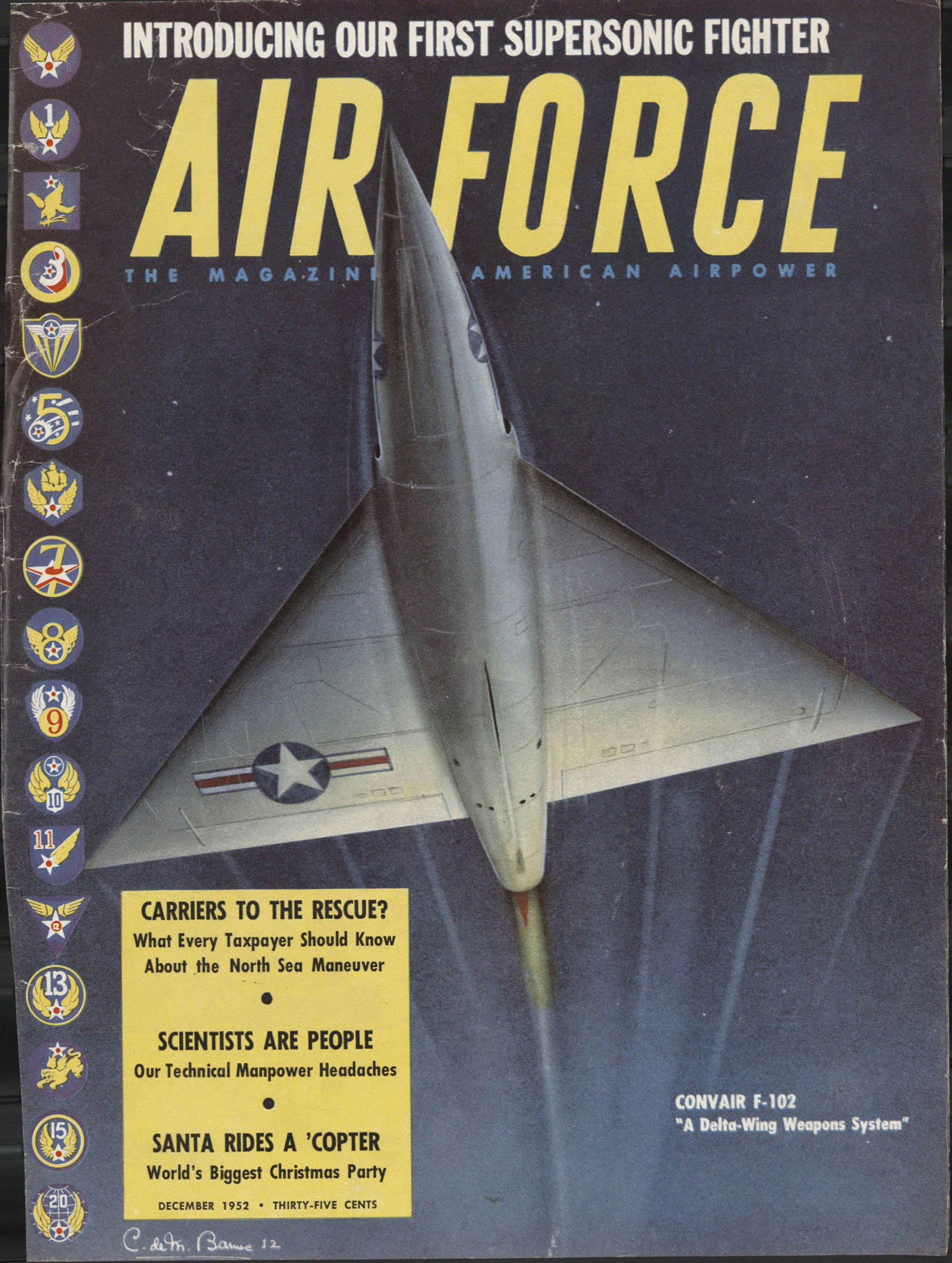
INTRODUCING OUR FIRST SUPERSONIC FIGHTER

AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER



CARRIERS TO THE RESCUE?
What Every Taxpayer Should Know About the North Sea Maneuver

SCIENTISTS ARE PEOPLE
Our Technical Manpower Headaches

SANTA RIDES A 'COPTER
World's Biggest Christmas Party

CONVAIR F-102
"A Delta-Wing Weapons System"

DECEMBER 1952 • THIRTY-FIVE CENTS

C. de M. Bamse 52

Wherever Man Flies

Hamilton Standard's long experience as the leader in propeller design and production is also devoted to supplying other equipment for outstanding airplanes and guided missiles for the Navy and Air Force.

HAMILTON STANDARD
WINDSOR LOCKS CONNECTICUT
DIVISION OF UNITED AIRCRAFT CORPORATION

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

Why Boeing has undertaken "Project X"

In a restricted area of one of its Seattle plants, the Boeing Airplane Company is building a new prototype airplane which may be identified for the present as "Project X."

It will be a large, new type, jet-powered airplane incorporating many engineering advancements Boeing has developed and proved over the past several years. It will be a demonstrator model, the basic design of which will be adaptable to two production models:

1. A versatile military airplane for aerial refueling of fast jet bombers and fighters, and for cargo and troop transportation fitted to the tempo of jet-age military tactics.
2. A high-speed, economically operating airline transport for passengers and cargo.

Boeing has undertaken this program because it has long recognized a real need in America for modern, jet-powered equipment in each of these categories. The project has been underway for a substantial period of time. With the prototype Boeing will be able to demonstrate the capabilities of production aircraft in both the military and commercial fields.

The undertaking follows naturally from the company's leadership in the application of jet power to large aircraft. Designing, building and flying the B-47 Stratojet bomber and the new B-52 eight-jet Stratofortress have given Boeing a background of experience unparalleled elsewhere in the world. It has included, for example, 14,500 hours of jet wind tunnel research and more than 5000 hours of test and research flying. The Boeing Company is taking positive steps to apply this wealth of experience to advancement in the field of air transportation.

The prototype airplane – company financed – will be completed and flying in 1954. The project is being carried out with great enthusiasm, bred of highly successful experience with the B-47 and B-52 jet bombers. This will be another great Boeing.

BOEING

The Aircraft: Grumman F9F-5 Panther

The Engine: Pratt & Whitney Aircraft J-48 Jet

The Fuel System: Holley Turbine Control

HOLLEY Carburetor Co.

FOR HALF A CENTURY—ORIGINAL EQUIPMENT MANUFACTURERS FOR THE AUTOMOTIVE AND AIRCRAFT INDUSTRIES

DETROIT 4, MICHIGAN

A-8

AIR FORCE
THE MAGAZINE OF AMERICAN AIRPOWER

VOL. 35, No. 12

DECEMBER 1952

Shooting the Breeze

It always makes us feel good when we can get one of our readers off the hook. That's one of the reasons we're in business. This month one of those little things happened that makes us a little prouder of one of our departments and, we suppose, renews our faith in mankind.

This chap, Harold Edwards, from Hendersonville, N. C., was on a spot. He was doing a bronze memorial plaque—had it all designed and ready for casting. On it was to appear a poem he thought had been in a wartime issue of AIR FORCE. All he remembered was part of the last line, and, using this, we spent the best part of an afternoon culling our files, to no avail.

Well, we put a note in "Rendezvous," and hoped that somebody, somewhere, would help Mr. Edwards and us out. It didn't take long. We've had—and presume that Mr. Edwards' mailman has done as well by him—a bundle of letters from people all over, this country and Canada, identifying the missing poem as "High Flight" by John Gillespie Magee, Jr., a young American who joined the RCAF in 1940 and died flying a Spitfire over Britain just after Pearl Harbor (see "Air Mail," page 9).

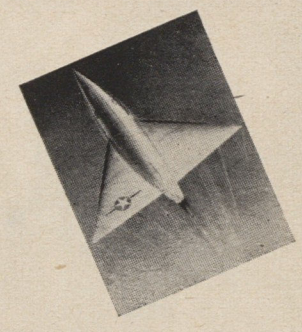
Apparently the poem (a Shakespearean sonnet) was more or less officially adopted by the RCAF and widely reprinted and distributed. It also appeared in the graduation book for Class 42-F at Luke Field, Ariz. Then a Captain Arthur F. Brown used it in his history of the 354th Fighter Group. And an El Paso, Tex., lawyer tells us the poem appeared in "The Readers' Digest."

The first words of the third line, "Sunward I've Climbed," became the title of a biography of young Magee. The book is in the Army Library at the Pentagon, here in Washington. Here, also, Magee's father was minister in charge of St. John's Episcopal church, across Lafayette Park from the White House, from 1940 to 1945. He is now chaplain of Yale University where, interestingly enough, his son had won a scholarship before the war, which he turned down to enlist in the RCAF.

So, Mr. Edwards, go ahead on your plaque.

FEATURES

DEPARTMENTS



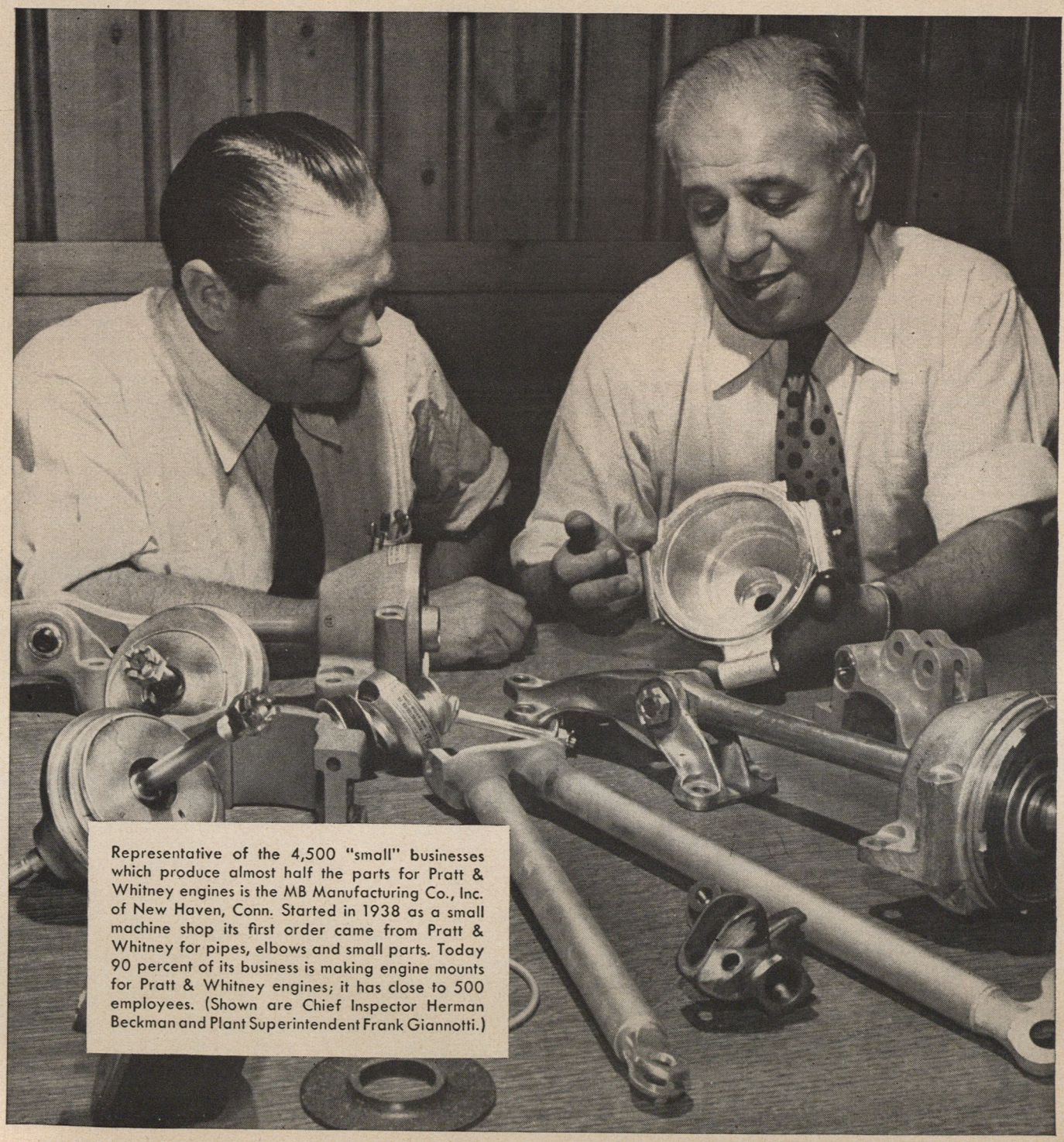
THE COVER

On this month's cover is artist Charles deM. Barnes' conception of Convair's F-102 delta-wing interceptor, in which the pilot goes along pretty much for the ride. Mr. Barnes used non-classified material in depicting the XF-92A's big brother. No 102s exist yet, but for word on what they'll do and how they'll do it, see page 31.

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: Urben 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.

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.

Small Business



Representative of the 4,500 "small" businesses which produce almost half the parts for Pratt & Whitney engines is the MB Manufacturing Co., Inc. of New Haven, Conn. Started in 1938 as a small machine shop its first order came from Pratt & Whitney for pipes, elbows and small parts. Today 90 percent of its business is making engine mounts for Pratt & Whitney engines; it has close to 500 employees. (Shown are Chief Inspector Herman Beckman and Plant Superintendent Frank Giannotti.)

helps do a Big Job

4,500 of Pratt & Whitney Aircraft's 5,000 Suppliers are "Small" Businesses

THE FACT that thousands of small businesses play a very big part in Pratt & Whitney Aircraft's production is far from accidental.

Some 27 years ago, when Pratt & Whitney Aircraft itself was a small business, its founders established the principle that approximately half of the work load should be borne by outside companies. Over the years this has meant that thousands of companies all over the U. S. have joined the ranks of its regular suppliers.

Now it has reached a point where there are over 5,000 subcontractors and suppliers furnishing parts, materials and supplies necessary for the building of Pratt & Whitney engines. Significantly, 90 percent of these suppliers—4,500 out of 5,000—are "small" businesses, firms with less than 500 workers.

Achieving production on such a broad base is something that could only be found in America. It is a typical example of how big business contributes its organizational ability, its engineering resources, and its know-how to make it possible for smaller businesses by the hundreds to share in major production assignments.

All Americans benefit by this type of teamwork. The task of providing equipment for the armed forces is not confined to a few big suppliers. Instead, large prime contractors like Pratt & Whitney, who alone have the resources to develop major items of military equipment, generate enough production assignments to keep thousands of medium and small sized companies busy helping to stock the nation's arsenal.

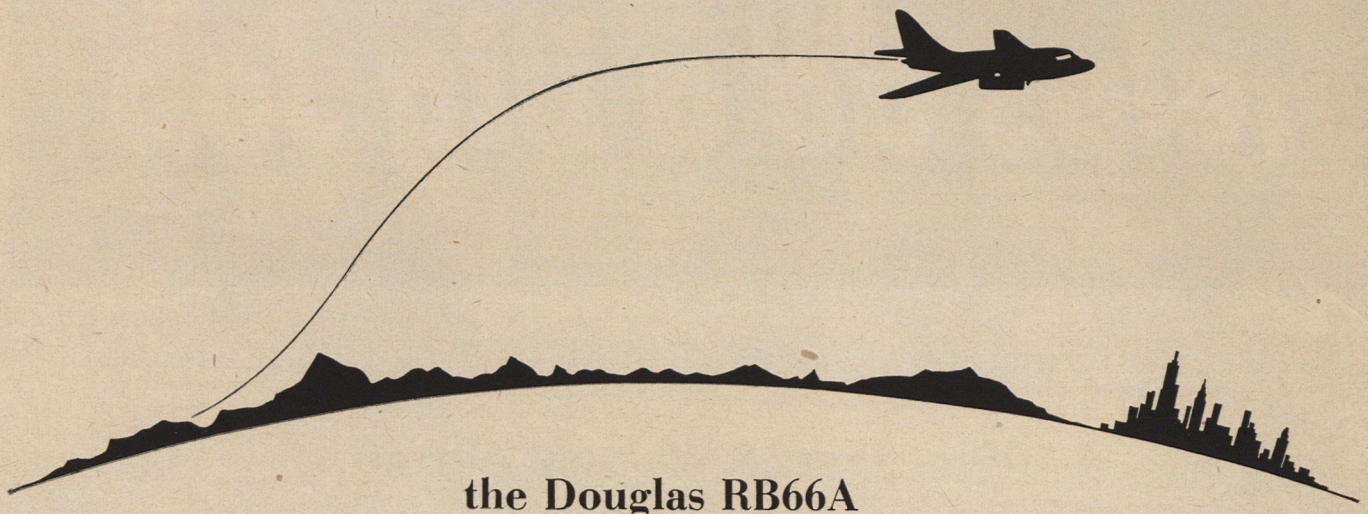
Pratt & Whitney Aircraft

PRATT & WHITNEY AIRCRAFT — DEPENDABLE ENGINES

ONE OF THE FOUR DIVISIONS OF
UNITED AIRCRAFT CORPORATION

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

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

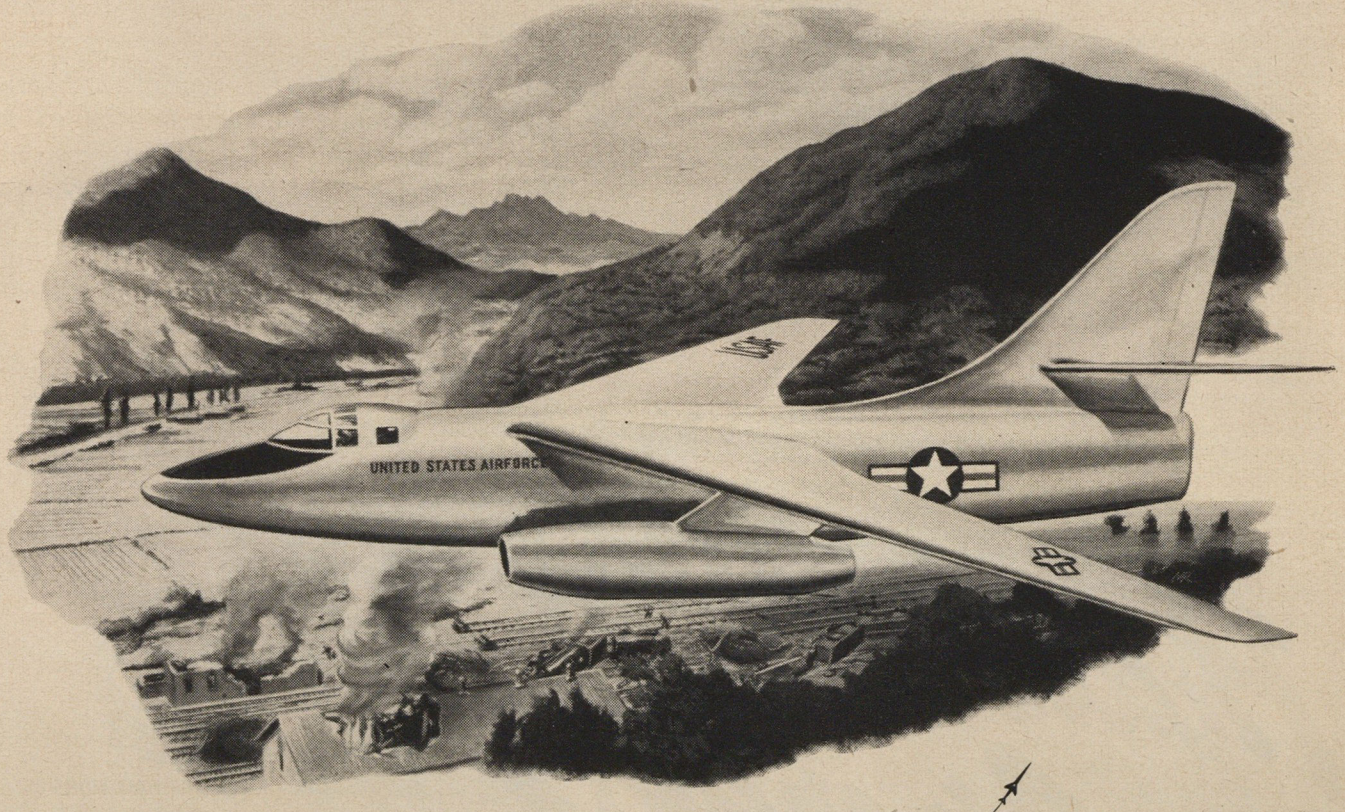


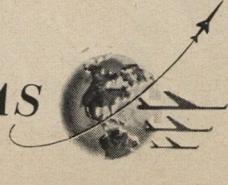
the Douglas RB66A

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

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

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



Depend on *DOUGLAS*  **First in Aviation**

AIR MAIL

Still Disgusted

Gentlemen: A few issues ago I pointed out my two-month wait to get an answer from the Air Force on the reserve program after being solicited to participate. I thought you'd be interested in knowing what has happened in the interim.

Eventually my assignment to the organized Reserve came through, and I started attending weekend "training" periods. *Absolutely nothing constructive* (in fact, nothing at all!) has taken place

in any of the twelve periods that I have attended. I am told by others who have been sitting around weekends reading newspapers and book condensations, and generally "shooting the breeze," that the situation has been like this for as far back as they can remember.

I wonder if it wouldn't be better to end the present pretense, which is costing Uncle Sam a considerable amount of money in large overhead organizations (ConAC, its Air Forces, Reserve Training Centers, etc.), in addition to the direct expenditures for Reservists (pay, allowances, materials, etc.), replacing it with complete reliance on extension activity for all specialties, flight training for reserve rated personnel living near regular Air Force installations, and two-week active duty tours in mobilization assignments. This program would make the Reserve the supplementary group "filling in" around the regular Air Force personnel in times of emergency. It would eliminate reserve wings that are unwieldy and usually "broken" up after recall because they lack the really experienced basic core that is needed.

A Disgusted Reservist

Added Information

Gentlemen: Reference the reserve survey schedule appearing on page 74 of the September issue of AIR FORCE, the following comments from the Director of Personnel Planning, HQ ConAC, are submitted for your information:

a. Under First Air Force *add*—"Scranton, Pennsylvania, starting 22 Oct 52, estimated completion date 25 Nov 52."

b. The heading should read substantially as follows: "The following current and projected operations represent those sites and dates which are planned for at this time. In addition to those indicated below there will be approximately 164 additional sites in operation during the inventory project. Location and estimated dates for these sites have not been established as of this date."

c. The amendment in b above is considered necessary in that the terminology employed in the schedule as presently published infers that the sites listed represent the total number contemplated during the conduct of the Inventory.

The above information was sent to this office to relay to your magazine because we are, so to speak, the Washington representative of ConAC, although our primary responsibility is that of serving as the editorial office of The AIR RESERVIST.

The material carried in your September issue concerning the Reserve Program was highly interesting and informative, and should be of great benefit to your readers.

Maj. Lyman L. Woodman, USAF

More for the Plug File

Gentlemen: Much is to be gained from reading your magazine and I consider it one of the best.

J. W. Larson
Chief Engineer, Convair
Ft. Worth, Tex.

Gentlemen: As Intelligence Officer of our VARTU flight, I use your magazine almost exclusively for briefing on present Air Force developments and training. Keep up the good work.

Willis C. Lundahl
Warren, Penna.

Gentlemen: Over here in Korea, where we can see the real importance of airpower, we who are fighting this war (police action, if you prefer) appreciate the efforts of the AFA more than I can say. Keep up the excellent work.

Lt. Daryl W. Motte
APO 970, San Francisco, Calif.

Gentlemen: In regard to the September issue of AIR FORCE—the entire issue was up to the usual high standards of yours, with the article on Air Force Reserve proving very apt and interesting—to me, at least. As a charter member of AFA, I feel that the present annual dues are more than compensated for by the normal content and scope of material presented in each copy of AIR FORCE, to say nothing of the complete and prompt information available from AFA. I for one am more than content and satisfied with AFA as it is—and will gladly continue to remain a member as long as AFA strives to accomplish its goals, as it has in the past. As yet, I have seen no need to join any other veterans organization—and can see no reason for changing my opinion. Your present "flight plan" seems about ideal to me, and may we all arrive at "our ultimate destination," rather than some other alternate, not of our choosing.

John A. Mulvihill
Lebanon, Mo.

Gentlemen: May I say that I look forward more eagerly now to my monthly copy than I did to its World War II "brother" – and even then it was my favorite magazine. Your magazine is the main link between we civilians and our ever-changing Air Force.

I hold a position in an aircraft industry, which means that interest runs higher than the usual in aviation. I find that I am well versed in many discussions—thanks to AIR FORCE. Please keep up the good work.

Robert L. Woodhouse
Buffalo, N. Y.

Dissenting Voice

Gentlemen: Since your magazine (the prime reason for membership) has become just another newsstand aviation

magazine for teen-agers, I'm no longer interested. Please cancel my membership.

Norman Wymbs
Northbrook, Ill.

Security Specialists

Gentlemen: I have read your article "More Than Just A Cop," in the September issue of AIR FORCE Magazine, and feel that you have helped immeasurably to portray the essential role of our Air Police. One thing is certain, the Air Policeman today is considerably more than a "cop." His duties include more than "checking passes and sniping at unbuttoned buttons."

The traditional system of utilizing Officers of the Day and detailing personnel on a roster basis to perform traditional interior guard duty has been generally eliminated from Air Force installations. Today the Air Force places the responsibility for internal security for all our combat resources on the Air Police. As you have ably pointed out, the Air

Leadership demands constant achievement

AIR DEFENSE FROM THE GROUND UP

AIR ATTACK! This alarm could be sounded in the U.S. If it is, then time will be priceless.

