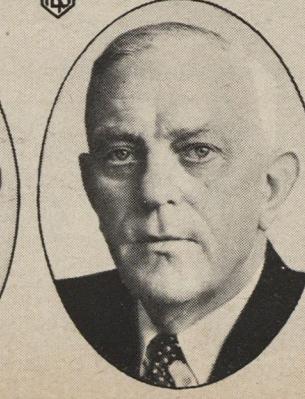
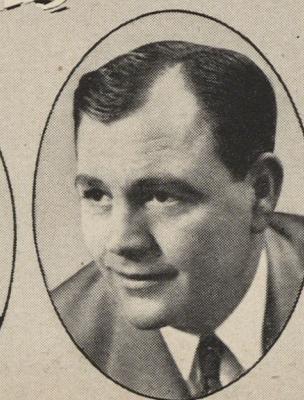
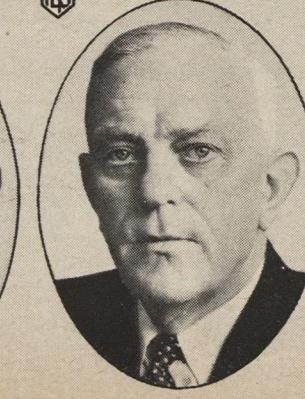
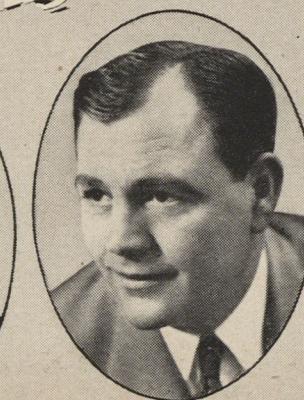
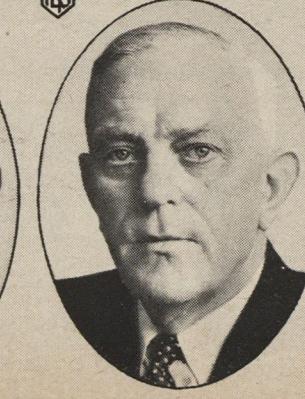
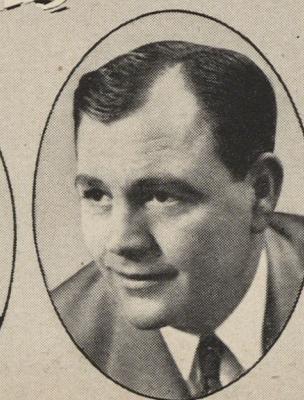
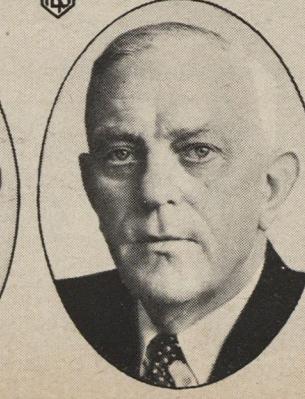
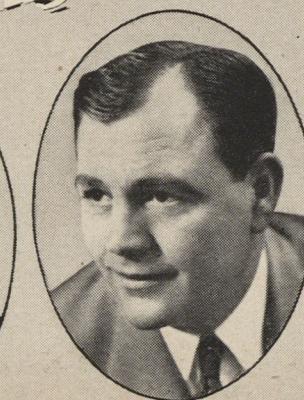
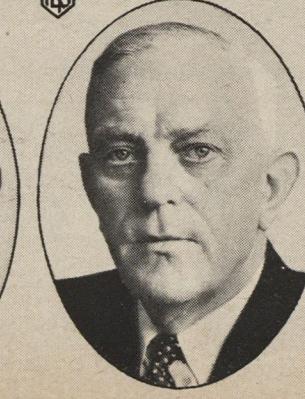
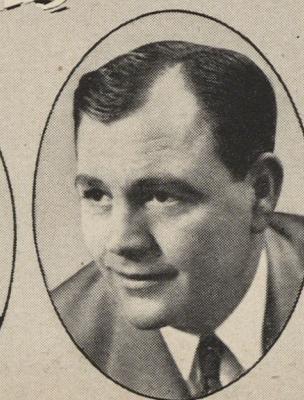
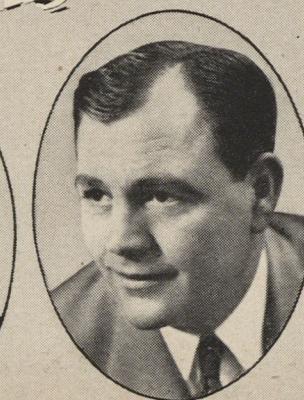
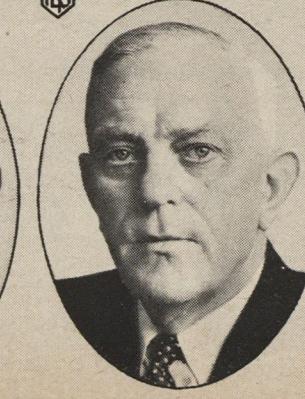
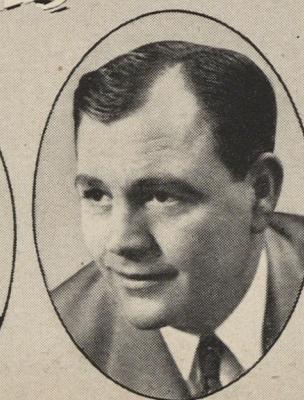
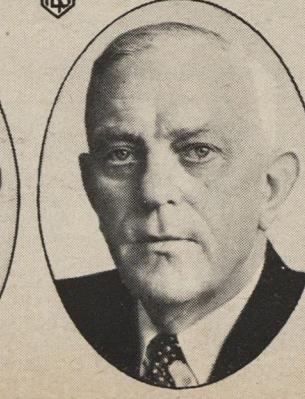
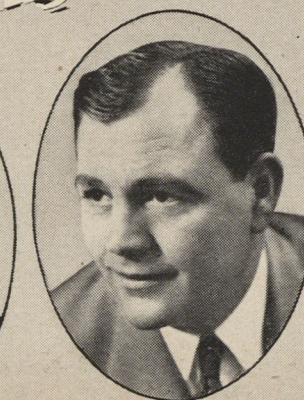
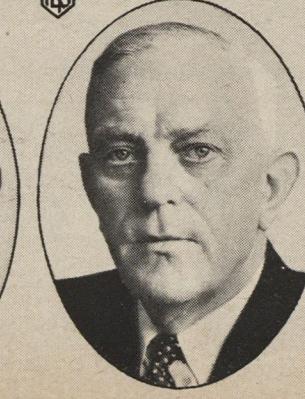
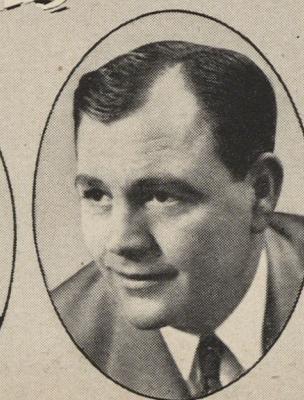
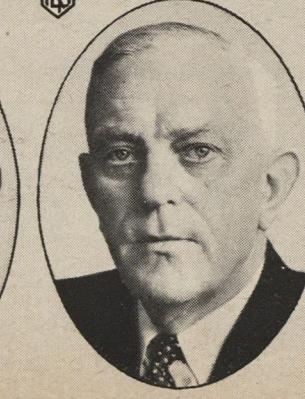
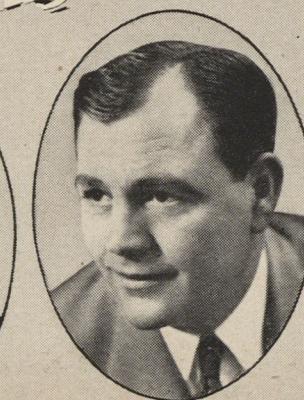
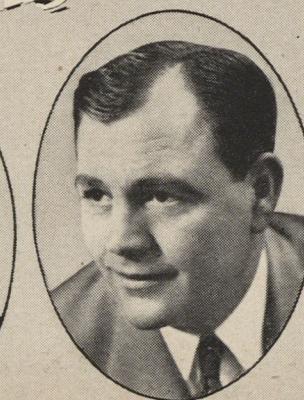
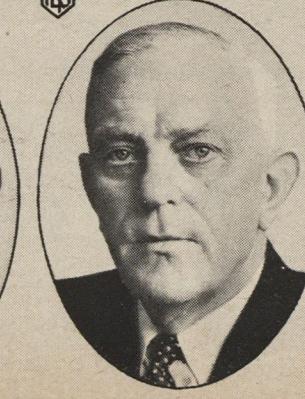
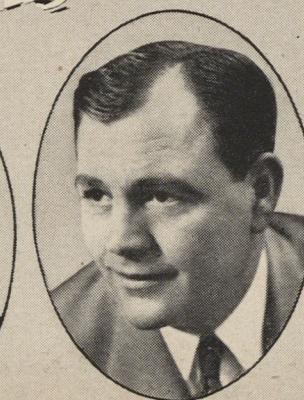
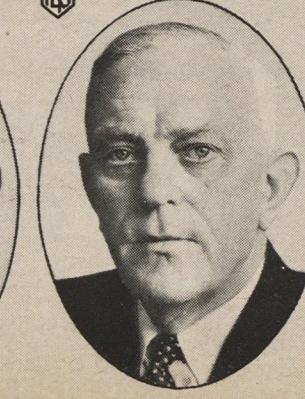
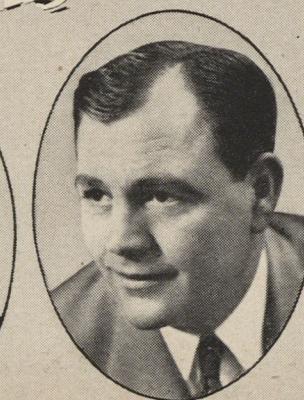
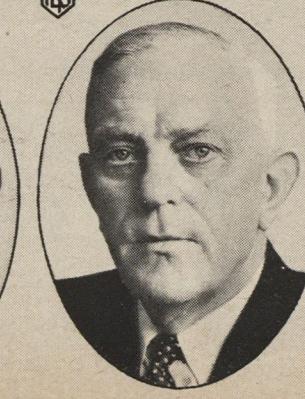
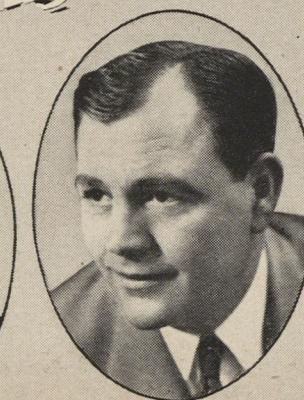
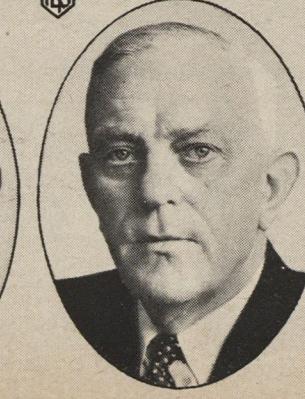
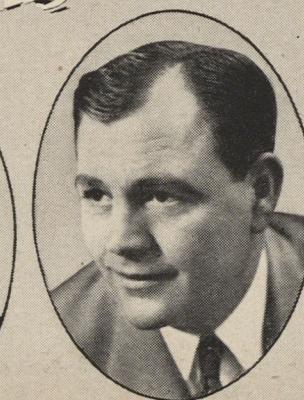
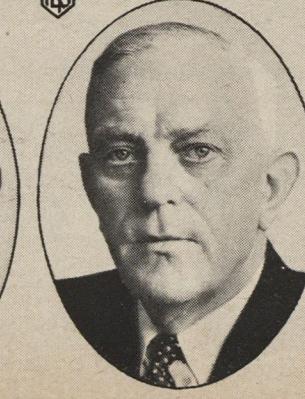
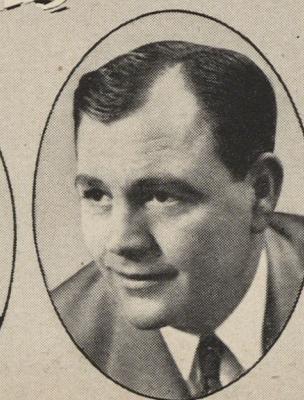
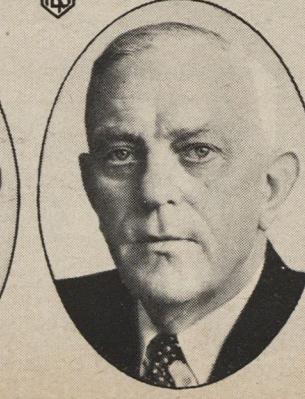
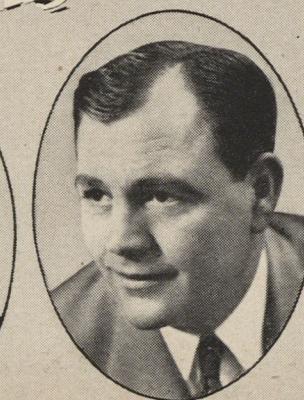
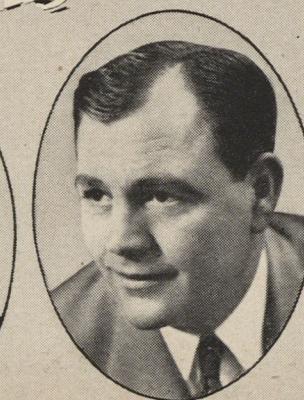
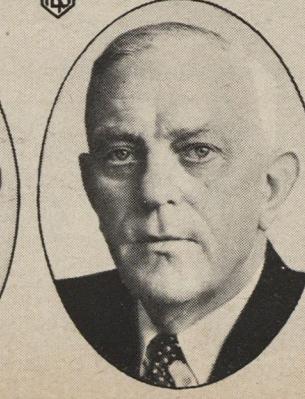
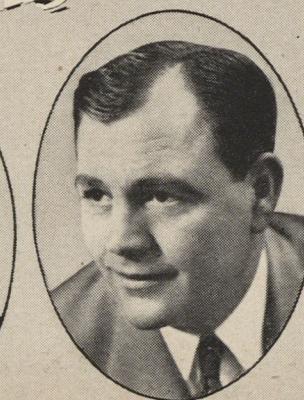
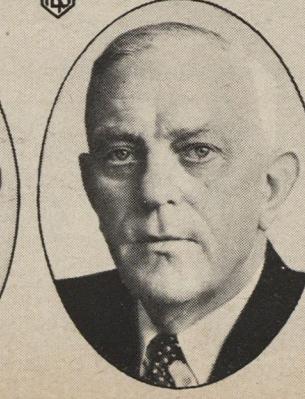
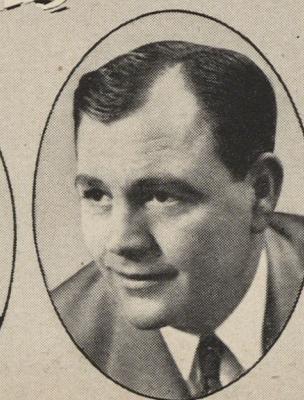
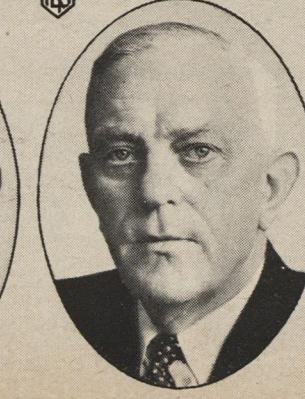
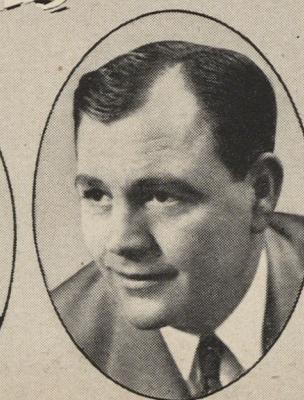
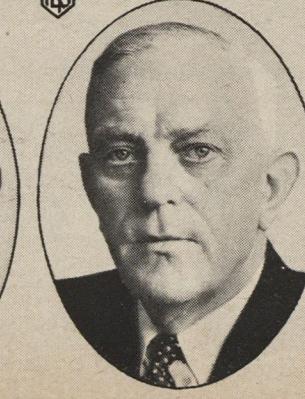
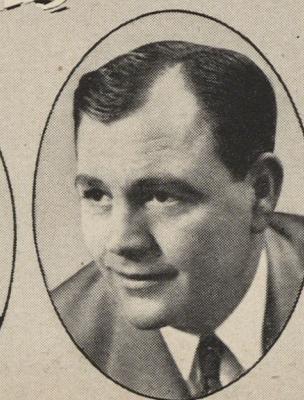
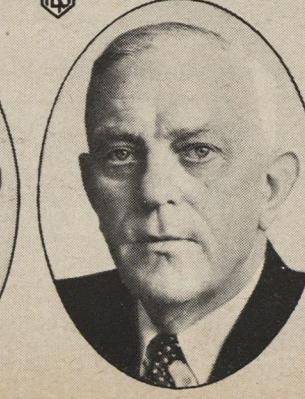
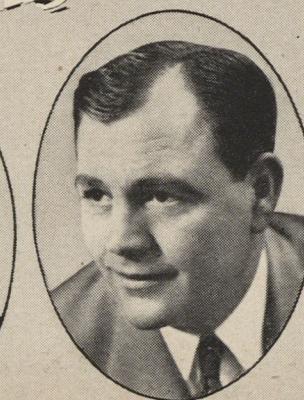
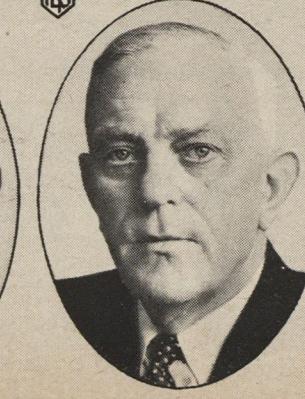
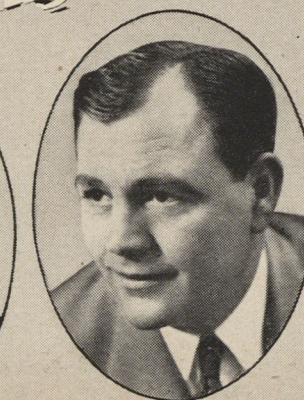
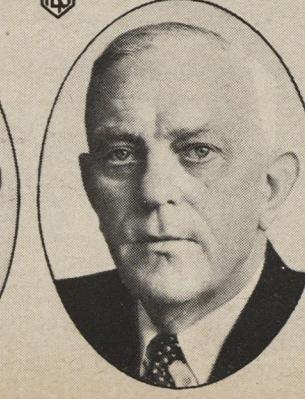
PRINCE M. PACELLI
President
LAI Italian

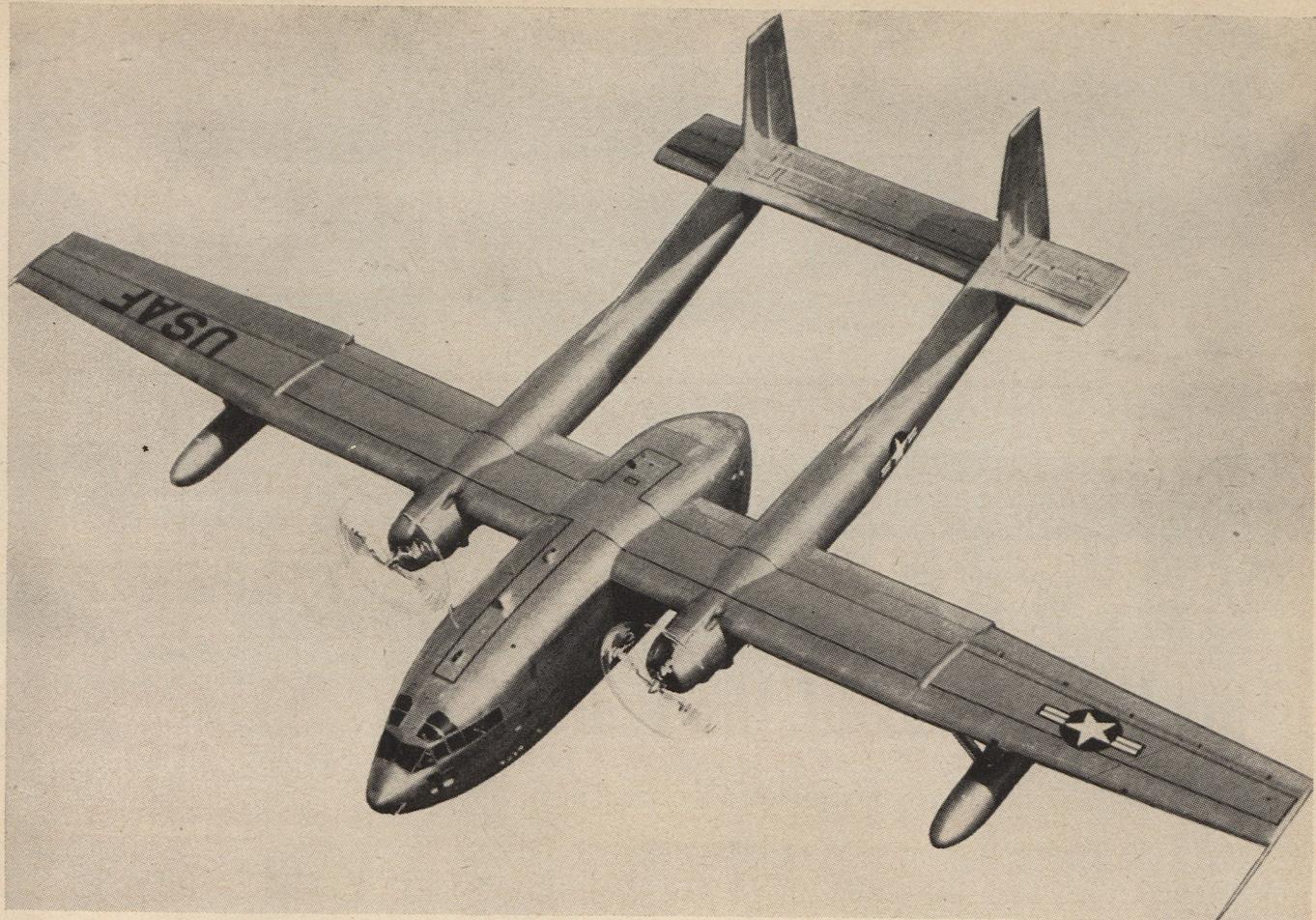


DR. A. PLESMAN
President
KLM Netherlands



ROBERT W. PRESCOTT
President
FLYING TIGER LINE U.S.

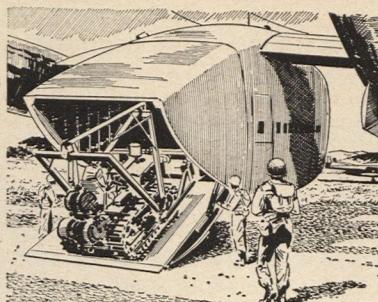




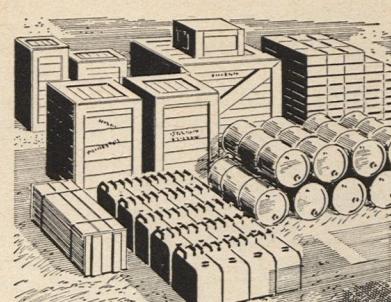
INCREASED AIR TONNAGE ...GREATER COMBAT RANGE



SLOWER DROP SPEEDS, made possible with the new C-119H, greatly facilitate parachuting troops, supplies and heavy equipment... more accurately and with greater efficiency than ever before.



"BEAVER TAIL" DOORS allow loading and unloading with greater ease... open for airborne drops... seal tight in flight when not in use... provide additional cargo space.