The U.S. Air Force is ready to answer any alarm—with squadrons of Lockheed Starfire interceptors* that can climb quickly to the attack, locate and knock out invading bombers in any weather, day or night.

But first the alarm must be given. Somebody must spot the invaders.

And there are only two ways to spot an air attack: (1) by radar, (2) with human eyes and ears. Ground radar stations cannot always spot planes flying under 5,000 feet. So we badly need civilian observers.

True, airplanes are being built to take our radar warning system off the ground. For this job Lockheed is producing WV-2 Early Warning Constellations with 360-degree radar.

Also the Navy has many Lockheed P2V Neptunes on antisubmarine patrol day and night. Their "eyes" guard against air attack too.

But we still need an additional 300,000 men and women observers to fill the low-level radar gaps. You give just a few hours a week. Call your Civilian Defense Office, or write to Ground Observers Corps, U.S. Air Force, Washington 25, D.C.

**Lockheed Starfire*

Look to Lockheed for Leadership

LOCKHEED

AIRCRAFT CORPORATION

BURBANK, CALIFORNIA, AND MARIETTA, GEORGIA

GROUND OBSERVER CORPS NEEDS 300,000 VOLUNTEERS

Early this summer top U.S. Air Force officials met with Civil Defense directors from 46 states and four territories, and reviewed in confidential detail the current efforts to defend America from surprise enemy attack.

"Despite a $300,000,000 radar fence around the nation's perimeter, gaps exist through which enemy aircraft could penetrate our defenses undetected," the meeting was told.

That's why America needs a total of 500,000 civilian skywatchers as members of the Ground Observer Corps. Nearly 200,000 have already volunteered.

"The only practical means of filling the gaps in our defenses is through a 24-hour operation by civilian volunteers," the meeting was told.

Why isn't America's radar network sufficient?

Defense gaps exists because of radar's line of sight principle, and radar's failure to penetrate opaque masses. Every mountain, every hill casts a shadow behind which enemy aircraft could sneak undetected. Even in perfectly flat country the curvature of the earth shortens the effective range. Equally alarming, radar is susceptible to jamming.

These gaps cannot be filled by Air Force personnel due to the staggering expense. That's why civilians are needed in 27 perimeter states to man Ground Observer Corps stations 24 hours a day. Here is a critical, patriotic job that requires just a few hours a week from each volunteer.

Aircraft too are an important part of our national warning system and of course are the backbone of defense against attack. Three advanced Lockheed planes play a vital role:

The WV-2 *Super Constellation* Early Warning Aircraft, developed for the Navy and the Air Force to extend radar's range in a whole new concept of national defense.

The P2V *Neptune* Navy Patrol Bomber, charged by the Navy with anti-submarine patrol and protection of U. S. coastal waters.

And the F-94C *Starfire*, the nearly automatic all-weather interceptor, which does the final job of climbing to the attack at terrific speed, locating the invaders, and shooting them down with more than human accuracy.

When the U. S. has all necessary planes and personnel—civilian and military—it will be difficult for enemy aircraft to penetrate U.S. defenses.

AIR MAIL — CONTINUED

Policeman has become a versatile security specialist who protects matériel essential to the Air Force mission against saboteurs or armed aggressors. Air Police form the nucleus of a striking force and assist in meeting the present day requirements for internal security and ground defense of Air Force bases.

This new role for the Air Policeman has generated specialized training which will be given at the Air Base Defense School at Parks Air Force Base, Calif. Air Force participation in the Military Police School at Camp Gordon, Ga., is being phased out. The Air Base Defense School will receive its first quota of Air Police officers and Air Policemen in January of next year.

Maj. Gen. J. V. Dillon, USAF
The Air Provost Marshal
The Inspector General
Washington 25, D. C.

Our Apologies

Gentlemen: The list of officers carried in the September 1952 issue of AIR FORCE called me Julian M. Rosenthal. In the November issue it is Julian R.

For the sake of uniformity and accuracy, could this be corrected to Julian B?

Julian B. Rosenthal, Secretary
Air Force Association

● *Glad you set us right before we could run through the other twenty-three letters of the alphabet.—The Editors.*

Thoughts on Ramming

Gentlemen: I am a lawyer, not an engineer. However, it would seem reasonable to me that the faster a plane was traveling at the time of impact in a ramming mission the more chance the rammer would have of coming out alive. I base this thought upon the following observations:

1. I have seen soft wood splinters driven clear through palm trees by hurricane winds, and

2. It is a generally recognized fact that the greater the relative force or power which is exerted against a given field of resistance the less counter-reaction on the side of the force.

Therefore, it seems to me that the portion of your article on ramming which discussed the advisability of slow flying in ramming is superfluous, if not in error.

Robert E. Powers
Lakeland, Fla.

● *1. Soft wood splinters go through—sure, but the whole front (point) of the splinter gets badly damaged.*

2. Not so!! Action always equals reaction. The important thing is to get ramming action powerful enough to destroy enemy bombers, and yet weak enough to keep reaction from destroying the rammer. That's why rammer speed is not "fastest possible" – but fast enough to destroy the bomber, and yet slow enough to give the rammer pilot accurate control.—The Editors.

Five Little Words and a Poem

Gentlemen: The "Five Little Words" which headed an item in your November Rendezvous from H. W. Edwards, Hendersonville, N.C., were quite enough.

It was written by a young American, Pilot Officer John Gillespie Magee, Jr., who was killed serving with the RCAF. Born of American missionary parents in Shanghai and educated in Britain's famed Rugby School, he went to the United States in 1939 and, at the age of eighteen won a scholarship to Yale. However, instead of attending Yale he enlisted in the RCAF in September, 1940 and served overseas with a Spitfire Squadron until his death on active service December 11, 1941.

I thought your readers might be interested in seeing the rest of the poem, which was originally scribbled on the back of a letter to his mother.

Leslie C. Powell
Canadair Limited
Montreal, Canada

Gentlemen: In the November AIR FORCE, on page seven, one of the readers requests a copy of the poem. This poem appears in "History in the Sky" by Capt. Arthur F. Brown, a history of the 354th Pioneer Mustang Fighter Group. I am a former member of the 355th Fighter Squadron, which was a part of the 354th Fighter Group.

John M. Kenny
Springfield 5, Mass.

HIGH FLIGHT

Oh! I have slipped the surly bonds
of earth
And danced the skies on laughter-
silvered wings;
Sunward I've climbed, and joined the
tumbling mirth
Of sun-split clouds—and done a hundred
things
You have not dreamed of—wheeled and
soared and swung
High in the sunlit silence. Hov'ring
there
I've chased the shouting wind along,
and flung
My eager craft through footless halls of
air.

Up, up the long, delirious, burning blue
I've topped the wind-swept heights with
easy grace
Where never lark, nor even eagle flew—
And, while with silent lifting mind I've
trod
The high untrespassed sanctity of space
Put out my hand and touched the face of
God.

● *Our thanks, too, to Lloyd H. Jenkins, Executive Assistant, RCAF Association, for his letter; and to Lt. Col. Thomas M. Carhart, of the Pentagon, for phoning to tell us that there is a biography of John Gillespie Magee, Jr., entitled "Sunward I've Climbed," and that the poem was featured some months back on the Air Force radio program Serenade in Blue.—The Editors.*

General Motors' *fourth* proving ground is in the Air!

GENERAL MOTORS engineers are never satisfied with the results of laboratory tests alone.

That's why we have three proving grounds where cars, trucks and military vehicles are tested under conditions that duplicate actual service.

In addition, Allison operates a fourth — *a proving ground in the air.*

At our flight test facility on Weir Cook Airport in Indianapolis, experimental and production models of Allison turbine engines are mounted in flying test beds in latest combat type aircraft and put through their paces under actual flight conditions.

Over and above this, Allison has invested in its own Convair Liner to evaluate and demonstrate the application of Turbo-Prop engines in military and commercial transports. Allison engines have powered the Turbo-Liner on more than 150 individual flights—and the program of testing and development continues.

This actual flight testing of Allison engines helps explain their constant improvement — in thrust, in fuel economy, in endurance and, in fact, all the factors that spell dependable, high-output performance.

GM
GENERAL MOTORS

Allison

DIVISION OF GENERAL MOTORS, INDIANAPOLIS, INDIANA

World's most experienced designer and builder of aircraft turbine engines

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

AIRPOWER IN THE NEWS

BY JAKE CULPEPPER

AF POLICY on role of guided missiles indicates that while future capabilities of the AF will become increasingly dependent upon guided missiles, human pilots will not become obsolete, at least for many years. Pilotless aircraft are simply an extension of conventional aircraft. Transition to them will be a smooth process of replacing obsolescent equipment with up-to-date models. Pilotless aircraft units are now established, and as improvements in the weapons are made, these units will be expanded into combat wings. But this gradual process should lead no one to the conclusion that an AF built around "push-button warfare" is around the corner (see page 14).

AF PRODUCTION — Under Secretary Roswell Gilpatric in an address in Seattle revealed: B-47 production at Boeing's Wichita plant has now hit more than one per day, and two other plants will start deliveries early next year. F-86 and F-84 production is now around 250 a month or twelve a day. Two years ago production on these was only fifty-five a month. Jet engine production of two contractors only (General Electric and Allison) has risen to sixty per day, compared with seventeen per day two years ago. . . . Small business got seven out of ten AF prime contracts during FY 1952. This does not include subcontracts by small business.

AF BASES — AF is working at top speed on plans for the new $30,000,000 Aeromedical Center at Brooks AFB, Tex., though no money has yet been appropriated for this project. . . . Greenville AFB, Miss., will become a basic, single-engine jet school in January 1953. . . . First helicopter school ever conducted by AF in Europe has opened at Burtonwood, England. . . . Captain Gustav C. Bahn of AF School of Aviation Medicine, Randolph AFB, Tex., has become a Fellow of the American College of Surgeons. . . . AF base formerly located at Neubiberg has been shifted to Landstahl, Germany, in one of many moves anticipated in a long-range plan to put air bases west of ground troop detachments facing the Russians in East Germany. . . . A heavy strategic reconnaissance wing, to be equipped with RB-36 type planes, has been activated at Ramey AFB, Puerto Rico. . . . AF plans to rename Dover AFB, Del., in honor of the late Maj. Gen. Robert Olds, an organizer of the wartime Air Corps Ferrying Service. . . . Operational control of Navy and AF facilities at White Sands Proving Grounds, Las Cruces, N. Mex., has been placed under Army. . . . Laughlin AFB at Del Rio, Tex., has been transferred from Flying Training AF to Crew Training AF. . . . The 6580th Missile Test Wing at Holloman AFB, Alamogordo, N. Mex., has been renamed Holloman Air Development Center.

TRANSITION — Sacks with innerspring mattresses are slated for airman dormitories in near future. . . . Better flight chow has been okayed for crewmen and others who eat aboard AF planes. . . . Eighty-six airmen have been outfitted with $6,000 worth of flowing Arabian costumes by King Ibn Saud of Saudi Arabia in thanks for airlifting Moslems to Mecca. . . . Colored scarves, different for each branch, were adopted for Army personnel this fall.

OFFICER HIKES — Recess appointments to temporary grade of Major General: Kingston E. Tibbetts, Director of Materiel, SAC, Offutt AFB, Neb.; Jarred V. Crabb, C/S, ADC, Ent AFB, Colo.; Harlan C. Parks, CG, 3275th AF Indoctrination Wing, ATRC, Parks AFB, Calif.; Morris J. Lee, Director of Personnel Planning, USAF Headquarters; Robert E. L. Eaton, Director of Legislation and Liaison, OSAF; Gabriel P. Disosway, CG, Flying Training AF, ATRC, Waco, Tex. To temporary grade of Brigadier General: Clifford H. Rees, C/C, Allied Air Forces, Northern Europe; William E. Rentz, C/S, TTAF, ATRC, Gulfport, Miss.; Charles W. Schott, C/S, 8th AF, SAC; William H. Cantebury, CG, 1009th Special Weapons Squadron, Headquarters Command, USAF; C. Pratt Brown, CG, Wright-Patterson AFB, Ohio; Major

S. White, Air Surgeon, TAC, Langley AFB, Va.; James O. Guthrie, Deputy Director of Requirements, DCS/D, USAF Headquarters; Henry R. Spicer, CG, 3520th Flying Training Wing, ATRC, Wichita, Kans., Municipal Airport; Thomas P. Gerrity, CG, 11th Bomb Wing (H), SAC, Carswell AFB, Tex.

THE PLANES — F-86s set new combat record in September, knocking down 61 MIG-15s while losing four Sabrejets in air-to-air combat. During three months period, July through September, 107 MIGs were downed at cost of ten AF fighters in air-to-air combat. . . . America's first supersonic delta wing interceptor, F-102, to be built for USAF by Convair, has been ordered into initial production (see page 30). . . . Glenn L. Martin Co. has received second order for a "substantial number" of B-57 night intruder bombers for AF. . . . The F-84G fighter-bomber, new type of Thunderjet equipped with facilities for refueling in flight, is reported to have gone into action on a sizable scale in Korea. . . . FEAF has disclosed that an F-80 Shooting Star stayed in air continuously for more than fourteen hours, making five combat missions against Communists in Korea. Record-making flight was made more than a year ago.

WAF — An all-women AF unit, 20th WAF Squadron, has been set up at Keflavik Airport, Iceland. . . . Women of the Armed Services received a salute when the Post Office Department issued a commemorative stamp in their honor. . . . Three WAFs at Wiesbaden Air Base recently became Europe's first women control tower operators. . . . WAF airmen will now be considered for Air Attaché duty.

FLIGHT PAY — A civilian commission, which will study such special pays as combat pay, flight pay, submarine pay, overseas allowances, and physician and dentist pay, has been appointed by Defense Sec'y Lovett at request of Senator Richard B. Russell (D.-Ga.). The study will be submitted with Mr. Lovett's recommendations to the Senate Armed Services Committee during first session of the Eighty-third Congress. Members of Commission are: Lewis L. Strauss, of Rockefeller Brothers, who is chairman; Don G. Mitchell, president of Sylvania Products; Harold Moulton, former president of Brookings Institution; John Thomas Cahill, member of New York law firm of Cahill, Gordon, Zachry and Reindel; and Joseph Campbell, vice president of Columbia University.

SAFETY FIRST — Forty-two of every 100 AF non-combat deaths last year resulted from aircraft accidents, with motor vehicle accidents running second (twenty-eight percent).

VETERANS — More than 31,000 vets with post-Korean service applied for education and training under Korean GI Bill during first ten days of the program. . . . Korean Service Medal will not be available until after Korean war because of current metal conservation program.

BRIEFS — Col. Charles A. Brown, Chief of MATS' Information Service, has been transferred to Office of Public Information, OSAF. . . . Far East AMC saved approximately $3,000,000 by making over winter clothing used by AF in FEAF last year. . . . The European Research Office of AF's ARDC has begun operations in Brussels. . . . Air Rescue Service has been given job of monitoring emergency signals used by AF with aim of reducing the number. . . . Lt. Gen. Leon W. Johnson, CG of ConAC, has been awarded a Distinguished Service Certificate for his active support of the Red Cross Blood Program. . . . AF Headquarters has approved an organizational emblem for Flying Training AF. . . . Col. Harry J. Bullis has assumed command of Flight Service, subordinate unit of MATS, with headquarters in Washington, D. C. . . . Maj. Gen. George W. Munday has been named Director of Supply and Services at USAF Headquarters.

Scramble!

ENGINEERS & SCIENTISTS

You are invited to write regarding positions in new, long-range projects at Northrop Aircraft, Inc. Exceptional opportunities now exist to join the engineering and scientific staff headed by John K. Northrop. If qualified, you may select important developmental work, or equally vital production engineering.

Examples of positions open are:

BOUNDARY LAYER RESEARCH SCIENTISTS...
ELECTRONIC PROJECT ENGINEERS...
ELECTRONIC INSTRUMENTATION ENGINEERS...
FLIGHT-TEST ENGINEERS...
THERMODYNAMICISTS...
SERVO-MECHANISTS...
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

Skilled and alert are the men of the 83rd Squadron, at Hamilton Air Force Base, in the Western Air Defense Command. They fly 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

5A11

THE ROLE OF A WATCHDOG

PUBLIC OPINION is the final term of reference in a democracy, and this opinion must be founded in fact. Those who trespass against the facts must be sought out and exposed. Only with such vigilance can we expect to get the defense we need and the most defense for our tax dollar.

As a watchdog of defense facts, the Air Force Association must not only bark in warning, but must bite back at offenders when the public trust has been violated. In this issue of our magazine, we sink our teeth into two aspects of the problem as it pertains to public understanding of our air weapons.

The article "Carriers to the Rescue?" (page 25) by Managing Editor Jack Loosbrock examines a recent naval exercise in the North Atlantic known as Operation Mainbrace. In this instance, the public has been led to believe that the operation was a marked success, whereas close scrutiny of this maneuver results in quite a different conclusion. Indeed, it strongly suggests that re-evaluation of the carrier task force as a full-fledged weapons system, apart from any worth carriers might have for specific tasks, such as anti-submarine warfare, commands the immediate attention of our leaders. As the nation struggles to achieve both financial solvency and military security the carrier task force, from the standpoint of value received, obviously deserves a full dose of good old American common sense.

The problem of the carrier task force essentially is a problem of evaluating a weapon of World War II in terms of its ability to face the facts of a possible World War III. On these pages I should like to call attention to another phase of the problem.

A few weeks ago the headlines announced that a new era in warfare had at last arrived. "US Fires First Guided Missile in Combat," these headlines said in bold black print across the front pages of the nation.

The announcement seemed plausible enough. For years the newspaper reader had been told he was living on the edge of the electronic age, with "fantastic weapons" soon to come.

Now the reader was told that a fantastic guided missile was in action, introduced into combat by our Navy from the deck of the aircraft carrier *Boxer* off Korea.

The newspaper dispatch from the battle zone chronicled the event in breath-taking prose. A Navy spokesman officially confirmed, in equally glowing terms, that history had been made. Here at home editorial writers and news commentators let loose their choicest adjectives in a full dress salute, and the public cheered.

So it was that the American taxpayer became the victim of the publicity stunt of the year.

"On this aircraft carrier today," the newspaper dispatch began, "we watched the first take-off of a guided missile in actual combat."

Actually, the object which left the deck of the *Boxer* that day was an obsolete fighter plane of World War II vintage known as the Grumman Hellcat. Some electronic gadgets had been pushed into the pilot's seat and the plane was controlled from another aircraft in flight. The controlled "drone," as such pilotless aircraft have been known for the past seven years and more, was hardly a "guided missile." Even if it were, this was merely one of many flights by pilotless vehicles "in actual combat."

Radio-controlled pilotless aircraft were flown against German targets in 1944 and 1945 by the Air Force under what was known as the "war weary project." In fact, the World War II drones (B-17 and B-24 type bombers) each flew more than twice as far as the 150 miles covered by the Navy Hellcats in Korea, and carried more than nine times the explosive load of the 2,000-pound bomb lugged by the carrier-based fighters. A dozen or more "war weary" remote-controlled missions were flown by the Air Force against the enemy seven years ago, while only a half dozen of the Hellcat missions in Korea have been reported to date. Yet, the recent news dispatch from Korean waters continued with this statement:

> "And we on the ship knew that here, at least in actual combat, was a new era of battle—an era when electronic brains will ride into tough, dangerous places, saving the lives of American pilots."

This was a cruel hoax to play on the American family. Across the country it gave new hope to a nation burdened with the cost and despair of war. To the mothers of America it meant that electronic devices had begun to take over the bloody tasks of combat long demanded of their sons. With such thoughts in mind, the *Boston Herald* described this Navy stunt as "heartless." It fully lived up to that definition.

"We realized in our hearts," the dispatch concluded, "that the age of fighting with guided missiles was no longer in the future. It was here."

This disregard for the truth was quite unforgivable. The age of missile warfare is *not* here. It is still in the future. The pilot, the navigator and the bombardier will hold the key to our airpower capability for some time to come. These flights off the carrier *Boxer* proved nothing that hadn't been proved before. They were public relations missions pure and simple—and expensive ones, at that.

Can the American press, both the originating news agencies and the reporting newspapers, be blamed for this hoax? Yes, of course, but only to a degree. The press reported what it believed to be legitimate spot news. It reported what it was told. As the true story evolved, a few alert publications dug out the facts and denounced this stunt, as did the *Boston Herald* in its courageous editorial of September 19.

The military service involved, in this case the Navy, must bear the major responsibility for this hoax. The newsmen were not aboard the *Boxer* by accident. They could not have written their dispatches without the help, and no doubt the encouragement, of the Navy. The Navy spokesman in Tokyo not only confirmed the original newspaper report, but added the phony claim that "powerful and sustained attack by guided missiles could be made on North Korea from US aircraft carriers," as *The New York Times* reported it. To be sure, a Navy admiral in Washington stepped into the breach with remarks which seemed to tone down the incident, but by the time his comments appeared they were well buried in the newspapers and the impact of the original front-page announcement lingered on in the minds of the taxpayer.

Revealing is the fact, uncovered by a staff writer for the *New York Herald Tribune*, that the Navy in Washington had censored from the original news report the identification of the aircraft employed, and had in-

An editorial by ARTHUR F. KELLY, PRESIDENT, AIR FORCE ASSOCIATION

serted, instead, merely the term "guided missile." Only a snafu in communication between Washington and Tokyo, said the Navy, permitted the identity of the Hellcats to be revealed. We can be thankful for the snafu. Without it the public would have been hoodwinked even more.

As it was, Secretary of Defense Lovett felt called upon in a press conference to clarify the status of this Navy mission off Korea.

"Now these are not guided missiles at all," he said. "They are simply drones with a warhead in them. They were used in the last war, that type of thing. There is improvement in the system, but they are not guided missiles in the sense we are talking about."

The Secretary had good reason to be concerned. We are in the midst of a major technological revolution in weapons, in which the guided missile plays a vital role. Great strides are being made in the development of true guided missiles.

However, we are still several years away from the operational employment of such missiles and, meanwhile, piloted aircraft must do the job. The transition from conventional air weapons to guided missiles is likely to create a number of problems. It will tax the military mind to the utmost. And it will call for full understanding on the part of the public. Under these circumstances, it is imperative that the taxpayer is not misled as to time element involved in this transition in weapons.

In this regard, all the services must be watched closely. The Air Force was somewhat premature in its announcement of more than a year ago that it had activated pilotless bomber squadrons for its Matador surface-to-surface missile. The Army is inclined to over-rate its Nike anti-aircraft missile as an air defense weapon despite its obvious aerodynamic shortcomings. However, both these vehicles are at least true guided missiles. Only the Navy has attempted to palm off an old obsolete fighter on the public.

This Navy stunt has gone a long way toward misleading the taxpayer. He must not remain misled. He and his representatives in Congress must know the facts. We in the Air Force Association, in our own way, must see that the facts are known.—END

THE BOSTON HERALD

FRIDAY, SEPTEMBER 19, 1952

The Navy's Stunt

The Navy has perpetrated a heartless publicity stunt upon the public.

The Navy sent some drone planes on missions over Korea. The planes were radio-controlled. The news was held, ostensibly for security reasons, and released on a dull day with full publicity build-up. The result was headlines across the country. The usually restrained New York Herald Tribune used an eight-column headline to say "U. S. Fires First Guided Missile in Combat, Blasts Korea Foe 150 Miles from Carrier." The United Press story which followed hailed "pushbutton" warfare.

That story was a stunt, for the marvelous new equipment and techniques were used in various forms in the Pacific and in Europe during the last war.

It was heartless because thousands of parents were fooled into believing that a new era had arrived when wars would be fought miles from the front instead of from fox holes.

Its apparent purpose was to score one on the Air Force in the bitter Air Force-Navy feud still going on under unification.

The theatrical performance was calculated to prove that the responsibility for strategic bombing should be given to the Navy and a huge fleet of super carriers. It should not be. The Naval Air Force plays a vital role in our strategic plans, but it is too limited by natural conditions of weather and geography to undertake the whole job.

When the reports from the aircraft carrier Boxer are studied objectively by experts, it is apparent that the Navy did nothing out of the ordinary. It loaded some obsolete planes with big bombs and electronic equipment, made drones out of them and led them over a target.

During World War II, the Air Corps filled B-24's and B-17's full of TNT and sent them over targets on the continent, especially at North Sea submarine bases. The drones were called Weary Willies. Back in 1944 and before, the War Department and the Air Corps headquarters in Washington were working on "stripping B-17's, B-24's and other appropriate aircraft, loading them with explosives, and providing them with the necessary target-finding and control gear, escorting and guiding them to the target area, and finally directing them to a specific part of the target by a combination of radar and television means."

One more example of the work that was done on this years ago—with effective combat results—was Azon and Razon, radio guided bombs, which were used in Burma.

The "new" Navy drones are generally useless except when a target is sufficiently critical to warrant sending flights of them over on the gamble that a few will get through anti-aircraft defenses. An airplane which is obsolete, as the Hellcat is, because of low speed and poor maneuverability, will be just as easy a target for jet interceptors and regular or radar controlled anti-aircraft, without a pilot in it as it was with a pilot.

To be effective, guided missiles must be supersonic and capable of long range control, far more than 150 miles. They must be able to drop enormous amounts of explosives on targets without warning. The Navy drone is less effective than the German V-1 rockets, which were shot down over the channel by Spitfires.