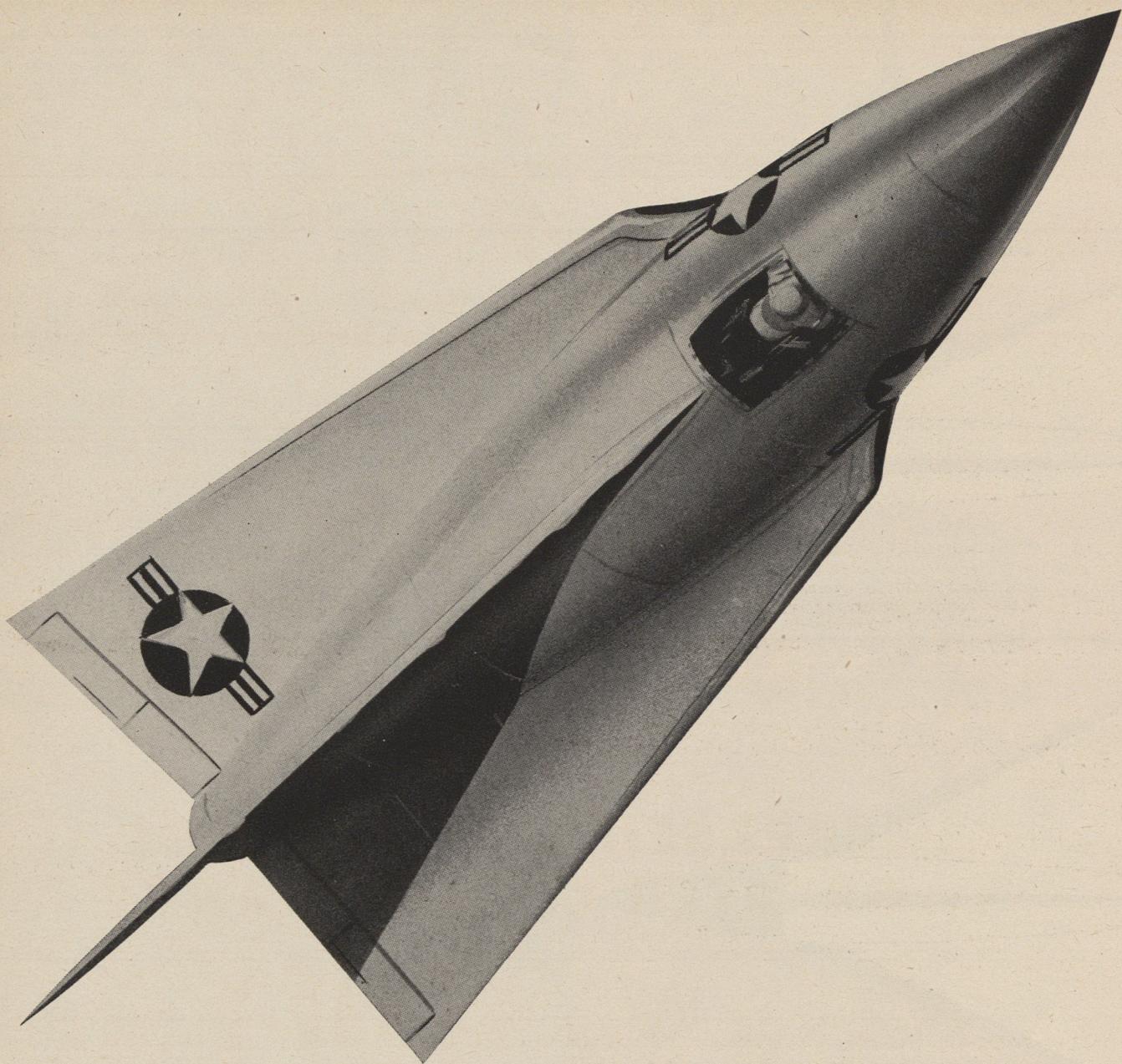
FUEL, AMMO, RATIONS... Increased tonnage of everything needed by our Armed Forces in combat... goes further and gets there faster with improved loading and air-drop facilities.

FEATURES of the new C-119H

Increased Wing Surfaces • Larger Flight Control Surfaces
Improved Stability and Control • Increased Payload and Better
Cargo Distribution • Greater Combat Range • Lower Stall and
Jump Speeds • Shorter Take-Offs and Landings • Greater Tail
Clearance • External Fuel System • More Efficient Heating System
Rough Field Landing Gear • Crew Bail-Out Chute


ENGINE AND AIRPLANE CORPORATION
FAIRCHILD
Aircraft Division
Hagerstown, Md.

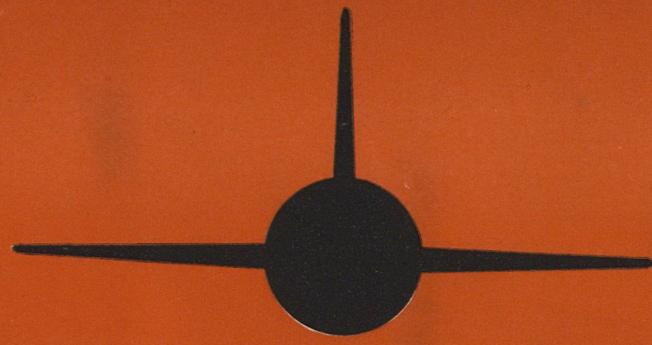
Other Divisions: Guided Missiles Division, Wyandanch, L.I., N.Y. • Engine Division, Farmingdale, N.Y. • Stratos Division, Bay Shore, L.I., N.Y.



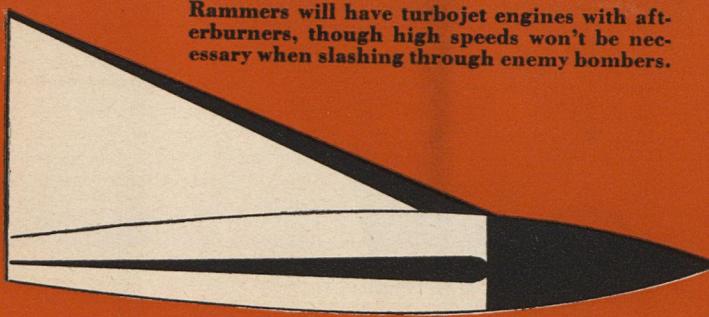
WILL RAMMING BE OUR LAST-DITCH DEFENSE?

*This missile has a control system that can't
be jammed. Here's a way to achieve the 100
percent air defense we need in the Atomic Age*

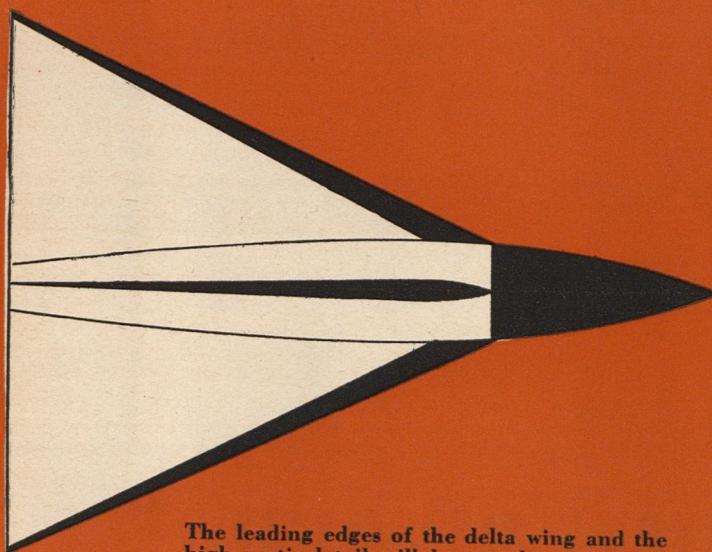




Rammers will have turbojet engines with afterburners, though high speeds won't be necessary when slashing through enemy bombers.



Pilots will have a good chance of survival in the armor-reinforced rammers, the Atomic Age equivalent of hand-to-hand combat. When zeroing in on target, the rammers will be completely independent of electronics, which could be jammed by the enemy bomber.

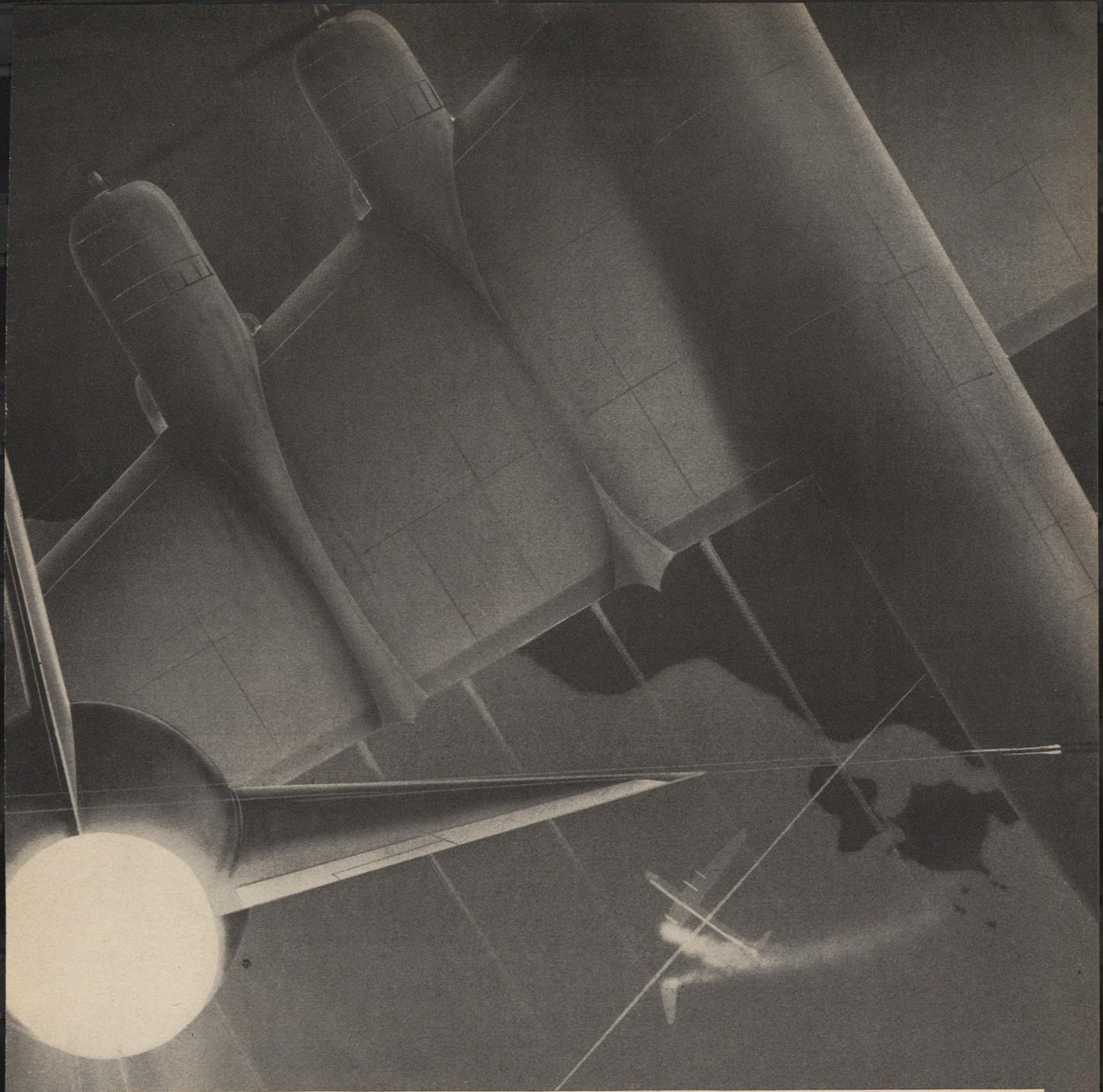


The leading edges of the delta wing and the high vertical tail will be stoutly reinforced. The rammer will be a high speed plane with low speed maneuverability.



During attack, the ejection seat is retracted further into the fuselage. The pilot will have a body harness for protection from G forces during collision. Boring in for the kill, he will sight through a periscope.





HOW TIGHT can an air defense get? During World War II, a ten percent loss of bombers was considered prohibitive. The Royal Air Force achieved this figure many times—and broke the Luftwaffe's back in the Battle of Britain. We could do this well again, and a really modern air defense system can do even better. But ten percent attrition is no longer acceptable. Fifty percent is not enough. Even ninety percent destruction of the enemy force is not sufficient if, in the remaining ten percent, *a single atom bomb is left!*

How can our Air Force provide the degree of protection needed in the Atomic Age? How can we get 100 percent effectiveness? Is there an answer, or must we resign ourselves to widespread atomic destruction?

Today, when a single enemy bomb carrier may spell doom for one of our cities, the American people cannot condone a "fire and fall back" attitude. As long as a single enemy plane remains airborne in the American sky, we must attack. Even after all weapons are exhausted, even after rockets and ammunition have been expended, that lone enemy aircraft must be destroyed. Miles high in the cold, thin atmosphere, the isolated fighter pilot has left but one alternative—deliberate ramming!

To Americans the very mention of air ramming tactics is synonymous with suicide, typified by the Japanese *kamikaze* pilots. But ramming did not originate with the Japanese air forces, nor were such tactics limited to World War II. Actually, the earliest

record of deliberate ramming was in 1914 when a Russian observation plane rammed a German plane.

Contrary to most published opinions, the aerial ramming of World War II paid big dividends, and it is important to remember that these dividends were obtained (by both Germany and Japan) during the *experimental development* stages, and with *orthodox non-specialized aircraft employing haphazard tactics*. An examination of early Japanese ramming against B-29s shows Japanese casualties of eleven airmen and sixteen fighter aircraft lost, as opposed to an American loss of forty airmen and four B-29s. B-29 ramming was generally executed by conventional single-engine fighters, unarmed to improve performance.

In the air war over Germany, the Luftwaffe carried out ramming tactics, using special units. The ramming pilots were all volunteers who received a ten-day training course. In one attack, the AAF lost twenty airmen and two heavy bombers to a single Luftwaffe fighter (Me-109), and the German pilot is believed to have bailed out successfully.

Early in World War II Soviet communiqués frequently mentioned deliberate collisions by pilots of the Red air force. Two techniques developed by the Russians were ramming with the undercarriage lowered, and clipping the enemy's control surfaces with the propeller blades. Both of these increased pilot survival, but lessened the probability of target destruction. Nevertheless, there were times when Soviet pilots sacrificed their lives in deliberate ramming.

Americans too have rammed deliberately. At Guadalcanal, on October 25, 1942, Marine Lt. Jack E. Conger, rammed a Jap Zero over Henderson Field. Both Conger and the Jap pilot bailed out and landed safely. In the anti-bomber category, we find Lt. Robert R. Klingman making contact with a Nick, on May 10, 1945, near Okinawa. When his guns jammed, Klingman rammed the Nick and chewed off the tip portion of the rudder. He made two more runs, tearing off all of the rudder and the right stabilizer before the Nick went into a spin and was splashed.

Now this country faces grave peril and every possible means must be taken to provide adequate air defense of the North American continent. However, responsible officers who are considering the inclusion of air ramming tactics in the air defense arsenal feel it need not be equivalent to a "death warrant." Modern science and technology are capable of developing ramming aircraft which can do the job without killing, or even injuring, the pilot. Actually, there is no reason why the pilot's chances cannot be at least as good as in other phases of aerial combat. But why should we consider ramming at all, and—if the job must be done—what kind of aircraft is needed for it?

It is electronics that makes air ramming tactics look attractive as a last resort. Because of the speeds of modern aerial combat, gunsights, rocket fire control systems, and missile homing systems depend heavily on electronics for accuracy and effectiveness. It is inconceivable that the Soviets, who have been amazingly successful in jamming the "Voice of America," could not jam our electronically-guided missiles and electronic rocket and gunfire control equipment. This is why we must have "last-ditch" weapons whose operation depends on the human brain, against which the enemy cannot develop countermeasures.

The primary requirements for a satisfactory air rammer design are:

- Adequate pilot protection to insure high survival probability.
- High speed to catch up with enemy bombers, and high maneuverability to enable it to hit the "soft" and highly vulnerable portions of the bomber.
- Design features which make sure the rammer is still flyable after a deliberate aerial collision.
- Complete lack of dependence on electronic gear for aiming purposes.

How can all of these requirements be met in a modern warplane? Let's take *pilot survival* first.

The weight of the complete armament system plus various other equipment (which the rammer would not need) total as much as 4,000 pounds in certain modern fighters. With a little ingenuity, an armor-plated shell, large enough to completely contain the pilot—and thick enough to withstand modern air-to-air armament, can be easily designed for less weight than this. So an ideal air rammer would be little more than a small, armor-plated flying shell. Other protective features for the pilot would, of course, be added. Among these would be: a combination retracting-ejection seat, which would lower into the fuselage during the attack (sealing off the cockpit enclosure with bullet-proof glass), and which could safely eject the pilot after collision if he should inadvertently hit the engines or any of the other "more solid" portions of the bomber; and complete body harness for the pilot, which would prevent internal injuries from the momentary semi-high G loads occurring during the actual collision. It is paradoxical that much useful data on G loads which the pilot would experience during collision can be gathered by ramming drone aircraft with electronically-guided missiles equipped with suitable recording instrumentation.

The rammer would be powered by a turbojet engine equipped with afterburner to give it high "catching-up" speeds. It would also have air brakes and a drag parachute to reduce speed just before collision. The control system design would emphasize *low-speed maneuverability*.

To protect the aircraft during a ramming pass and actual collision, the engine and fuel would be housed in the armor-plated fuselage. In addition, the leading edges of the delta wings and vertical tail would be of extremely solid construction, back to the point of maximum thickness. During actual collision, the forward engine air intakes would be closed, and the controls would be automatically locked in neutral to prevent serious damage as the rammer sliced through the enemy bomber.

For *aiming* purposes, the rammer would be equipped with a suitable periscope, which could not be jammed.

The air rammer would be a relatively small, short-range aircraft. However, it would not be used purely for close-in defense, although it could be. But the best method would be to tow ramming aircraft aloft behind high altitude patrol planes. There was enough experience during the last war with experimental towing of fighter-type aircraft to leave no doubt as to the feasibility of the technique. When the airborne radar in the patrol planes would pick up enemy bombers, the rammers would release, climb higher than the enemy bombers, and proceed with their mission.

The impact forces required to inflict decisive damage to an enemy bomber in flight are comparatively small. It would not be necessary for the rammer to sweep down on the enemy aircraft at great speed. A closing speed of about fifty mph would be more than enough to inflict fatal damage to some vital part of the enemy aircraft. The rammer pilot would obviously aim for the bomber's tail surfaces or wing tips. However, even if the pilot should inadvertently fly through the strongest parts of the bomber, the G loads would not be excessive for the pilot or rammer aircraft.

Even if there were some rammer aircraft losses, these could not be considered serious in relation to the grave problem that faces us. Even though the international bomber costs about ten times the price of the fighter, even if we could trade one fighter pilot for ten to fifteen bomber crew members, these comparisons are small. It is the atomic weapon and the devastation it can cause that must be used as a yardstick when we consider the relative worth of the ramming mission. Measured against the potential damage stored within the atomic bomb if dropped upon our cities, all relative costs are dwarfed.—END



IT WAS a great convention and it's been a great year. I only wish I could thank personally all who helped make both of them possible."

It was Harold Stuart speaking and he voiced the sentiments of the entire Air Force Association as well as those of the retiring president and newly elected Chairman of the Board.

The convention was a great one, from any point of view — successful business sessions, top guest speakers, dinners, lunches, reunions, cocktail parties, celebrities, press, radio and television coverage. From the kickoff business session to the last cup of coffee at the Dawn Patrol breakfast it was a fast moving whirl of events.

Highlighting the business side was the Airpower Preparedness Symposium, in which ten top leaders in their respective fields — management, labor, the military services, and the aviation industry aired their production problems before AFA delegates and answered questions tossed at them from the floor (see page 43). At a luncheon between symposium sessions General Hoyt S. Vandenberg re-eval-

THIS IS HOW IT WAS

Airpower preparedness theme stressed at sixth annual Air Force Association convention and reunion in Detroit

uated the Air Force's increasing responsibilities in the atomic age and Jimmy Doolittle struck hard at complacency and at the wasteful triplication of our defense effort.

Reservists had their day, too, in a Reserve clinic presided over by Brigadier General Robert L. Copsey and featuring the Honorable James T. Hill, Jr., Assistant Secretary of the Air Force. Fourteen jet aces from Korea were in town, led by Colonel Francis S. Gabreski, America's leading living ace. They gave the convention the benefit of their cumulative knowledge of jet combat against the Reds. The Skyblazers, crack aerobatic team from USAFE, were also on hand and were awarded the Legion

of Merit at the same luncheon at which Doolittle and General Vandenberg spoke.

Secretary of the Air Force Thomas K. Finletter addressed the annual Airpower Banquet, and, in what he called his "annual report" to AFA, stressed the challenge to Air Force thinking which the current technological revolution has brought about. At the same banquet the jet aces and four of the fourteen living Air Force Medal of Honor holders were honored guests, and AFA top airpower awards and citations of honor were presented. A moving impromptu talk by screen star Joe E. Brown almost stole the show.

Celebrities there were aplenty but

Past president C. R. Smith (center) discusses convention matters with George Hardy (left), Central East regional VP, and AFA Secretary Julian Rosenthal.



Talking things over are Miss June Lockhart and Lt. James Low, one of the Korean jet aces.



CO-SPONSORS

Much credit for the success of AFA's Sixth Convention is due the following organizations for their public-spirited participation. To them goes AFA's deepest gratitude.

Aero Club of Michigan
*Aerojet Engineering Corp.
Aeroquip Corp.

Allied Products Corp.
American Airlines, Inc.
American Seating Co.
American Spring of Holly
American Steel & Wire Co.
Geo. W. Auch Co.

*The Babb Co., Inc.
Barton-Malow Co.
*Beech Aircraft Corp.

*Bell Aircraft Corp.
Bendix Aviation Corp.
William Beyster, Inc.

Bohn Aluminum & Brass Corp.
Bower Roller Bearing Corp.
Briggs Manufacturing Co.

Cadillac Gage Co.
Cadillac Square Fruit Co.
Capital Airlines, Inc.

Checker Cab Co.
Chrysler Corp.
City Foods Co.

*Consolidated Vultee Aircraft Corp.
Continental Motors Corp.

Courter Electric Products
Creative Industries

Cummings & Hopkins

D.S.M. Food Products

Daisy Manufacturing Co.

Dearborn Machinery Movers Co.
Deppmann & Furney Plumbing &
Heating Co.

Drexter Corp.

Detroit Creamery Co.
Detroit Gasket & Mfg. Co.

The Detroit News

Detroit Stamping Co.

*Douglas Aircraft Company, Inc.

Douglas Tool Co.

Eastern Air Lines

Eaton Manufacturing Co.

Elevator Engineering Co.

Equipment Mfg. Co.

Tom Evans

Ex-Cell-O Corp.

*Fairchild Engine & Airplane Corp.

Federal Engineering Co.

Federal-Mogul Corp.

First Fed'l Savings & Loan Assn.

Fisher Provision Co.

Ford Motor Corp.

Francis Aviation

Fruehauf Trailer Co.

George A. Gardello Co.

*The Garrett Corp.

General Electric Co.

General Motors Corp.

General Sheet Steel Corp.

Giffels & Vallet, Inc.

*The B. F. Goodrich Co.

*Grand Central Aircraft Corp.

Hall Engineering Co.

Hayes Industries, Inc.

Heidrich Tool & Die Corp.

J. Clive Helferich & Son

*Industrial Associates of the Air Force Association

Holley Carburetor Co.
The J. L. Hudson Co.
*Hughes Aircraft Co.
Huron Engineering Corp.
Jones Iron & Metal Co.
Joy Airport, Inc.
Kaiser-Frazer Corp.
Kasle Steel Corp.
Kelsey-Hayes Wheel Co.
*Kollsman Instrument Corp.
Leading Engine Co.
Lear, Inc.
*Link Aviation, Inc.
*Lockheed Aircraft Corp.
Lowenstein Poultry & Game
The Mfrs. Nat'l Bank of Detroit
Marsh & McLennan
H. A. McDonald Creamery Co.
McInerney's, Inc.
Mechanical Products, Inc.
Metropolitan Meat Supply Co.
Michigan Consolidated Gas Co.
Michigan Seamless Tube Co.
Micromatic Hone Corp.
George Miesel & Son
Miller Brothers
*Minneapolis-Honeywell
Regulator Co.
Multi-Hydromatic Welding &
Mfg. Co.
Nash-Kelvinator Corp.
National Bank of Detroit
The Nichols Co.
*North American Aviation, Inc.
Northern Steel Co.
*Northrop Aircraft, Inc.
O'Neil & Hoffner Co.
*Pacific Airmotive Corp.
Reo Motors, Inc.
*Republic Aviation Corp.
*Rheem Manufacturing Co.
Arthur J. Rohde & Co.
*Ryan Aeronautical Co.
S & G Wholesale Grocery Co.
Shell Oil Co.
Simon and Leeman
The Sparks-Withington Co.
Special Engineering Service
*Sperry Gyroscope Co.
H. L. Spitzley Heating Co.
Stanny-Morris-Livingston Co.
Superior Tool & Die Co.
Technical Service, Inc.
*Temco Aircraft Corp.
J. Walter Thompson Co.
Thos. J. Thompson Sons
Trans World Airlines
Trundle Engineering Co.
The Udylite Corp.
United Air Lines
Universal Carpet Co.
Universal Wine & Liquor Co.
Vickers, Inc.
Ira Wilson & Sons Dairy Co.
Wolverine Diesel Power Co.
N. A. Woodworth Co.
Ziv Steel & Wire Co.