Eventually vastly improved planes utilizing the same principles as the Navy Hellcat drones may be used in anti-aircraft defense, searching out enemy planes and destroying them by electronically homed missiles.

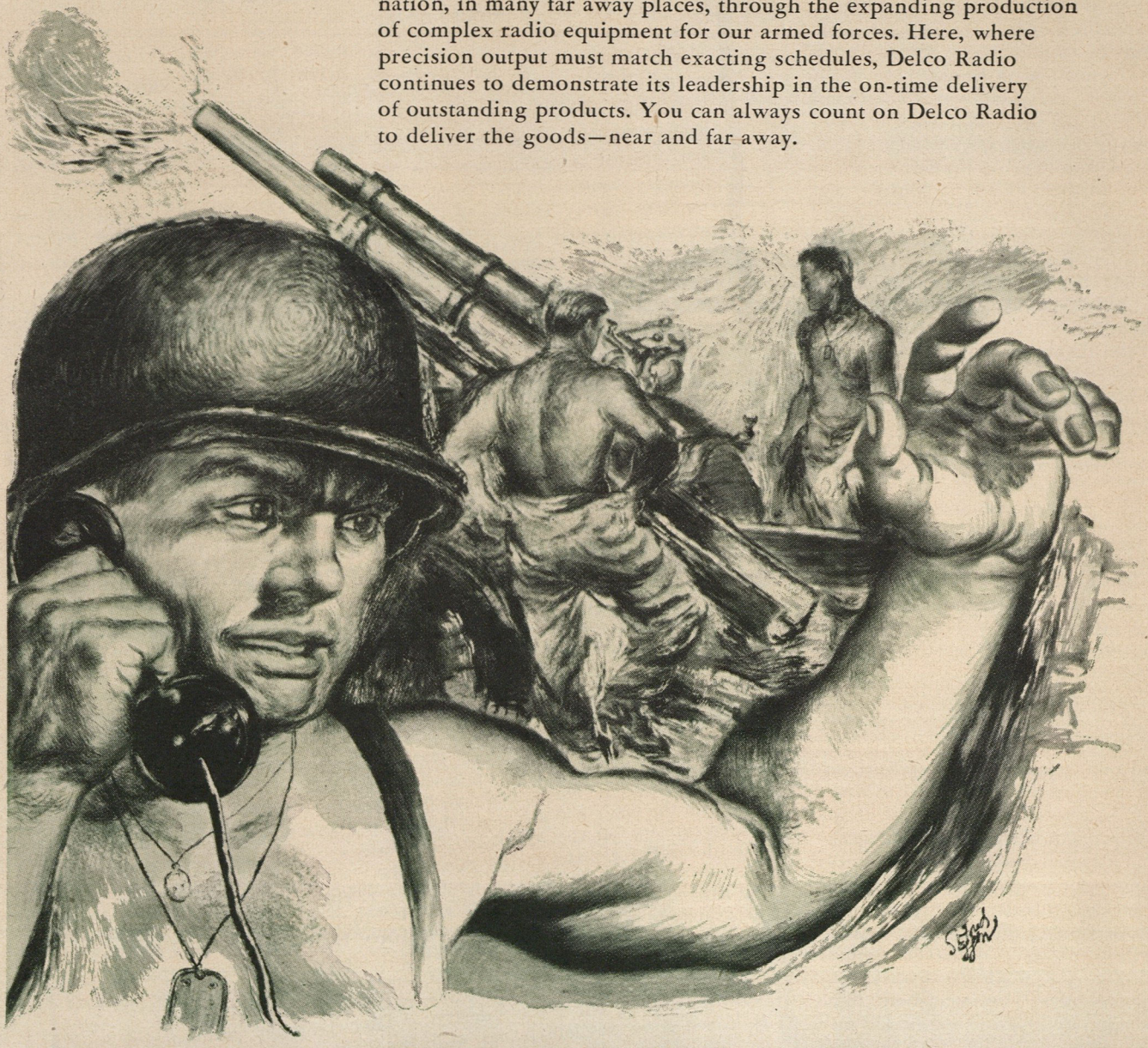
But the recent performances from the flight deck of the Boxer served no strategic purpose. And they may have handed the Russians propaganda material. If it had been a true experiment, it would have been carried out in secret, observed by scientists not reporters.

The conclusion must be that the Navy's opening of pushbutton warfare was a stunt stolen from Barnum and financed by the taxpayer.

Serving at home and far away

DELCO RADIO

As the world's largest producer of radios for automotive use, Delco Radio serves the nation at home with quality manufacturing facilities, a broad engineering and production experience. Today, this same know-how and capacity is also at work in the service of the nation, in many far away places, through the expanding production of complex radio equipment for our armed forces. Here, where precision output must match exacting schedules, Delco Radio continues to demonstrate its leadership in the on-time delivery of outstanding products. You can always count on Delco Radio to deliver the goods—near and far away.



DELCO RADIO

DIVISION OF GENERAL MOTORS, KOKOMO, INDIANA

LEADER *IN PRODUCTION*

Delco Radio is the world's largest builder of automobile radios—the leader in production and assembly of component parts.

LEADER *IN ENGINEERING*

Delco Radio developed many of the most important advances in automotive radio . . . has outstanding experience in this field.

LEADER *IN QUALITY*

Each step in the manufacturing of Delco Radio products is closely supervised to maintain high, uniform product quality.

LEADER *IN MANUFACTURING*

Completely integrated for efficient production from raw material to finished product, Delco Radio meets any customer need.

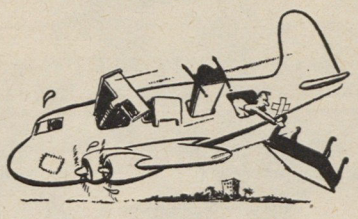
Wing Tips

Traffic on local service airlines during the first half of 1952 was double the volume carried in the same period of 1950.

* * *

An indication of airline safety accomplishments is found in recent quotations of extra premiums charged per $1,000 of life insurance by one of the leading insurance companies. For airline pilots, $2.50; housepainters, $2.50; railroad detectives and watchmen, $5; bridge painters, $5.

* * *



All the furniture in the Caribe Hilton Hotel in San Juan, Puerto Rico, was flown in from New York to save on crating and to avoid breakage of the furnishings.

* * *

For a trip of 200 miles, a helicopter capable of 100 mph should get you there faster than a fixed wing airplane cruising at 170. If a ground time of five minutes at each terminal is assumed for the helicopter trip, and thirty minutes for the airplane rider, average speed for the whole journey is nearly ninety mph for the helicopter and eighty-six mph for the airplane.

* * *

During 1950, private aircraft used for business and professional trips flew 100,000 more hours than the scheduled airlines.

* * *

The average length of all domestic air carrier passenger trips is 461 miles.

* * *

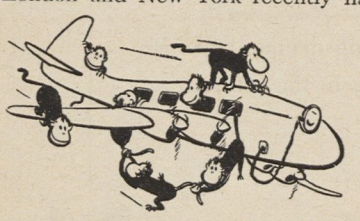
The air transport fleet owned by American corporations numbers about 10,000 planes. About 1,700 of them are multi-engine aircraft. Many are Twin-Beeches, Lockheed Lodestars, and DC-3s, but big business has even gone in for big B-17s and B-24s.

* * *

A single US transport plane can carry enough fuel to drive your automobile 165,000 miles. That's about enough to keep the average motorist rolling until 1968.

* * *

A British Overseas plane en route from Tripoli to London and New York recently had a passenger list of 600 monkeys. A rhinoceros, according to B.O.A.C., is the most exclusive patron of the Zoo Specials, insisting on traveling alone.



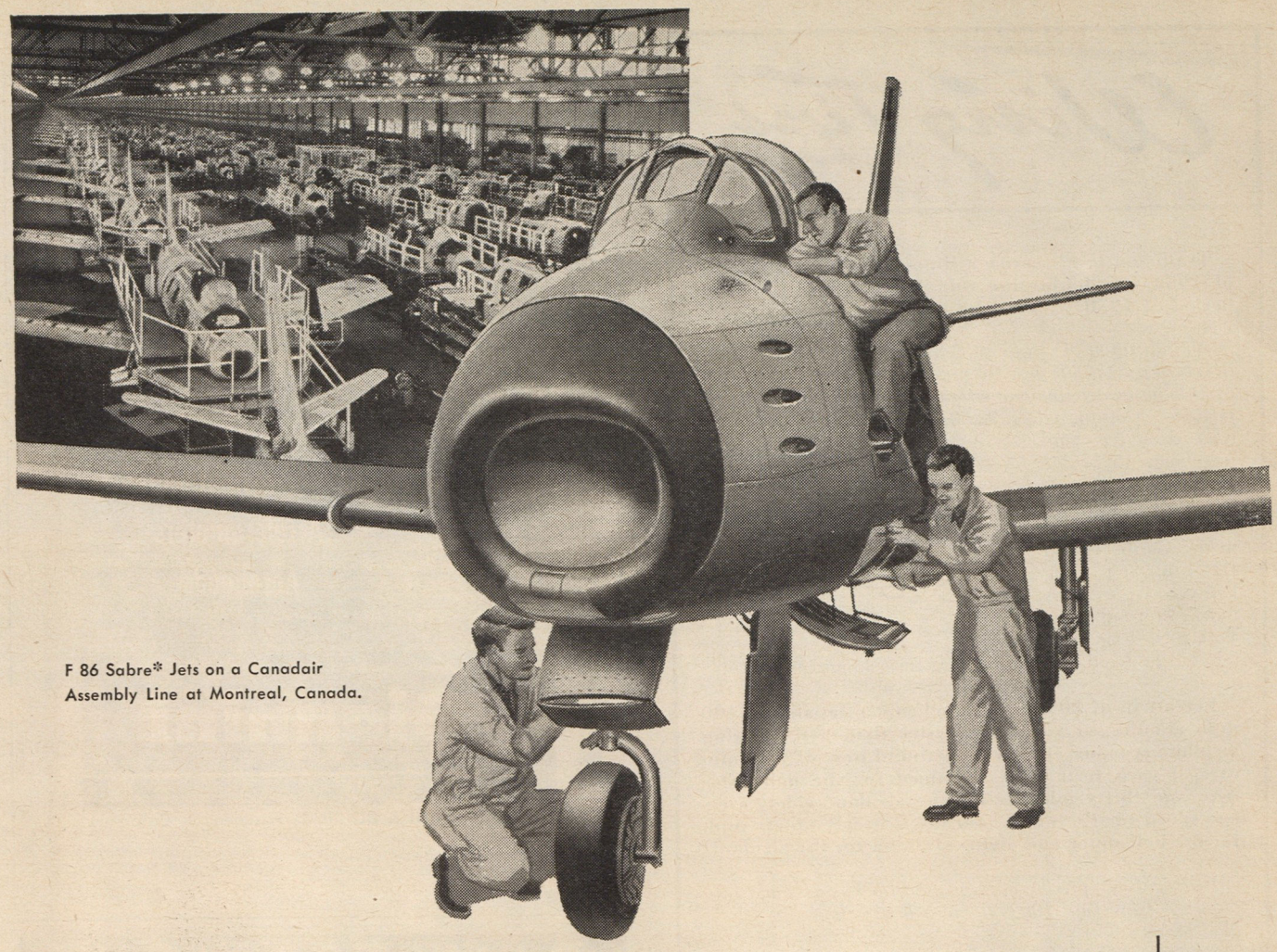
* * *

During 1951, lightplanes dusted an area the size of West Virginia, sprayed as much land as there is in Vermont and New Jersey combined, and fertilized and seeded an area as big as Massachusetts. Cities and towns fighting insects from the air sprayed as much territory as half the state of Connecticut.

* * *

During the first half of 1952, airline coach travel jumped seventy percent in volume over 1951. Nine carriers now provide low-rate coach travel to 43 cities, and sixteen percent of airline patronage is now accounted for by coach trips.

By Wilfred Owen



F 86 Sabre* Jets on a Canadair
Assembly Line at Montreal, Canada.

What are we building at Canadair?

In the building of hundreds of one of the world's finest jets . . . the F-86 'Sabre' . . . Canadair demonstrates its ability to meet today's exacting demands in aircraft production.

A whole new concept of engineering and manufacturing precision has been brought about in the production of jet aircraft . . . Canadair meets this concept with the most advanced equipment, the finest of plant facilities, and its thousands of skilled craftsmen and engineers.

Canadair will continue to meet whatever may be the exacting demands of aircraft manufacture . . . in peace or war . . . today or in the future.

*Made under license from North American Aviation, Inc.

Canadair

LIMITED, MONTREAL, CANADA

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

CA52-19UST

Know Your Enemy

BEATING REDS AT OWN GAME

PART OF THE JOB of this magazine is to set the record straight on matters pertaining to airpower. And certainly the core of our airpower is the men who man our combat aircraft. That is why we felt it our bounden duty, when the matter was brought to our attention, to take up the cudgel on behalf of the two Air Force officers, Lieutenants Kenneth L. Enoch and John S. Quinn, who had been falsely accused by the Communists of participating in bacteriological warfare in North Korea.

It was most gratifying, too, to find that the article excited widespread interest, literally worldwide, and to know that we had played a small part in making the free world aware that Enoch and Quinn had been victimized as part of a gigantic and cruel hoax. The Associated Press gave national distribution to a story based on the article and clippings are pouring into our shop from all over the country. *The Los Angeles Times* and the *Honolulu Star Bulletin* featured it on their front pages, under eight-column headlines.

No small part of the impact created by the article was due to the efforts of AFA local leaders, who brought the article to the attention of editors and stimulated wider editorial coverage than it otherwise would have obtained, including editorials in several leading newspapers.

The Newspaper Enterprise Association condensed the article and distributed it to its 800 client newspapers, representing a combined circulation of about 20,000,000. The International Information Administration of the United States State Department reprinted the article and distributed it, through US Information Service Offices abroad, to foreign magazines and newspapers in the British Empire, continental Europe, Latin America, the Middle East, Far East, Africa, and the French-language press in Canada.

Radio station KFI in Los Angeles telephoned Col. Driscoll in Paris, where he is presently assigned to the Advisory Group for Aeronautical Research and Development (NATO), and transcribed an intercontinental interview. The transcription then was featured on a radio program, "KFI Calling." The article was also quoted on network radio and television newscasts.

Newsmen queried the Pentagon on its reaction to the charges levelled in AIR FORCE Magazine and in reply Secretary of the Air Force Finletter issued a strong public confirmation of the charges and a denunciation of the Red torture methods. His statement follows:

"All members of the Armed Forces and particularly those of the United States Air Force, feel an intense revulsion against Chinese Communist methods of forcing false confessions from their victims to provide grist for the Communist propaganda mill.

"There is no doubt in anyone's mind that the testimony of Lieutenant Enoch, for example, was forced on every single point.

"These barbaric methods of endeavoring to 'brain-wash' the minds of soldiers for propaganda purposes are among the blackest marks yet recorded against the Communist regimes."

Lieut. Gen. Thomas B. White, Deputy Chief of Staff, Operations USAF, wrote us, "The article is commendable and consistent with the usual high standard of your magazine. Naturally, no one is more concerned with the safety and welfare of American flyers than I am and consequently,

(Continued on page 30)

A Man Who Knows

The following communication was received from Robert Vogeler, who himself was tortured until he signed a phony confession and subsequently spent fifteen months in a Red Hungarian prison:

THE ARTICLE in the November issue of AIR FORCE Magazine, "It Could Have Been You" by Col. John F. Driscoll, as well as the editorial by Arthur F. Kelly in the same issue, are of such timeliness and importance that I believe they should be made available to all Americans.

The editorial is a clear statement of what must be done by our government in combatting the Communist threat with which all Americans are faced. Thus far the impression that has been given the people of the United States of the "cold war," which the Soviet Union is carrying on, and the not so cold war in Korea, has been one that definitely minimizes the seriousness of our present conflict.

Mr. Kelly so well states in his editorial that it is imperative that a full account should be made of what the Communists are doing, not only in the physical war in Korea, but also the war they are carrying out to condition men's minds. To condition those minds to accept the dangerous propaganda which the Communists in Moscow and their agents all over the world are disseminating for the purpose of enslaving the world, or for the purpose of preparing free peoples to accept Communist slavery without resistance.

I have seen the techniques of the Communists practiced successfully in a few of the nineteen nations comprising 600 million people that have been enslaved since 1945.

The article by Colonel Driscoll, although only treating that phase dealing with the preparation of prisoners for a Communist public trial, should make clear to everyone just how the will and brain of strong-minded men can be influenced to the extent of completely changing the individual's philosophy – changing all the deep beliefs and the faith upon which hope and life itself depends. What the Communists do in their torture chambers and prisons, they are also doing more slowly through their propaganda media.

All Americans should be made aware not only that we have an enemy, but should know the viciousness of the type of warfare that the enemy is waging against all mankind in the free world.

I definitely concur that in the past our government, our press, our institutions and public officials have been criminally lax in their failure to expose the facts of Communism in forthright terms—calling "a spade a spade." I compliment you for your editorial by Arthur F. Kelly and the article by Colonel Driscoll, which pull no punches and I sincerely hope that your example will encourage others to do the same.

I heartily agree with Mr. Kelly's statement:

"A 'Know Your Enemy' campaign, or any other form of psychological warfare, is only as good as the physical forces we have available to back us up."

In my opinion, the active campaign of exposing Communist methods unequivocally must be supported by a strong Air Force program, a program which I have supported wholeheartedly since my experiences at the hands of the Hungarian Communists in Budapest.

Your magazine, AIR FORCE, should be complimented for its courage and I trust you will continue your efforts to bring the truth to the American people while there is still time to defend ourselves against enslavement and to assist in the liberation of the many unfortunate peoples who have already been enslaved. It is my conviction that by following the principles proposed by you, we can accomplish the destruction of Communism without becoming involved in a war of destruction.

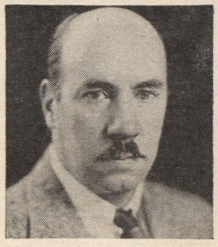
Robert A. Vogeler

PEOPLE

In The Air News

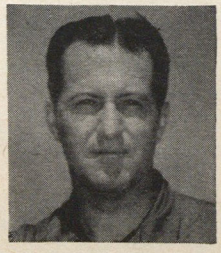
Col. Donald J. M. Blakeslee, CO of the 27th Fighter-Escort Wing, who led his wing of F-84G's in transpacific flight of 7,800 miles from US to Japan. Pilots of the 27th set a new record for over-water flight by single-engine fighters when they flew the last 2,575 miles non-stop, using in-flight refueling techniques. Colonel Blakeslee's wife lives in Austin, Texas.

Igor I. Sikorsky, noted pioneer in development of the helicopter, who received the 1951 National Defense Transportation Association's award for achievement in transport. In accepting the award from AF Sec'y Finletter, Sikorsky predicted that 'copters capable of carrying thirty to forty passengers and comparable amounts of cargo are not more than two years away.

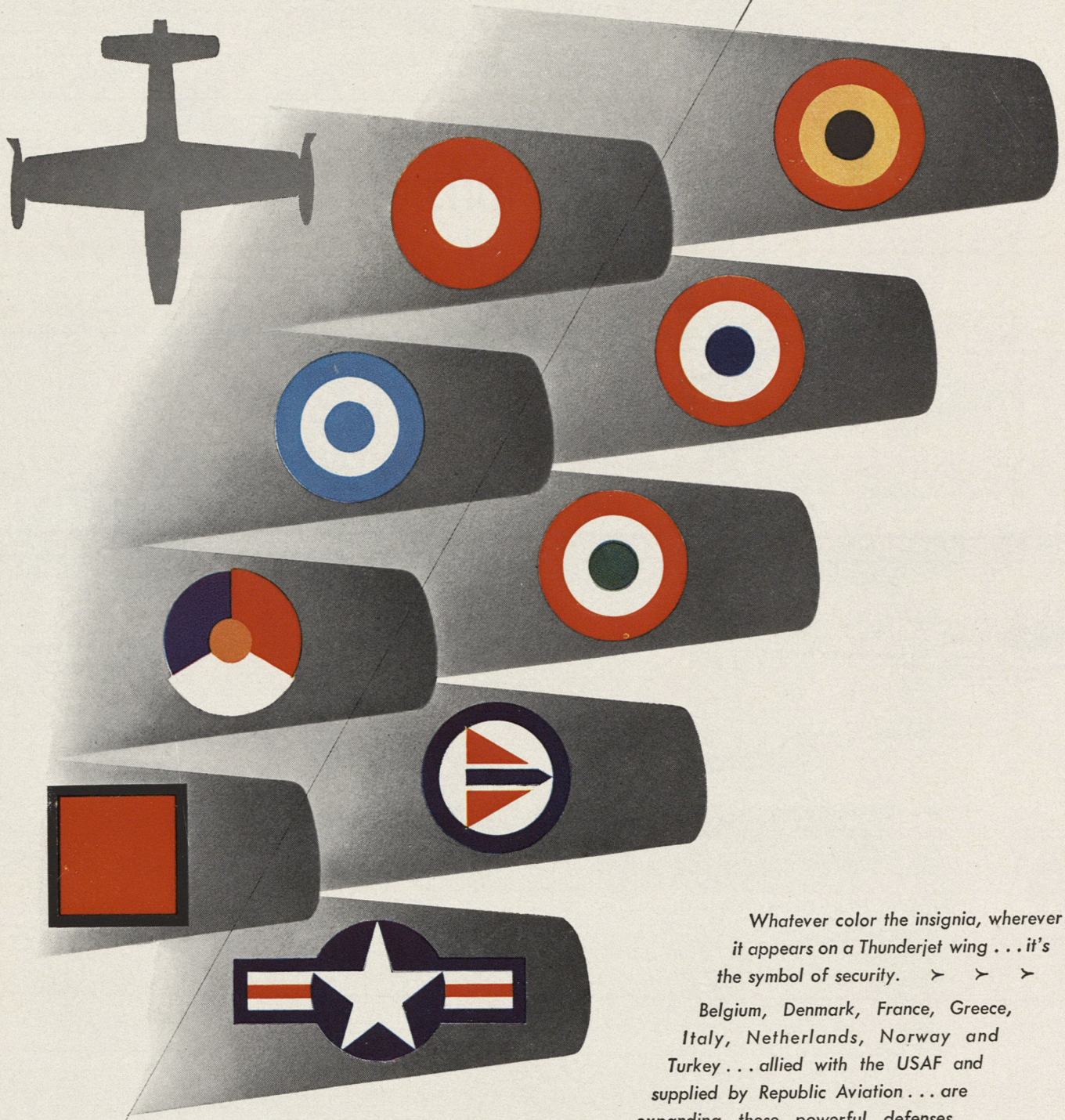


Pilot Officer Jean Lennox Bird, Women's RAF Volunteer Reserve, first woman to win the wings of an RAF pilot. She became eligible under a new ruling after passing the same flying and ground test required of other RAF pilots. She holds a senior commercial pilot's license and a full instructor's license. The British aviatrix has more than 3,000 flying hours to her credit.

Col. Fred J. Ascani, one of the AF's leading specialists in research testing of aircraft, who recently received USAF's Mackay Trophy for 1951 for setting a world speed record of 635.6 mph in the 100 kilometer Closed Course Competition at the National Air Races in Detroit last year. Colonel Ascani flew an F-86E to beat the previous record of 605.8 mph.



HAND IN HAND....



Whatever color the insignia, wherever it appears on a Thunderjet wing . . . it's the symbol of security. ➢ ➢ ➢

Belgium, Denmark, France, Greece, Italy, Netherlands, Norway and Turkey . . . allied with the USAF and supplied by Republic Aviation . . . are expanding these powerful defenses against would-be aggressor nations.

REPUBLIC AVIATION

FARMINGDALE, LONG ISLAND, N. Y.

Makers of the Mighty Thunderbolt • Thunderjet • XF-91 • F84F

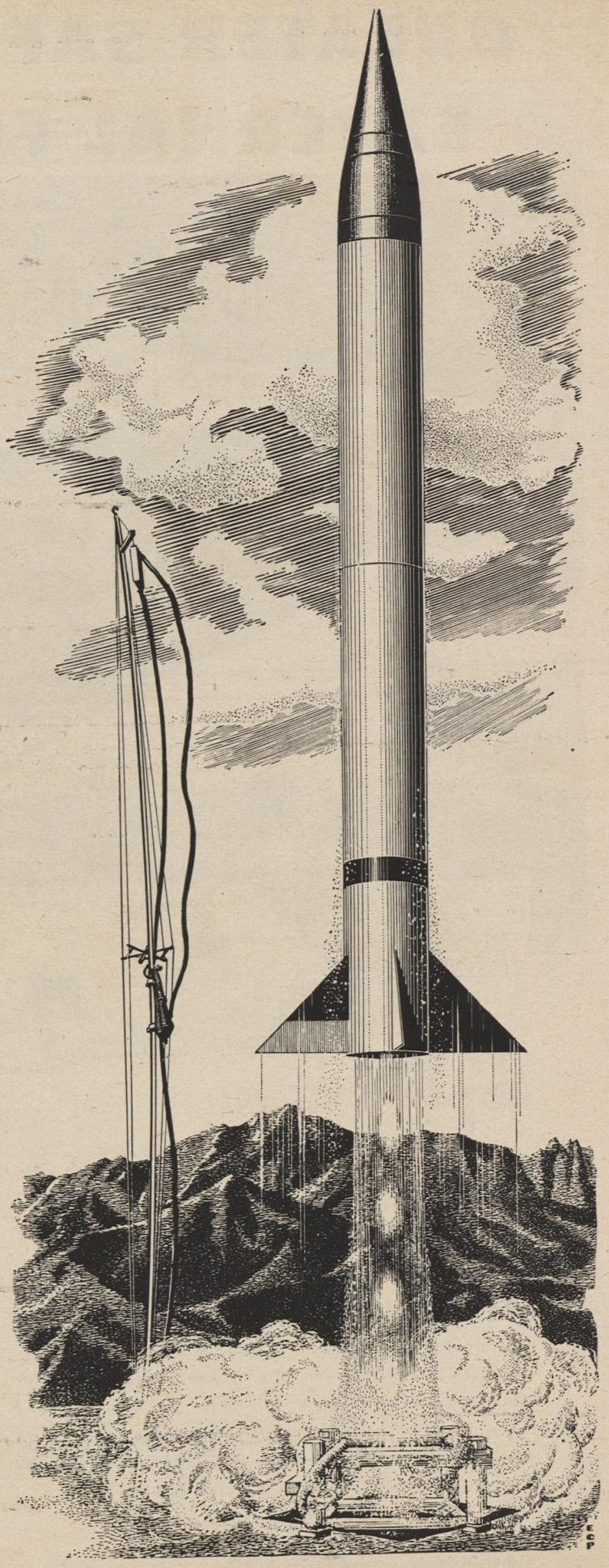

In 24 nations of
the Free World
Safe Christmas "Touchdown"
with Gilfillan
Los Angeles
California
GCA
radar

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.

HURTLING 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.

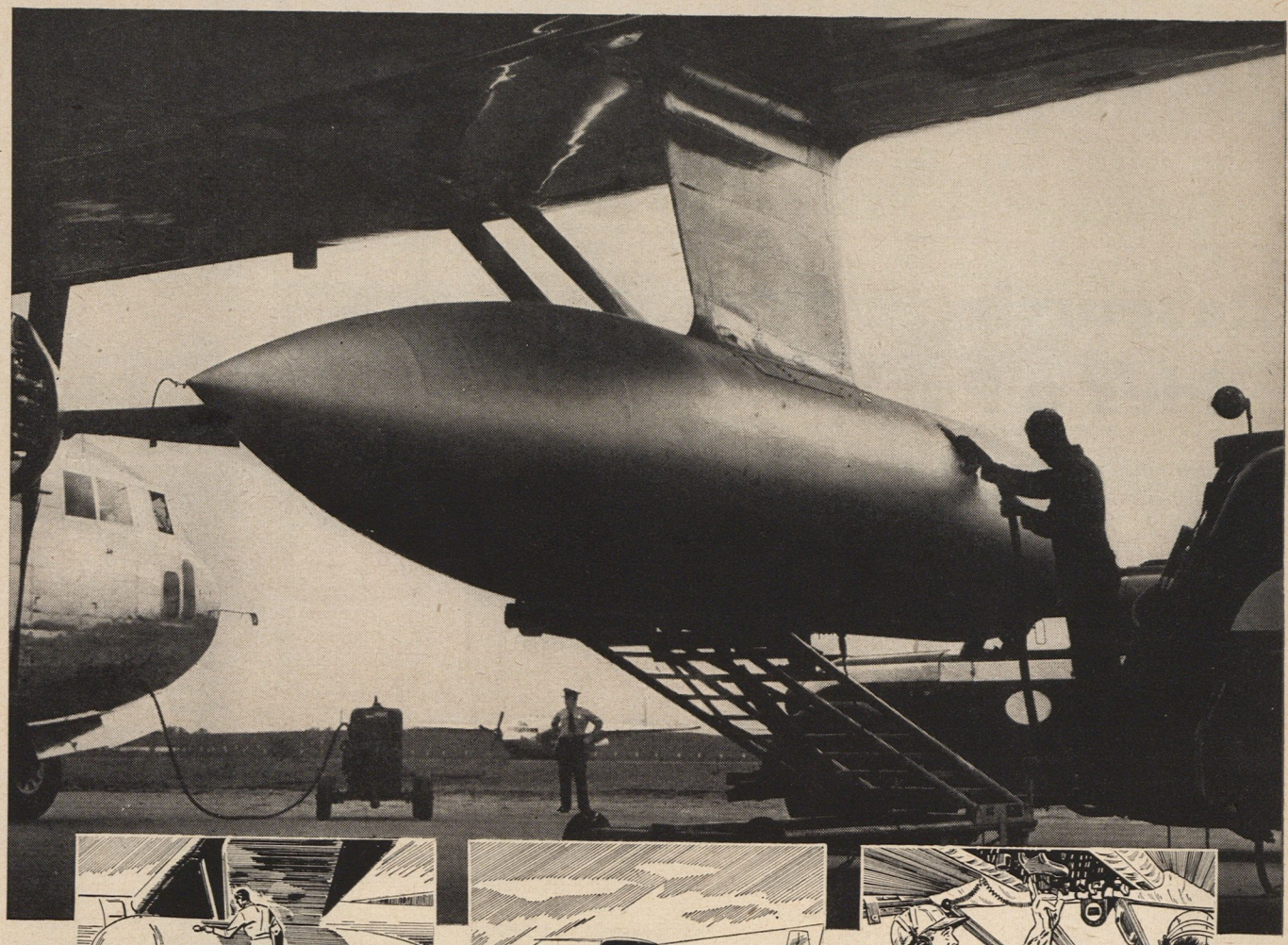


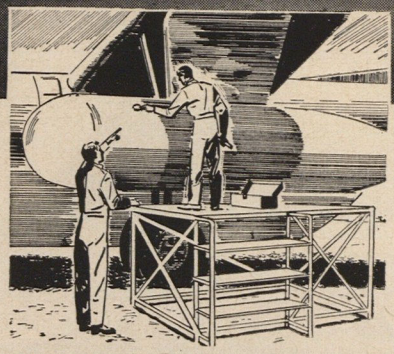
Martin AIRCRAFT

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.

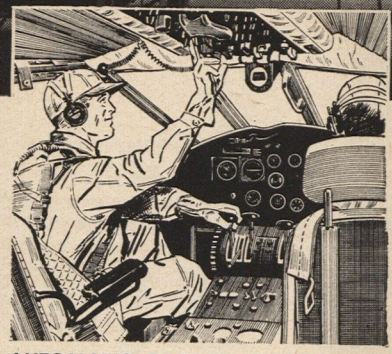
GREATER SAFETY through EXTERNAL FUEL TANKS





RAPID AND EFFICIENT FUELING...under-wing external tanks provide quick and efficient fueling without specialized fueling equipment. This is an *exclusive* feature of the Fairchild C-119H.

EASY ACCESSIBILITY...external tanks allow ready access to all operating components of fuel system...make fueling of the new Fairchild C-119 H easier, safer and quicker.



AUTOMATIC COCKPIT CONTROL...is readily accessible to pilot...and complicated fuel selection systems are eliminated. Trim, as effected by fuel consumption, remains constant.

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, MARYLAND

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

SUPERSONIC DELTA FIGHTER

Production contract for F-102 is latest step toward USAF's automatic all-weather fighter, which may be last stage in piloted interception

THE FULLY AUTOMATIC all-weather interceptor is still around the corner, but the Air Force moved one step closer to that corner with the announcement that Convair had received a substantial production order for its F-102. The 102 will be the USAF's first truly supersonic fighter—a single seat, all-weather interceptor of delta-wing configuration. Few details have been disclosed, but it seems a good guess that the F-102 represents what may very well be the final state in piloted interception before the guided missile takes over completely. Best guess is that it will be along in about three years.

Actually, the F-102 is a by-product of the atomic age. Once the A-bomb's destructive capability had been coupled with an aircraft capable of intercontinental delivery, our air defense requirement underwent a radical change. No longer would ten, or twenty, or even thirty percent attrition of an attacking bomber force be enough. A level approaching ninety percent would be necessary so that we could absorb the punishment and still strike back. Clearly an entirely new approach to the problem was in order.

At the time, and this was way back in 1948 or thereabouts, no existing or planned fighter even came close to meeting the requirement. As a result, it was possible, for the first time in Air Force history, to apply the weapons system approach to plane design from the ground up.

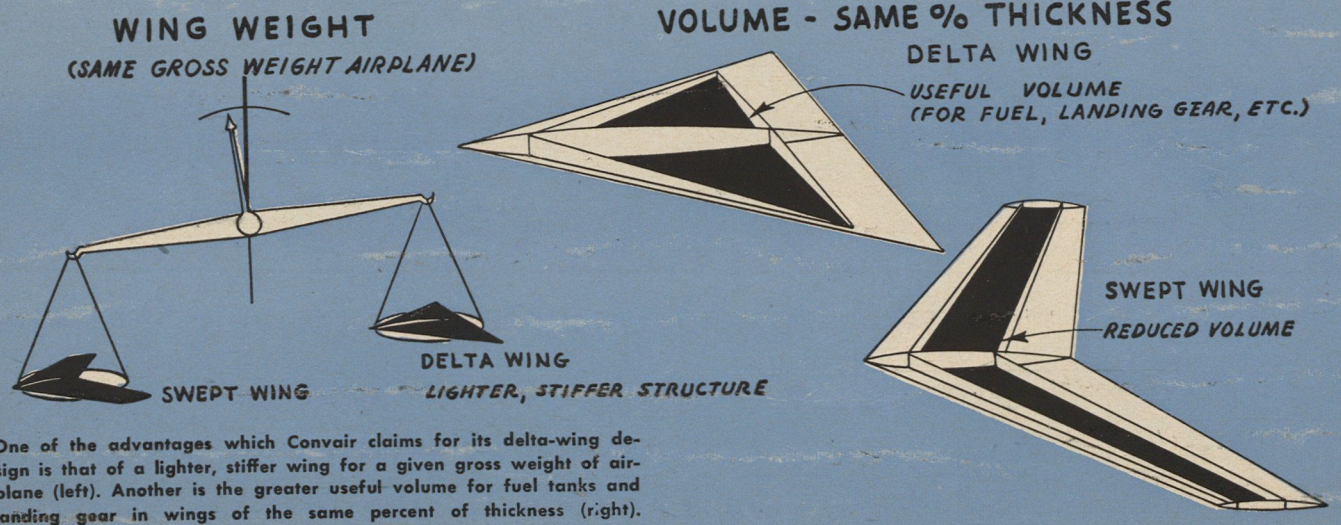
The weapons system approach, briefly, is a recognition of the fact that the increasing complexity of weapons no longer permits the isolated and compartmented development of equipment and components which are then put together in a structural shell to form an aircraft or missile. It calls for integrating the design of the entire weapons system as a whole from the beginning, so that the characteristics of each component are compatible with the others. The system is designed to solve specific military problems in their entirety, rather than dumping a batch of component design problems in industry's lap.

By and large, the weapons system approach came along too late to have influenced the design of aircraft which are flying today. But it has been of great assistance in the missile field, and the F-102 is referred to in some quarters as an "inhabited missile."

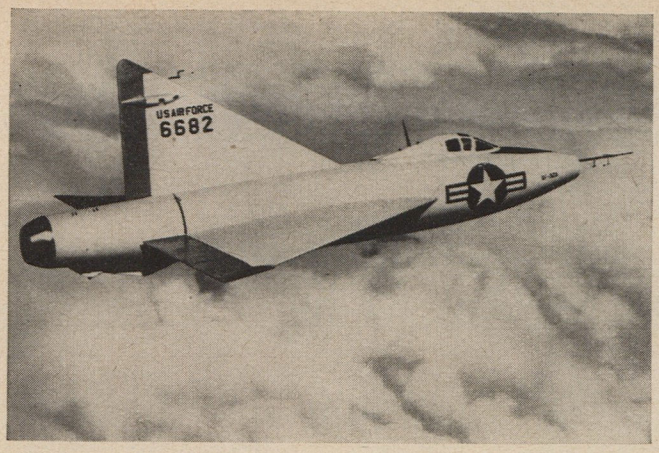
Assuming that the F-102 is the answer to the interceptor requirement laid down some years ago, and its description certainly indicates that it is, we can split the difference between a true guided missile and present "all-weather" interceptors and arrive at a fair description of how the new delta is designed to operate.

Unlike our currently operational "all-weather" interceptors, the F-89 and F-94, the single-seat F-102 dispenses with the radar observer and turns over his job to the pilot. The pilot himself will barely justify his title. He will handle the controls at landing and takeoff but in between he becomes scarcely more than a flesh-and-blood monitor for the little black boxes which do the work. A ground control operator, working from a radar screen, will take command of the aircraft from the end of the runway to a spot within perhaps twenty miles of the approaching target. Up to this point the pilot has pretty much gone along for the ride.

When the enemy bomber appears on the interceptor's radar scope the pilot will twist a knob. Control will shift from the ground to an automatic pilot in the aircraft itself. The auto-pilot, through the wizardry of electronics, will



One of the advantages which Convair claims for its delta-wing design is that of a lighter, stiffer wing for a given gross weight of airplane (left). Another is the greater useful volume for fuel tanks and landing gear in wings of the same percent of thickness (right).



XF-92A—first experimental delta.

home on target, with no assistance from the pilot, and will fire the plane's air-to-air guided missiles as the target comes within range. The ground control station will "fly" the airplane back to its home field and the pilot will land it. Not until then will he know whether he scored a kill on the enemy plane which he very likely will not have seen.

In case of a malfunction the pilot can override the automatic controls and operate the aircraft manually. But in darkness or in overcast he probably will not be able to complete his mission without electronic assistance, although he will be able to bring the plane home.

Even this relatively slight human element in the guidance system has its disadvantages. When you include a pilot, you buy trouble—pressurization, refrigeration, human susceptibility to G-loads, and an expensive built-in lead time of twenty-one to twenty-five years. But until a better guidance system is perfected, he performs a useful function —he can think, and act upon his thoughts.

Like many an aerodynamic innovation, the delta wing had its inception in the wind tunnels of wartime Germany, although low aspect ratio wing forms had also been studied by our National Advisory Committee for Aeronautics. The leading figure in the German program, Dr. Alexander M. Lippisch, helped develop the spectacular Me 163 rocket-propelled interceptor for the Messerschmidt combine. Lippisch built several wind-tunnel models and a delta glider, which unfortunately was never completed or flown.

NACA's early design studies, captured reports of the Lippisch program, and later conferences with Lippisch himself convinced Convair's engineers that the delta might be the answer to many of the problems of supersonic flight.

After exhaustive wind-tunnel tests, work began on the world's first delta-wing airplane—first known only as Model 7002, later called the XF-92A. The 92 flew for the first time on September 18, 1948, at Edwards AFB, Convair pilot E. D. Shannon at the controls. Since then, the F-92A has made more than 100 test flights.

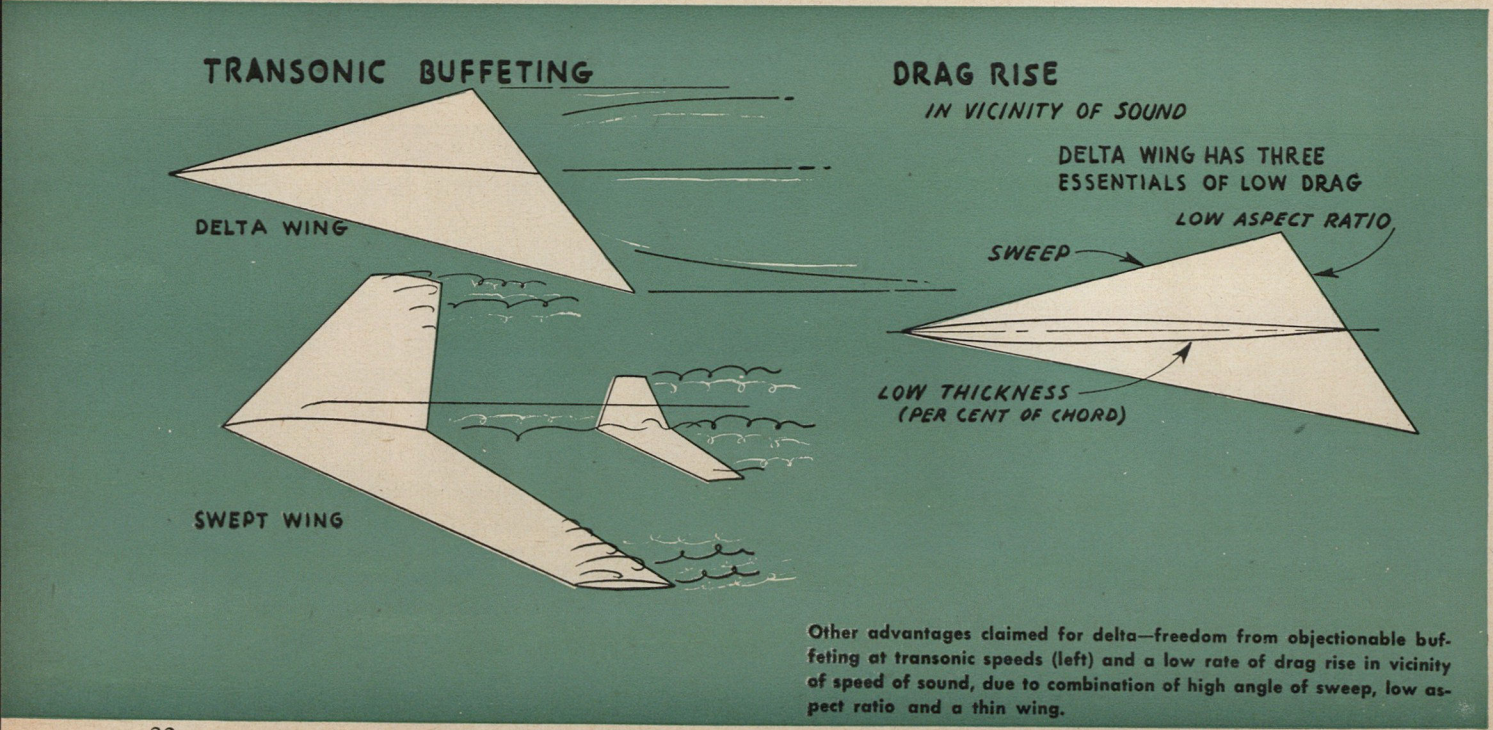
The same year, 1948, that the XF-92A first flew, the Air Force threw its new fighter requirement at the industry and the F-102, with electronics by Hughes and powerplant (the J-57) by Pratt and Whitney, is the result.

Its proponents insist that the delta offers the best configuration for speeds ranging from the speed of sound up to and including Mach 2, which is about as fast as it is practical to operate piloted aircraft. For one thing, the delta has a relatively low drag rise in the vicinity of the speed of sound. Operating to reduce this drag rise are three factors —its leading edge sweepback of sixty degrees, its extremely low aspect ratio, and its relative thinness. Another advantage is that its triangular shape is structurally nearly ideal, combining high rigidity, light weight, and a thin wing section with ease of adaptability to mass manufacture. Stall is virtually eliminated, according to Convair engineers, and the same factors of sweep, low aspect ratio, and relative thinness of wing tend to eliminate stability troubles in the transonic speed ranges.

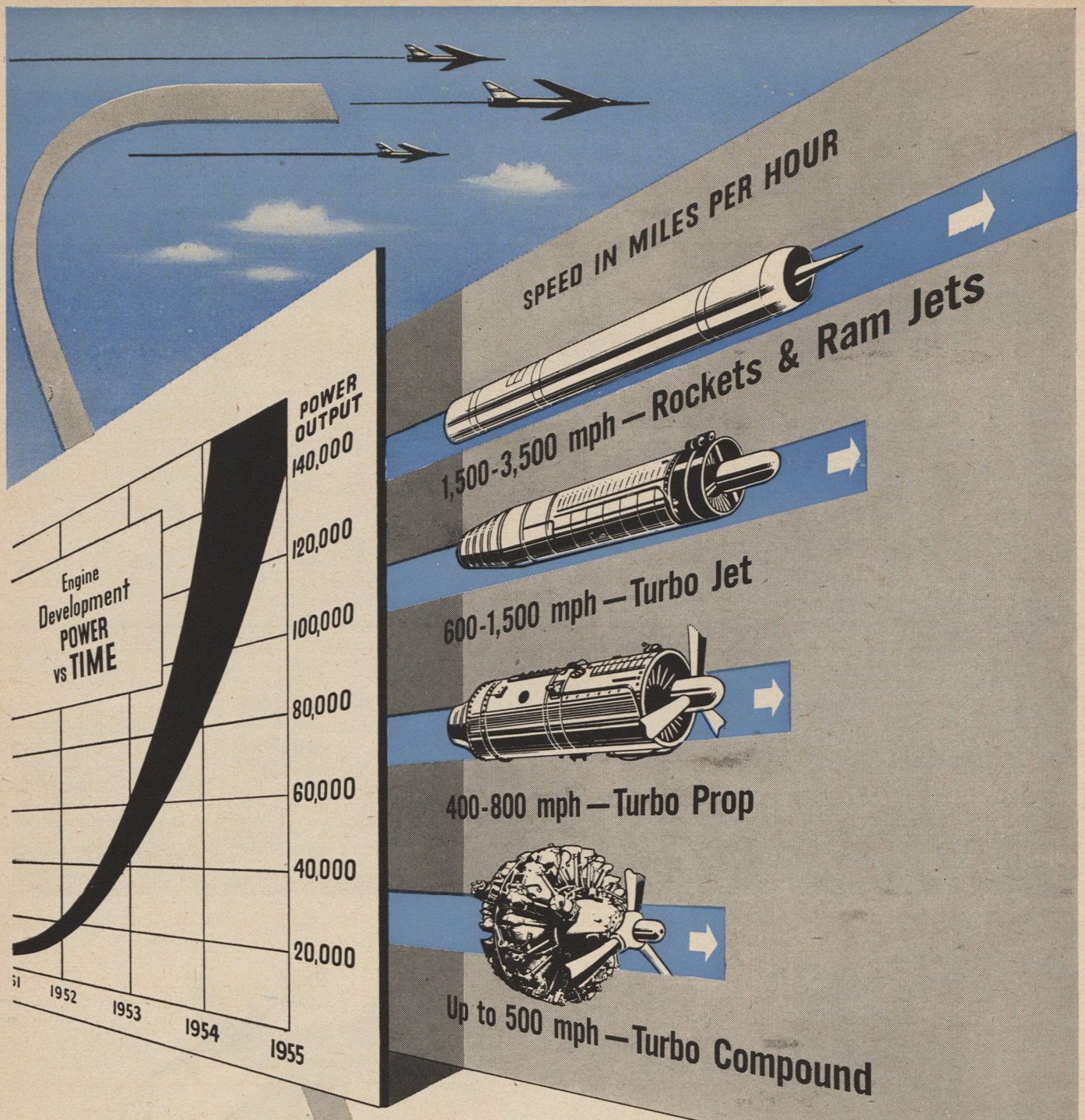
Other desirable characteristics which proponents claim for its delta design are:

- Higher speed for given thrust in speed ranges from Mach 1 to Mach 2.
- Freedom from buffeting at transonic speeds.
- No abrupt trim changes.
- Greater safety at high angles of attack.
- Good spin characteristics.

No one claims that the delta wing is ideal for every aircraft requirement. It's no cure-all. But a growing body of opinion indicates that, in the range from Mach 1 to Mach 2, the delta might be the best solution for human flight.—END



Other advantages claimed for delta—freedom from objectionable buffeting at transonic speeds (left) and a low rate of drag rise in vicinity of speed of sound, due to combination of high angle of sweep, low aspect ratio and a thin wing.



ENGINEERS: The diversified development work of Curtiss-Wright offers outstanding career opportunities in all branches of engineering.