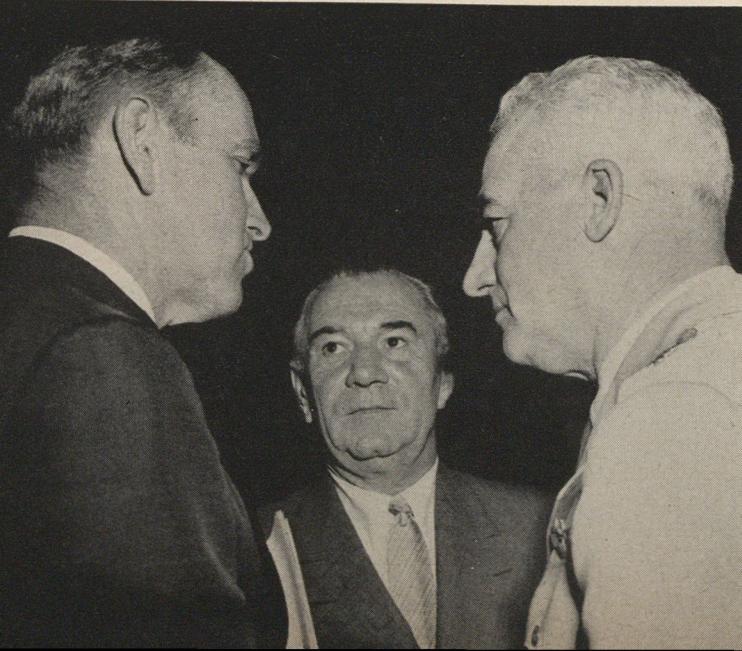
Prompting Capt. Ralph "Hoot" Gibson are four of his fellow jet aces. They are, from left, Lt. Iven Kincheloe, Lt. James Kasner, Col. Francis Gabreski—the nation's top living ace—and Capt. Richard Becker.

the real honored guests, as at every AFA convention, were the working delegates, the people who make Air Force Association possible, the loyal workers from every part of the United States who met to formulate the policies, procedures, recommendations, and resolutions that make up AFA. These and the people who make it possible for the delegates to come together—the hundreds of volunteer workers and the many individuals, agencies, and companies who pitched in to make it one continuous effort—men like Cass Hough, chairman of the Host Committee and their co-workers. Invaluable assistance was also rendered by the Air Force dance band and ceremonial troops, who performed at the Airpower Ball, by personnel of the 10th Air Force and Selfridge AFB, by the 439th Fighter Bomber Wing (Reserve), by the Michigan Wing of the Civil Air Patrol and by the Aero Club of Michigan who sponsored the International Aviation Exposition at Wayne-Major Airport, at the opening session of which AFA delegates were guests.

Underlying the whole affair was a sober sense of urgency and perhaps one of the most important functions of the convention was to impart, if only for a few days, a similar sense to a great American city and to the country at large. There could only be one reason for such a gathering and that was the realization that the nation lay in great peril and that the United States Air Force, as fit and strong as it could be made, was the prime shield against the naked aggression that stalks the world.

If, as someone said, the Air Force Association "came of age" in Los Angeles last year, the Detroit Convention was convincing evidence that its maturity was not a fleeting thing.—END

Looking over the program are retired general George C. Kenney and Maj. Gen. Emmett O'Donnell, CG of 15th AF.



Airpower Awards

Two Senators, two airmen, a physicist, and a TV commentator receive AFA's top honors



Senators O'Mahoney and Johnson got AFA's highest award. At left, Jimmy Doolittle; right, Tooeay Spaatz.

AIR FORCE Association's annual airpower awards — symbolic of outstanding achievement in five fields — were awarded this year at the convention's banquet in Detroit's huge Masonic Temple. United States Senators Joseph C. O'Mahoney of Wyoming and Lyndon B. Johnson of Texas jointly received the H. H. Arnold trophy and were named "Avia-

tion's Men of the Year." AFA's top award was made in recognition of their Congressional leadership contributing to stronger and more efficient airpower for America.

Mrs. Margaret Schilling accepted the Flight Award for her son, Colonel David C. Schilling; physicist Dr. Edward Teller received the Science Award, and CBS commentator Ed-

ward R. Murrow was given the Arts and Letters Award. Presentations were made by AFA elder statesman Jimmy Doolittle. The Air Age Award, presented by Tooeay Spaatz, went to General Hoyt S. Vandenberg, Air Force Chief of Staff.

Past President C. R. Smith gave AFA Citations of Honor to Captain Charles F. Blair, Jr., first person to fly

Senator Lyndon B. Johnson comes out for 'One Air Force'

GENERAL Doolittle, most distinguished guests, and my friends of the Air Force Association. There is little I can say tonight that would adequately express my appreciation for this award which you have given me. It is an event of great significance to me that you who have dedicated yourselves to the defense of your country have chosen to honor me and through me the committee of which I am chairman. It is a tribute which we will all carry in our heart for a long, long time.

In this modern age, the age of atomic power and the age of supersonic airplanes, the struggle for our national defense necessarily must be the struggle for airpower, and the struggle for airpower is the struggle for survival—our survival. No thinking man looking about the world today can question the dire nature of the peril that our country faces. We live in dangerous times, challenging times, and we shall live through those times only if we have the strength and courage to do the things that ought to be done. It is a sad but inescapable fact that we face a potential enemy who is growing stronger each hour. It is an even sadder and equally inescapable fact that we have lost precious time in building our defenses against his threatened onslaught. How much time is left to us, no person here this evening can say. We know only that we must live each day as though our supreme test must come tomorrow. We know only that we must build strongly, vigorously, even frantically to make up for the precious hours that have been lost. Yes, we have lost more than three years in the air that we can never get back.

But of all of our efforts, the most determined, the strongest must be directed to the creation of air and atomic power. It is only through the possession of such power, in overwhelming quantity, in unsurpassed quality, that there lies any hope for peace in the world and for the survival of the country we love so much. If the attack must come—let us pray to our God that it does not—it will come through the air. If the attack must come, it is our airmen who will bear the brunt of our battle to survive. If the attack must come, it is through the air that America will retaliate with the awesome force of atomic destruction. We have long since passed the point where we can debate the question of whether this nation can afford an adequate defense in the air. We can afford debate only on the question of how to attain that adequate defense in the quickest and in the most effective manner. We must have that power to maintain the peace or to insure our survival, if that peace cannot be maintained.

These things are known to all of you. That is why you have banded together in this Air Force Association to work for strong national defense. I think you have done a wonderful job because of the high aims and the patriotic ideals of your Association. I consider the award that you have given us tonight one of the greatest honors that has ever come to me. From the bottom of my heart I say thank you, and I pledge you that I will continue to devote whatever ability I may have to keeping the defenses of our country strong and assuring that we have one Air Force, the greatest Air Force in all the world.

Senator Joseph C. O'Mahoney

GENERAL Doolittle, Secretary Finletter, General Vandenberg, all members of the United States Air Force, and all the members and guests of the Air Force Association. Not for myself do I accept this award tonight. Grateful though I am for the honor which has been conferred upon me, I accept it also for all of the members of the Subcommittee on Defense Appropriations of whom there is present with us tonight the ranking minority member of that committee, the Honorable Homer Ferguson, Senator from the State of Michigan. I accept it for all the other members of the Committee, and for the members of the Senate, who by a vote of seventy-nine to nothing adopted the amendment which it was my honor to propose to provide for the 143-wing Force. There is a significance, I think, in this award to members of Congress, to my distinguished friend, Senator Lyndon Johnson of Texas, and to myself, and that significance is that the members

asks 'Defense Without Stint'

of the Congress of the United States are behind the members of the military services and behind the members of the USAF.

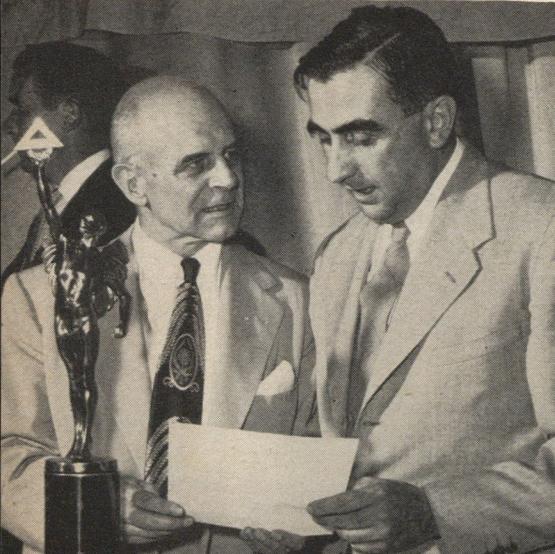
I know that I speak for them when I say to you gentlemen who are gathered here tonight, to you, the aces from Korea, to you, the veterans of World War II and of World War I that when America calls her sons to battle, America ought to provide them with all the instruments of defense without stint. But more particularly tonight as I want to say to this group that I feel deeply in my heart that we owe a special tribute to those two men who lost their lives here today (Maj. Donald Adams and Capt. Ed Kelly who died in an F-89 crash at the Internat'l Aviation Exposition—Ed.) in preparedness activities for the defense of the United States. Let it be said that these who have given their lives and these who have so fortunately returned to us from Korea are the flyers of freedom, the harbingers of peace.



Mrs. Margaret Schilling accepted Flight Award from Doolittle in behalf of her son.



Arts and Letters Award went to CBS TV commentator Edward R. Murrow, above. Dr. Edward Teller got the Science Award for his work in physics. Doolittle made both awards.



a single-engine airplane nonstop across the North Pole; to William B. Bridgeman, Douglas test pilot, who set speed and altitude records; to Captain Vincent H. McGovern, who conceived and carried out the first helicopter crossing of the Atlantic; to Colonel Francis S. Gabreski, whose appearances as America's top living ace have contributed to a better public understanding of jet combat; to Dr. David T. Griggs of UCLA, for service as the AF's chief scientist; to Philip G. Johnson (posthumously), former president of Boeing, who developed the B-17 and B-29; to Eugene M. Zuckert, now with the Atomic Energy Commission, for administrative leadership as Assistant Secretary of the Air Force; and to the Hollywood Coordinating Committee, for its efforts in mobilizing entertainment for American troops. The Johnson award was accepted by James Murray, vice president of Boeing; the Hollywood award by screen star William Lundigan.

Citations for the top airpower awards follow:

Senators Joseph C. O'Mahoney and Lyndon B. Johnson . . . for statesmanship of the highest order

Under the democratic way of life, our elected representatives in Congress make the final determinations regarding our airpower preparedness. On the Congressional decision rests the hope of the free world for security under arms. Senator Johnson has served as Chairman of the Preparedness Subcommittee of the Senate Armed Services Committee. He was responsible for bringing to light many valuable military facts upon which sound airpower legislations could be based. Senator O'Mahoney has served as Chairman of the Armed Services Subcommittee of the Senate Committee on Appropriations and as Senate floor manager for the defense appropriations bill. He has provided brilliant and courageous leadership contributing to a stronger and more efficient airpower program for America. Senators Johnson and O'Mahoney have demonstrated statesmanship of the highest order.

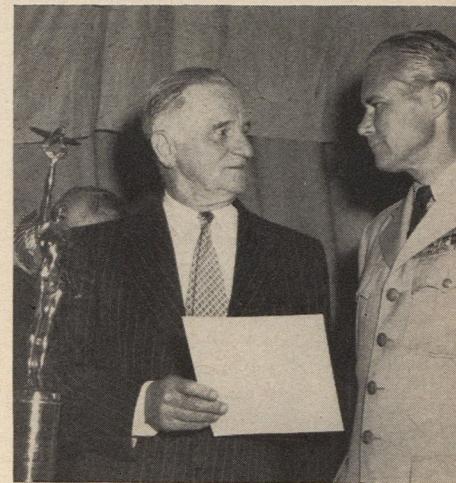
Colonel David C. Schilling . . . for pioneering leadership

The global striking power of the Air Force has been developed by the interaction of new technologies and the age-old element of operational leadership. The first intercontinental mass movement of jet fighters utilizing aerial refueling techniques was at once a tribute to new equipment and new techniques, to the participants of the 31st Fighter-Escort Wing and supporting organizations, and to the leadership of Colonel David C.

Schilling, Wing Commander. Colonel Schilling first pioneered trans-oceanic, aerial-refueled flight by jet fighter, and then commanded the historic movement of F-84s 11,900 miles from Albany, Georgia, to Tokyo.

Edward R. Murrow . . . for honesty and clarity

In the world of free men, public opinion is the final term of reference. America is as strong as its public awareness of the need for strength and its public enlightenment on the type of strength needed. Edward R. Murrow, of the Columbia Broadcasting System, in his outstanding radio and television programs, has presented the nation's airpower requirement



Former Chief of Staff Carl Spaatz present the Air Age Award to General Vandenberg commanding his integrity and courage.

with honesty, clarity, and dramatic impact.

Dr. Edward Teller . . . for unparalleled creative genius

Productive genius, long our bulwark in national emergencies, must now be accompanied by leadership in science. Our survival in the future will depend to an increasing extent upon pioneering along hitherto uncharted paths. Dr. Edward Teller has brought to the national effort in the field of basic research in physics an unparalleled creative genius. He is primarily responsible for important basic discoveries which will greatly improve the strength of the USAF.

General Hoyt S. Vandenberg . . . for integrity and courage

The struggle for adequate airpower is essentially a struggle against tradition. General Hoyt S. Vandenberg has successfully met this challenge. In his wise assessment and skillful presentation of the airpower requirement, General Vandenberg has demonstrated integrity and courage of the highest order.—END

Research Rides a Rocket

*The Naval Research Laboratory's
Viking rocket research at White
Sands Proving Grounds, N. M.,
hunts facts, figures and formulas
in the upper atmosphere.*

HURTLED far into the blue, Naval Research Laboratory rockets ask questions of the earth's upper atmosphere . . . flash back the answers needed to guide the designers of tomorrow's piloted and pilotless super-altitude systems for peace or war. What are the pressures and temperatures of the earth's atmospheric layers . . . the high-altitude changes in the earth's magnetic field affecting navigational instruments . . . the alterations in radio waves caused by the ionosphere . . . the effects of sun spots on communications equipment out beyond the filtering effects of the earth's heavy atmosphere?

Martin Viking rockets play a major role in this high-altitude flight research program. Last summer, the Viking cracked the world's altitude record for single-stage rockets . . . nosing 136 miles into the heavens at a top speed of 4100 m.p.h. Now, an even more powerful Viking is being readied for launching. The Martin Company is proud to be a partner with the Naval Research Laboratory in these vital activities . . . helping to prove that America's most valuable secret weapon is its scientific leadership! THE GLENN L. MARTIN COMPANY, Baltimore 3, Md.

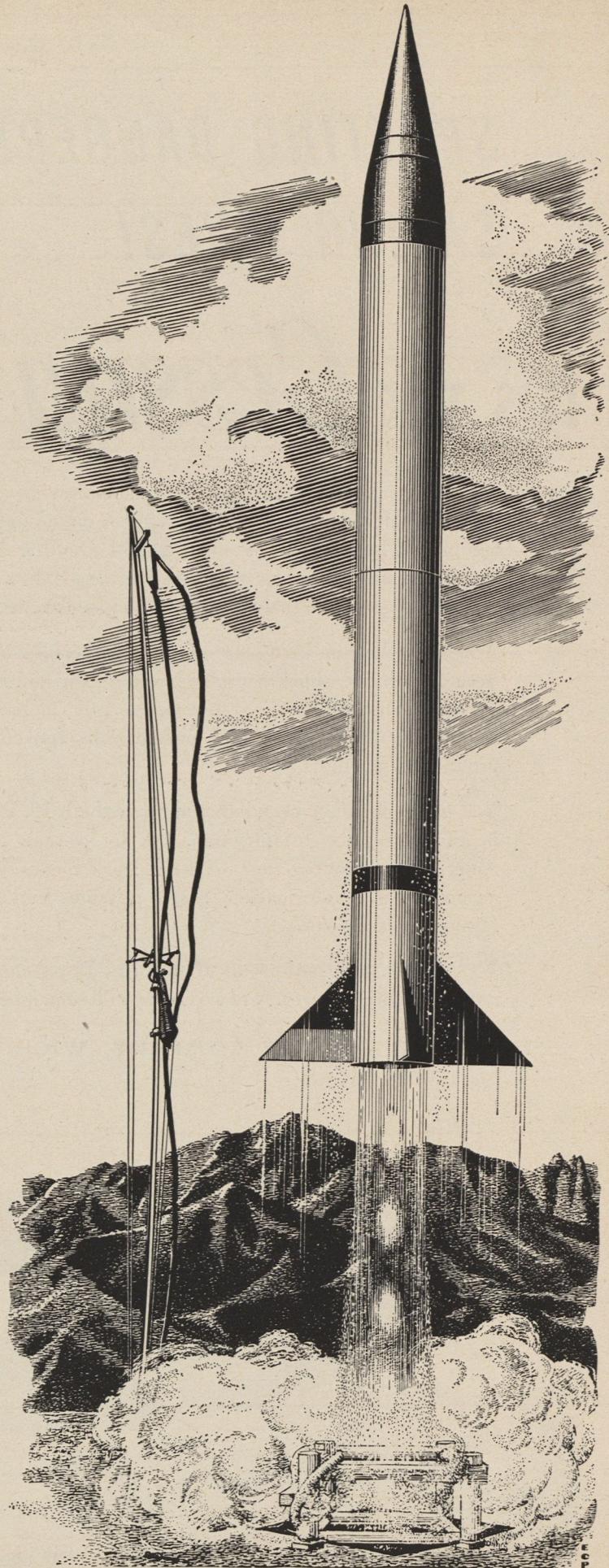
Martin
AIRCRAFT

Builders of Dependable



Aircraft Since 1909

Developers and Manufacturers of: Navy P5M-1 Marlin seaplanes • Air Force B-57A Canberra night intruder bombers • Air Force B-61 Matador pilotless bombers • Navy P4M-1 Mercator patrol planes • Navy KDM-1 Plover target drones • Navy Viking high-altitude research rockets • Air Force XB-51 developmental tactical bomber • Martin airliners • Guided missiles • Electronic fire control & radar systems • **Leaders in Building Air Power to Guard the Peace, Air Transport to Serve It.**





SPOTTING DANGER!

SAVING LIVES!

IT'S THE *Cessna L-19* BIRD DOG

America's most versatile military reconnaissance plane — specially designed and engineered for the rugged, day-to-day assignments of combat . . . battle-tested as much as 150 frontline flying hours each month . . . acclaimed by Army and Marine aviators as the really dependable light plane that has *proved* its place at the front!

And look what the Bird Dog offers: A powerful 213 HP engine, all 'round visibility, shock-resistant landing gear and high-lift flaps for easy take-offs and landings in rough terrain, *all-metal* construction, roominess and multiple-radio installations for contact with both ground *and* air units.

Yes, *all* reconnaissance aviators approve the L-19. But its biggest fan is, of course, the Infantryman. For to average GI foot soldiers, America's expanding fleet of Bird Dogs means better and more accurate battle information, easier missions and most important, fewer Purple Hearts!

We are tremendously proud of the Bird Dog's contribution to our nation's fighting power. And we hope you'll remember . . . it's a Cessna.

CESSNA AIRCRAFT COMPANY, WICHITA, KANSAS





NEW THINKING NEEDED

Our knowledge and new techniques can give the world the leadership it needs, and thereby assure our own safety.

By Thomas K. Finletter

Secretary of the Air Force

ANY REPORT about the Air Force must begin with Korea. The outstanding fact about Korea is the magnificent fighting record officers and men of the Air Force are making. This is the final product of all the effort of the Air Force.

After the destruction of the small North Korean air force, the Chinese Communists started from scratch, with Soviet aid, to build a formidable air force; and the North Korean air force was rebuilt with like aid. Starting from almost nothing in October 1950, the combined Chinese Communist and North Korean air forces achieved within a year a level of about 1,200 planes, of which 600 were jets. The increase kept on steadily. There are now approximately 2,100 planes in the Chinese Communist air force, 1,300 of which are jets, mostly MIG-15s.

So far we have maintained air supremacy not only over the battlefield, but over North Korea as well. We have been able to do this because the MIG-15 has only been used so far as an interceptor. Modern airplanes, however, are pretty flexible, and the MIG-15 equipped with wing tanks and using bases in North Korea could cause us some concern with its attacks on our front lines and logistic support.

Practically all the planes of the Chinese and North Korean Communist air forces are, as I have said, Russian-made. Moreover, there is good reason to believe that many of the pilots who have been flying the MIG-15 are other than Chinese Communists and North Koreans.

Recently the Soviets have made an important addition to their own Far East air force in the form of quite a few Soviet twin-engine jet light bombers which are roughly comparable to the Canberra and our own B-45. These bombers are built for the purposes of ground attack. They are therefore capable of serious and damaging attacks on the UN front lines and UN logistic support. These types are so far still in the Soviet air force. But if the pattern of the past is followed, there is no reason why they can't be transferred to the Chinese or North Korean air forces, thus giving them a further and important attack capability which could change the whole character of the air war.

To counterbalance this Communist threat, the decision was made in June of this year to increase the striking power of the United States Far Eastern Air Force by about fifty percent. This has been done.

Here at home, the Air Force has passed a milestone within the past year. With the beginning of the Korean war, the Army, Navy, and Air Force moved up in more or less parallel increases in strength. As the Air Force climbed from forty-eight to sixty-eight, to eighty-four, and then to ninety-five authorized wings, the increases in the other services and in their money authorizations moved up correspondingly.

This, however, was changed by decisions made last October and put into effect only recently with the Appropriation Acts for the Fiscal Year 1953. An increase of fifty percent in the number of wings—from ninety-five to 143—was approved by the Joint Chiefs of Staff and the civilian authorities, while no corresponding increases were made in the other services. This jump in Air Force strength knocked out any idea that the so-called balanced-force concept meant a roughly equal three-way division of money and everything else.

Actually, I don't think the balanced-force idea was ever intended to mean any such thing. The three-equal-parts interpretation was a distortion of the meaning which those who had coined the phrase had not intended; and it was a damaging and dangerous distortion.

Anyway, the 143-wing decision of October 1951 knocked it out—I hope for good—and the proper principle was set up—to create those forces, regardless of what service provides them, which are needed to carry out the top priority requirements of our foreign policy and of the strategic plans set forth to carry out this policy.

This 143-wing decision is therefore a milestone in the history of the Air Force. It is a recognition of the key position in military operations today of land-based airpower.

The airpower idea has been in the process of development for nearly half a century. The event we have recently witnessed represents, in effect, a national recognition of the logic tirelessly propounded by a long line of distinguished figures beginning with Billy Mitchell and carrying through Frank Andrews, Hap Arnold, Tooey Spaatz and Stuart Symington to the present Chief of Staff, General Hoyt Vandenberg.

But the work of these pioneers would have been unavailing if there had not been a fundamental force aiding them in the battle. That is the revolution in arms which is changing—or at least must change—the basic strategy and the military concepts of the past—even the most recent past—and is putting on the Air the key responsibility for the defense of the free world and the hopes of that world that atomic war can be averted.

We are now in the sweep of the greatest increase in military striking power in history. This is truly a revolution; it is not at all an evolution. This revolution is centered on atomic power. It is this revolution that plays so heavy a part in catapulting airpower into the keystone position; for in the future, atomic power and airpower are inextricably combined. It was the impact of this incontrovertible fact that finally forced the recognition of the true position of airpower in the military scheme of today.

But at the same time we must recognize that logic does not always prevail in the affairs of men; that there is a real chance that we may revert to these distortions of the balanced-force principle which we have had in the past. Or

we may fail in some other way to recognize the great importance of the control of the air and of the ability to deliver atomic weapons through that medium. This victory of air-power is not going to stay won unless it is fought for again and again.

I have been talking about the victories which airpower has had during the past year; but it is not this note that I want to emphasize. It is rather the responsibilities that we have acquired by these grants of authority, position, and money to us by the people of the country.

One specific responsibility that I would like to mention at the outset is that of command.

The United States now has commands in many areas, commands in which elements of the Army, Navy, and Air Force are represented. The United States also is part of international forces in SHAPE and in Korea. So far the command positions have been largely in the hands of representatives of other services, whether those of the United States or of some other country; for the concept is still strong that the Air is an ancillary arm and not a full partner in terms of responsibility.

This concept no longer has any relation to fact. In any future war, the Air will play a key, and in my opinion, the decisive role. Its responsibility will therefore be primary, not secondary. It follows that assignments to command must recognize these facts and that the Air of all nations, including ours, must be given their full share of command responsibility.