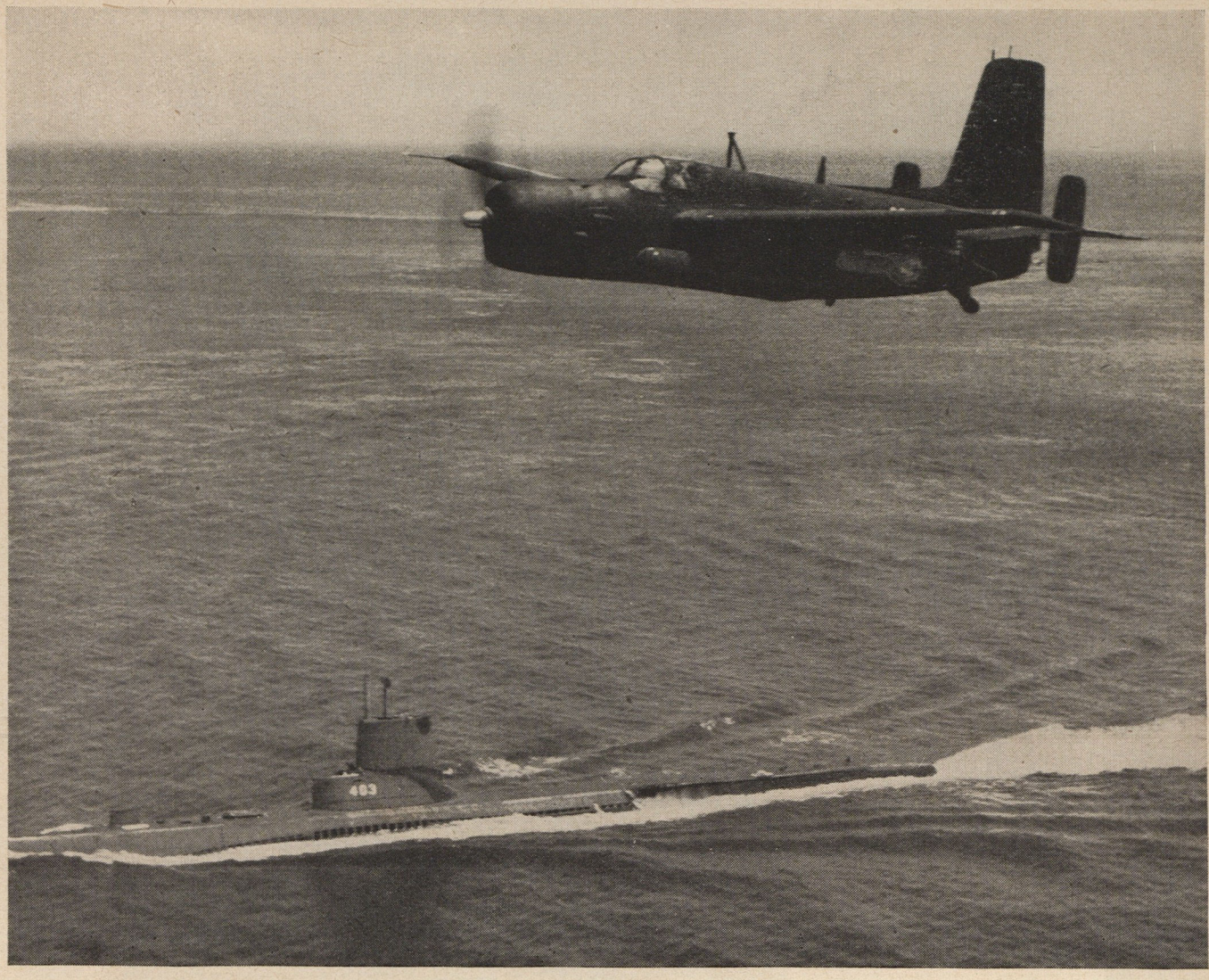
World's Finest Aircraft Engines

WRIGHT AERONAUTICAL DIVISION

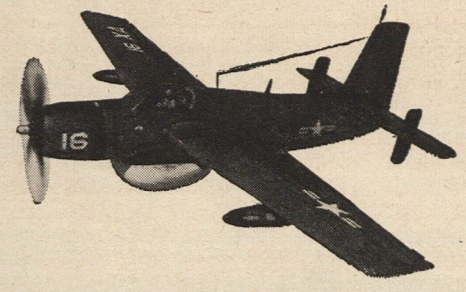
CURTISS-WRIGHT

CORPORATION

WOOD-RIDGE • NEW JERSEY



FRIENDLY ENEMIES



One of the Navy's GRUMMAN GUARDIANS makes a pass over one of the Navy's submarines. It's a case of "friendly enemies" . . . for as the mongoose is trained to kill cobras, these big, carrier-based aircraft are designed to find and destroy submarines. One type of GUARDIAN, equipped with long range radar devices, hunts down the enemy. Then others, lighter on radar but heavier on bombs, come in for the "kill."

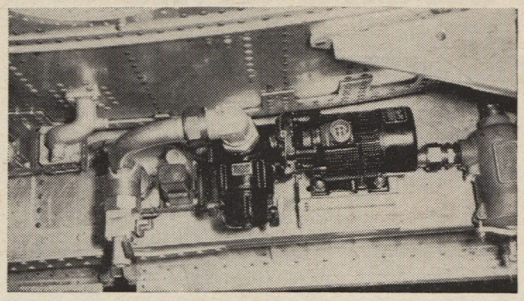
GRUMMAN AIRCRAFT ENGINEERING CORPORATION, BETHPAGE, LONG ISLAND, N. Y.

. . . and on the new Mainliner Convairs, too, it's Pesco Pressurized Power and Controlled Flow!

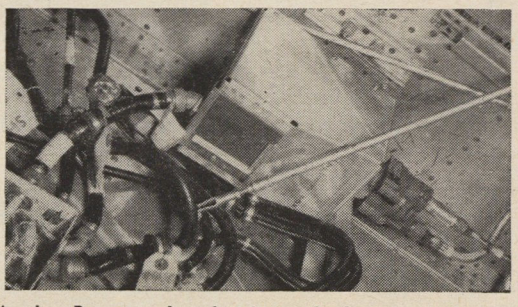
United Air Lines' new, trim, sleek Mainliner Convairs, designed to provide radically improved service on short and medium-range trips, embody the latest and finest developments in aircraft efficiency and dependability.

To make certain that the two 2400 h. p. engines will never lack for fuel, Pesco motor-driven and engine-driven fuel pumps were specified to provide a constant flow of fuel, at 21 psi, regardless of the airplane's altitude or attitude.

Precision-made, time-tested Pesco fuel pumps are only one of several Pesco products, including main and emergency hydraulic pumps, propeller feathering pumps, and cabin supercharger pump, specified by United Airlines as standard equipment on their new fleet of Mainliner Convairs. For complete information on these or other products, write or call today.



View shows the Pesco motor-driven fuel pump as mounted in the nacelle of a new Mainliner Convair.



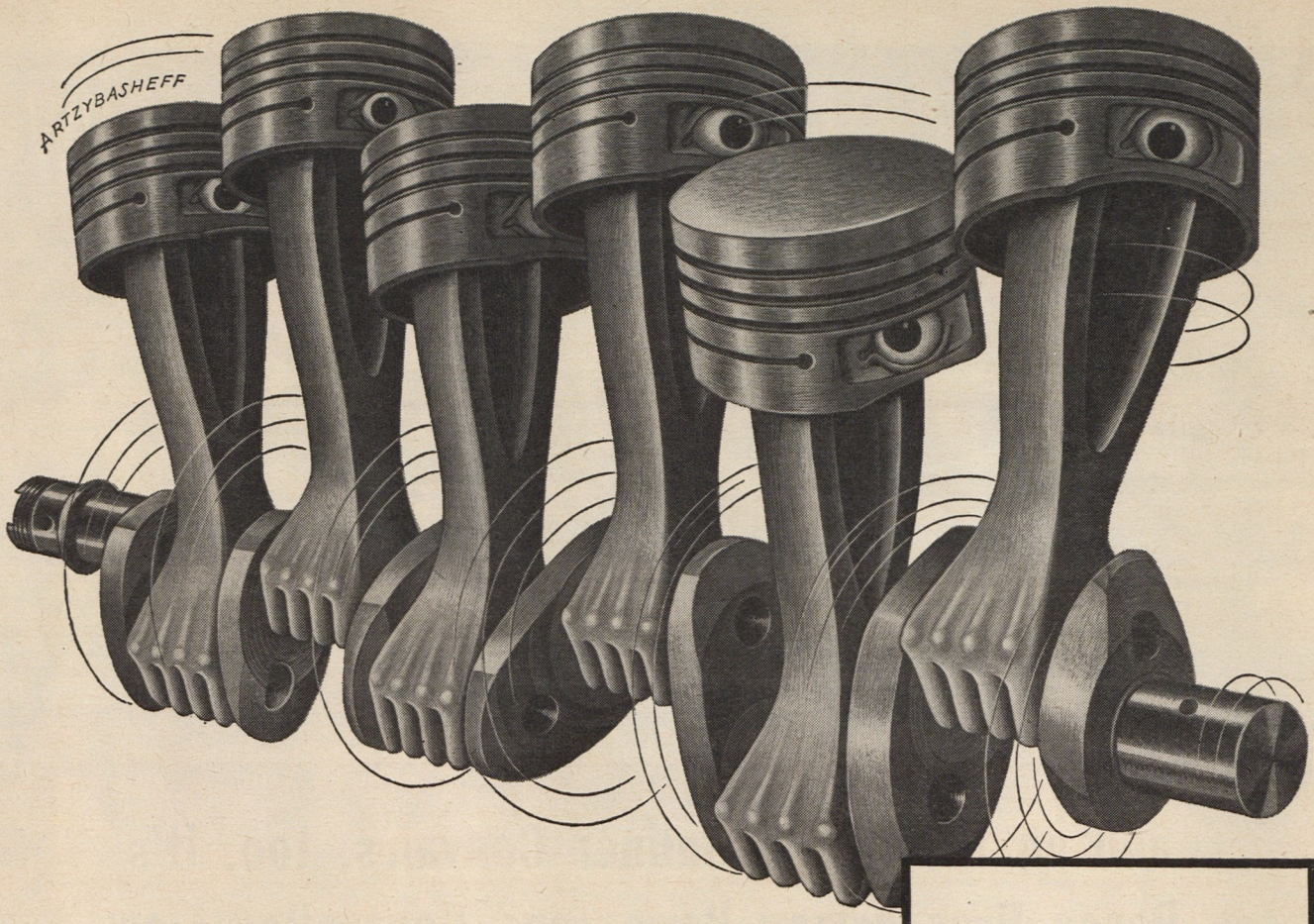
Another Pesco product that is standard equipment on the new Mainliner Convair is this auxiliary hydraulic pump, located in the nose wheel of the plane.

engineering Pesco production

PRODUCTS DIVISION

BORG-WARNER CORPORATION

24700 NORTH MILES ROAD • BEDFORD, OHIO



Six strong arms and "true"

Six powerful arms of steel grip and turn the crankshaft—send power from pulsing pistons surging through the mighty Ford truck. These connecting rods are machined to tolerances of 3/10,000 of an inch—diamond-bored for precision—dynamically balanced to 1/10th of an ounce for peak performance. That's precision production—and for such exacting work in great volume, Ford Motor Company depends on Lycoming.

Lycoming stands ready to assist you—whether you have "just an idea" that needs developing, a problem in the blueprint stage, or a finished metal product that needs speedy fabrication. Long famous in the metal-working field, Lycoming continues to meet the most exacting and diverse requirements, both industrial and military. *Whatever* your problem—look to Lycoming!

Lycoming's 2½ million feet of floor space, its more than 6,000 machine tools, and its wealth of creative engineering ability stand ready to serve your needs.

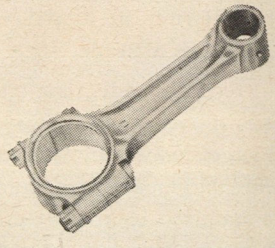
AIR-COOLED ENGINES FOR AIRCRAFT AND INDUSTRIAL USES • PRECISION-AND-VOLUME MACHINE PARTS • GRAY-IRON CASTINGS • STEEL-PLATE FABRICATION

LOOK TO LYCOMING FOR RESEARCH FOR PRECISION PRODUCTION

LYCOMING-SPENCER DIVISION, WILLIAMSPORT, PA.
BRIDGEPORT-LYCOMING DIVISION, STRATFORD, CONN.

AVCO MANUFACTURING CORPORATION

For precision "arms" —connecting rods that perfectly pass power along to a truck's wheels— Ford Motor Company depends on Lycoming precision production.



Lycoming-Spencer Division
AVCO Manufacturing Corp.
652 Oliver Street
Williamsport, Pa.

Please send me further information on Lycoming's varied abilities and facilities.

Name_____

Firm_____ Title_____

Address_____

City_____ Zone____ State____

SANTA RIDES A HELICOPTER AT POPE AFB

"Operation Christmas" is making it a brighter holiday for thousands of youngsters in North Carolina. Here's the reason

She's part of the "world's biggest Christmas party."

THEY'VE MECHANIZED the reindeer at Pope AFB, North Carolina, and are going in for Christmas in a big way. Nobody knows it better than the nearly 5,000 orphans in the state. In two years "Operation Christmas" has snowballed into a $100,000 project whose good will might conservatively be reckoned in millions of dollars. It may well be the world's biggest Christmas party.

The airman-sponsored Christmas party has the blessings of the brass, state officials, and—most of all—the kids. Last year 1,440 of them were at the party held at Pope, and 16,000 gifts were distributed to 4,600 orphans throughout North Carolina. This is where the mechanized part came in. Santa traveled in a helicopter.

Even bigger things are planned this year. Teams have toured the state, visiting every orphanage to see what the greatest needs of the youngsters and the homes are. Santa will again stop at each of the thirty-two homes this year with a present for every child and such things as laundry and playground equipment, radios, blankets and beds, and clothing for the orphanages that need them most.

Air Force committees, working on their off-duty hours since last spring, have been making things easier for Santa by cataloging each child by name, age, and gift preference. Every youngster can request his own present.

This is for the children who can't attend the party at Pope in person. The ones who do come to the party come from all over. Last year four railroads pooled to produce a fifteen-car special train. Bus companies cooperated too, toting kids to the Ninth Air Force base where a real stomp-down Christmas party awaited them, complete to the twenty-five foot Christmas tree.

It all started in 1950 when two master sergeants—G. H. Truston and J. F. Boyland—suggested entertaining children from a state orphanage for dinner Christmas Eve and Christmas Day. The idea took hold, and this year the first donation came from Maj. Gen. Edward J. Timberlake, commanding general of the Ninth Air Force.

Raising the money isn't easy, but this year's chairman, Warrant Officer Clyde Gurkin, says donations are rolling in from airmen, officers, and civilians of the base. That helps, but even more money comes from the series of dances held in major North Carolina cities. At these, the Air Force Dance Band plays, and big name singers and movie stars lend their support.

North Carolina's governor Kerr Scott, in a letter to General Timberlake, added his endorsement to the project when he said, "I am pleased to commend the personnel of the base, both military and civilian, for their fine gesture in making Christmas brighter for the children."

The governor might have added that it makes Christmas a lot brighter for the people giving the party too. — END

Santa airlifted presents all over North Carolina last year. Even bigger things are in store this Christmas.

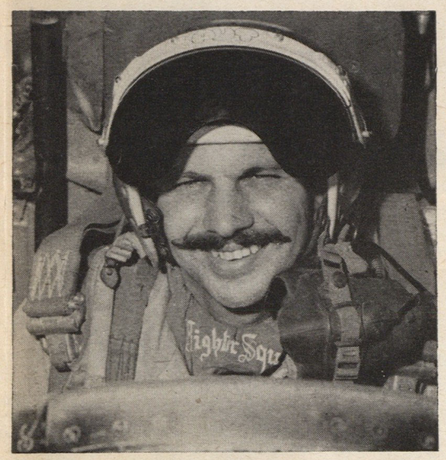
Pre-dawn spotting is becoming routine for the pilots of the unarmed Mosquitoes. Here one climbs from his T-6 after pinpointing a target for the fighter-bombers.

The old and the new meet on the beach of an island off Korea where a Combat Cargo "flying grocery" unloads fresh meats, fruits, and vegetables as an ox-drawn cart passes. All perishables are flown in.

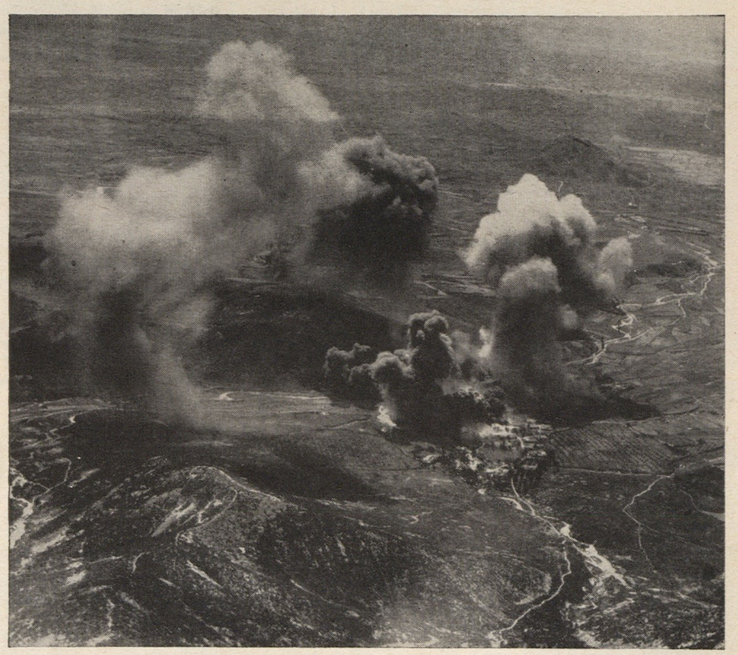
Breathing spell. UN fighters bound for five-day rest leaves in Japan load aboard a C-124 Globemaster at a Korean airstrip. Combat Cargo carries some 1,500 men daily on rest leaves.

SHOOTING WAR IN KOREA

With everything from Mosquitoes to Superforts, the Fifth Air Force keeps hammering away at the enemy

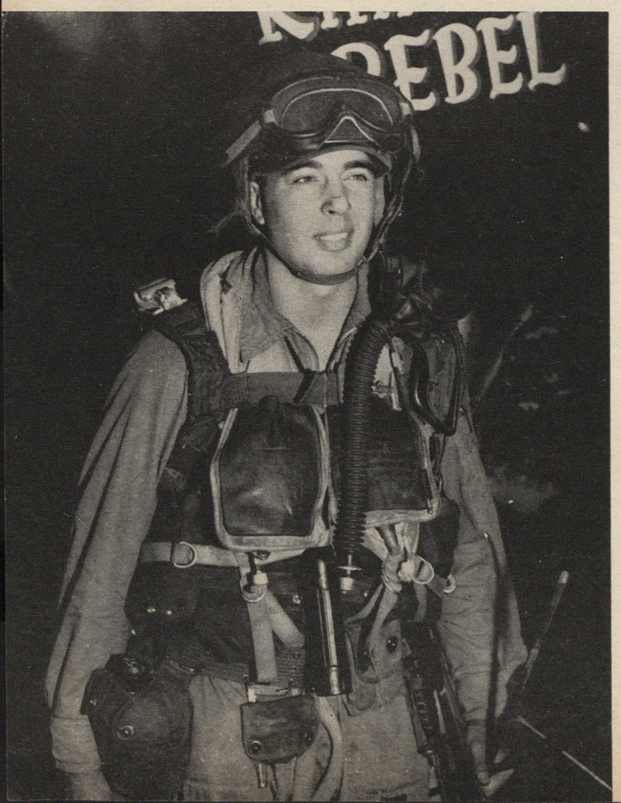


The best dressed jet pilots in Korea have the most distinguished moustaches.



Smoke and flame mark the spot, just north of Sariwon, hit by F-84 pilots of the 474th Fighter-Bomber Wing in one of the fledgling unit's first strikes.

"Never stand short," says Lt. Maurice D. Walton of Memphis, Tenn., probably the best equipped B-26 pilot in Korea, who carried an extra 65 pounds of gear.



On hand as Air Medals go to the Greek AF detachment is the bearded chaplain of the Greek Infantry Battalion in Korea.

Bundles for North Koreans. At left, two AF armament specialists prepare packages of frag-bomb clusters which B-26s will deliver at night to targets in North Korea. The 23-pounders are destined for Communist supply trucks and convoys.

A B-29 Superfort takes off from its FEAF base in Japan at sunset into stormy skies for another night mission over North Korea. The tolls the 29s take are reckoned in blasted supply areas and ruined rail marshaling yards and depots.

Changing the map of the world

—*with RCA Shoran*

A SHIP SANK in these remote straits—because a chart was wrong. But that won't fool navigators any more. Modern aerial survey . . . using RCA Shoran and photography together . . . recorded the *true* shoreline (the lines in white). Now, the charts are right!

Surpassing any optical survey system now in use, this radar "yardstick" can map land-and-water areas never explored by man—and do it at flying speeds as high as 600 mph. Accuracy is better than 50 feet in 100 miles or more. Here's how it's done.

Two widely separated SHORAN stations on the ground (or aboard ship) form the base of a triangle. The plane becomes the apex. Pulsed radar signals from the SHORAN are received by each ground station and retransmitted back to the pilot. On a radar screen the pilot sees one "pip" for each station signal. He calibrates the "pips" and gets his fix. Cameras used with the Shoran equipment simultaneously photograph the calibrations—and the ground along his course. *Result: a highly accurate and permanent record of every square foot he covers.*

Just another application of RCA Shoran—added to its use in locating oil wells, plotting microwave radio relay and pipeline routes, detecting mine fields, and precision bombing.

RCA

RADIO CORPORATION of AMERICA

ENGINEERING PRODUCTS DEPARTMENT CAMDEN, N.J.

SCIENTISTS ARE PEOPLE, TOO

How we use our technical personnel will determine our survival as a free nation in a free world. The challenge is to open new horizons in personnel management techniques

By Major Robert R. Lent

WHEN THE Air Force began to recall its Reservists to meet the emergency requirements of the Korean war, we found we knew very little about the status of our war-seasoned veterans. We ordered more than a few dead men to active duty. Some recall orders went to the inmates of Federal penitentaries. Other orders followed Reservists across the world to their homes in foreign countries. We attempted to recall a few Reservists who were too busy to reply, largely because they were flying combat in Korea.

This embarrassing situation should have come as a surprise to no one. For years the Air Force had been hampered by lack of an accurate inventory of its personnel, even those on active duty. For example, a study conducted at a major research and development establishment a few years after World War II revealed that fifty percent of the officers in this organization did not meet our minimum standards for participation in research and development activities. In another instance, we double-checked our figures on how many Air Force officers possessed PhDs, and found that our current statistics were eighty-three percent inaccurate.

My major interest, simply because it was my military duty, has been in the proper assignment of technical and scientific personnel—a prime area of controversy. Here the malassignments have been both critical and pitiful. Here it has been difficult indeed to achieve effective utilization of personnel.

Yet, despite all of the sympathy I have felt for the individuals who, in the words of the weekly television mystery drama, were "caught in the web," I feel that the time has come to set the record straight. Without excusing past mistakes, I think it only fair to explain that much has been done and that, all in all, the situation is greatly improved. I think it important to do so because I feel that the pendulum has swung too far in the direction of criticism.

Let us consider our former inability to properly classify the skills of our active duty personnel.

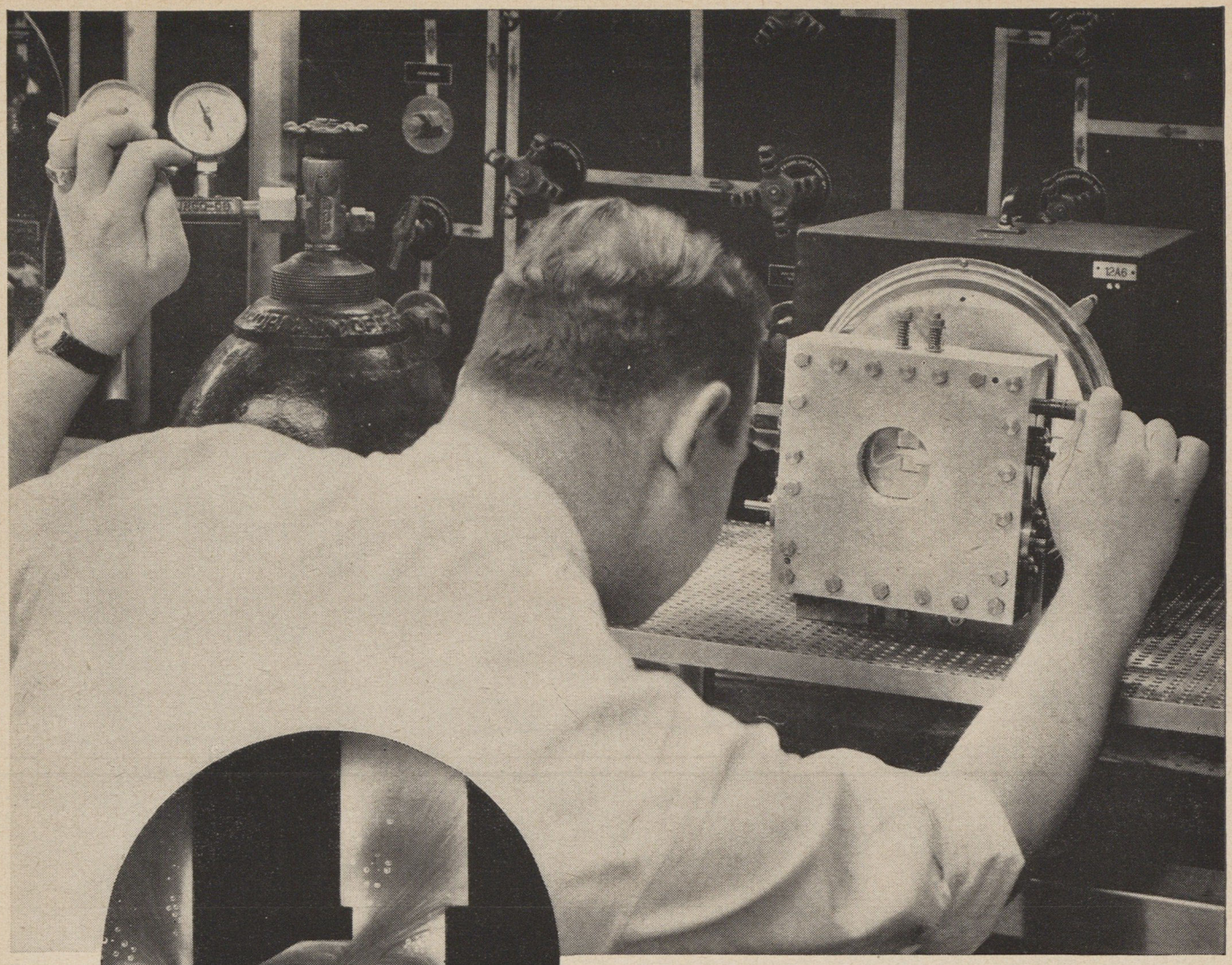
Recently the Deputy Chief of Staff, Personnel, took steps to correct this situation by creating new career fields. The Office of the Deputy Chief of Staff, Development, provided the guidance for setting up the research and development career field. In the new system the qualifications for engineering and scientific fields are high, on a par with those in industry. The minimum academic qualification in a Baccalaureate degree, with a Master's degree preferred. By applying these standards stringently it is now possible to distinguish between professional engineering and scientific skills and technical skills.