The most important responsibility of the Air Force, however, as it comes to full maturity, is to do some new thinking about how we are going to help our country carry out the great foreign policy on which it is embarked.

Our part in this job is to help build a military establishment which is strictly tailored to the needs of this foreign policy and is capable at minimum cost of carrying it out.

Let me be a little bit more specific. The broad lines of our foreign policy are reasonably clear. They are these: The free world sees the Soviets building up a huge military establishment; the free world must be in a position to defend itself; the free world has one great technical advantage in that the United States has an atomic capability superior to that of our possible enemies; the free world, therefore, has decided to build up a force in being centered on our advantage in atomic power which we hope will pack such a wallop that if the other fellow hits first our counter-attack would knock out his capacity to wage war; that our hope is that in the face of such a force our possible enemies will decide not to hit at all; that the United States intends to carry out its commitments in the North Atlantic Treaty; that the United States intends to carry out the commitments of the United Nations Charter to join in collective measures to suppress acts of aggression in any part of the world; and that, most important of all, the United States intends to use the time the free world will gain by this defensive posture to try to persuade our possible enemies, our allies, and ourselves, to create a foolproof system of enforceable disarmament in which no nation would possess the power to attack its neighbor and no nation would have the power to violate its agreement to keep itself disarmed.

This is a tall order. The defense officials of the various nations have to translate this general foreign policy into terms of military forces. In this, the United States defense officials have a very heavy role. And we in the Air Force have to take our full share in the formulation of the American decisions which will shape the form of the force in being.

So far we are doing reasonably well. The point is that we have to do this job superlatively well. It will not do to accept mediocre results. The results must be of a high order of wisdom.

Sometimes you hear that we can't afford to pay for the military establishment we need for our security. I don't think that is true. Our total production has more than doubled in a decade and a half; it has gone up by twenty-five percent since 1949. There is every reason to expect this expansion to continue. At present we are putting about seventeen percent of our gross national product into our security program. Yet personal consumption is as high as before the rearment program began, while the same proportions of a larger national product are still available for private investment and for civilian government services. Compared with the boom year of 1929 consumption per person is up by one-third and gross private investment by nearly two-thirds. Does that sound like an economy which can be staggered by the burden of any defense program that may prove to be necessary?

We are really trying to make the Air Force a force in which the support establishment — people, materiel, and bases — is held to the absolute minimum. We must never skimp on the forces needed to do the job. But the forces must be calculated with respect to the top priority tasks to be performed. Our drive for economy is, therefore, not only in the interest of getting things as cheaply as possible, but to be able to demand and get the kind of increased air striking power which we think is necessary.

This has to be done by all three services. There is no greater challenge to the military establishment. As the defense leaders plan the force in being they will have to be very wise. First, they will have to hold the force levels of all services and all nations down to the priority tasks which are absolutely indispensable; and, secondly, they will have to hold the support establishments down so that the whole will present a tightly tailored force.

The interests of the nation must be put ahead of the interests of any service. If an Air Force task should be eliminated from the force in being, that task must be eliminated. And the same thing goes for the other services.

Of equal importance is the fact that we must be fully alert in all services to this terrific revolution in arms. There is a great opportunity that through atomic power we can make a smaller and less expensive force than would be necessary if we had to rely upon the tactics and the strategy of previous wars. We must not prepare a force which is capable of winning the battles of World War II or World War I. We must prepare a force which is imaginatively calculated with respect to the possibilities of this incredible revolution. It makes no sense to be in the midst of the greatest revolution in military striking power in the history of man and not to aggressively embrace the idea that this must cause an equal revolution in tactics and methods.

Here is where this point about the new thinking comes in. The challenge is great; and the finger points squarely to the Air Force. It is from the Air Force that the country is entitled to expect the highest order of imagination and wisdom in helping to solve this problem.

The issue of the kind of force we are going to create is teetering in the balance, and it may very well be the leadership which is forthcoming from the Air Force which will decide it in the right way.

There is thus an enormous opportunity and challenge placed upon the Air Force in these years to come. We have said that we are definitely now mature. Now is the time to prove it and I have no doubt that we will. We now have the base from which to spring—the 143-wing force. Now is the time to apply our knowledge and our realization of all of these new techniques in such a way as to give to the free world the leadership which it needs. If this leadership is given, our country will be safe.—END

Condensed from a speech given at the AFA Convention, Detroit, Michigan, August 30, 1952

**NOW FASTAX
HIGH-SPEED
MOTION PICTURE
CAMERAS ARE
EVEN MORE
VERSATILE**



with *NEW!*

80" MIRROTEL LENS

for Sharp, Clear Studies of Distant Objects

**and COMPLETE RANGE of ACCESSORY
LENSES from 3.7mm to 80"**

The 80" f/14 and the 40" f/8 Mirrotel Lenses are special purpose telephoto lenses for making sharp closeups of very distant objects . . . 80- and 40-time magnification. Mirrotel lenses have the amazing new mirror optical system, which absorbs less light . . . is more efficient . . . has greater resolving power. Mirrotel lenses are lighter, shorter and more compact than conventional systems.

FASTAX users now have a complete range of accessory lenses . . . from 3.7mm wide angle to 80" with field of view ranging from 142° to .36°.

WRITE for more detailed information on these new wonder telephoto lenses and the world's fastest High-Speed Motion Picture cameras.

Wollensak
MEANS FINE LENSES

OPTICAL COMPANY • ROCHESTER 21, N.Y.



AIRPOWER VS THE DEAD HAND OF TRADITION

We need our Army; we need our Navy; we need our Air Force. To avoid waste, we need just one of each

By James H. Doolittle, Ex-Officio Board Member, AFA

WE HAVE experienced war to end war, not once, but twice in our lifetimes. Now there is the possibility that one more war will do the trick, that it will be three times and out.

Some of us—the luckier ones—may crawl away from the debris after it is over, but it is highly probable that there wouldn't be much left to crawl to—that the essence of our civilization, as we know it, might remain among the ashes.

We dropped thousands upon thousands of bombs in the last big war. It is now possible to conceive of a single bomb dropped from a single plane that will have the explosive power of all the bombs dropped in World War II.

The challenge facing us to prevent the use of such weapons by the gangsters of the world has all the elements of a great crusade.

Only airpower has made such a crusade possible, for only airpower contains the elements which make it practical.

Only national policy and international diplomacy based on the philosophy of deterrent airpower, and guided by a firm and consistent plan, can hope to prevent atomic blackmail as well as atomic war.

America's productive capacity was the decisive factor in the last world war, and it is still one of our greatest assets. If we tried we could soon out-produce Russia in ships and tanks and guns and planes—despite her sizeable head start. But all-out military production, over a protracted period, would eventually create serious economic problems, if not economic collapse.

Russia, I fear, would like to have us try this method and then—with oriental patience—sit back and wait for our economic roof to cave in. She can set the pace and maintain her own development and production

schedules for an all-out military effort—at a time of her selection.

We cannot afford to underestimate Russia's productive capability. The MIG jet fighter and MIG parts which we have under study in this country prove conclusively that the Russian methods of aircraft construction are on a parity with our own.

Our own productive capacity has been throttled by the fact that America has had neither a specific objective nor a sound, consistent plan. It has been wastefully speeded up and slowed down by the vagaries and inconsistencies of our national policy—and by our changing hopes and fears. Russia has accepted sacrifices and privations that we—without an objective—cannot successfully contemplate.

Our strength over the long haul must lie in the quality rather than the quantity of our weapons. We can afford to have fewer weapons than the enemy, but we can never afford to have inferior weapons.

While the military services have been giving increased emphasis to the quality of our weapons, the research and development pace is still too slow. Much valuable time has been lost by our past sins of omission. We have a long way to go to meet the military requirement.

The new defense budget does not necessarily imply a new understanding of airpower's role in our defense structure. Much of the Air Force money in the new defense budget is "catch-up money" necessary to bring it to the point where it should have been several years ago.

Waste in the military deserves not only continued investigation but a broader definition. Waste is rife in the duplicating efforts of the three services—in their assigned roles and missions—in the traditions which govern many of our military expenditures. This is a fertile field for the

waste investigator—and a vital field for the taxpayer.

Lest I be misunderstood, let me be absolutely clear—we need our Army; we need our Navy; we need our Air Force—and I mean *one* of each.

Our legislators are finding it more and more difficult to deal with the increasing scope and complexity of the airpower requirement. Congress deserves a permanent, well-qualified staff to work the year around on the defense budget.

We must strive to maintain a sense of urgency among our people. We must arrive at basic conclusions concerning the threat to freedom, and the nature of the communist aggressor. We cannot—each time the Kremlin alters its propaganda line—gyrate from apathy to crisis to apathy again without wasting our substance and impairing our security.

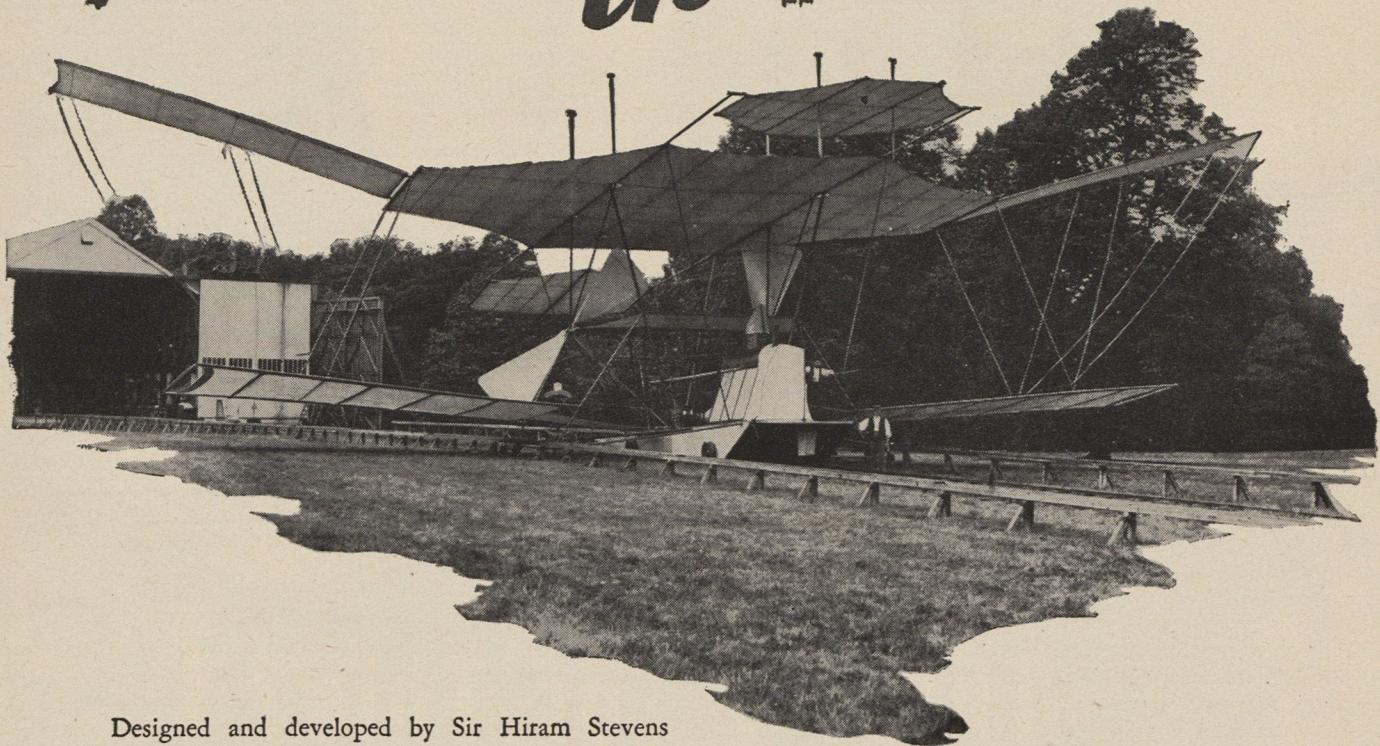
It is almost inconceivable that with about a third of the tax dollar going directly or indirectly into airpower, there is so little concern on the part of the taxpayer as to why and how this money is being spent.

Is this percentage for airpower too much—or too little? Is it based on a realistic appraisal of the military requirement, as determined by the best intelligence information available to us? Or is it based, in large degree, on traditional desires of the military, and on unrealistic compromises among the three services?

A few years ago the taxpayers were told—by highest authority—that a defense budget exceeding \$15 billion would wreck the national economy. Today these same government economists tell us we can safely absorb a defense budget more than three times that size. Other economists imply that we can't. All right. Let's argue it out. Let's get the facts.—END

Condensed from a speech at the AFA Convention, Detroit, Aug. 29, 1952

Maxim-built--in 1894



Designed and developed by Sir Hiram Stevens Maxim, this machine actually got off the ground on July 31, 1894, traveling 500 yards and reaching a maximum speed of 45 miles per hour. Each of the two 17 ft. propellers was driven by a 150 H.P. steam engine. With a wing surface of 5400 square feet, the total weight of the machine including 600 lbs. of water and 200 lbs. of naphtha, was 8000 lbs. A copy of the rare photograph above (without any advertising message) will be sent on request.

The Maxim interest in aviation has continued to this very day. At right is shown a Maxim Silencer

eliminating the roar of a jet engine during run-up tests at the Lockheed plant in Burbank, California. If you have a problem of silencing, you will save time and money by consulting our engineering and research departments.



Consult

MAXIM

DR.
SHUSH



THE MAXIM SILENCER COMPANY
103 HOMESTEAD AVE., HARTFORD 1, CONN.

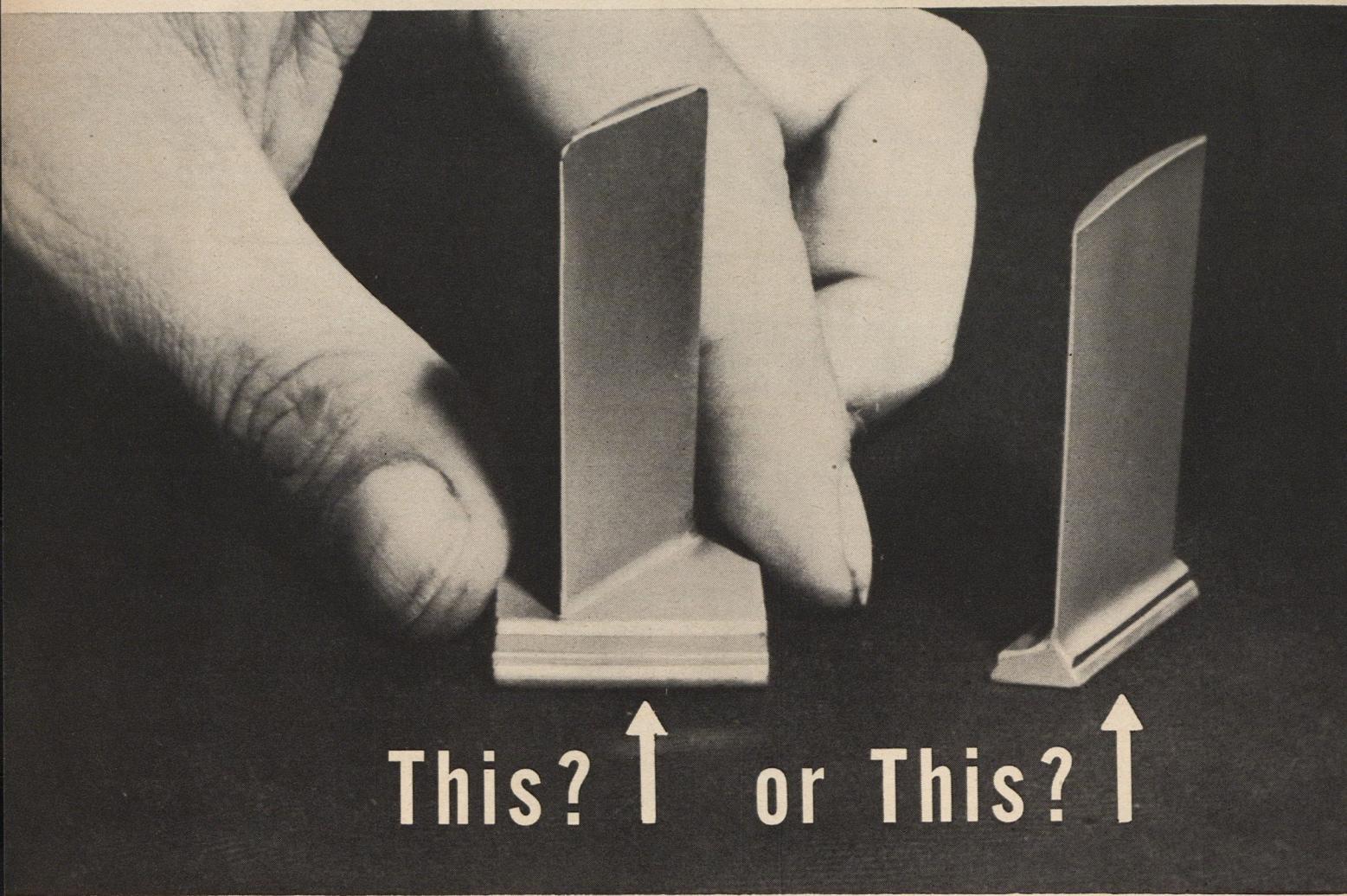
Gentlemen: Please send me more information on jet engine silencing.
 Please send me a copy of the early airplane photo.

NAME _____

COMPANY _____

ADDRESS _____

Which One Will Save a Million Dollars?



Three years in the making, the fabricated jet engine compressor stator blade (left) promises to save the armed forces not just one million, but millions of dollars annually in jet engine costs, compared with the forged blade (right). This new G-E development will cut manufacturing cost in half and save over a third in critical materials. Military approval has been received for the use of fabricated blades in the General Electric J47-GE-23 which powers the Boeing B-47 Stratojet bomber. And G.E., through the United States Air Force, is sharing the process with other turbojet manufacturers.

The blades are rolled in long strips, contoured to the proper air foil, and cut to desired length. Each blade is then welded into a separate base which fills the same

area as the "blade ring" used with forged blades. Thus the ring and an expensive manufacturing and assembly process have been eliminated.

Endurance tests on two engines equipped with the fabricated blades proved them just as efficient as forged blades. The base provides greater resistance to vibration due to uneven airflow through the compressor. Damage caused by foreign objects entering the compressor is minimized because the new blade is fastened much more strongly to the casing.

A product of G-E research at the Thomson Laboratory in Lynn, Mass., this new method of manufacturing stator blades is another of the many ways in which G.E.'s constant pioneering contributes to the advancement of aviation. General Electric, Schenectady 5, N.Y.

210-29

You can put your confidence in—

GENERAL  **ELECTRIC**

UNDER THE A-BOMB SHIELD

IT NOW SEEMS inevitable that another general war would be marked in its opening phases by attacks and counterattacks of unprecedented destructiveness. The immediate aim of the opposing sides would almost certainly be to destroy each other's prime war-making resources. Given the likely supply of fissionable material available to each side, and the destructive nature of air warfare, this phase may be over in a few months, possibly in a few weeks.

What would then ensue is a matter of conjecture—nobody really knows, and history offers no precedent. One side might be hurt so badly that capitulation would follow. Certainly widespread disruption of organized activity would occur, possibly more on one side than the other, and the second stage—if there should be a second stage—would probably witness on both sides a slow and painful gathering together of the remnants of strength in preparation for renewing the blows.

But as to the crucial importance of the opening phase there can be little question. A nation that now should lose the opening phase would almost certainly lose the war. Hence the over-riding importance of "readiness forces." The guiding principles of the Air Force since the end of the last war have been designed to give effect to these new realities.

So during the lean years after 1945 we concentrated our limited resources on the development of deep-in air striking forces. More recently, as Soviet military development has emphasized long-range atomic striking forces, we have strengthened the defensive aspects of the Air Force. Our margin of advantage is calculably thin, but we were determined to avoid the one fatal error—the error of being unable to deliver the superior stockpile of fissionable material which was and remains our principal military advantage.

The fact that the Soviet Union is now in possession of the atomic bomb, and that it is now assembling its own long-range striking force, does not seem to me to foreshadow the loss of the deterrent value of our atomic and air advantage. It only means that the atomic threat will soon be in both hands—theirs and ours. That condition is all right with us—we stand for peace. If, however, our communist enemies should be tempted to use

The deterrent weapon we now possess is an alternative to pyramiding armaments that could bring us to ruin

By Gen. Hoyt S. Vandenberg

Chief of Staff, United States Air Force



this same weapon against us, it will not save them from terrible punishment, and for an important reason.

Heretofore, many thinkers have measured the significance of the A-bomb in terms of the relative number of bombs in the opposing stockpile. But *numbers* are significant only in combination with effective delivery capacity—in terms of the ability to put a decisive number of bombs on the most critical targets without incurring prohibitive losses. Our major delivery force, which is the United States Air Force, must be adequate to this task.

The Air Force worked diligently and tirelessly to this end. It is doubtful if any other military force in history has ever undergone in peacetime such rigorous training or enjoyed such close and fruitful association with science. We are convinced that the means do not now exist for stopping an American atomic counteroffensive—nor are such means likely to appear in the near future.

I say this in no spirit of complacency. We are caught up in a ferment of change brought on by the technological revolution. It therefore behooves us to press on hard with research and development. I stress this point for a particular reason. In recent months there has been considerable discussion about the increasing complexity of combat aircraft. That this trend should be restrained, I am quite willing to concede. But let us not delude ourselves that fleets of cheap, "hot rod" airplanes will bring the economy we all desire. The right

solution lies, not in masses of relatively cheap and simple aircraft, but in the careful choice of the aircraft most effective for the jobs that must be done.

We of the Air Force have never claimed that airpower, in alliance with mass destruction weapons, could decide a war alone.

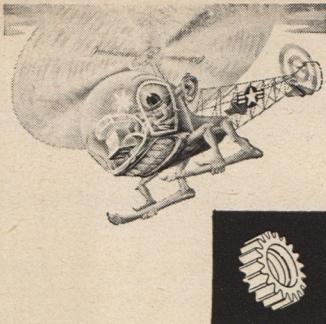
But perhaps we have underestimated the inherent capability of the atomic weapon. Heretofore, the prevailing tendency has been to think of it exclusively as a weapon against only the largest and most extensive targets. But new designs of atomic weapons are being developed to permit their economical use against a wider variety of targets and greatly to increase their efficiency and their effectiveness.

This would seem to establish two highly significant conditions. Condition One: The deterrent value is being compounded. Condition Two: The way is being cleared for a new kind of planning that may yet save us from a costly reenactment of the basic strategy of the previous world wars, with division being piled upon division, gun upon gun, ship upon ship, and plane upon plane.

I do not mean to suggest that any of the traditional military forces are now dispensable. The world is a vast jigsaw puzzle and different pieces are obviously needed for different places. What I am suggesting is that these other military forces, as well as the Air Force, must be shaped to specific strategic tasks.

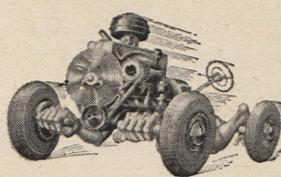
But let us not neglect the priceless deterrent weapon now in our possession. It is an alternative to a strategy of pyramiding armaments that prolonged through the years might bring many of the nations of the West to ruin. It is a shield under cover of which this nation can press forward with other great projects looking toward the peaceful reconstruction of the world.—END

Condensed from a speech at the AFA Convention, Detroit, Aug. 29, 1952



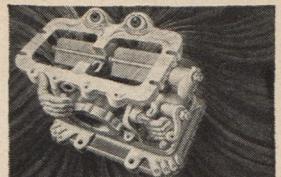
**Ever see a helicopter
grit its teeth?**

When this helicopter's giant blade spins, tiny two-inch Lycoming gears—machined to tolerances of 1/10,000 of an inch—carry the load!



"Sinews" to give cars "go"

For any or all engine parts—pistons, transmissions, crankshafts and other essentials that can "take it"—leading auto manufacturers look to Lycoming.



**Watch a plane's "lung"
take a deep breath**

To inhale 30,000 pounds of air an hour, an engine needs good lungs—the Lycoming fuel-injection body that never leaks or coughs at any speed or altitude.