A corollary to this problem is the need for an inventory of the engineering and scientific skills required by the Air Force. This includes positions outside the research and development activities where the Air Force would benefit by having professionally trained scientific and technical personnel in certain jobs. A study is under way to provide position descriptions to satisfy this need. When the job is completed, we shall be able to total the ledger in terms of requirements and resources to an extent not now possible.

Another consideration is to find out which positions within research and development can best be filled by outstanding operational officers with adequate technical backgrounds. As an example, take the case of a colonel, recently promoted, in the Strategic Air Command. He has commanded a squadron and a group, and completed a tour of duty as an operational staff officer. It would make sense to assign him to a research and development job in the field of strategic air. Research and development would benefit from this officer's operational "know-how" but later, when he is promoted to greater command responsibilities, he will understand the new aircraft and weapons that he will be working with. Such assignments are already taking place. For example, recently the Strategic Air Command has made available one of its best combat leaders, just returned from Korea, to be assigned as Chief of the Strategic Air Group in the Research and Development Directorate, Headquarters USAF.

Also established within the organization of the Deputy Chief of Staff, Personnel, is a central office to monitor the Air Force-wide assignment of scientific and technically trained personnel. Every officer in the Air Force who has professional engineering or scientific capabilities falls under the purview of this office. Its purpose is to assure the best use of such officers and to preclude their assignment to positions not commensurate with their education and experience. This office is not in a planning stage—it is real and operating today.

THE AUTHOR . . .
is Chief, Personnel Management Branch, DCS/Development, Hq USAF.



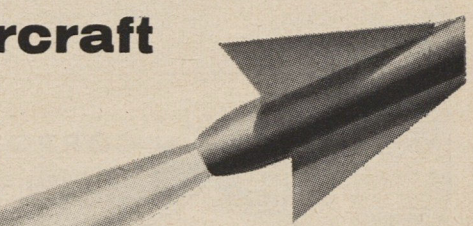
Fundamental Research for Tomorrow's Aircraft

This Sperry engineer is applying the fundamentals of hydraulics to determine oil flow characteristics at high pressure. Here he introduces nitrogen to the hydraulic fluid in a complex valve to make flow patterns visible for study.

This is an example of the fundamental engineering which precedes the design of high-power booster servos for use in automatic as well as manual flight.

Automatic controls for tomorrow's aircraft require extensive fundamental research. Not only in hydraulics, but in aerodynamics, electronics and gyros, Sperry engineers are establishing new sets of rules to work under.

For 40 years Sperry has been working continually on flight control problems. Currently, Gyropilot* flight controls are flying jet, propeller-driven, rotary-wing, lighter-than-air and pilotless aircraft.



With this background of leadership and experience and the constant exploration of fundamentals for new concepts of design, Sperry is able to anticipate and solve control problems for tomorrow's aircraft.

*T. M. REG. U.S. PAT. OFF.

SPERRY GYROSCOPE COMPANY

DIVISION OF THE SPERRY CORPORATION

GREAT NECK, NEW YORK · CLEVELAND · NEW ORLEANS · BROOKLYN · LOS ANGELES · SAN FRANCISCO · SEATTLE

IN CANADA · SPERRY GYROSCOPE COMPANY OF CANADA LIMITED, MONTREAL, QUEBEC


To our friends
the world over
Season's Greetings
THE BG CORPORATION
136 WEST 52nd STREET,
NEW YORK 19, N. Y.

SCIENTISTS——CONTINUED

As the result, hundreds of malassignments involving technical personnel have been identified and corrected. An example is the case of a Reservist who was recalled to active duty as an Air Police officer and was about to be sent overseas. We learned that he had a PhD in plant physiology and has been professor of forestry at the University of California. The anti-biological warfare program needed just such a man. In this case the action was rather dramatic. He was snatched from the ship and transferred to Washington in a position of great responsibility. This officer is now ready for separation, having completed his active duty tour. The Air Force has benefited from his services, and the year and a half which he has spent in the service has further enhanced his capability in his civilian position. This is only one of several hundred cases brought to our attention.

The Air Force is vitally interested in technical and scientific manpower problems. We want to increase our own competence, both civilian and military, but we are equally interested in the capabilities of private industry, universities, and independent research organizations. Examine the expenditures for Air Force research and development. More than eighty-five percent of a $525,000,000 direct research and development budget is spent in industry and universities. Our policy is to keep our own internal research and development program down to an absolute minimum. And we are always seeking new ways for industry and the universities to participate.

To manage this research and development program, to conduct the necessary testing and evaluation, and to accomplish the small amount of research and development work done internally, we need a small but highly competent technical staff. The Air Research and Development Command requires both military and civilian engineers and scientists. The number is low when compared to the scientific and engineering population of the country, but the qualitative requirement is extremely high.

When the total national civilian and military requirement for scientific and technically trained persons is contrasted with the number available, the outlook is bleak indeed. This is a serious problem and its solution requires aggressive action and cooperation on the part of industry, educational institutions, and the military services.

The problem of complete utiliza-

tion of our scientific and technical officers in the Air Force is complex. Often a technical officer with dual qualifications is assigned to a position which we in Research and Development consider secondary to his primary skill. From an Air Force point of view it may well be that that secondary skill is the more important at that particular time, although this may not be readily apparent to people outside the Air Force.

As an example, take an ROTC graduate of the Massachusetts Institute of Technology in the class of 1950. He volunteered and was accepted for flying training and is now flying an F-86 in Korea. Assuming an Air Force need for pilots, this officer, the Air Force, and the educational institution should fully accept that, upon completion of flying training, the officer should serve a tour of operational duty as a pilot. It is inconceivable that we would spend money necessary to train a pilot if we didn't intend to use him as a pilot.

This is not an unusual case. However, if you were to multiply this situation by the number of pilots and observers in the Air Force you would have some idea of the complexity of the personnel task.

Within research and development, our biggest need is for technically qualified officers who are rated pilots or observers with several years of operational flying experience. Their inherent understanding of Air Force problems and appreciation of operational responsibilities make them more valuable in research and development. We encourage ROTC and Military Academy graduates to volunteer for flying training, realizing fully that they will not be available to us for technical purposes for at least three years. Our project engineers on such items as manned aircraft and personal flight equipment by necessity should be technically trained, rated personnel. However, there are major opportunities for non-rated officers in most other areas of activity.

The Air Force ROTC is a potent source for technical officers. Although the ROTC graduate with no prior service must meet his active duty obligation, the Air Force has positive determent policies to enable him to pursue graduate study. In 1951, and again in 1952, the top ten percent of the ROTC graduates from engineering schools were brought directly into research and development. They got a special orientation program covering the state of the art in their field and a general indoctrination in Air Force research and development. Their assignments were determined on the basis of their scientific interest and skills, and preference as to geographic location.

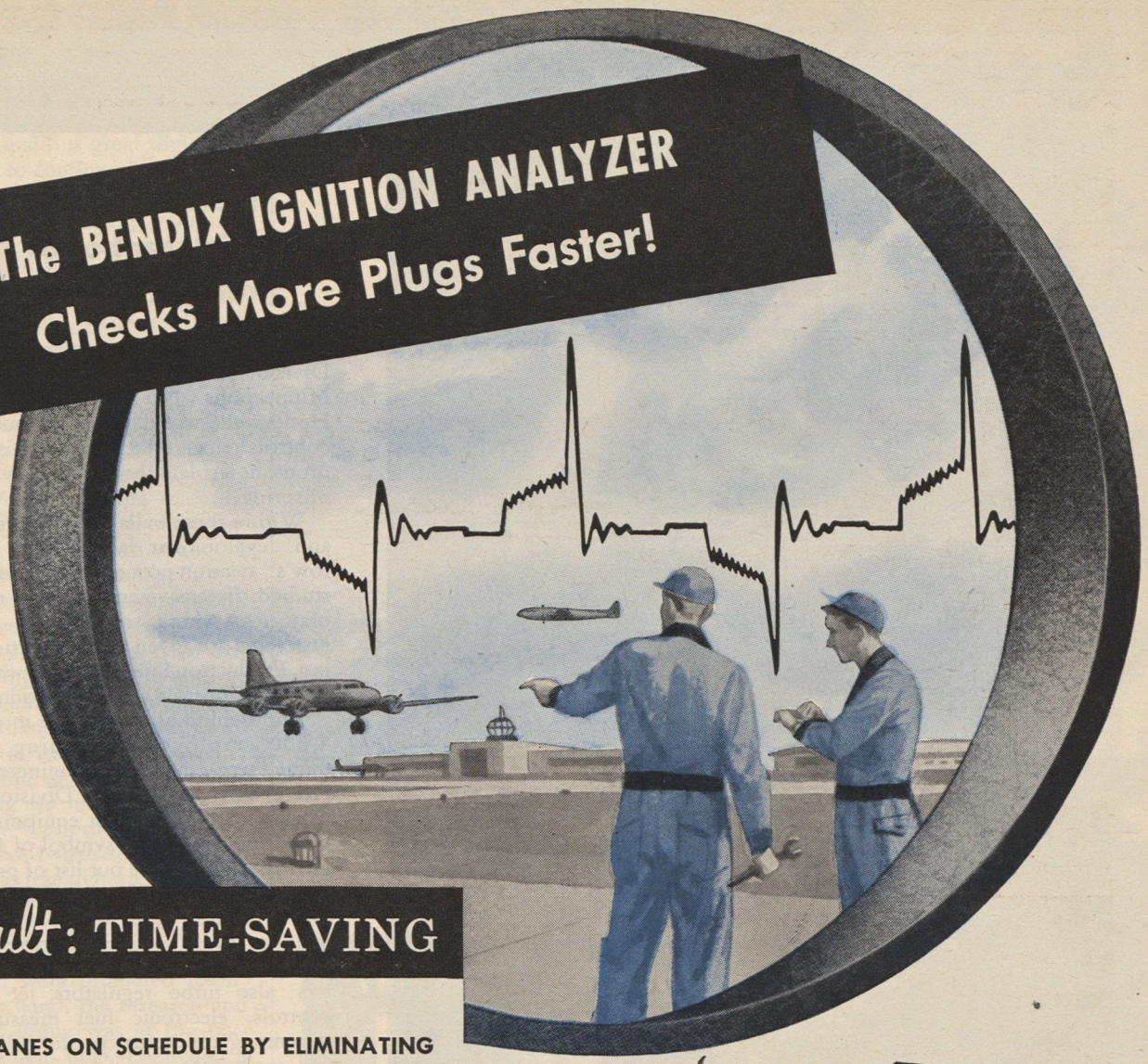
During the indoctrination period of the 600 young engineers in 1951, I visited the school at Wright Air Development Center. We in the survey team were tremendously impressed. The group was intelligent and surprisingly mature for its age and experience. Truly this was the "cream of the crop." One thing troubled us, however. They left much to be desired as Air Force officers. Obviously their military training in the ROTC curriculum was incomplete. As a result we in research and development supported the Air Force plan to change the ROTC curriculum from a specialized course to a general course with emphasis on military leadership.

The Air Force has been criticized for making this change, the charge being that it will encourage malassignment of the professionally trained scientific and engineering personnel. Quite to the contrary, the new plan will help us make the right assignment and it will enhance the officer's capacity for responsibility. In the past, an ROTC graduate was classified in accordance with the option under which he trained. It was not unusual to find aeronautical mechanical and chemical engineers classified and assigned as logisticians or communicators. Under the new plan the student will get generalized military training and he will be classified and assigned in accordance with his academic training.

We have also established a program to train some of our own engineers and scientists internally, through a graduate study program in civilian educational institutions for our officers, both reserve and regular. A requirement must exist within the Air Force for this additional training and further, the officer must prove to us that he is capable of performing the graduate study required. Our success in this selectivity has been demonstrated many times. An outstanding example is Lt. Col. Lee Gossick, who was awarded a B.S. and M.S. simultaneously in Aeronautical Engineering at Ohio State University in 1951. As a student at Ohio State, Colonel Gossick attained the highest academic honors ever received in the history of the institution. Today he is with the Air Research and Development Command and is making an important contribution to the development of our air defense system.

We also contract with educational

The BENDIX IGNITION ANALYZER Checks More Plugs Faster!

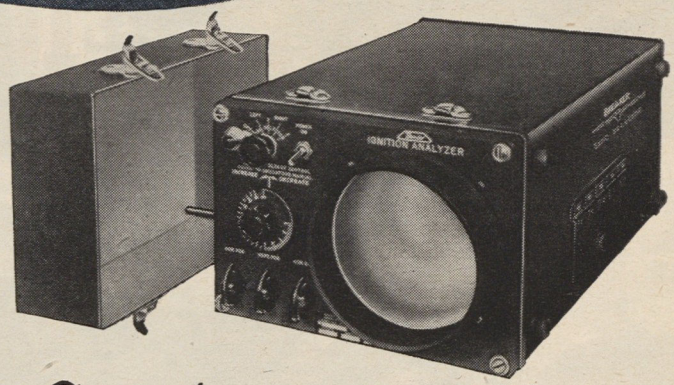


Result: TIME-SAVING

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

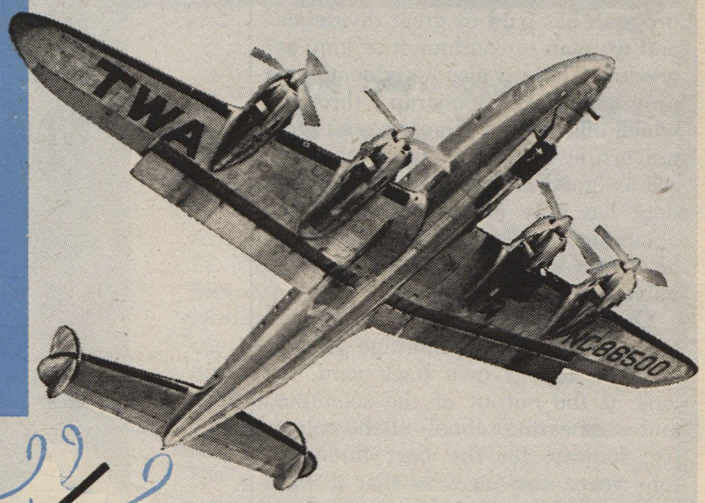
SCINTILLA MAGNETO DIVISION OF SIDNEY, NEW YORK

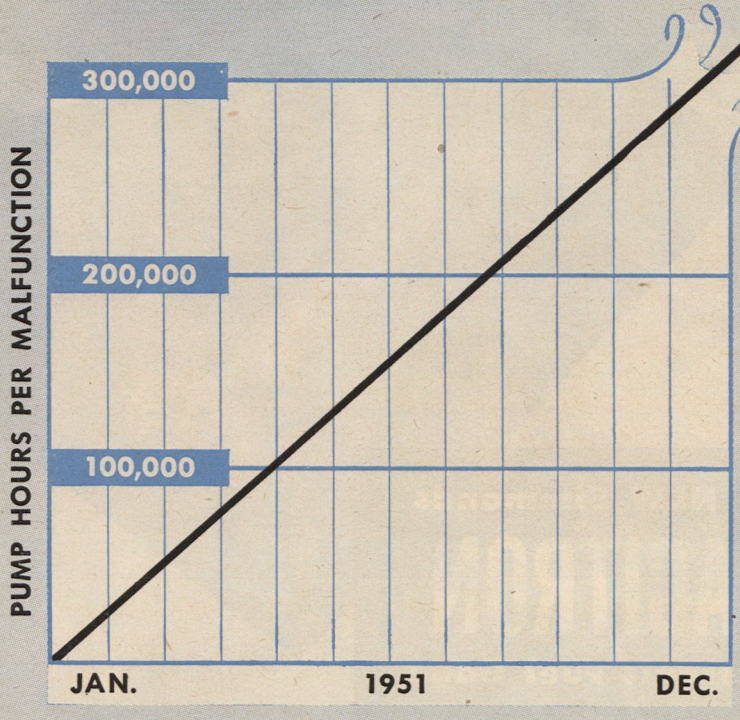
Bendix AVIATION CORPORATION

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

304,578 PUMP HOURS PER MALFUNCTION





There can be no question of the reliability and lasting qualities of Vickers equipment when it hangs up records like this. TWA maintenance records for 1951 indicate only one unscheduled removal of a Constellation cabin supercharger drive pump in a total of 304,578 pump hours.

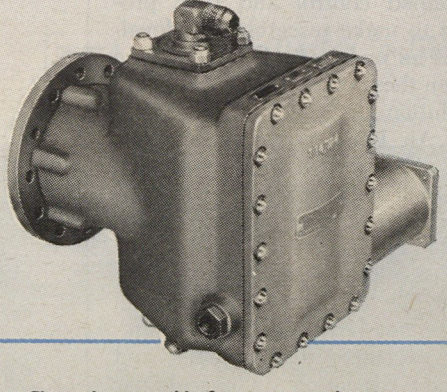
These TWA Constellations make use of numerous Vickers Hydraulic units. Besides variable displacement pumps (for main hydraulic system as well as cabin supercharger drive), there are hydraulic motors, pressure reducing valves, relief valves, unloading valves, and accumulators.

Vickers Hydraulic Equipment for aircraft is so widely preferred because it is compact, efficient, light weight . . . but above all dependable.

VICKERS

3000 psi VARIABLE DISPLACEMENT PUMPS

ON TWA CONSTELLATION CABIN SUPERCHARGER DRIVES



● *This is the reversible flow pump used in the Constellation supercharger drive, one of a wide variety of variable displacement piston type pumps available from Vickers. For further information write for new Bulletin A-5203.*

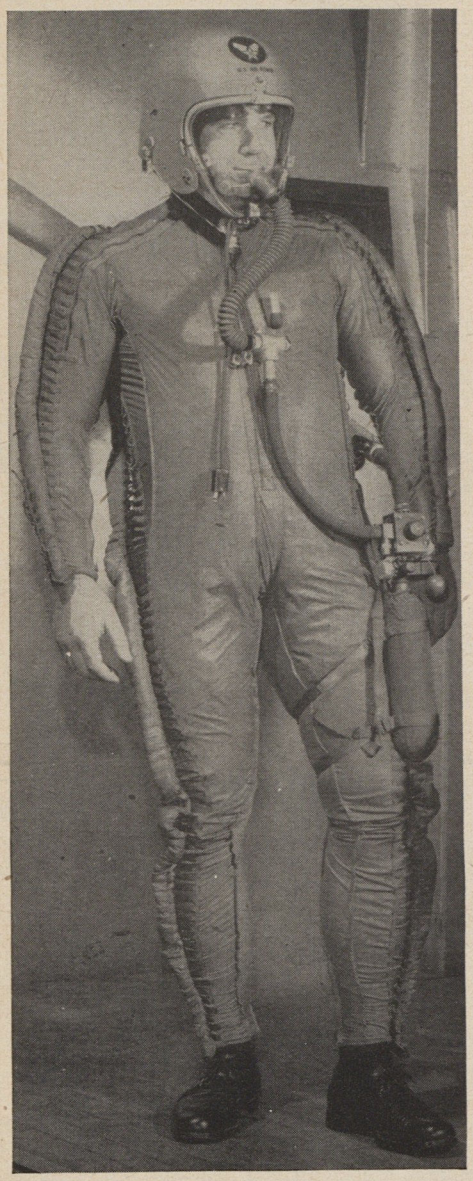
VICKERS **Incorporated**

DIVISION OF THE SPERRY CORPORATION

1526 OAKMAN BLVD. • DETROIT 32, MICH.

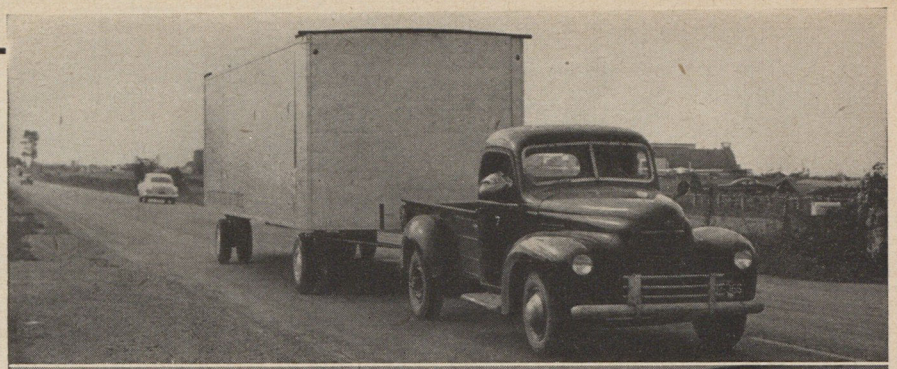
4827

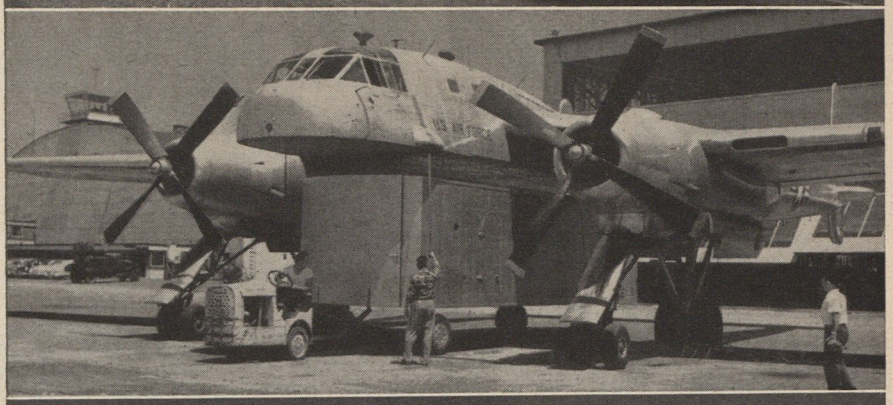
ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

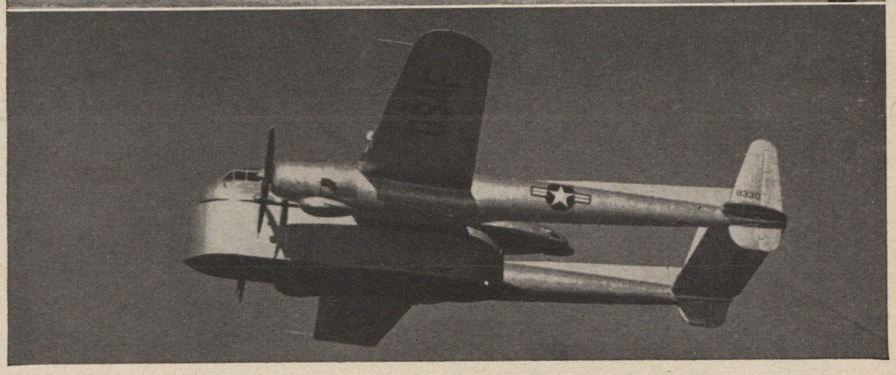


High Fashion

Above 63,000 feet, without protection, your blood boils, your body swells to twice its normal size, and it's sudden death. Even above 40,000 feet, pure oxygen won't keep you alive—your lungs must be supercharged. To meet these problems, ARDC has perfected the T-1 High Altitude Suit. It combines altitude protection with anti-G suit, crash helmet, oxygen mask, earphones, microphone, goggles and defroster, and oxygen bail-out bottle. Worn uninflated, the suit inflates automatically when needed.





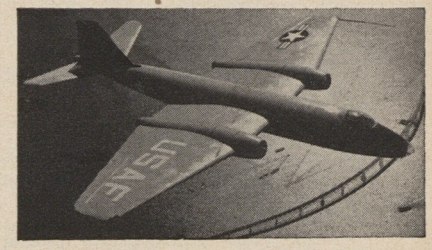


At Home on the Road or in the Air

On the highway Fairchild's new Flying Trailer looks about like any other trailer rig as it rolls along on its truck-type wheels. But hoisted into place on the XC-120 Pack Plane, it becomes a pod that carries as much cargo as the C-119. Shorn of its wheels for flight, it's streamlined by locking the front and rear cargo doors into a modified V to cut air resistance. The assembly takes just a few minutes. The pack carries its own detachable tow-bar.

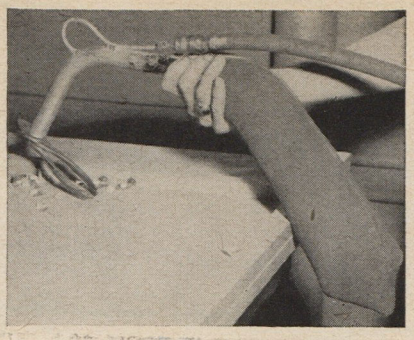
More B-57s on Tap

The AF has placed a second order with Martin for a "substantial number" of B-57 night intruders. The B-57, American version of the English Electric Canberra, is powered by twin J-65 Sapphire jets instead of the Rolls Royce Avons that appear in British models.



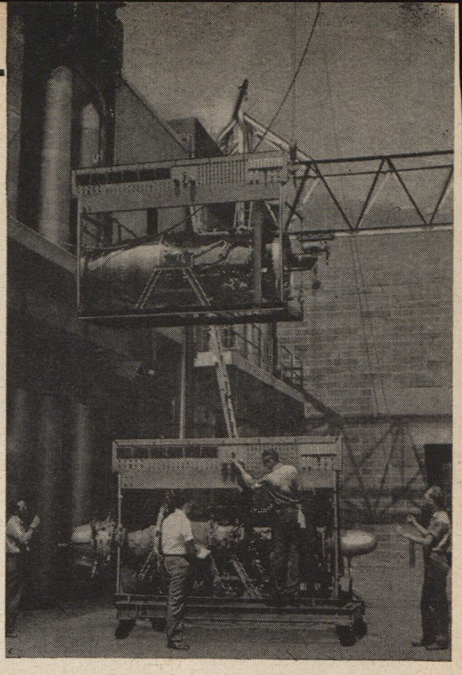
Hitting the Deck

An electrical-optical device developed by North American now tells the landing speed of planes landing on carriers. Nicknamed Trodi (Touchdown Rate of Descent Indicator), the instrument shoots out two parallel beams of light which the plane cuts as it comes in. The interval is translated into rate of descent.



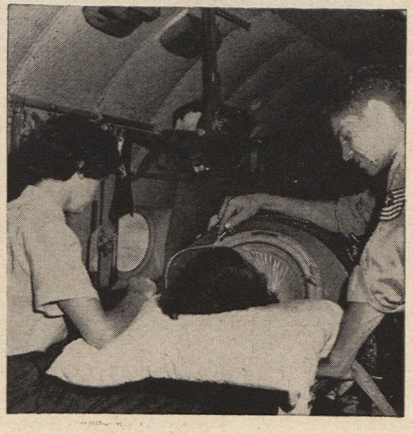
Cuts Cleaning Time

A powerful little vacuum only 12 inches long has been designed by a Temco employee to clean wing fuel tanks and other hard-to-reach places in aircraft. The main tube is beaded to permit attachment of a bag to catch bits of flying metal without cutting down power efficiency.



Double Decker

They're stacking them up at Curtiss-Wright. To save space, Wright Aeronautical Division is using double decker test cells. Above, a pair of J-65 Sapphire turbojets are readied for testing. The rounded "columns" behind are part of the sound-deadening walls.

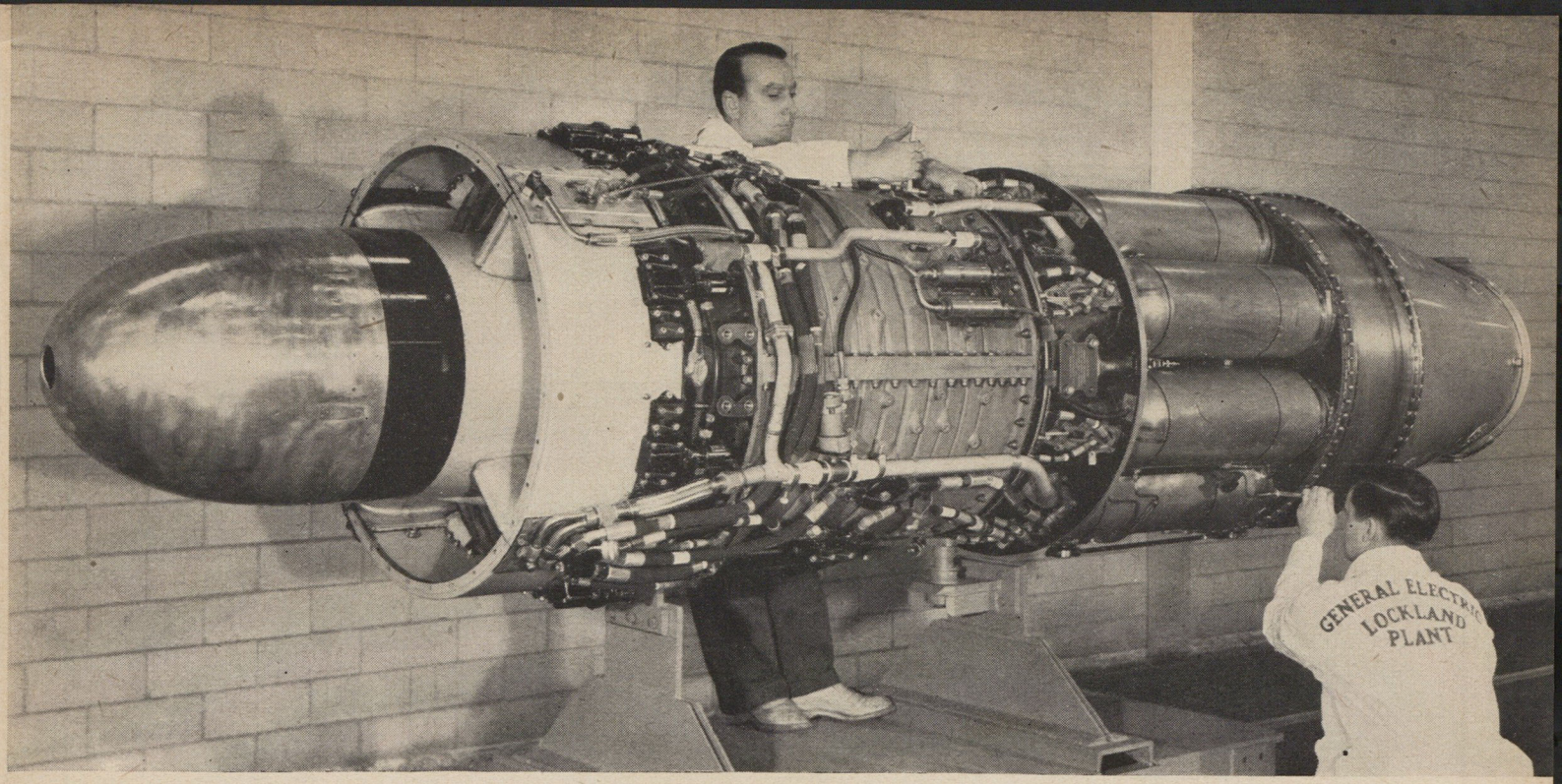


Flying Lung

A girl stricken with polio while vacationing in Mexico became this year's 75th customer for the School of Aviation Medicine's flying lung in a mercy flight home on a MATS plane. The 150-pound respirator, unlike other airborne lungs, is a full-body chamber. Its special, small motors work on standard 110 volts.

FD-25 to be Japan's First Postwar Plane

What's likely to be the first plane made in Japan since the end of WW II is the FD-25, Fletcher Defender, a single-seater for tactical support. A prototype will soon be sent to Japan, with the State Department's blessing, as a demonstrator and pilot model for production under an agreement with Toyo Aircraft Co. The FD-25 packs two .30 calibre machineguns, 2,000 rounds of ammo, and either four 5-inch rockets or 40 smaller rockets.



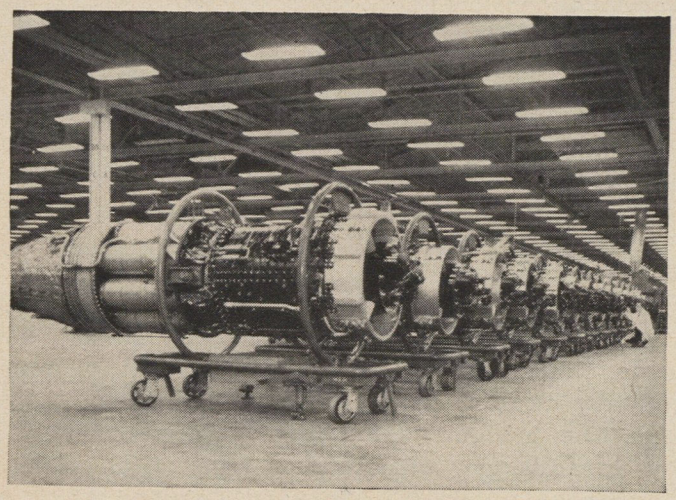
THE J47-GE-27, newest production model in G.E.'s "all-weather" J47 series, will power the North American F-86F Sabre. A modified -27 will power the Navy's FJ-2 Fury, carrier version of the F-86. Sister engines, the -23 and -25, are powerplants for the Boeing B-47B Stratojet.

NEWEST "ALL-WEATHER" ENGINE IN PRODUCTION

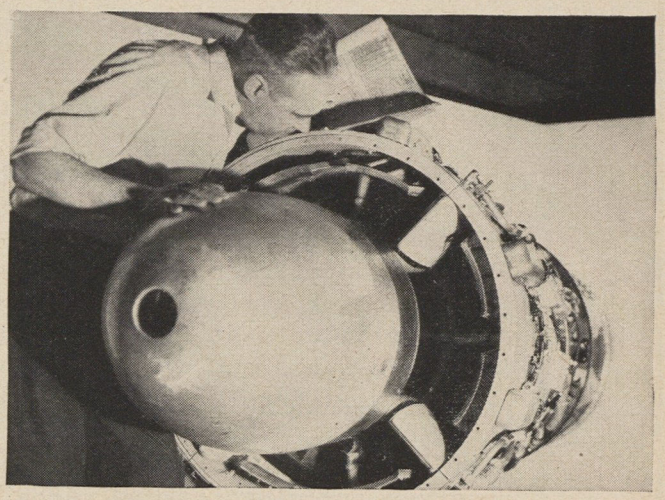
J47-27 Has 10% Greater Thrust Than Present F-86 Engine, Lower Fuel Consumption Without Size or Weight Increase

By incorporating a more efficient compressor, heated inlet surfaces and retractable air screens, the new high-performance J47-27 is capable of operation under extreme conditions of weather. An improved combustion system with high-voltage, opposite polarity ignition and larger crossover flame propagation tubes allows automatic starts to above 40,000 feet.

Constant product improvement is standard practice at General Electric with all aviation equipment. The benefits of this policy can be yours by calling on your G-E Aviation Specialist or writing the *General Electric Company, Schenectady 5, N. Y.* 210-27



NOW IN PRODUCTION at Lynn, Mass., and soon to roll off the line in quantity at the Lockland, Ohio plant, the J47-27 is the third in G.E.'s series of all-weather engines. In addition, two major automobile manufacturers will start producing the -27 this year under license.



"HOT NOSE" PREVENTS ICING on the -27. Hot air bled from the compressor warms hollow parts of the nose, inlet vanes and struts. Inlet air screens retract at the touch of a button to eliminate the last icing problem. The retraction of the screens also eliminates a loss of thrust.

GENERAL ELECTRIC

MOBILIZATION NEWS

BY JAKE CULPEPPER

RECALL PROGRAM for Reserve officers during period December 1952-June 1953 calls for about 2,000 pilots, 700 observers, and 2,000 non-rated officers with most of the quota going to company grade officers. . . . Nearly 100,000 Reserve officers now on active duty will get the chance to accept or decline the new indefinite Reserve commissions before February 1, 1953. Reappointments for inactive Reserve officers must be completed by April 1, 1953, when temporary war-time commissions and Reserve appointments more than five years old would otherwise expire. Those who decline will have no military status at end of present appointment.

DIRECT APPOINTMENTS in AF Reserve remain frozen until "vacancies exist." Four new specialties added to the direct commission list include: Air Technical Intelligence Officer, Air Combat Intelligence Officer, Air Traffic Service Officer, and WAF Squadron Officer. But right now openings exist only in the WAF specialty.

WARRANT OFFICER Act of 1952 is moving along. Budget is now reviewing a draft of proposed legislation. Generally, the Act provides for titles for each warrant officer pay grade, a permanent promotion system similar to that for officers, and definite retirement periods.

REGULAR AIRMEN serving involuntarily extended tours who have only short time left may be discharged at once if there is no immediate need for their skills at the local base. . . . Since T/O's do not reflect recent changes in ten career fields, waivers of position vacancy have been okayed for airmen otherwise qualified for promotion. . . . Airmen who have been captured, interned, or reported missing in action may be recommended for promotion if they have served the necessary time in grade and have been classified in an AFS calling for the next higher grade. . . . More than $14,000 is spent by AF on each airman who, in his first four-year enlistment, has had the maximum technical training — one more reason for the stepped-up reenlistment program. . . . Airmen who were discharged to accept commissions or warrant officer appointments are eligible for mustering-out pay only if their commissions were in the Regular AF, not the Reserve. The same holds true for officer candidates and aviation cadets discharged to accept commissions. . . . Airmen whose application for cadets or OCS is pending will not be sent overseas or to a tech training school. Airmen alerted for shipment are not eligible to apply for either training.

TRAINING openings in civilian institutions and the USAF Institute of Technology have been approved for 853 officers. Training runs for two years in courses leading to graduate and post-graduate degrees, or their equivalent. Quotas are in engineering, nuclear fields, sciences, management, education, international relations, psychology, and medical services. . . . Program to train 7,000 officers and airmen a year to defend air bases against sabotage and local ground attack will be launched by AF next year. An Air Base Defense Training Center will open at Parks AFB, Calif., January 5, 1953, to offer basic courses of twelve weeks and nine-week advance courses. Defense infantry tactics and weapons will be stressed, with secondary importance given to Air Police functions. . . . Beginning next year, the present six-month radar observer training course will be replaced by an advanced observer course of the Single Observer Training Program. AFROTC program to train chaplains for the AF is expected to relieve current chaplain shortage.

RESERVE OFFICERS who are faculty members of non-AFROTC schools may now be designated AF liaison officers by ConAC. If the Reservist, who must volunteer for this duty, is assigned to a specific Reserve program vacancy, he will receive

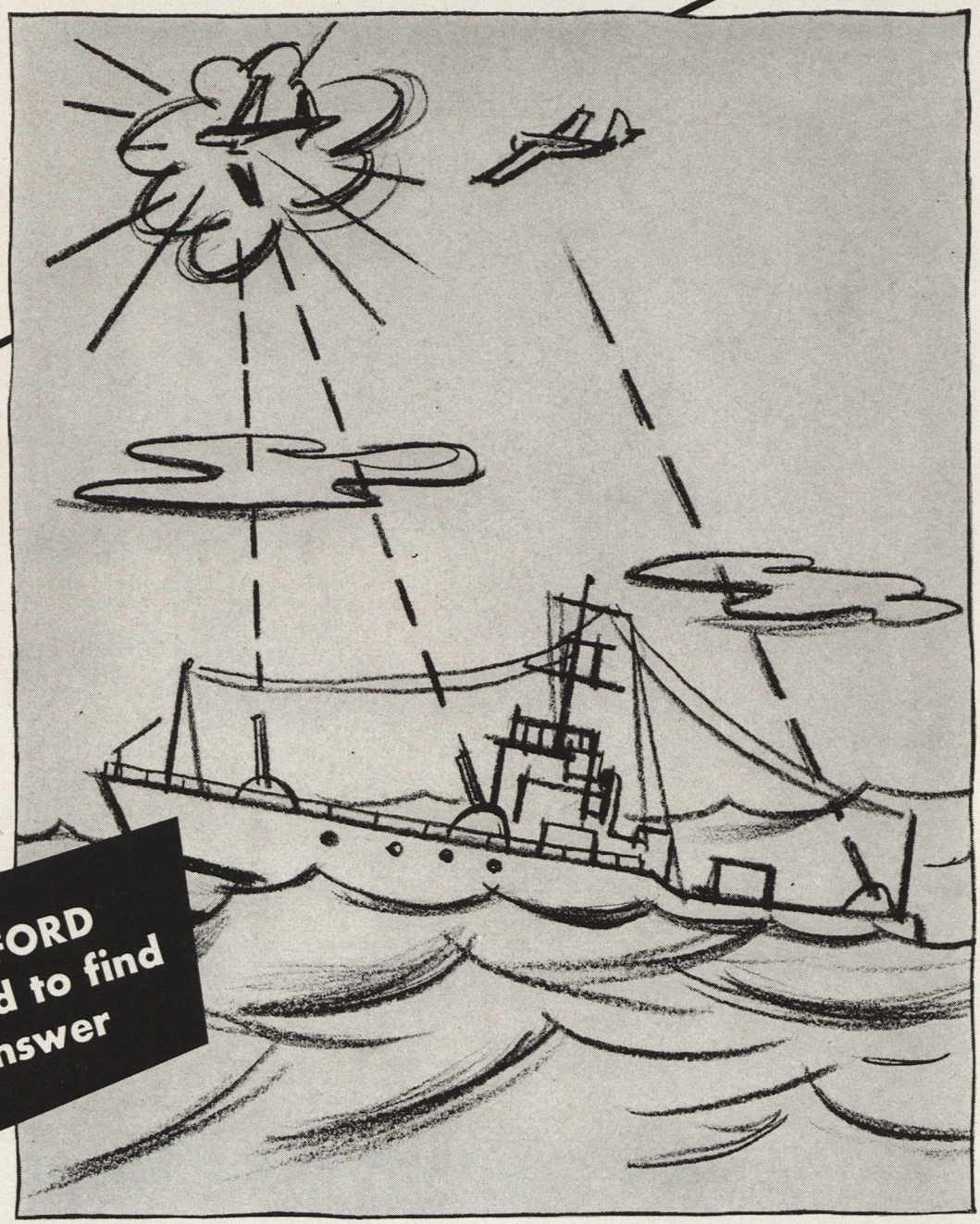
Missile with a "one track mind" ...Bomber Defense

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 controls 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

TO HIT TARGET from unstable decks of ship



...and FORD was asked to find the answer

A rolling, pitching ship... under attack from speedy, diving aircraft... counts on its anti-aircraft guns for protection... these guns must be able to stay on the target regardless of sea conditions. That's why the Ford Instrument Company was called on to design and build a control system that tracks and holds the target range with deadly accuracy.

This is typical of the problems that Ford has solved since 1915. For from the vast engineering and production facilities of the Ford Instrument Company, come the mechanical, hydraulic, electro-mechanical, magnetic and electronic instruments that bring us our "tomorrows" today. Control problems of both Industry and the Military are Ford specialties.

You can see why a job with Ford Instrument offers young engineers a challenge. If you can qualify, there may be a spot for you in automatic control development at Ford. Write for illustrated brochure.

FORD

FORD INSTRUMENT COMPANY

DIVISION OF THE SPERRY CORPORATION

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

inactive duty training points for his liaison work. Although he may be assigned additional duties of recruiting officer and information officer, he will receive no training points for this work. . . . Career officers who have a background in accounting may apply for reassignment to the Auditor General, USAF. . . . To save the AF dollar, mobilization assignees may perform their fifteen days annual active duty training at locations other than the unit of assignment or training attachment, only if the proposed duty station is no further away from the individual's residence than his duty of assignment. This policy will also apply for mobilization designees, when funds allow such training.

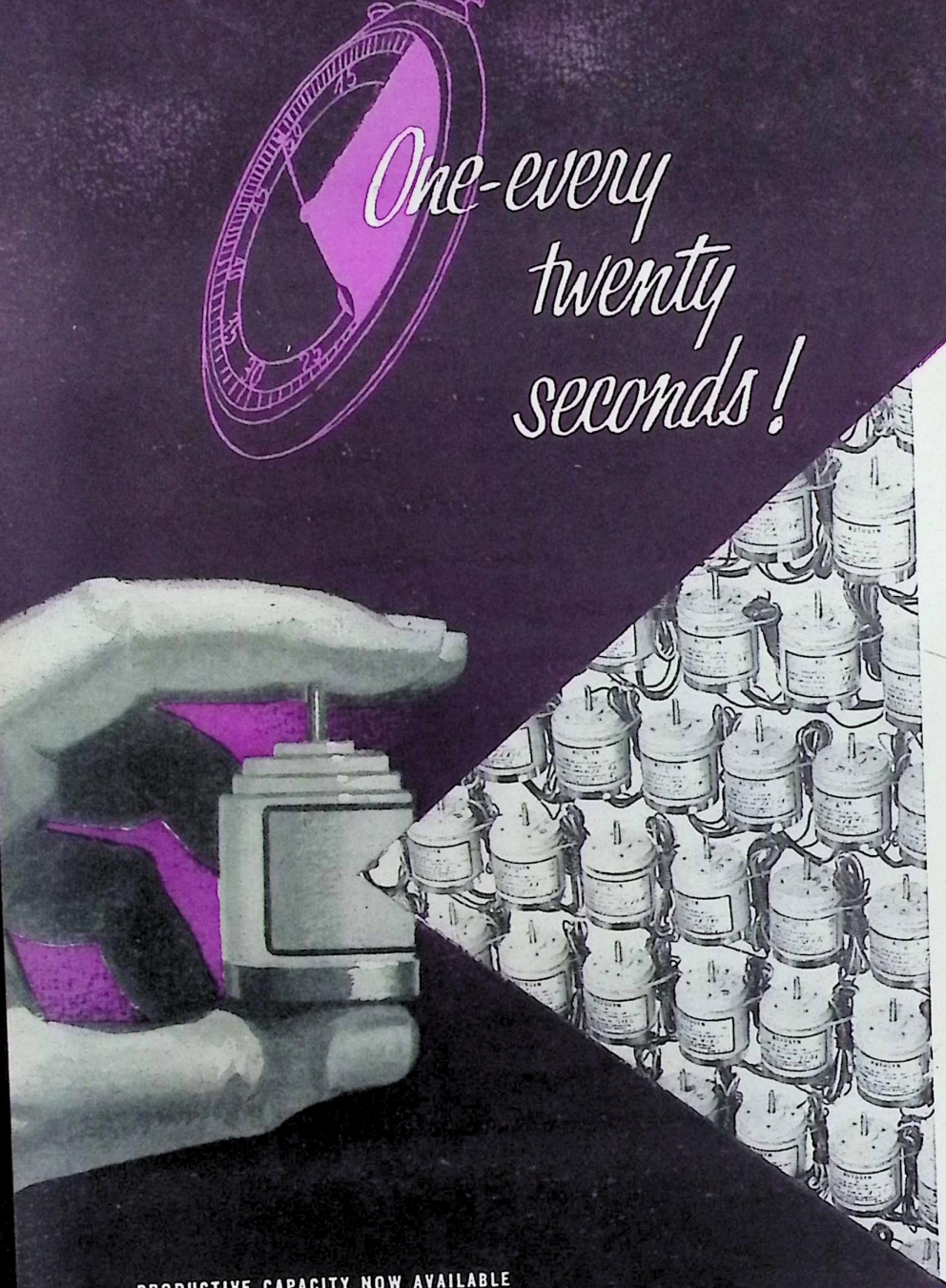
VACANCIES for about 300 aviators now exist in Army units of National Guard. Among those immediately eligible for these flying appointments are former pilot officers of the Air Force, who are not above the maximum age limit for unit vacancy to be filled. . . . Next US Coast Guard Academy extrance examinations will be held on February 24 and 25, 1953. All applications must be postmarked before January 15. To be eligible, a man must be between the age of 17 and 22, a high school senior or graduate. Qualified military personnel may also take the exam. Inquiries should be addressed to the Commandant (PTP), US Coast Guard, Washington 25, D. C. . . . Vets of any service can now enter aviation cadet training, if qualified, and in case of washout are assured of prompt discharge.

PROPOSED Air Force Academy is reported to have received Budget's blessing. . . . Department of Defense has said it will include in its legislative program "revised" and "refined" versions of the Reserve Officers Personnel and Armed Forces Equalization of Benefits Acts that the last Congress failed to touch. . . . New AFROTC program is scheduled for next fall. Instead of trying to graduate not only qualified second lieutenants but specialists as well, the new setup will not provide the special training until after the officer enters active duty.

CIVILIAN EMPLOYMENT — About one out of every eight AF civilian employees, 12.5 percent, is physically handicapped. . . . Civilian employment in the Air Force remains at a steady level. The general situation is not much different than it was a year ago. Professional and technical workers are in greatest demand. Jobs for skilled tradesmen and clerical help are fairly plentiful with some variations due to differences in local labor supply.

RESERVE CIVIL AIRCRAFT fleet includes total of 294 four-engine aircraft presently being modified so they can be transferred to military support contract operations within forty-eight hours in event of national emergency. The 294 four-engine aircraft have lift capability of 331 planes originally announced as the goal last March. While the greater portion of these planes are owned and operated by the certificated airlines, the non-certificated carriers and some corporations are also contributing suitable aircraft. . . . Identification cards issued by the Army, Navy, Marine Corps, Air Force, Coast Guard, National Guard, Merchant Marine, and Civil Air Patrol will be accepted by CAA in lieu of CAA identification cards. . . . CAP recently began an all-out, nation-wide drive for total of 50,000 senior members — instructors, pilots, observers, communications specialists, etc. . . . A new high of 18,166 rated CAP personnel — 15,735 pilots and 2,431 observers — has been announced. . . . Colonel Milton S. Kronheim, Washington businessman, has been named chairman of the CAP International Cadet Exchange Committee.

One-every twenty seconds!



With Korea, demands on our services and facilities increased tremendously. For one thing, aircraft production plans were instantly accelerated. Then, too, new aircraft models . . . carrying many more precision instruments and accessories . . . were lifted off drafting boards much sooner than expected. So we faced an unforeseen . . . tremendously changed . . . much more complicated . . . development and production task. We tackled it head-on. As of today, our production has been expanded to 514% of our pre-Korea output. As an example, we're turning out one precision Synchro-type device every twenty seconds—a previously unheard of rate. We have added 2 new manufacturing divisions, 23 complete unit sub-contractors, and over 2300 parts sub-contractors. Here is evidence aplenty that we're leaving nothing undone to satisfy demand in full at the earliest possible moment.