**AMERICA'S
LEADERS
LOOK TO
LYCOMING**

**AIR MATERIEL
COMMAND**

**BEECH AIRCRAFT
CORPORATION**

**BELL AIRCRAFT
CORPORATION**

**BENDIX AVIATION
CORPORATION**

**CESSNA AIRCRAFT
COMPANY**

**CHEVROLET-AVIATION
ENGINE DIVISION**

**DETROIT TRANSMISSION,
DIVISION OF
GENERAL MOTORS**

**DOMAN HELICOPTER
COMPANY**

**FORD MOTOR
COMPANY**

**GENERAL ELECTRIC
COMPANY**

**INTERNATIONAL BUSINESS
MACHINES CORPORATION**

**NAVY BUREAU
OF AERONAUTICS**

**OTIS ELEVATOR
COMPANY**

PHILCO CORPORATION

**PIPER AIRCRAFT
CORPORATION**

**PRATT & WHITNEY
AIRCRAFT**

**RYAN AERONAUTICAL
COMPANY**

**SYLVANIA ELECTRIC
PRODUCTS, INC.**

**WESTINGHOUSE
ELECTRIC CORPORATION**

**WRIGHT AERONAUTICAL
DIVISION**

LYCOMING PRESENTS



For a more complete story
on Lycoming write—
on company letterhead
—for the booklet
"Let's Look at Lycoming."

a representative group of its achievements considered of outstanding importance by America's military and industrial leaders

Here, through the eyes of a leading American illustrator, Lycoming demonstrates how it is geared to meet the most exacting requirements of America's leading industries. From basic research to precision and volume production, Lycoming offers a versatility of skills, extensive facilities and well-rounded experience. Whatever your problem—look to Lycoming!

AIR-COOLED ENGINES FOR AIRCRAFT AND INDUSTRIAL USES • PRECISION-AND-VOLUME-MACHINE PARTS • GRAY-IRON CASTINGS • STEEL-PLATE FABRICATION

LOOK TO

LYCOMING FOR RESEARCH
FOR PRECISION PRODUCTION

LYCOMING-SPENCER DIVISION
BRIDGEPORT-LYCOMING DIVISION

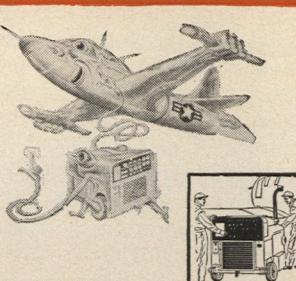


WILLIAMSPORT, PA.
STRATFORD, CONN.



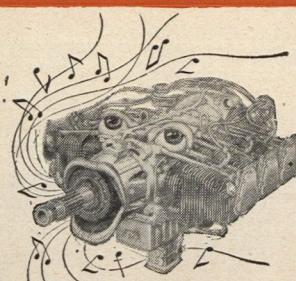
**There's a new "beat"
in this eagle's heart**

Ready *reserve power* is an outstanding advantage of this sturdy new Lycoming aircraft engine—the only 400-horsepower air-cooled model produced today.



Hot "juice" for cold jets

This light, compact, portable Lycoming generator provides dependable all-weather starting power for jets—from 135° above to 65° below F.!



Its "song" fills the air

For dependable air-cooled engines in a wide horsepower range, many of the nation's leading aircraft manufacturers look to Lycoming!

ILLUSTRATIONS BY ARTZYBASHEFF



MUSCLES...

where
you need
them

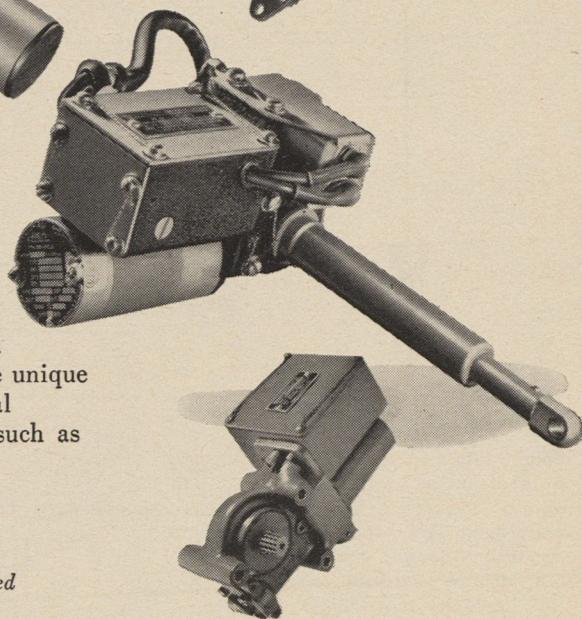
**AiResearch actuators are
small in size...big in power!**

For more than a decade AiResearch actuators have met the operating requirements of every U. S. military and commercial aircraft. They combine top performance with the utmost in dependability.

AiResearch is now producing more than 292 different actuators for specific uses. They meet *every* military specification. Major characteristics are wide operational ranges in temperature, light weight, and long life. Each type of unit has the unique ability, proven in AiResearch laboratories, to withstand 17 critical environmental conditions of flight. Other unique design features, such as integral motor brakes and torsion bar positive stops, have made AiResearch actuators the leading performers in this field.

AiResearch invites you to submit your special engineering problems for our consideration.

Would you like to work with us? Qualified engineers, scientists and skilled craftsmen are needed now at AiResearch in both Los Angeles and Phoenix.



AiResearch Manufacturing Company

A DIVISION OF THE GARRETT CORPORATION

LOS ANGELES 45, CALIFORNIA • PHOENIX, ARIZONA

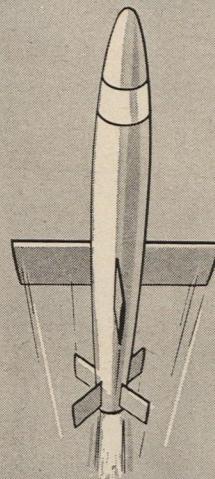
AiRESEARCH—specialists in the design and manufacture of aircraft accessories in the following major categories: air turbine refrigeration • cabin superchargers • gas turbines • pneumatic power units • electronic controls • heat transfer equipment • electric actuators • cabin pressure controls and air valves

We've been solving automatic control problems

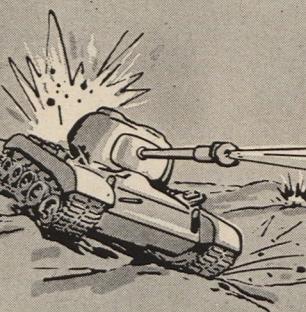
for 37 years



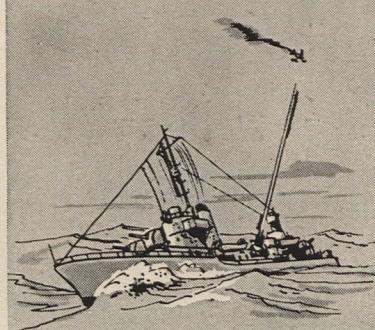
Knowing your whereabouts under all circumstances



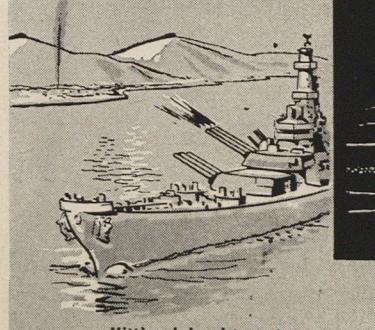
Controlling guided missiles in flight



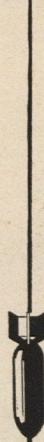
Stabilizing the guns on bouncing tanks



Shooting down jet planes from the unstable decks of ships



Hitting inland targets from battleships



An opportunity for able engineers

Build a future for yourself as an engineer at Ford. If you qualify there's a lifetime opportunity on automatic equipment design with the top name in automatic control. Write for our informative, illustrated brochure.

Take one part of the fantastic, mix thoroughly with Ford's engineering and production ability, and you've got the answer to another "impossible" automatic control problem. That has been the sum and substance of the Ford Instrument Company since 1915.

Stabilizing a gun on a bouncing tank or a ship's plunging deck; governing the unique movement of a torpedo; keeping a pilot informed of his whereabouts at all times and in all weather — Ford found the answer!

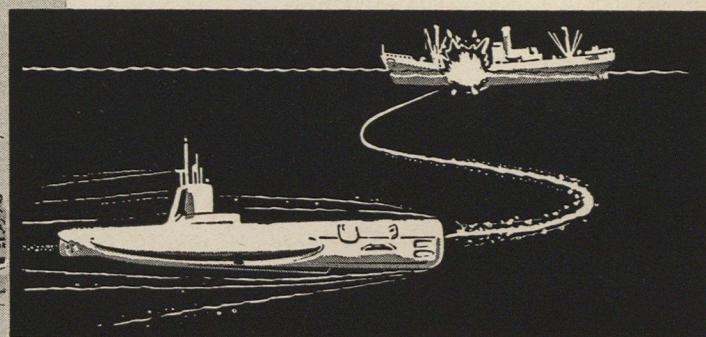
From the more than 16 acres of floor space that make up the engineering and production facilities of the Ford Instrument Company, come the mechanical, hydraulic, electro-mechanical and electronic instruments that bring us our "tomorrows" today! Research, development, design and production are being applied to control problems of both Industry and the Military.



FORD INSTRUMENT COMPANY

DIVISION OF THE SPERRY CORPORATION

31-10 Thomson Avenue, Long Island City 1, N. Y.



Directing torpedoes against surface crafts

AIR PREPAREDNESS SYMPOSIUM

Highlight of the AFA convention in Detroit was the panel of experts in ten fields who openly discussed the problems confronting airpower preparedness today

Here are pertinent quotations from the speeches of each of the Symposium participants. The panel discussion was moderated by Thomas G. Lanphier, Jr., retiring chairman of AFA's Board.

DETROIT MANAGEMENT

John F. Gordon

Vice President, General Motors Corporation

A stable economy requires also that its civilian sector be permitted to maintain the highest possible productivity of commercial goods within the limits of defense program requirements. This presupposes national policies that will stimulate, rather than restrict, the output of useful goods. . . . The country has not been following such policies. . . .

We are not an integral part of the aviation, the ordnance, or the electronics industries. Rather, we think of our productive capacity as a great industrial reserve which is able to augment those industries when the need arises for large increases in the types of units which are normally theirs to manufacture. . . .

This nation is perhaps unique in that it has never supported an armaments industry in the sense that most foreign countries have. Our people have always been preoccupied with the pursuits of peace. They have never countenanced a costly defense establishment except during times of national danger, but I believe that most of our people now realize that this nation must not forget defense even in times of peace.

LABOR

Walter P. Reuther

President, United Auto Workers

We must prove to millions of people throughout the world who look to us for hope and inspiration and leadership that America is not only a great economic and military power, but



that we have the moral strength and the sense of social responsibility to insure the intelligent and constructive use of our great material resources. . . .

The management of the aircraft industry proper is a primary exhibit of one of our failures in social and moral responsibility. . . .

Our union has been dealing with the aircraft industry over a period of years, during peacetime, wartime and times of national emergency like the present. We have found nearly always the same story from management. . . . During wartime and times of emergency, when the industry is feeding off the fat goose of military contracts and guaranteed profits, management hides behind a smoke-screen of false patriotism to evade meeting its responsibilities to its employees. During peacetime, when the industry's pickings are lean and when the employees' collective bargaining power is weakened by layoffs and cutbacks, management still fights against the legitimate demands of its workers for wages and working conditions that will give them a decent standard of living. . . .

The result has been that the management of the aircraft industry is socially one of the most backward managements in America, and their attitude has been a retarding factor in the full mobilization of our productive capacity in the aircraft industry.

U. S. NAVY

The Hon. John F. Floberg

Assistant Secretary of the Navy for Air

Our production problems have been for the most part the same as those that have faced the Air Force. We have had recurrent cycles of machine tool shortages, materials bottlenecks, manpower difficulties, and component availability, but above all our major difficulties have been, and will probably continue to be, of an engineering nature.

The fact is not surprising when one stops to think that we are in a world of entirely new parameters of flight developed since the end of World War II. Sonic and supersonic speeds, strato-



spheric altitudes, new theories of propulsion, new armaments, new electronics, have all contributed to the astronomical increase in performance and military capabilities of service aircraft compared to those of the last war—and they have contributed proportionately to the difficulties of development and manufacture.

Regardless of these difficulties, however, we have to have the performance and the capabilities; those requirements are established as much by potential enemies as by ourselves, and so we are going to plug ahead and lick the engineering problems which have contributed to so many delays over the past couple of years. . . .

I think we are going pretty well. I pray that no new major roadblocks lie ahead. . . .

However, let me assure you that aircraft capable of the job which we are today asking aircraft to perform will never be paragons of simplicity. If our aircraft have to be complex in order to perform their missions, then make them complex; but . . . let's also try to reduce the complexities as much as possible.

U. S. ARMY

The Hon. Karl R. Bendetsen
Under Secretary of the Army

The Army is embarked on a broad program to build up its own organic aviation. This expansion does not mean that the Army is seeking to take over the functions which it voluntarily relinquished with the passage of the National Security Act of 1947. This same act authorized the Army the organic aircraft required to discharge its primary responsibility in the field of land combat. . . .



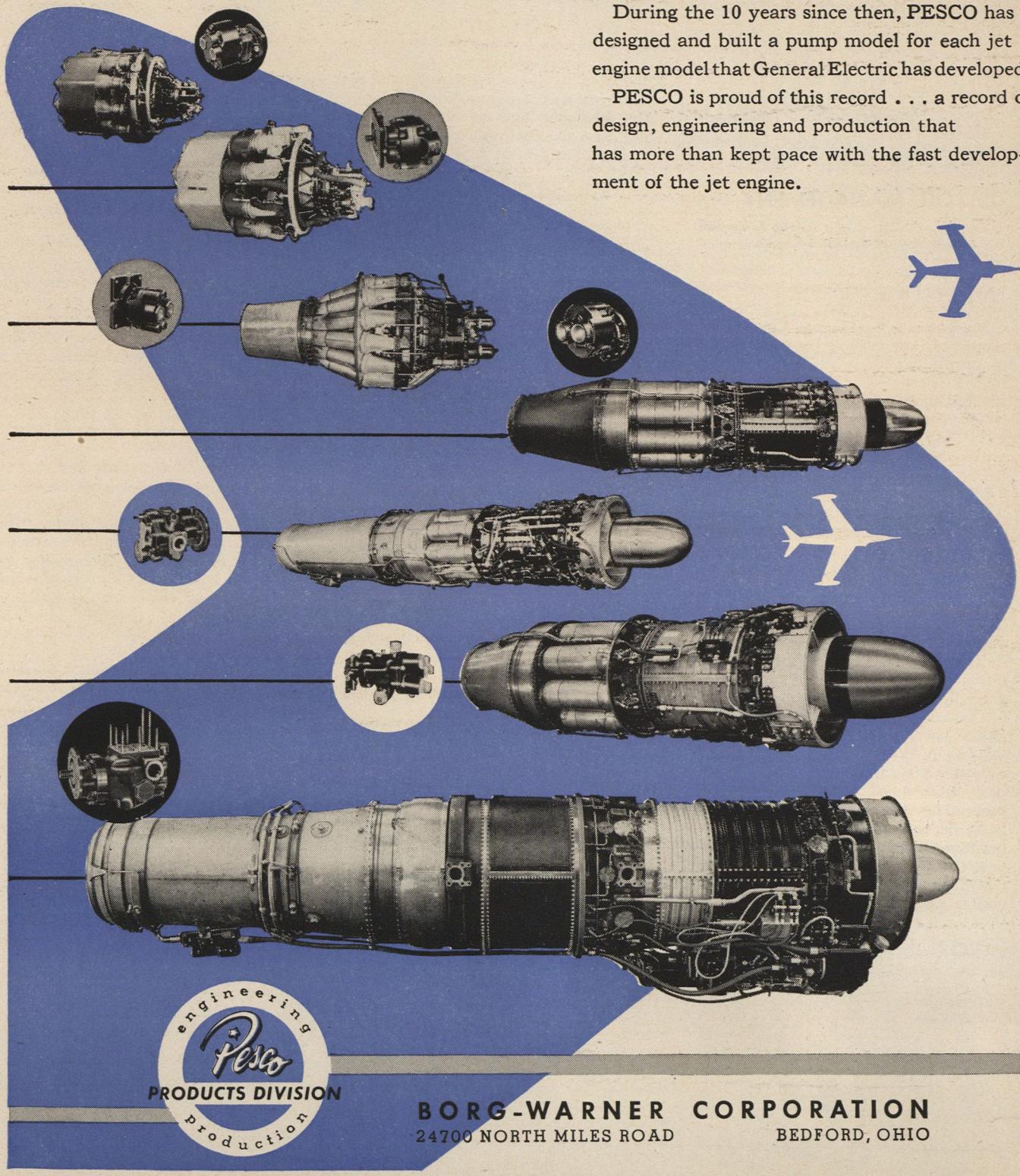
Fathered by the necessities of the Korean conflict, the Army aircraft program is today of major importance. . . .

The Army recognizes that the primary efforts of the Air Force and of the Naval air arm must be directed toward the development and procurement of combat aircraft. Nevertheless, the Army, as the primary customer for airlift, must con-

(Continued on page 46)

It's been a fast 10 years for PESCO too!

**...keeping up with G. E.
Jet development**



When General Electric completed America's first aircraft jet engine in 1942, and jet-powered flight became a reality, a PESCO fuel pump made certain that it was fed all the fuel it needed.

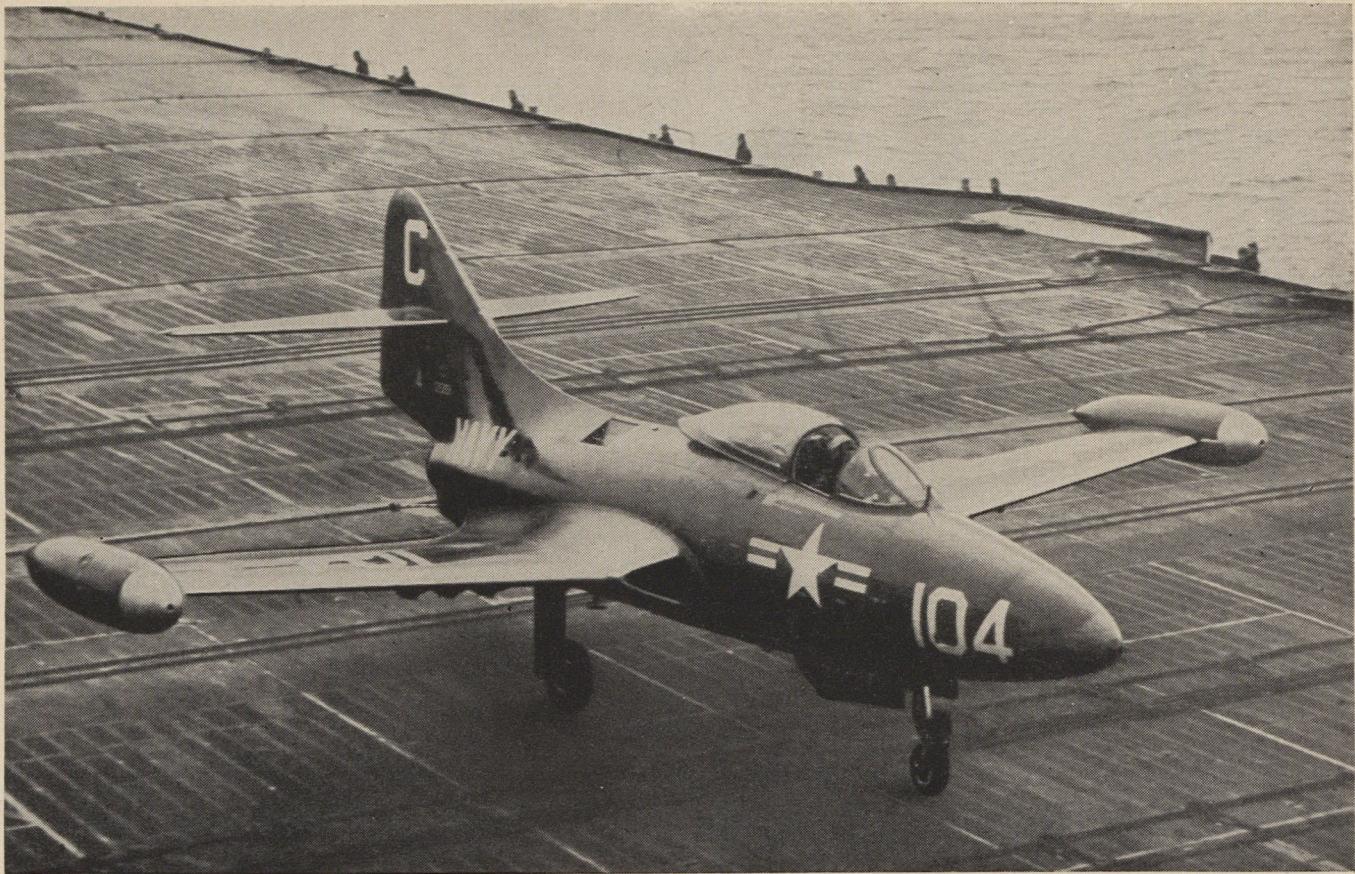
During the 10 years since then, PESCO has designed and built a pump model for each jet engine model that General Electric has developed.

PESCO is proud of this record . . . a record of design, engineering and production that has more than kept pace with the fast development of the jet engine.

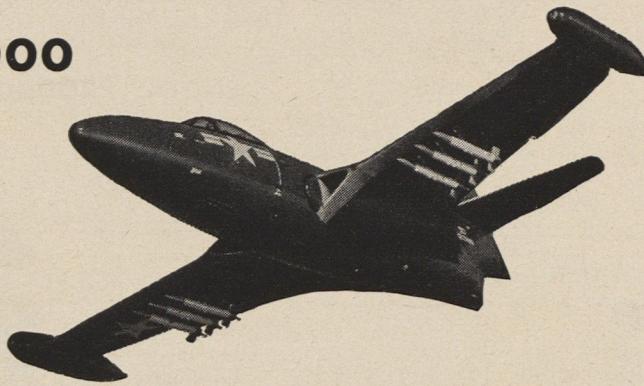


BORG-WARNER CORPORATION
24700 NORTH MILES ROAD

BEDFORD, OHIO



**Landing number 39,000
for the first
in the fight!**



It was no coincidence that the 39,000th plane to come to a stop in the U. S. S. Midway's arresting gear was a F9F PANTHER. These battle-proved fighters, first Navy jets to see combat in Korea, have been taking off and landing on this big carrier's deck for over two years. That the once spectacular is now the commonplace reflects Navy and Marine Corps skill and teamwork... plus the inherent ruggedness and dependability of the GRUMMAN PANTHER.

GRUMMAN AIRCRAFT ENGINEERING CORPORATION, BETHPAGE, LONG ISLAND, N. Y.

Contractors to the Armed Forces

SYMPOSIUM

CONTINUED

tinue to press for the transport aircraft needed to meet its requirements, both quantitatively and qualitatively. . . .

The Army is still not completely satisfied with the assault aircraft from which its airborne units enter combat. It would like to see expedited development of the convertiplane, a plane which combines the vertical ascent and descent features of the helicopter with the horizontal flight characteristics of the fixed wing aircraft. . . .

We must weigh carefully the pressing requirements of the cold war today, as well as the projected requirements of the always possible hot war tomorrow, and allocate our national resources accordingly. For both, I am convinced we must have a carefully balanced program of land, sea, and air forces.

U. S. AIR FORCE

The Hon. Roswell L. Gilpatric
Under Secretary of the Air Force



Congressional action on the Air Force FY '53 budget, with its provision for financing average lead time of two years for aircraft manufacture, has placed the Air Force in a position to extend to the aviation and its supporting industries a relatively firm basis for scheduling production over the next three years. . . .

The greatest peril faced by our program and by industry is the repetition of a process euphemistically called reprogramming. Whether reprogramming is due to an increase or decrease in force levels or a change in force composition, the effect is the same, namely, to set back the Air Force buildup and to unsettle industry. . . .

Among the causes for frequent reprogrammings over the past two years is that of rising costs. They form a vicious circle, for they feed upon themselves. . . .

It therefore behoves both the Air Force and the industry to hold down the costs of aircraft and related equipment. To a large extent, unfortunately, those costs are not within our control. Increased labor rates and higher material prices are something that neither you nor we can do much about. But we can do a better job of management. . . .

To achieve a real economy in our security program will entail far greater selectivity in military forces and weapons than has ever before been attempted—far less accomplished. The policy decisions implicit in that process are not the sole responsibility of either the Air Force or the aircraft industry, but each of us will have some part in those decisions and will be substantially affected by the results. All of us must therefore approach the future with a sharper sense of the

seriousness of the problems that lie ahead, while at the same time allowing ourselves some satisfaction out of what has been accomplished up to now.

RESERVE FORCES

Lt. Gen. Leon W. Johnson
Commanding General, Continental Air Command

To maintain an effective Reserve, in the light of modern weapons, requires personnel of many specialized skills. . . . The limited manpower of the nation makes it mandatory that the military training and the maintenance of acquired skills be recognized as duties of citizenship and interwoven with an individual's economic and social pursuits. . . .

The partnership between industry and the Reserve is now very widely recognized. . . .

We are going to be living with each other—industry and the Reserve—for the foreseeable future. Let's remove any source of incompatibility. . . .

We earnestly seek your assistance—in turn we have a responsibility to you. Our part in the partnership is to work out plans and policies to assure you that we recognize your problems and are organizing our training calls upon our Reserve to cause you the least possible disruption because of their military obligation.

ENGINE PRODUCTION

Roy T. Hurley
President, Curtiss-Wright Corporation

In order to maintain supremacy in airpower, we must have aircraft engines, including carbureted or fuel injection reciprocating engines, compounded for fuel economy for use in helicopters, utility airplanes, search airplanes, medium and long-range transports, with possible speeds up to 500 miles an hour. Next, the turboprop engines for high speed, long-range transports and bombers. Next, the turbojet engines for interceptors, fighters and medium-range bombers. Next, the ramjets for high speed interceptors and missiles, and rocket engines. . . .

The art of making these new engines is, in many respects, unexplored. The turbojet engine found industry without the machines or tools for the manufacture of large diameter, lightweight rings of corrosion-resisting alloys. The industry was not prepared to assemble thin sheet metal stampings and forms into large assemblies, welded together, maintaining close tolerances for over-all



dimensions of complex structures.

It is of little avail to subject the Air Force to unjust and unfair criticism for not having jet engines available, if they are forced to operate under a pricing and facilities program which in turn does not permit industry to operate on a sound financial basis. . . . Let us form a strong Air Force-Industry Team based upon a mutuality of interest, integrity, and respect.

COMPONENTS

Malcolm P. Ferguson
President, Bendix Aviation Corporation

From the standpoint of engineering and responsibility of performance, it is impossible to separate the development and performance of the airframe and the aircraft engine from its necessary components. . . .

I have three recommendations. . . .

First—standardization. If we do not achieve greater standardization it will be impossible to have anything that can properly be called mobilization preparedness. . . .

Second, the need for *cooperative planning*, as such. As lead times increase, the manufacturing and tooling problems of component manufacturers increase sharply, for these are what make lead times. We need a better understanding of performance requirements and engineering cooperation during development and pre-production, and of the benefits of mutual inspection procedures and similar test equipment. . . .

Third, I would emphasize the tremendous need we see that something be done about the awesome complications of specifications. . . .

Finally, it is not inappropriate, I believe, to be mindful of the cost of what we are doing. I do not mean the actual price tag on an individual component, but the price of all that lies behind it.

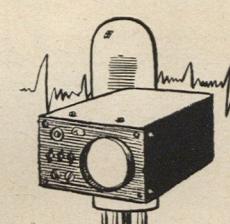
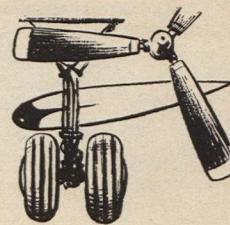
ELECTRONICS

Ira C. Eaker
Vice President, Hughes Aircraft Company

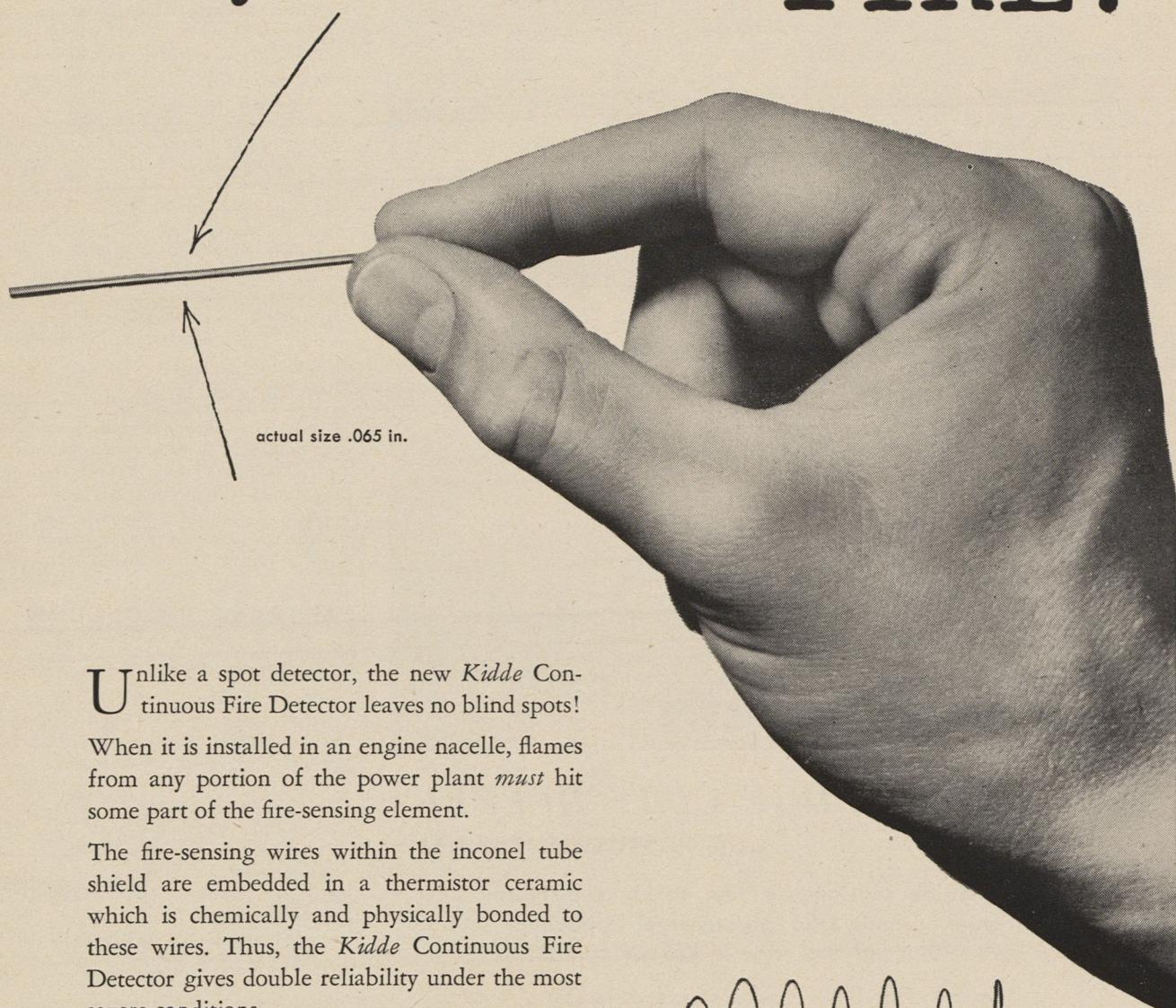
It is well, I think, at this point to consider the nature of some of the electronics gear needed for modern warfare. In military electronics equipment, we have probably the highest complexity per pound, and the largest percentage of newness of any kind of military equipment. . . .

There has been a considerable worry, I know, among the combat leaders in

(Continued on page 48)



...the tiny wire that screams FIRE!

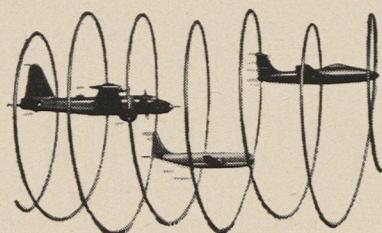


Unlike a spot detector, the new *Kidde* Continuous Fire Detector leaves no blind spots!

When it is installed in an engine nacelle, flames from any portion of the power plant *must* hit some part of the fire-sensing element.

The fire-sensing wires within the inconel tube shield are embedded in a thermistor ceramic which is chemically and physically bonded to these wires. Thus, the *Kidde* Continuous Fire Detector gives double reliability under the most severe conditions.

The result is that in over 2,000 hours of actual flight tests there is not one report of a false alarm, although several fires were detected.



the new **KIDDE** continuous fire detector permits
NO BLIND SPOTS...
NO FALSE ALARMS

Kidde

Walter Kidde & Company, Inc.
1012 Main St., Belleville 9, N. J.

The word "Kidde" and the Kidde seal are trade-marks of
Walter Kidde & Company, Inc. and its associated companies.



In Canada: **Walter Kidde & Company of Canada, Ltd., Montreal, P. Q.**



SABRE JET'S EDGE CUTS DEEPER ... with PASTUSHIN TANKS!

Pastushin-made jettisonable fuel tanks give North American Aviation's F-86 greater fuel capacity... help give it that fighting edge in Korean combat.

AIRCRAFT FUEL TANKS • SEATS • LANDING FLAPS
AILERONS • TAIL SURFACES • BOMB BAY DOORS

PASTUSHIN AVIATION
CORPORATION
5651 West Century Boulevard • Los Angeles 45, California
LOS ANGELES INTERNATIONAL AIRPORT, LOS ANGELES, CALIFORNIA



DECALCOMANIAS

WINDSHIELD IDENTIFICATION

Numbered Air Forces
Air Bases
Commands
Wings
Groups

Souvenirs • Flight Jackets • Helmets
Planes • Foot Lockers • Luggage, etc.

Squadrons
Reserve Units
Overseas Units
National Guard Units
Base & Service Units

SAVE—BUY DIRECT—
(Minimum order—500 pieces)

ABLAZE DECAL COMPANY

17 East 42nd Street, New York 17, N. Y.

SYMPORIUM CONTINUED

the Armed Services that the extreme complexity and miniaturization of the modern electronic device would make maintenance in the field difficult, if not impossible. Apparently it is not working out that way.

Not long ago, a maintenance record was kept in a combat squadron in the field equipped with a late type airplane, employing some of the most modern electronics devices. In this interceptor squadron, where thousands of hours of flying time were logged, it was found that approximately fifty percent of the maintenance hours of the mechanics was devoted to the airframe and engine, twenty-two percent to armament maintenance, and only twenty-one percent to the complex electronics fire control system, including radar and gunsight....

The electronics feature of any weapon is a system, and not a collection of components. All electronic components are interdependent and inter-related, and the whole system must, if it is to be successful, be developed for a particular missile or plane by the same laboratory and group of scientists and technicians.

AIRFRAME PRODUCTION

Mundy I. Peale
President, Republic Aviation Corporation

All of us in the industry are proud of the production records we have achieved. But behind the production line is another broader field in which there is need for greater coordination and cooperation. That is research — scientific research, used in the broadest sense....



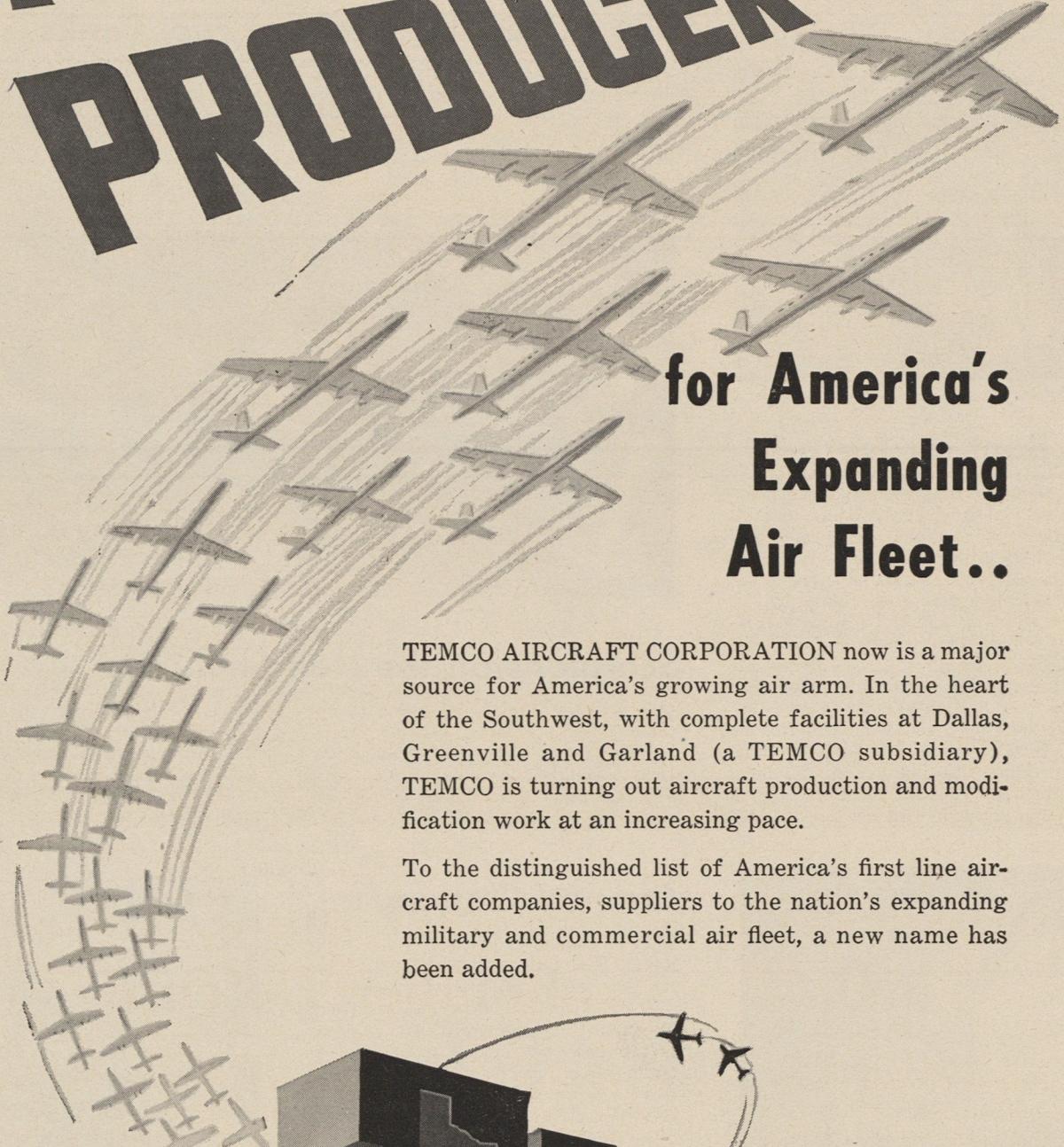
Looking at the future of the aircraft industry and airpower from the airframe manufacturer's point of view, there are . . . fields in which there is a great current need for concentrated research.

The first is in the field of engine design. If we are to have more speed, we must have more power. Engine manufacturers are working in this direction.

The second field for concentrated research is in production methods — and product engineering is included under this category.

For the aircraft industry itself to shoulder an increased load of research and development programs, it would have to spend millions of dollars on buildings and equipment, and it would have to hire and train thousands of new engineers—engineers who simply do not exist because of the “feast and famine” treatment of airpower in the postwar period. Here is a real problem. It involves the appropriation of funds by the military services, the metal producing companies, and the aircraft industry—and the determination of the risks involved so long as there is no assurance of a consistent level of business.—END

A MAJOR PRODUCER



for America's
Expanding
Air Fleet..

TEMCO AIRCRAFT CORPORATION now is a major source for America's growing air arm. In the heart of the Southwest, with complete facilities at Dallas, Greenville and Garland (a TEMCO subsidiary), TEMCO is turning out aircraft production and modification work at an increasing pace.

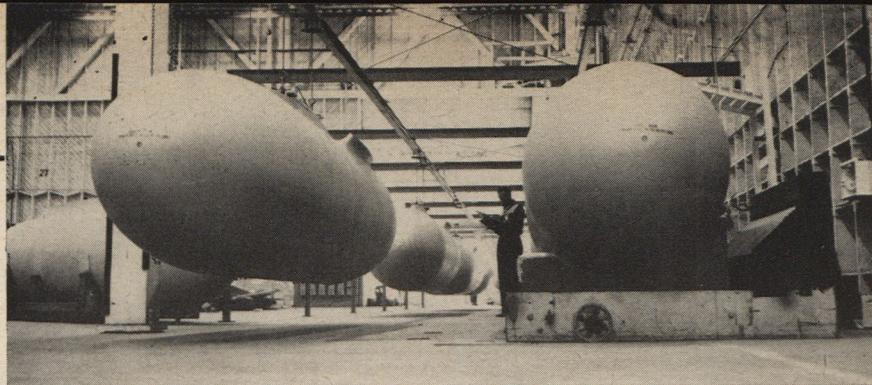
To the distinguished list of America's first line aircraft companies, suppliers to the nation's expanding military and commercial air fleet, a new name has been added.





A Boot for Ice

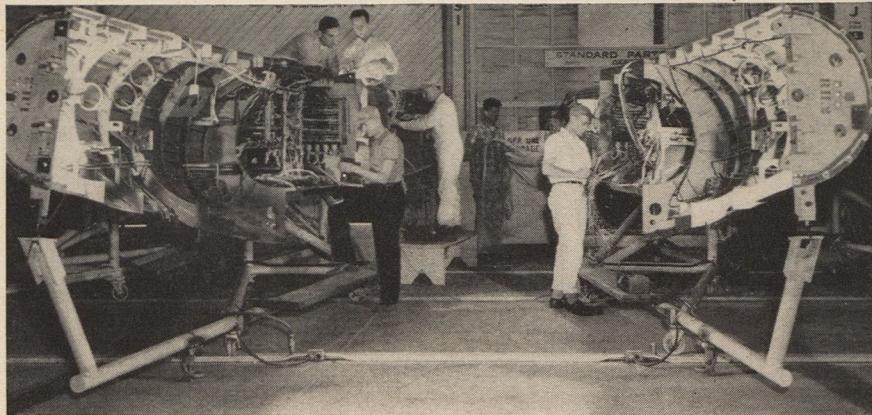
All Dagwood sandwiches aren't ham, cheese, and fried egg combinations. A sandwich of aluminum, copper, silver, and plastic is helping whip ice problems on the wings of F-94 Starfires. The rivetless de-icing boots replace rubber equipment on wing and tail leading edges. They're heated electrically and can take up to 75 watts per square inch, though the normal load is two-second jolts of 40 watts every couple of minutes. Advantages are these: aerodynamically clean construction, quick response, uniform temperature distribution, and elimination of water runback and refreezing, a common problem with hot air systems.



Slip Covers for External Fuel Tanks

Though Ryan's big aircraft fuel tanks are built with more than 30,000 invisible spot welds, their skins still aren't slick enough for high speed flight. So paint designed to cover tiny surface variations is used. First, a coat of thinner and alco-

holic phosphoric acid solution provides a surface for the primer — a coat of zinc chromate. This makes a slightly acid base for the final coat, a synthetic rubber-base compound. Hand-rubbing finishes the job of slick slip-covering.



Scorpions on the Half Shell

One gimmick used by Northrop to up production of F-89 all-weather interceptors is this "half-shell" technique. Here assemblers install plumbing, wiring, and other gear simultaneously on two separate sections of the twin jet.

Later, the two halves will be joined in "sew up" fixtures. The new D model of the Scorpion carries a load of 2.75-inch air-to-air rockets in wing tip pods. The rockets replace six 20-mm cannon on earlier versions.



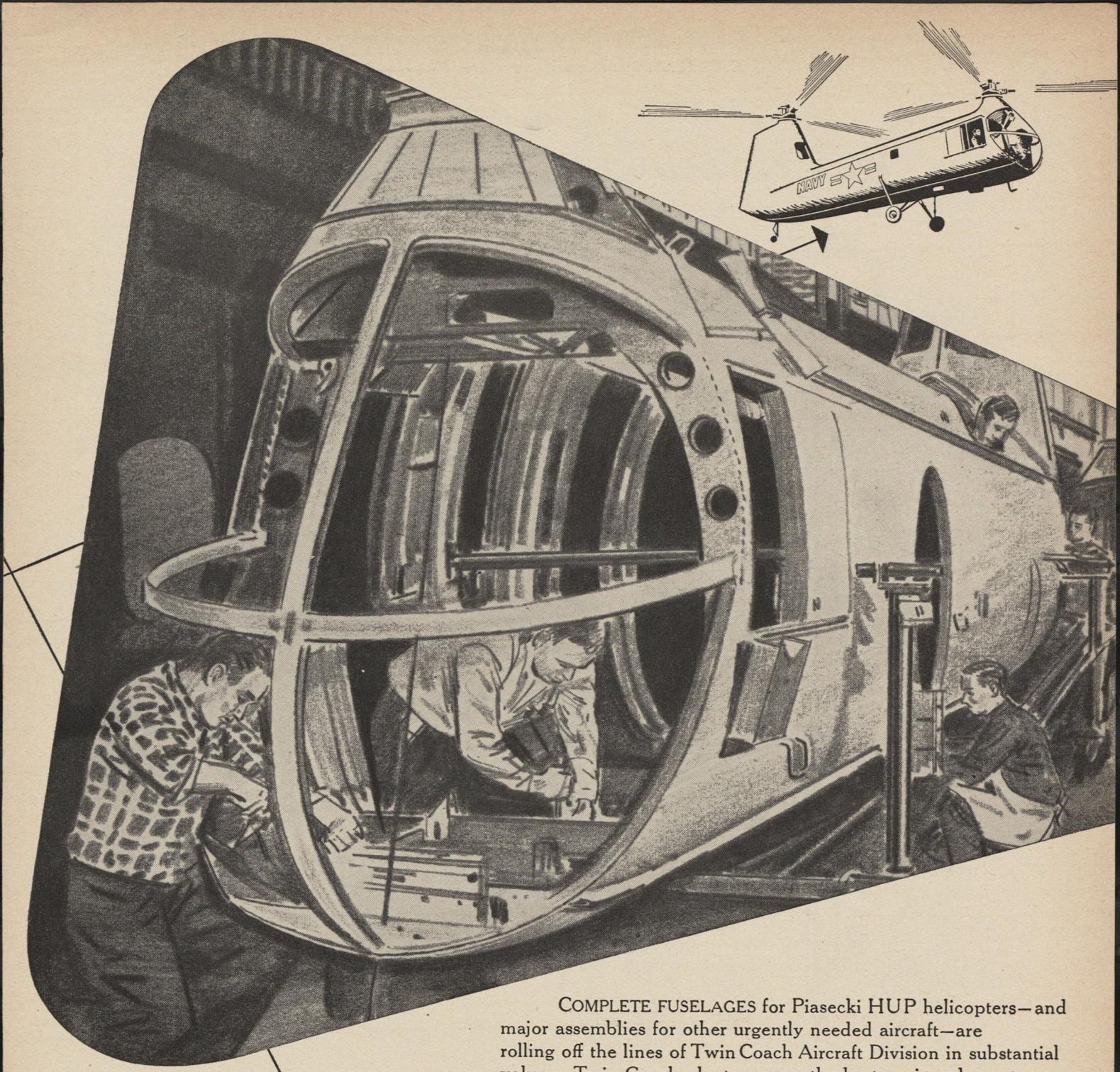
Canned Clothing

They've canned everything else — why not clothes? That's just what AMC's doing now, on an experimental basis, for overseas shipment. When packed, the 58-gallon drums are sealed with a ring-bolt closure that makes the shipment tamper-proof. The steel drums are sturdier than ordinary packing cases too, providing greater protection. AMC feels this technique will be cheaper as well.

Neutron Source

Part of the AEC's program to develop atomic energy for military application is this "water boiler" reactor built by North American. Half-ton concrete blocks, each two-feet thick, shield the reactor. It gets its power—and its name—from a water solution inside, containing uranium 235-enriched uranyl nitrate. The low power, less than one watt, makes a cooling system unnecessary.





Twin's Early Birds Build Whirly Birds

COMPLETE FUSELAGES for Piasecki HUP helicopters—and major assemblies for other urgently needed aircraft—are rolling off the lines of Twin Coach Aircraft Division in substantial volume. Twin Coach plants, among the best-equipped, most modern in the nation, are competently staffed by men who are the real early birds of the aviation industry. Many have over 25 years of unbroken aircraft experience. Modern facilities, modern equipment plus *experienced* manpower make Twin Coach a dependable source for every type of airframe assembly.

A-5358



Joe Sacco, lofting leadman, constructed and flew his first glider in 1929 while still attending Buffalo Technical High School. He has been in the aircraft industry continuously ever since.



TWIN COACH COMPANY

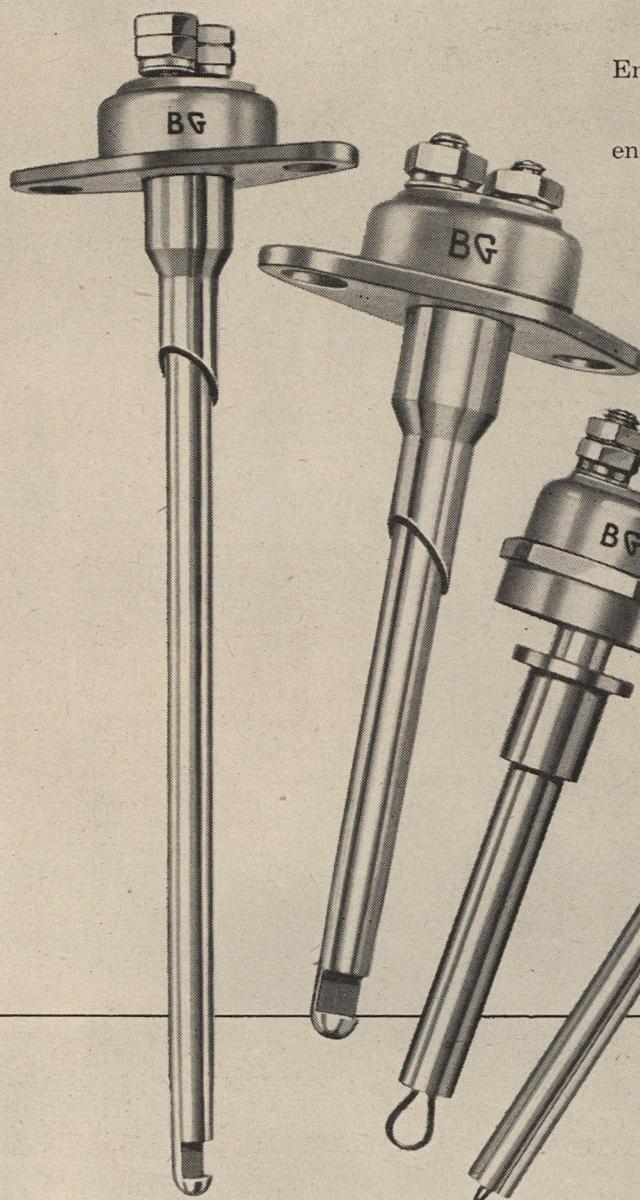
Aircraft Division

BUFFALO, N.Y.

TWIN COACH PRODUCTS:

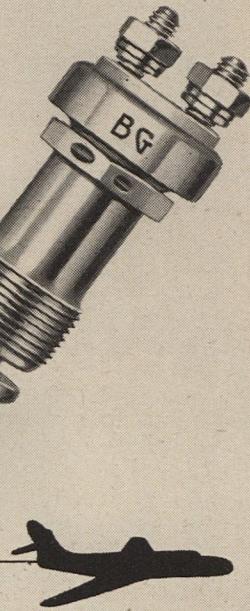
AIRCRAFT ASSEMBLIES • MOTOR COACHES • TROLLEY COACHES • SUPER FREIGHTER CARGO TRUCKS
• FAGEOL GASOLINE AND PROPANE ENGINES • FAGEOL-LEYLAND DIESEL ENGINES

Gas Turbine Thermocouples by **BG**



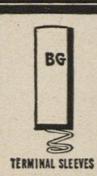
Engineered, developed and produced to meet the exacting requirements of gas turbine engines, BG thermocouples provide maximum performance and durability.

The exceptional performance of these thermocouples in military aircraft is further evidence that in aviation there is NO substitute for BG quality.



For information on these
and other BG products write to

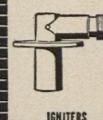
THE **BG** CORPORATION
136 WEST 52nd STREET,
NEW YORK 19, N. Y.



Thermocouples



Afterburner
Igniters



Igniters



Spark Plugs



ART KELLY GETS THE GAVEL

Convention delegates tended to serious business in Detroit, along with the reunions and banquets. Here are the men they elected

IN BETWEEN dinners, lunches, reunions, dances, and even less formal get-togethers, delegates to the sixth convention plugged away at AFA business — including three general sessions, a pre-convention meeting of Association leaders, a Reserve clinic, and the Airpower Preparedness Symposium.

In so doing the delegates elected a new slate of officers and directors for the coming year. Succeeding Harold Stuart as President of AFA is Arthur F. Kelly, Los Angeles, California, airline executive and former California wing commander, regional vice president, and member of the board of directors. Kelly last year served as chairman of the Los Angeles convention. Stuart, Washington, D. C., attorney was named Chairman of the Board to succeed Tom Lanphier, Jr., San Diego, California aircraft executive.

Named to newly created posts as ex-officio board members were such AFA old-timers as Lanphier, Edward P. Curtis, Jimmy Doolittle, C. R.

Smith, Bob Johnson, and General Carl A. Spaatz.

A full slate of new officers can be found on page 52 and a more detailed account of the convention business will be carried in the November issue of AIR FORCE Magazine.

In taking over the presidential post, Kelly said:

"In accepting the responsibility entrusted to me by members of the Air Force Association, I do so with deep humility and at the same time with a sense of great urgency.

"As president of the Air Force Association for the coming year, I pledge to the four million men and women who are veterans of the Air Force, many of whom are members and leaders in this Association, that the next twelve months will see an intensified drive to rebuild the airpower America had and lost.

Kelly, on the right above, accepts the gavel from retiring president Stuart while Tom Lanphier looks on. Stuart becomes new Chairman of the Board.

"World events are moving very rapidly, and the time may be short. We must carry to the American people the whole grim story of our country's rapid decline in just five years to a secondary position in which it cannot guarantee itself from aggression. Every man, woman, and child in the United States must know these facts. The American people must be told that the tragic and inexcusable dissipation of American airpower has brought us to the most dangerous period in our history. In these critical days we need straight talk and straight facts. We need courage to make decisions, and courage to translate them into action.

"The men who fought the last war in the sky know that the next world war will be won in the sky. Only by our research, our production, and our power in the sky, can we hope to prevent World War III. Those are the hard facts. The Air Force Association proposes to tell them to the American people—for now, as in the future, airpower is the price of freedom."—END

TO
MEN OF
SKILL AND
INTEGRITY

GRAND CENTRAL

OFFERS
BETTER
JOBS
AND

*Healthier living
in*

ARIZONA

Grand Central Aircraft Co., the world's leading aircraft and engine modification, overhaul and engineering organization, needs high caliber men. Full employee benefits, high wage scales and excellent opportunities for advancement.

MAIL TODAY!

**GRAND CENTRAL
AIRCRAFT CO.**
GLENDALE, CALIFORNIA
TUCSON, ARIZONA

Personnel Manager,
Grand Central Aircraft Co.,
Municipal Airport,
Tucson, Arizona

NAME _____

ADDRESS _____

CITY AND STATE _____

I am qualified in the category checked below, and wish further information:

<input type="checkbox"/> Engineer	<input type="checkbox"/> Sheet Metal
<input type="checkbox"/> Draftsman	<input type="checkbox"/> Layout Man
<input type="checkbox"/> Airplane & Engine	<input type="checkbox"/> Aircraft Radio
<input type="checkbox"/> Mechanic	<input type="checkbox"/> Installer
<input type="checkbox"/> Aircraft	<input type="checkbox"/> Aircraft Radio
<input type="checkbox"/> Electrician	<input type="checkbox"/> Mechanic
<input type="checkbox"/> Sheet Metal	<input type="checkbox"/> Inspector
<input type="checkbox"/> Mechanic	<input type="checkbox"/> Clerical
<input type="checkbox"/>	

AFA's NEW LEADERS

Elected for the year 1952-53 at Detroit, Mich.

August 30, 1952

PRESIDENT

Arthur F. Kelly
Los Angeles, Calif.

SECRETARY

Julian B. Rosenthal
New York, N. Y.

TREASURER

George H. Haddock
Washington, D. C.

REGIONAL VICE PRESIDENTS

New England Region
(Me., N. H., Vt., Mass., Conn., R. I.)

William H. Hadley, Jr.
Mansfield, Mass.

Northeast Region
(N. Y., N. J., Pa.)

Randall Leopold
Lewiston, Pa.

Central East Region
(Md., Del., D. C., Va., W. Va., Ky.)

George D. Hardy
Mt. Rainier, Md.

Southeast Region
(N. C., S. C., Ga., Fla.)

Jerome A. Waterman
Tampa, Fla.

Midwest Region
(Neb., Iowa, Mo., Kan.)

North Central Region
(Minn., N. D., S. D.)

Merle S. Else
Minneapolis, Minn.

South Central Region
(Tenn., Ark., Ala., La., Miss.)

Frank T. McCoy, Jr.
Nashville, Tenn.

Far West Region
(Calif., Nev., Ariz.)

N. Michael Kavanaugh
San Francisco, Calif.

Pacific Ocean Region
(Areas in or bordered on east by Pacific)

Roy J. Leffingwell
Honolulu, T. H.

Rocky Mountain Region
(Colo., Wyo., Utah)

William Thayer Tutt
Colorado Springs, Colo.

Southwest Region
(Okla., Tex., N. M.)

Thomas D. Campbell
Albuquerque, N. M.

Northwest Region
(Mont., Idaho, Wash., Ore.)

H. R. Wallace
Spokane, Wash.

Great Lakes Region
(Ohio, Mich., Wis., Ill., Ind.)

Morry Worshill
Chicago, Ill.

NATIONAL DIRECTORS

Chairman of the Board

Harold C. Stuart

Washington, D. C.

John R. Alison
Redwood City, Calif.

J. H. Henebry
Kenilworth, Ill.

William F. Mullally
St. Louis, Mo.

George Anderl
Chicago, Ill.

Cass S. Hough
Plymouth, Mich.

Charles W. Purcell
Baltimore, Md.

Warren DeBrown
Red Bank, N. J.

Russell F. Hunt
Tulsa, Okla.

Mary Gill Rice
San Francisco, Calif.

Ira C. Eaker
Culver City, Calif.

George C. Kenney
New York, N. Y.

James Stewart
Hollywood, Calif.

Cortez F. Enloe, Jr.
New York, N. Y.

Rex V. Lenz
Dallas, Tex.

C. V. Whitney
New York, N. Y.

Samuel M. Hecht
Baltimore, Md.

Jerome H. Meyer
Dayton, Ohio

Gill Robb Wilson
Trenton, N. J.

EX-OFFICIO BOARD MEMBERS

Edward P. Curtis
Rochester, N. Y.

Robert S. Johnson
Garden City, L. I., N. Y.

C. R. Smith
New York, N. Y.

James H. Doolittle
New York, N. Y.

Thos. G. Lanphier, Jr.
San Diego, Calif.

Carl A. Spaatz
Washington, D. C.

The BENDIX IGNITION ANALYZER Checks More Plugs Faster!



Result: TIME-SAVING

KEEPS PLANES ON SCHEDULE BY ELIMINATING HIT AND MISS TROUBLE SHOOTING

Even before the wheels touch the runway, the ignition fault has been pin-pointed and a maintenance crew stands by to make a fast repair. Minutes later the ship departs *on schedule*. The fast, certain repair job was possible because the trouble shooting was done in flight, by the operator of a Bendix Ignition Analyzer. While making a routine check of several plugs the scope reading showed a trouble pattern. The operator quickly analyzed the location and seriousness of the trouble and the word was radioed ahead. Meanwhile, the pilot reduced power of the malfunctioning engine to cool it in flight and ready it for maintenance. Just such a case as this is the reason why one airline has reduced turn-around time by 18% with the Bendix Ignition Analyzer. It can do the same for you and much more besides.

Write us for free literature concerning
the Bendix Ignition Analyzer.



Costs Less—Does More

The Bendix Ignition Analyzer is available for either airborne or portable-airborne installations. It can be used with either high or low tension magneto or battery ignition. It is the ignition analyzer that can predict spark plug failure before it occurs . . . make an efficient check of more than one spark plug at a time and do so on a large, easy to read screen . . . yet it costs less than comparable analyzers.

Bendix

SCINTILLA MAGNETO DIVISION OF
SIDNEY, NEW YORK

 **Bendix**
AVIATION CORPORATION

Export Sales: Bendix International Division, 72 Fifth Avenue, New York 11, N. Y.

FACTORY BRANCH OFFICES: 117 E. Providencia Avenue, Burbank, California • Stephenson Building, 6560 Cass Avenue, Detroit 2, Michigan
Brouwer Building, 176 W. Wisconsin Avenue, Milwaukee, Wisconsin • 582 Market Street, San Francisco 4, California



Missile with a "one track mind" ... Bomber Defense

Defensive guided missiles launched from supersonic aircraft will depend upon electronic marvels that come as close to simulating human intelligence as any mechanism ever devised. Important functions of these "weapons of the future" are typical of those entrusted to systems made by Arma Corporation.

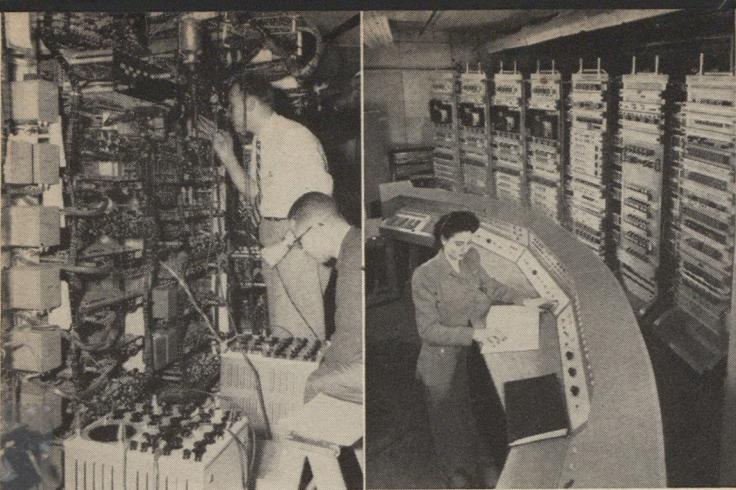
Complex electronic and electro-mechanical con-

trols from Arma are an integral part of many of America's most advanced weapons. In basic research, design, development and manufacture, Arma Corporation has worked in close cooperation with the Armed Forces since 1918—and more recently, the Atomic Energy Commission. *Arma Corporation, Brooklyn, N. Y.; Mineola, N. Y. Subsidiary of American Bosch Corporation.*

ARMA

ADVANCED ELECTRONICS FOR CONTROL





Computer Speeds Missile Work

A calculating machine that not only tackles weighty problems but also worries about the results it gets is scheduled to be used by the Armed Forces soon to help develop guided missiles. The "Raydac" (for Raytheon Digital Automatic Computer) will be used initially at Point Mugu, Calif., to analyze the behavior of missiles during test flights there. A complex set of electronic checks and double checks halts the machine whenever it makes a mistake, and shows where the trouble is. Raydac's 5,000 vacuum tubes and 18,000 germanium diodes—enough to build more than 1,000 home radio sets—enable it to spew out 1,900 additions or subtractions, 1,100 divisions, or 1,400 multiplications a second. Left, above, engineers test the computer's innards, while right, an operator feeds data into the 44-foot long machine.

Router Guide

A TEMCO employee has worked out a gimmick that trims the edges of aircraft skin sections flush with bolt angles quickly and easily. Bolt angles are the basis of joints between sub-assemblies and must fit perfectly. Old methods, using a file, didn't always do the job. But this TEMCO router guide does. It's made from a piece of bar stock with one end machined to a smaller diameter and threaded to fit the housing of a pneumatic hand router.



Air Force Shooting Gallery

Penny arcade techniques where you pay a nickel to take pot shots at enemy bombers cruising over a painted horizon go to work for the AF in the Glenn L. Martin T-13 flexible gunnery trainer. The T-13, now ready for delivery, projects the image of an attacking plane on the inner surface of the large half-dome. The projector uses the shadow from a scale model instead of film. Tracking, sighting, and gun-laying errors are summarized continuously during each session, and poor gunners are quickly spotted.



TECH TALK

By Richard Skinner

Westinghouse designers are talking about their new jet engine, which the Defense Department has just accepted for production. A re-do of the J-40, the power plant develops the equivalent of 25,000 hp—2½ times as much as all four engines on a Superfort. The Navy expects to use the axial flow engine in McDonnell F3H Demons and Douglas F4D Skyrays.

South African chicken farmers are wondering if the British jet Comet airliners that swoosh into Johannesburg three times a week are responsible for cutting down the laying prowess of their hens. Also, keepers at the Pretoria Zoo are trying to figure out what sort of advance warning system their chimpanzees have. Long before humans spot approaching jets, the chimps utter wild cries, climb to the tops of their cages, and scan the still-empty sky.

Welsh fishermen aren't saying much about the latest British guided missiles being tested from a Government research station on their coast. The missiles, a few steps short of push-button warfare, are said to fly at 2,000 mph and are claimed able to ferret out enemy bombers as high as ten miles up.

Wardrooms are buzzing with talk about the Navy's first public demonstration of aerial refueling techniques, using a carrier-based North American AJ-1 Savage as the tanker plane. Spurning flying boom methods of refueling, the Navy uses the British-developed probe and drogue system, which permits the receiver pilot to select the time of contact.

Portable oxygen generators in trailers are a new twist for the Air Force, and one that will permit the recharging of cylinders in airplanes without first removing the tanks from the aircraft. Air Products Inc. of Allentown, Penna., makes the mobile units which can produce 1,200 cubic feet of oxygen an hour.

B-29 airplane commanders can't win. They're plagued by what psychologists call the "dilemma of leadership." If they're unusually considerate of their crews, the crewmen like it fine but it's thumbs down from high level officers who keep tabs on the commanders, according to reports made last month to the American Psychological Association. On the other hand, tough commanders get high ratings from their supervisors but don't score so well with their own flying mates, although crewmen tolerate sterner treatment in combat than in training.

Know what propeller ice sounds like from inside a Boeing Stratofreighter? Take a hop in the C-97A flight simulator the AF is now using. It has built-in sound effects including propeller ice, as well as the proper noise for engine synchronization. It's also constructed (by Curtiss-Wright) to permit accurate fuel depletion readings, making cruise control training possible, and has fully operational landing gear. The unit, called the most advanced electronic simulator ever made for cargo-type aircraft, is set up at Morrison AFB, West Palm Beach, Fla. Ten more are now on order.

ECLIPSE-PIONEER

Dedicated to the design
and manufacture of products for
the Precision Industries

AUTOMATIC PILOT AND FLIGHT PATH CONTROL EQUIPMENT

Turn and Bank Indicators
Omni Range Components

AIRPLANE AND ENGINE INSTRUMENTS

POWER SUPPLY EQUIPMENT

Remote Indicating Systems For:

Fuel Flow
Fuel Pressure
Hydraulic Pressure
Liquid Level
Manifold Pressure
Oil Pressure
Position
Torque Pressure
Water Pressure

Fuel Flow Totalizing Systems

Electric Tachometer Systems

Warning Units

In-Flight Refueling Systems

FLIGHT AND NAVIGATION INSTRUMENTS

Accelerometers
Airspeed Indicators
Vertical Gyro Indicators
Directional Gyros
Dual Radio and Magnetic
Compass Indicators
Gyro Flux Gate* Compasses
Magnetic Compasses
Rate of Climb Indicators

AIR PRESSURIZATION AND ICE ELIMINATION EQUIPMENT

Electronic and Mechanical
De-Icer System Timers
Oil Separators
Pumps
Valves
Pressurization and Control Units
Windshield De-Icing Controls

ENGINE STARTING EQUIPMENT

Booster Coils
Relay Switches
Starters

OXYGEN EQUIPMENT

Oxygen Regulators
Liquid Oxygen Convertors

MISCELLANEOUS

Automatic Engine Power Controls
Actuators
Differential Pressure Switches
Gear Boxes
Flexible Drive Shafts
Air Turbine Driven Accessories

PRECISION COMPONENTS FOR SERVOMECHANISM AND COMPUTING EQUIPMENT

Autosyn Synchros
(Transmitters, Receivers,
Differentials, Control Trans-
formers and Resolvers)
Amplifiers
Low Inertia Motors
Servo Motors and Systems
Gyros
Rate Generators
Stabilization Equipment
Remote Indicating Systems

FOUNDRY PRODUCTS

Sand, Permanent Mold, and Die
Castings of Magnesium and
Aluminum for a wide variety
of Aircraft and Industrial Ap-
plications. Non-Ferrous Preci-
sion Plaster Mold Castings.

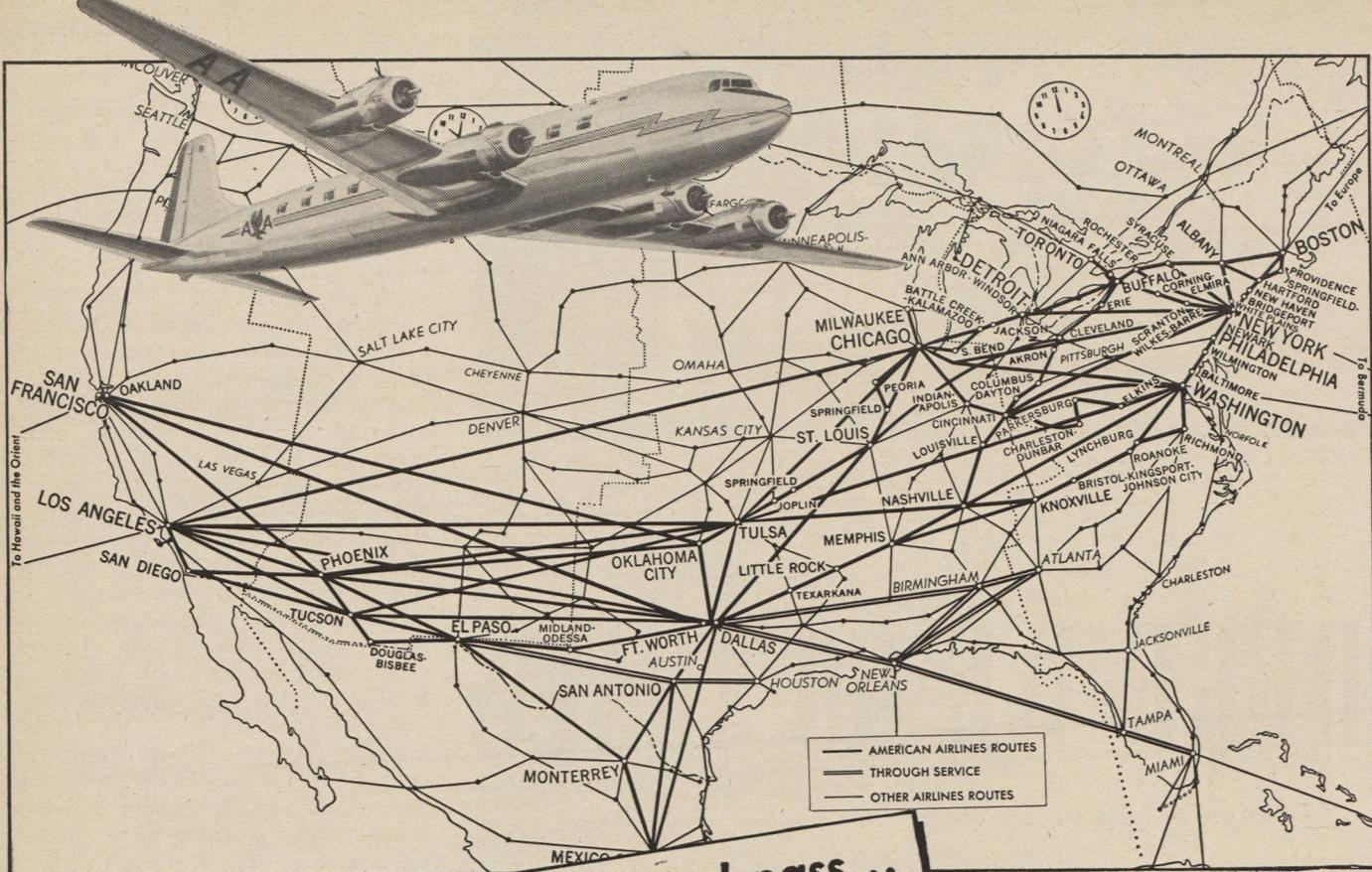
*REGISTERED TRADEMARK OF BENDIX AVIATION CORPORATION

ECLIPSE-PIONEER DIVISION OF

TEREBORO, NEW JERSEY

Export Sales: Bendix International Division, 711 Fifth Avenue, New York 11, New York

Bendix
AVIATION CORPORATION



Furlough or weekend pass...

ARRIVE SOONER STAY LONGER ... GO AMERICAN

- WHEN A LEAVE calls for travel, be sure to call American! Gain extra days for pleasure ordinarily lost to slow-moving surface transports. In addition, when you travel American Airlines, you go by famous DC-6 or Convair Flagships with comfortable pressurized cabins. Make your reservations now. You'll be surprised how little Flagship travel can cost... how much more time you can enjoy at your destination.

Serving the Leading Cities of the United States, Mexico and Canada

AMERICAN AIRLINES INC.

AMERICA'S LEADING AIRLINE



HERE WE GO AGAIN

Turning people into combat crews takes some doing.

Randolph's operation shows how it's done

AFTER twenty years of training fledglings in the fundamentals of getting single engine airplanes into the air and back down again, Randolph AFB is now operating at a post-graduate level. Where once stick and wire crates buzzed, B-29s now roar. From Randolph today come the SAC bomber crews, the aerial police force whose skyborne nightsticks are helping to preserve international order.

With the change-over from basic pilot training to combat crew training, a colorful era ended at Randolph. More than 20,000 young Americans and nationals from some twenty-two friendly nations had earned their wings there and went on to acquitted themselves with distinction in the skies over the entire world.

It was a mere two decades ago that the War Department decided to es-

tablish an air field for pilot training near San Antonio, Tex. Construction was completed at the end of 1930. Students first went aloft the next year and the West Point of the Air was in business. Until World War II Randolph was the only primary training school for pilots. Even after other flying schools had set up shop when the war load proved too great for a single facility, Randolph epitomized the standards and spirit of the Air Force and continued to occupy the training spotlight.

After the war, all other pilot training stations were inactivated, and once again Randolph became practically the sole source of Air Force junior birdmen. Activity was slow and there were fewer aviation cadets in training. But when Korea flared in June 1950, almost overnight Randolph came back with a roar.

Late one afternoon in July of that year a tall spare man with a staff of B-29 experts landed at Randolph and took over what had been a T-6 flying training program. Thirty minutes later there was an officers' call and the station formally became a B-29 Combat Crew Training Center. The pipeline to peace was open.

The man who opened the pipeline was Brig. Gen. Carl B. McDaniel, who had been one of the first flying instructors at Randolph back in the 30s. Until mid-1951, the gradual phasing-out basic training program at Randolph operated from one side of the field while the B-29s flew out of the other. Finally the bomber boys took over lock, stock, and barrel. General "Mac" was moved upstairs to the post of Inspector General of the Air Training Command in July 1951 and his successor, Brig. Gen. James H. Davies, former Chief of Staff of Air Training Command, and a B-29 man from way back, took over.

Today, with a full complement of bombardment crews in training, with all of its airplanes, maintenance docks, and support personnel, Randolph has more than four times as many officers and airmen as in 1950. And it's still growing.

AF brass originally had figured that Randolph would be no more than an assembly and polishing-up point for individually qualified crew members. But competent pilots current in four-engine aircraft are not exactly a drug on the market. Randolph's job is to polish them up and make acceptable aircraft commanders out of them.

The eleven pipeline individuals

UNITED STATES AIR FORCE



By Col. Vincent J. Donahue

MORALE-BUILDER



TRAVEL BY TRAIN

... a happy interlude for busy service men

- More to see . . . more to do . . . more to enjoy!
That's why soldiers, sailors, marines and airmen like to travel by train.
- There's plenty of opportunity to see the country—and plenty of good company to help you enjoy it. Room to roam around . . . real meals and real beds . . . reliable schedules. On orders or on leave, travel by train—the complete transportation system that makes every trip a real morale-builder!

SAVE 10%

10% discount allowed for all military travel
on transportation requests.
Also reduced fare for furloughes.

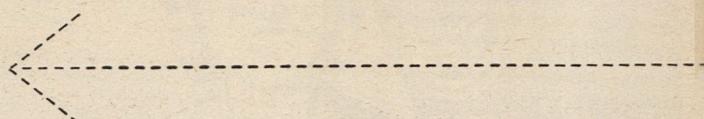
**Railroads
of the United States**

America's only complete transportation system

to the E. E. or PHYSICS GRADUATE
with military experience
in RADAR OR ELECTRONICS

*Here's a good way to capitalize on your military experience
upon your return to civilian life.*

*Hughes Research and Development Laboratories,
one of the nation's more prominent electronics organizations,
is now creating a number of new openings
in an important phase of its operation.*



Here is what one of these positions offers you:

1. THE COMPANY

Hughes Research and Development Laboratories is located in Southern California. We are currently engaged in the development of advanced detection devices, electronic computers, and guided missiles. You are probably familiar with some of the equipment we are supplying the services.

2. YOUR POSITION

You will serve as a technical advisor to those using Hughes equipment. In this capacity you would help insure the successful operation of our equipment in the field.

3. YOUR TRAINING

Upon joining our organization, you would work in our Laboratories in Southern California for several months—until you are thoroughly familiar with the equipment.

4. WHERE YOU WORK

After your period of training (at full pay), you may (1) remain at the company Laboratories in Southern California in an instruction or administrative capacity, (2) become the Hughes representative at a company where our equipment is being installed, or (3) be the Hughes representative at a military

base in this country—or overseas (single men only). Compensation is made for traveling and for moving household effects. Married men keep their families with them at all times.

5. YOUR FUTURE

You will gain broad experience that will increase your value to us as we further expand in the field of electronics. Furthermore, the large-scale commercial employment of electronic systems in the next few years is inevitable . . . and your training and experience in the most advanced electronic techniques with our company now will qualify you for even more important positions then.

HOW TO APPLY

If you are under thirty-five years of age, and if you have an E. E. or Physics degree, with some experience in radar or electronics,

write to:

HUGHES

RESEARCH AND DEVELOPMENT LABORATORIES

Engineering Personnel Department

CULVER CITY, LOS ANGELES COUNTY, CALIFORNIA

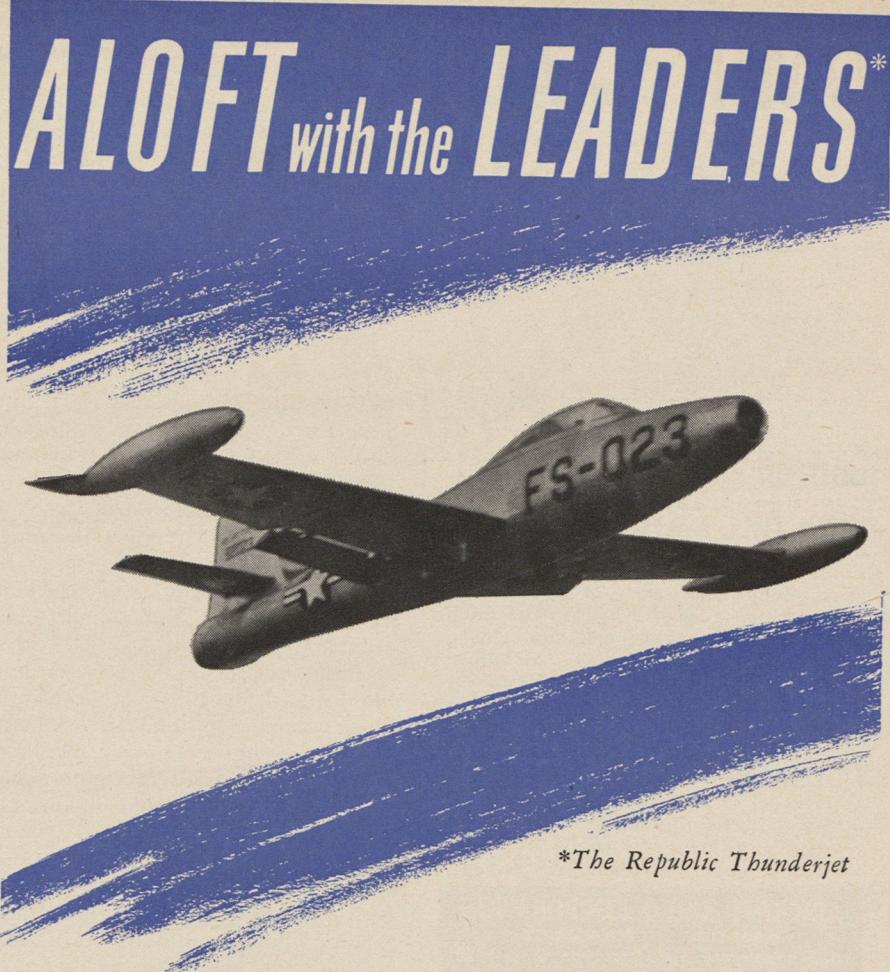


who go into a complete crew are assembled and trained as a unit, with emphasis on crew integrity. Crew integrity normally means that, if the aircraft commander washes out, the other ten men in his crew go back for a fresh start with a new commander. Fresh starts occur only every thirty days—when a new class checks in.

Crews are generally assembled at random from the available pool of talent. Obviously, it's best to have the airplane commander the ranking man on the crew. Occasionally requests are made by individuals who, for any number of reasons, want to be crewed up together. Perhaps they come from the same home town, or perhaps they served together in World War II. One request came from eight Mormons who wanted to fly together. In this same class was a five-man flight crew that had successfully bailed out of a crippled B-29 during transition training. The members asked to be kept together when the complete crew was assembled later. In another case, the airplane commander of the honor crew in a graduating class was his navigator's uncle. The navigator asked to be crewed up with his "kin folk."

The student workhorse at Randolph, the B-29, is a tailor-made training medium for the newly assembled crews. In fact, the Reservists recalled to active duty for combat training at Randolph are not the only participants in the program who have been through the mill before. Among the training aircraft are any number of B-29s which have felt the slash of flak and fought off enemy fighters. Often a "student" recognizes his old airplane from a faded number that has been painted over, or from a set of initials scratched on a bulkhead during a long lonely overwater strike. Maj. John G. Garvin, for example, now sits at the controls of the same B-29 in which he flew thirty-five missions over Japan in World War II. Detailed to fly a B-29 named "Skyscraper III" on a routine test hop at Randolph, Garvin reported to the flight line one morning, picked up his gear and headed for his ship. A few minutes spent in looking it over convinced him it was his old airplane. The clincher was an almost illegible pencil message written by a former crew member inside the nose wheel well.

This particular meeting renewed a close association between Garvin and the airplane which began late in 1944. "Skyscraper III" had been bought with war bond subscriptions by the employees of the Guaranty Trust Company of New York, where



*The Republic Thunderjet

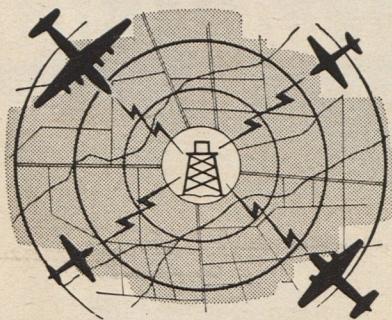
There are many new and interesting hydraulic advancements to be found in Republic's headline-making Thunderjet—and Electrol is proud indeed to have worked side-by-side with Republic engineers in developing them. Perhaps, you, too, can benefit by availing yourself of Electrol's hydraulic engineering experience.



CYLINDERS • SELECTOR VALVES • FOLLOW-UP VALVES
CHECK VALVES • RELIEF VALVES • HAND PUMPS
POWERPAKS • LANDING GEAR OLEOS • SOLENOID
VALVES • ON-OFF VALVES • SERVO CYLINDERS • TRANSFER
VALVES • CUT-OUT VALVES • SPEED CONTROL VALVES

Better Designed Products Use Electrol Hydraulics

OMNI's for ALL



and all get OMNI
with ARC's VHF Equipment

Pilots of private, executive or transport aircraft enjoy the safety of OMNI with ARC's compact Type 15C VHF Navigation Equipment. It takes the work out of navigation—gives a reliable signal to follow, whatever your bearing to or from the station. No worry about drift, no static interference. Type 15C also provides for use of visual-aural ranges, and runway localizers. All ARC airborne equipment is CAA type certificated and designed for reliability and performance, not to meet a price. Write for all details.



AIRCRAFT RADIO CORPORATION
Boonton New Jersey

Dependable Electronic Equipment Since 1928

CREDITS

Front cover, pages 23, 24, and 25—Charles deM. Barnes, Jr.; AFA Convention photos—Lt. Frank Stevens and A/1C Robert Murray, 1st Photo Sqdn.; pages 43, 46, and 48—Arlo Greer.

POSITION OPEN—SALES MANAGER

For Midwestern accessories manufacturer. Essential to have thorough knowledge of aircraft industry relative to accessories for jet engines and airframes. Must be capable of directing a sales and service organization. Please submit complete education and employment abstract. All replies will be treated confidentially.

AIR FORCE, Box D-1, 114 East 40th Street, New York 16, N. Y.

AERONAUTICAL ENGINEERING



Design Aircraft & Components — Study with Jets & Rockets — Great Future — Advanced Aeronautical Subjects — World-Wide Enrollment — Fully Accredited — Est. 1929 — Approved for Vets — CAL-AERO grads in heavy demand.

WRITE TODAY for Special Information

CAL-AERO TECHNICAL INSTITUTE

GRAND CENTRAL AIR TERMINAL
GLENDALE 1, CALIFORNIA

Dept. AF

Aeronautical Engineering Master Aviation Mechanics
 JET ENGINE Maintenance & Overhaul

Name _____ Age _____

Address _____

City _____ Zone _____ State _____

RANDOLPH CONTINUED

Garvin had been employed before joining the Air Force. Garvin recalls his first raid over Tokyo in November 1944, when he and his plane were chosen to fly a "preview" mission, to gather weather, anti-aircraft and other information, two weeks before the first mass strikes against the Japanese capital. Their toughest raid was on January 27, 1945. "Skyscraper III" led the B-29 formation over its target, and despite serious flak hits, the Superfort completed its mission and shot down five enemy aircraft to boot.

At present the program at Randolph is divided into transition, crew indoctrination, and combat training. The transition phase is intended primarily for the flight crew. The airplane commander, pilot, flight engineer, and two gunner scanners arrive at Randolph the same day, forming the nucleus. The thirty-day transition phase whips them into shape. Meanwhile, the flight engineer, bombardier, radar observer, navigator, and the other two gunners are taking refresher courses at specialized schools of the Air Training Command.

When the full crew is finally assembled, the crew indoctrination phase begins. There is no flying during this "standdown" and the crew members have a chance to get used to each other, besides hearing a lot about intelligence, discipline, whole picture orientation, and other subjects.

The final phase, combat training, takes the complete crew through a number of missions ranging from four to fourteen hours. These are planned to bring the crew to a level of proficiency which will eventually enable them to take a B-29 on a "lone-wolf" mission or fit into a wing strike without strain.

After three months at Randolph, graduating crews are usually transferred to SAC bases in the ZI, except for the classified number which report to California for shipment to FEAF. The stateside tours are not exactly compatible with homesteading. Short notice training missions of ninety days or more anywhere in the world, except the USSR, are routine for SAC crews. Randolph-trained crews are almost uniformly destined to be highly mobile for the duration of their active duty period.

Big Jim Davies and his high experience level boys at Randolph haven't been pulling all the stops in the training program just to amuse themselves. When crews finish up in the pipeline to peace, they are equipped to do their job anywhere in the world. Maybe someone ought to pass the word along.—END

THIS IS AFA

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

ITS 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 members of the USAF.

ITS MEMBERS

Active Members: Individuals honorably discharged from military service who have been assigned or attached to the USAF or its predecessor services, or who are currently enrolled in the Air Force Reserve or the Air National Guard.

Service Members (non-voting, non-office holding): Individuals currently assigned or attached to the USAF.

Cadet Members (non-voting, non-office holding): Individuals enrolled as Air Force ROTC Cadets or Civil Air Patrol Cadets.

Associates (non-voting, non-office holding): Individuals not eligible for Active or Service membership who have demonstrated their interest in furthering the aims and purposes of Air Force Association.

Industrial Associates: Companies affiliating with Air Force Association on a non-membership status who receive subscriptions to AIR FORCE Magazine and special magazine supplements known as Industrial Service Reports.

ITS OFFICERS AND DIRECTORS

ARTHUR F. KELLY, President

Regional Vice Presidents: William H. Hadley, Jr. (New England); Randall Leopold (Northeast); George D. Hardy (Central East); Jerome A. Waterman (Southeast); Morry Worshill (Great Lakes); Merle S. Else (North Central); Frank T. McCoy, Jr. (South Central); Lauren C. Reynolds, Jr. (Midwest); N. Michael Kavanaugh (Far West); William Thayer Tutt (Rocky Mountain); Thomas D. Campbell (Southwest); H. R. Wallace (Northwest); Roy J. Leffingwell (Pacific Ocean). Secretary, Julian B. Rosenthal. Treasurer, George H. Haddock.

HAROLD C. STUART, Chairman of the Board
Directors: John R. Alison, George Anderl, Warren DeBrown, Ira C. Eaker, Cortez F. Enloe, Jr., Samuel M. Hecht, J. H. Henebry, Cass S. Hough, Russell F. Hunt, George C. Kenney, Rex V. Lentz, Jerome H. Meyer, William F. Mullally, Charles W. Purcell, Mary Gill Rice, James Stewart, C. V. Whitney, Gill Robb Wilson.

Ex-Officio Board Members: Edward P. Curtis, James H. Doolittle, Robert S. Johnson, Thomas G. Lanphier, Jr., C. R. Smith, Carl A. Spaatz.

NATIONAL HEADQUARTERS STAFF

Executive Director: James H. Straubel

Organizational Director: Ralph Whitener

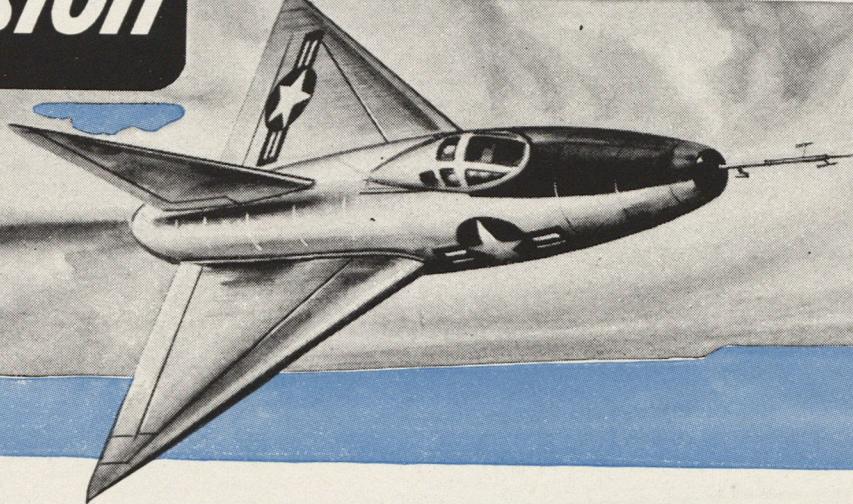
Organizational Assistant: Gus Duda

Service Director: Jake Culpepper

Bendix Products Division

FIRST IN

FUEL METERING



Planning for the Future— Building for the Present

Bendix Products' position of leadership in fuel metering and landing gear has been attained through its unique ability to plan as well as to produce.

The specialized knowledge of trained engineers and the vast research facilities of Bendix are constantly employed in the development of new and better products.

Assembled here, also, is the most modern and comprehensive machinery in the industry to assure production in quantity and precision in quality to meet your most exacting demands. Whether your problem is planning or producing fuel metering, carburetion, struts, brakes or wheels, you will find Bendix Products is best qualified to do the job.

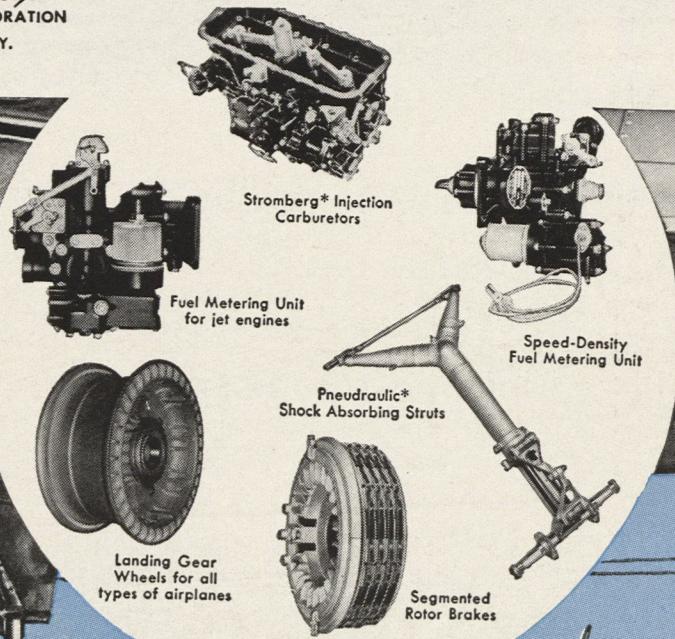
BENDIX • PRODUCTS DIVISION • SOUTH BEND



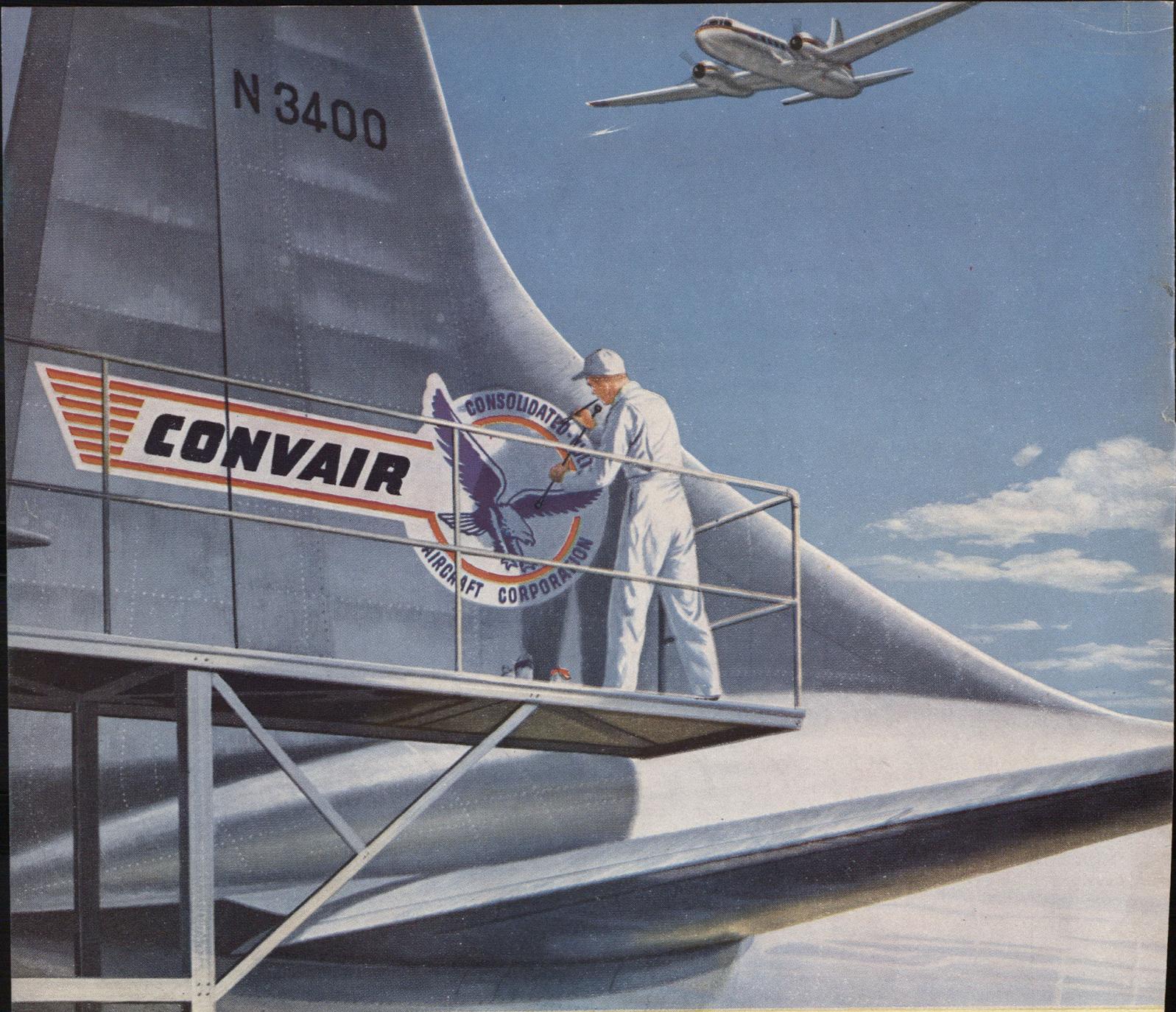
Export Sales: Bendix International Division, 72 Fifth Avenue, New York 11, N. Y.

LEADER IN

LANDING GEAR



*REG. U. S. PAT. OFF



Outstanding contribution to Air Transport Progress
is the universal acceptance of equipment such as
the Convair-Liner, choice of 27 airlines...
the world's most popular postwar airliner!

CONVAIR

CONSOLIDATED VULTEE AIRCRAFT CORPORATION
San Diego and Pomona, California • Fort Worth and Daingerfield, Texas



* * CONVAIR IS ADDING ANOTHER 1½ MILLION SQUARE FEET OF FLOOR AREA TO ITS PLANT FACILITIES...MAKING A TOTAL OF MORE THAN 9 MILLION SQUARE FEET DEVOTED TO RESEARCH AND PRODUCTION PROJECTS FOR AIRCRAFT, GUIDED MISSILES AND ELECTRONICS