PRODUCTIVE CAPACITY NOW AVAILABLE FOR THESE HIGHLY CRITICAL ITEMS

- Autosyn Remote Indicating Systems
- Flight Instruments
- Warning Units
- Reciprocating Engine Starters
- A.C. and D.C. Generators
- Carbon Pile Voltage Regulators
- Radar Antenna Positioning Systems
- Jet Electric Starters
- Radio Magnetic Indicators
- Omni-Bearing Converter Indicators
- Automatic Pilots and Automatic Approach Systems
- Oxygen Regulators
- Radar Pressurization Equipment
- Engine-Driven Dry Air Pumps
- Turbine-Driven Fuel, Water and Alcohol Pumps
- Ordnance Electrical Equipment
- 400 Cycle Synchros (AY-200 Series Types)
- Special Purpose Servo Amplifiers

Eclipse-Pioneer

DIVISION OF Bendix AVIATION CORPORATION

TETERBORO, NEW JERSEY

WORLD'S LARGEST PRODUCER OF AVIATION INSTRUMENTS AND ACCESSORIES

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

TECH TALK

By Richard Skinner

The Air Force's new gun cameras, especially designed for high speed jets, are being made by the Bolsey Corporation of America. "Tech Talk" last month did a photo finish on the company's name, spelled it incorrectly.

If you've got an igloo that needs insulating, Lockheed's got just the stuff—a new industrial plastic that pours like molasses and looks like angel food cake. But Lockfoam will be used more as a structural stiffener in aircraft than for bolstering igloos. The foam plastic is light, strong, and unusually durable. It can be poured into place (where on drying it expands to fill cavities), sucked into smaller cavities, or used in casting blocks for specific shapes. Lockfoam now appears in the radomes of F-94Cs, where it insulates against shock, sound, heat, vibration, and electricity, Lockheed engineers say, without interfering with radar waves. Other uses the engineers see are as a filler for ailerons, rudders, elevators, wing trim tabs, and additional strengthening for antenna housings, and insulation of cabin ventilation systems. The substance sets without heat or special equipment.

Martin has a Navy contract to build the first all-jet seaplane, the model 275 Seamaster. Security blocks performance details, but the minelayer is reported to be "radically different in concept and design from past models." It'll be multi-engine, large, and "very fast."

Northrop and AF engineers are still running stress tests on F-89 Scorpions, hunting for the structural defect believed responsible for three recent crashes of C models of the all-weather interceptors. All Scorpions were grounded in September. According to the company, the reason for grounding the A and B models too was for an engine change program.

Lockheed president Robert Gross and Capt. Eddie Rickenbacker, president of Eastern Air Lines, have been talking jet airliners, a sign that perhaps now American industry and airlines are doing something about the big headstart the British have in jet transport. The Lockheed airliner would reportedly carry more than 100 passengers from New York to Miami in about two hours—breezing along at something close to 600 mph. The plane, like the B-47 and B-52, would have sharply sweptback wings. It would cruise between 30,000 and 40,000 feet. Other jetliners are being developed by Boeing and Douglas. Meanwhile, Pan Am World Airways has bought three British jet airliners, for delivery in 1956 with an option on seven more the following year. These Series III Comets are powered by four Rolls Royce Avons, giving 9,000 pounds static thrust. The jetliners cruise at 500 mph, seating 58 first-class passengers or 78 tourist class.

What's believed to be the first commercial use of colored smoke in skywriting appeared over New York City on Columbus Day when planes spelled out a mile-high message 10,000 to 12,000 feet up for Macy's, using yellow and white smoke. The color was developed by the American Cyanamid Company's Calco division, who also have scarlet smoke in the works.

Weapons Evaluation

During World War II a force of fifty bombers was assigned the mission of attacking an industrial city. The attack was fairly successful and only five aircraft were lost. At the briefing following the raid the conclusion of the interrogators disclosed that the designated target was fifty percent destroyed with all major factories damaged. In a month, a reconnaisance of the city revealed that most of the damage was repaired and the industrial plants were back in business. At the conclusion of World War II a great effort was expended to evaluate the true effectiveness of raids such as this, and, in effect, of the strategic bomber as a weapon. These studies have run head on into an old problem, how to properly evaluate the effectiveness of a weapon.

In the past, and in some quarters today, the sole concern in evaluating the worth of a weapon revolves about its effectiveness on the battlefield. This narrow viewpoint would, in the raid cited above, weigh the loss of five bombers and the cost of bombs dropped against the destructive effect produced at the target. Such a profit and loss analysis merits some consideration in judging the over-all effectiveness of a weapon. However, it is no longer the complete consideration that it was in the past. The concept of total war, involving the complete economic system and working manpower of a nation, when translated to weapons, means that the full evaluation goes beyond battlefield effectiveness. Strategic planners today must consider weapons in terms of raw materials required, factory space needed, labor forces involved, supply and transportation problems, and a point of major consideration—what the enemy must do to combat the weapon.

Certain weapons could be considered to be of little value if viewed solely from the direct destructive effect produced. In particular the German V weapons used against England provide outstanding examples of the tendency to underestimate weapons. Even today when the V-2 is discussed the majority of individuals will cite its poor accuracy and failure to produce destruction of military targets in England as proof of the low effectiveness of the V-2. It is true that when these items are measured against the tremendous effort put forth by the Germans to develop the V-2, the balance is very much against the missile. However, when the accompanying effects of the V-2 are considered its true value comes to light. These effects are mainly centered around the reaction of the public and, as a result of this reaction, the countermeasures taken by the military. The public reaction was to demand immediate anti-missile action. Since such action was not possible against the missile itself, this meant requiring aircraft to fly into the hornet's nest and accept overly high loss percentages.

There is no way to accurately assess the manufacturing time lost due to fear but it certainly must have been many times greater than the time lost by virtue of direct destruction. It is quite possible that the lack of accuracy of the V-2 was to a large degree an asset to the German effort in fostering this fear.

When we total all the effects of the V-2—destruction at the target, disruption of manufacturing, anti-missile studies, attack of missile sites—in terms of the enormous cost of materiel used, and the diversion of forces from other efforts, the net balance swings in favor of the V-2.

The V-1, or buzz bomb, which has been relegated to the junk pile, had one important feature which we are prone to overlook. It, unlike the V-2, could be intercepted and destroyed in the air because of its relatively slow speed. The public reaction to being bombarded by V-1 missiles caused the air defense command in England to throw the utmost effort into combatting these missiles. The V-2 missiles were too fast to attempt air interception, hence no active air defense effort was expended against them. Thus, in terms of active air defense expended, the V-1 was the better weapon of the two. It could saturate an air defense system and thus make it more vulnerable to attack by strategic bombers. It is well to consider this lesson in designing some types of weapons. Instead of always looking for the more expensive and invulnerable weapon some developmental thought should be expended on the cheap, vulnerable weapon which the enemy can exhaust himself against.

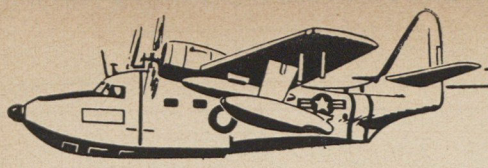
In the case of the strategic bomber we have a weapon which can very well be measured against the destruction it can achieve and still show a net profit. However, to assess the full value of this airplane it must be judged by the economic factors mentioned above and particularly by the tremendous air defense effort which is required to combat it.

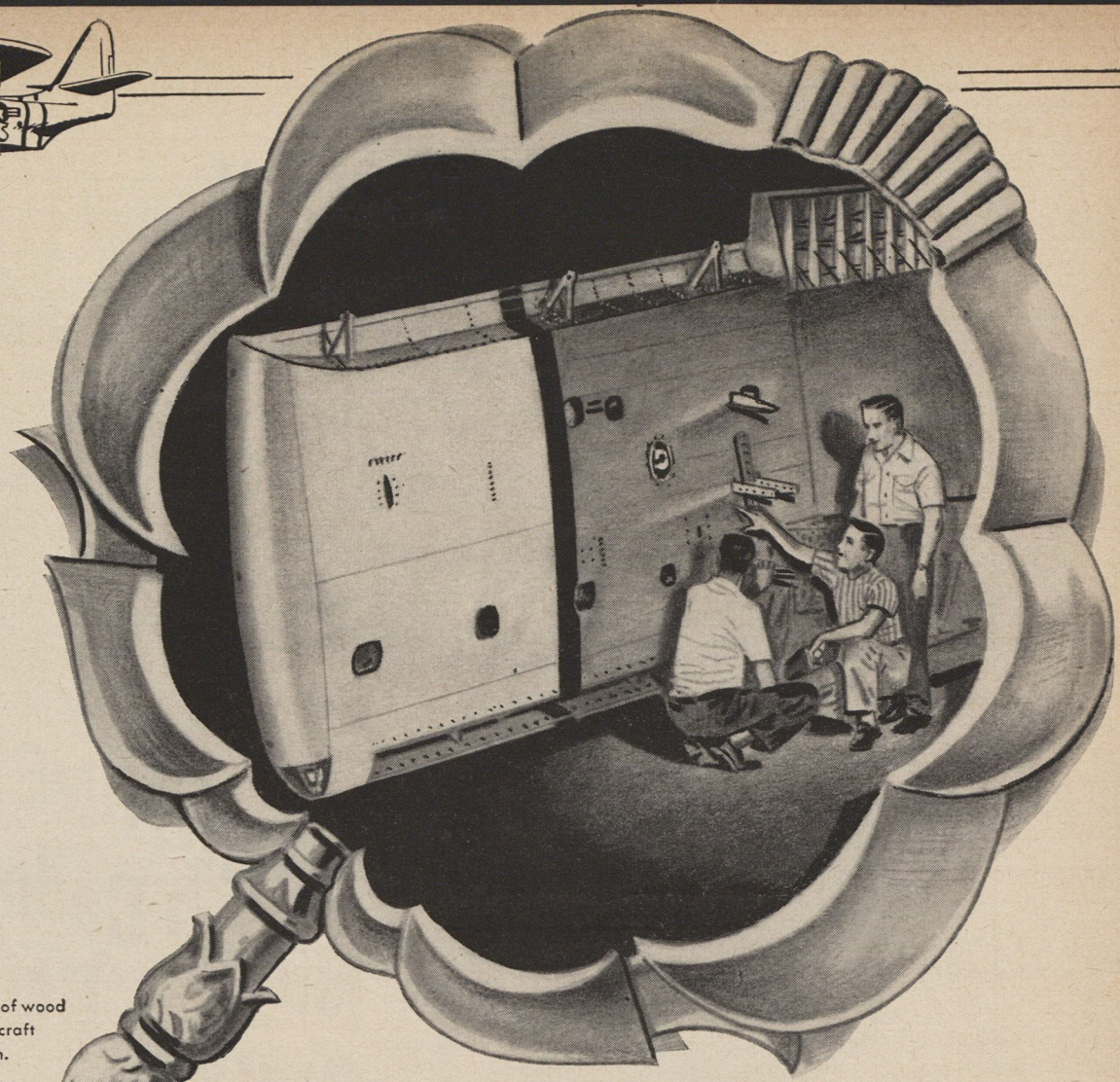
The requirements for early warning radars, jet fighters, fighter bases, control systems, and identification systems are staggering when the defense of a country as large as the United States is concerned. Production of these items, even with our industrial capacity, must necessarily be at the expense of construction for other purposes. Labor forces to produce these items and military forces to man them must all be charged to the strategic bomber.

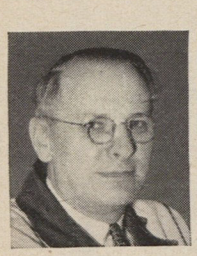
In summarizing, it should be noted that although our research and develop-

A NEW DEPARTMENT

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







Steven Chojnacki, general foreman of wood tools and dies, has been in the aircraft industry almost since its inception. Starting with the famous Flying Jenny he has spent 37 years in the industry, over 6 of them with Twin Coach.

Here's how Twin Coach helps lock Davey Jones's locker

GRUMMAN UF ALBATROSS amphibians have established remarkable records in rescuing downed airmen from Korean waters, often behind enemy lines.

Twin Coach was selected to build, in quantity, the massive center panel and wings for this important air-sea rescue craft. In addition to fabrication and assembly, Twin also installs all wiring and tubing, ships complete sections ready for final assembly.

Twin Coach plants, among the best equipped in the nation, are also in volume production on assemblies for helicopters, attack, and search planes. Modern facilities, modern equipment, and *experienced* manpower make Twin Coach a dependable source for every type of major airframe assembly.

A-5850

FAGEOL TWIN COACH AIRCRAFT

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

TODAY

—complete output of the SONOTONE-designed Sintered-Plate Nickel Cadmium storage battery is consigned to the United States Government exclusively.

TOMORROW

— this great new battery — developed and now being produced by SONOTONE—will be made available to American industry for civilian use. Inquiries regarding its availability for defense contracts and eventual commercial use are invited.

the battery the world is waiting to use

BATTERY DIVISION

SONOTONE CORPORATION

Elmsford, New York

ment in weapons should strive for great destructive effect, this is not the sole consideration. The factors which must be evaluated in determining the full effect of a weapon are many and complex, and reach far beyond the battlefield. In every case we must assess how far the enemy is willing to go in combatting the weapon we are developing.

Lt. Col. Edward P. Wynne
Armed Forces Staff College
Norfolk, Va.

Soaring Society

In your October edition Secretary Thomas K. Finletter has an article entitled "New Thinking Needed." He tells us that we cannot stop at present accomplishments, but must move ever onward in finding new ways of improving our machines, and in educating our men.

If the government, any department of it, will take a simple lesson from the youth of this country, it will be found that if it had not been for the kids, some of them hardly above the habit of clutching at mother's apron strings, it is dollars to plugged lead nickels that radio would never have advanced so rapidly.

The Wright brothers were only youngsters when they started experimenting for the tests that came at Kitty Hawk, North Carolina, not so long ago. From them to Lindbergh and "backended" flying Corrigan now seems ages, and from those two worthies to now seems to be even longer, but look at the progress. And the time from the Wrights to now is as short as a tale that is told.

Nevertheless we seem to be faced with a situation there that needs remedying, and there seems to be a way of remedying it. If the Air Force could find a reservoir of young Americans who had won their spurs, so to speak, by flying through the air with the ease of the eagle and buzzard, in comparatively the safest of all sports, young fellows who do their flying daily or weekly, taking their turn in flying powerless machine as nonchalantly as those great birds of prey, hourly, daily, and weekly growing in courage and resourcefulness that seems to come natural to youth, they would be saved the necessity of calling a hundred men into the Air Force to be sifted so that ninety and nine could be rejected, and one taken. No, the armed forces could use every single youngster, boy or girl who might be in such a pool.

Is there such a pool? Yes, but at the present time, due to the oversight of the government, and also of the heavier-than-air passenger and cargo-carrying machine manufacturers, and also the manufacturers of air warcraft, that pool is comparatively small.

The pool has been created over a period of years by the youngsters who found "soaring in gliders" a sport to challenge the daredevil spirit of youth. That spirit brought into being the Soaring Society of America, and a large number of state branches of that Associ-

JET BLASTS——— CONTINUED

ation which in a limited way have been trying to make it possible for anyone inclined to take to the air to do so. That Association is voluntary in its actions, but all who would like to soar cannot because of lack of money in many parts of the country to provide ships and tow ships.

Let the government make it possible for the youth, without entering the armed forces, to have opportunity to get a taste of soaring and in a comparatively short time they would have at their disposal thousands of youngsters, who could quickly be turned into pilots, and other needed jobs in the air. Such youngsters would have already mastered the elements, and would know the rules of safety out of an experience that but few flyers who get their experience operating a powered machine could have.

Too, the private air lines would have available to them a force of pilots, cool, courageous, dependable.

It behooves then, the Air Force to get behind a department for soaring. It will repay the heavier-than-air machine makers to help the cause of soaring, to see that the largest number of youth have a chance to learn the art of gliding. The sooner we give them the opportunity to spread their wings and fly, the better off the country will be.

F. E. Morriss
Dallas, Tex.

AN HARDWARE *anytime . . . anywhere . . .*

. . . from your nearest Air Associates Aviation Supplies Division–

216 Union Street, Hackensack, New Jersey

5315 West 63rd Street, Chicago 38, Illinois

3214 Love Field Drive, Dallas 9, Texas

1231 Airway, Glendale 1, California

International Airport, Miami 48, Florida

Manufacturers and Distributors of Aviation Materials and Equipment

Aircraft Products Division: Teterboro, New Jersey

Electronic Equipment Division: Orange, New Jersey

AIR ASSOCIATES

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 leading electronics organizations, are now creating a number of new openings in an important phase of their operation.

Here is what one of these positions offers you:

THE COMPANY

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

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.

YOUR TRAINING

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

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

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 later.

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

GREATER PITTSBURGH SQUADRON CITED

The Pennsylvania unit is named Squadron of the Month for its participation in civic affairs and public service programming

SQUADRON OF THE MONTH

Greater Pittsburgh Squadron

CITED FOR

distinguished performance of duty, and outstanding programming in the fields of television, airpower displays, and youth essays.

This month, AFA salutes as its Squadron of the Month the Greater Pittsburgh unit which has taken part recently in a number of civic activities.

In June, the Squadron planned and carried out an enthusiastic civic reception for Col. Francis S. Gabreski.

The Squadron is currently working on plans to air a weekly television show, featuring well known Air Force and industry personalities. The show may be broadcast nationally.

The Squadron is also planning an airpower essay contest for all school children in the metropolitan area. Such a contest should create interest in modern airpower, and contribute to public understanding of the Air Force and AFA.

As if this schedule were not enough to keep members of the Squadron busy, the unit is also at work on a plan to feature an AFA display in the Buhl Planetarium, as another demonstration of airpower for the citizens of Pittsburgh.

The Commander of this Squadron is Alexander M. Campbell, 643 Gettysburg St., Pittsburgh 6, Pa. All Pittsburgh AFAers are urged to contact him.

Here are the officers of the new San Fernando Valley, Calif., Squadron. At the left, in the aloha shirt, is Rush Linch, Vice Commander. The others include, from left to right, Mark Donahue, Secretary; James Ellis, Commander; Chris Condon, Treasurer; Thomas Skinner, Councilman; and Jack Stilbert, Councilman. The Squadron's charter was approved November first.

New Regional VP

President Arthur F. Kelly recently announced the appointment of Harry B. Johansen, St. Louis, Mo., as Vice-President of AFA's Midwest Region, which includes the states of Iowa, Missouri, and Nebraska.

Johansen was in the wartime Air Transport Command, saw service as a Base Commander in North Africa, and is now a colonel in the Air Force Reserve. He is Executive Vice President of the Johansen Brothers Shoe Company in St. Louis.

Boy Scout Troop 124, Bellwood, Ill., looks over O'Hare AFB, Chicago. Running the show for the Chicago Group Council are George DeHesus (left), West Chicago Sq. Cmdr., and LeRoy Kwiatt, committee chairman (third from left).

Kelly Tours the Country

In his first two months as president, Arthur F. Kelly of Los Angeles has maintained a fast pace in getting acquainted with the AFA organization. During September and October, Kelly visited seven of AFA's twelve regions, and made two trips to the National Headquarters office in Washington. At National Headquarters he reviewed all activities of the organization and conferred with George Hardy, Vice President of AFA's Central East Region.

While in Washington, Kelly also conferred on two occasions with Air Force

President Arthur Kelly meets with AFAers and officers from Scott Air Force Base in St. Louis. From left are Fred Rein, St. Louis Convention Bureau; Roland Frey, Missouri Wing Commander; Colonel Carlisle Ferris, C.O., Scott AFB; Major General K. P. McNaughton, Vice Commander, Air Training Command; Kelly; Harry Johansen, Midwest Regional Vice President; Father William Mullally, national director; and Joe Harper, St. Louis Squadron member.

leaders, including Secretary Finletter, Under Secretary Gilpatric, Assistant Secretaries Hill and Huggins, Chief of Staff Vandenberg, and Vice Chief of Staff Twining.

His travels on behalf of AFA took him to St. Louis, where he met with AFA Vice President Harry B. Johansen; Father William F. Mullally, National Director; Missouri Wing Commander Roland Frey; St. Louis Squadron Commander Richard Wassall, and other AFA leaders in the area. While in St. Louis, Kelly visited Scott AFB, headquarters of the Air Training Command, where he met with leaders of that organization.

On the weekend of October 4, Kelly was a guest of honor and speaker at the first Colorado Wing convention, where he conferred with W. Thayer Tutt, AFA's Vice President of the Rocky Mountain Region; Paul C. Potter, Colorado Wing Commander; and Squadron commanders from throughout the region. While in Colorado Springs, he met with leaders of the Air Defense Command, whose headquarters are in that city.

Kelly next visited Chicago for a meeting with Morry Worshill, Vice President of the Great Lakes Region.

In Minneapolis he conferred with Merle Else, Vice President of the North Central Region.

Kelly also traveled to New York City for meetings with past presidents C. R. Smith and Bob Johnson, and Julian B. Rosenthal, National Secretary. While in New York, he conferred with leaders of the Continental Air Command.

In his home state of California, Kelly discussed AFA business with past president Tom Lanphier, Jr., and Wing leaders in the state, and made a trip to San Diego for a meeting with Edward Kranch, Squadron Commander in that city.

Just for good measure, Kelly spent five days in New York City attending meetings of the Air Staff Committee on Reserve and National Guard Policy, of which he is a member.

DOOLITTLE HONORED

This year's winner of the Wright Brothers Memorial Trophy for "significant public service of enduring value to aviation in the United States" is James H. Doolittle, a founder and board member of AFA. The trophy will be awarded by the National Aeronautic Association at the Wright Brothers Memorial Dinner December 17, in Washington, D. C.

For Public Understanding

Lyman Welliver, Commander of the Chicago South Shore Squadron, reports the Squadron is undertaking a type of public relations campaign that has never before been attempted. Using the names of recent enlistees into the USAF as a guide, members of the Squadron are making personal calls on the families of these men, explaining AFA, and the relationship of AFA and the man on active duty. It is hoped this program will result in added good will for the Association, and a better understanding by the public of its role in airpower. Welliver's address is 15831 Millard Ave., Harvey, Ill. All interested members are urged to contact him regarding participation in the project.

Indiana Reorganization

A special meeting was held in October in Indianapolis, called by Vice President Morry Worshill, Great Lakes Region, to discuss reorganizing the Indiana Wing.

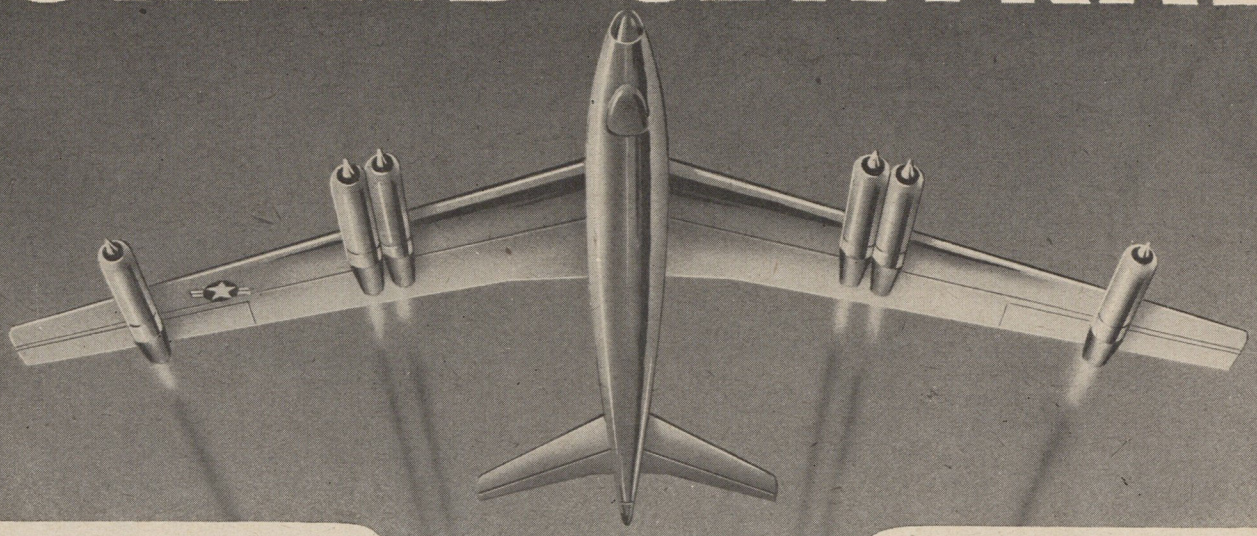
Representatives of eleven Indiana cities attended this meeting, and everyone showed an interest in the formation of AFA Squadrons in the various communities.

Temporary Wing Officers were appointed, to serve at least until more Squadrons are chartered and a formal election of officers held. Officers appointed were: Robert Logan, 210 Glenwood Ave., Muncie, Commander; Robert Wilson, 2522 Hoke St., South Bend, Vice Commander, and T. J. "Pat" Fleck, 1914 N. Riley, Indianapolis, Secretary-Treasurer.

Also at the meeting were Jerome

Delivering the Goods!

GRAND CENTRAL



THERE IS A BETTER JOB FOR YOU, WITH A REAL FUTURE, IN THE HEALTHFUL CLIMATE OF ARIZONA.

Qualified Aircraft Men of integrity, with sound skills in aircraft construction are invited to write for information regarding positions in our long range B-47 program at Tucson, Arizona. If you are a good operator, with experience and like the "Pulling Together" spirit, write us today.

Address all correspondence to:

Personnel Manager
GRAND CENTRAL AIRCRAFT CO.
Municipal Airport, Tucson, Arizona

Increased Capacity—Better Skill—More Facilities—Higher Quality—these are reasons why Grand Central has marched forward; so that today, it ranks among the important units in the nation's aircraft strength.

In every phase of Aviation Modification, Overhaul and Engineering, Grand Central is delivering the goods. In the military field, we are proud of our service to the nation. In the civilian field, our work is unsurpassed, and the confidence that is continually expressed in our output has been won by reason of skill and integrity... With its twenty three years of growth and progress, Grand Central continues to march forward.

Alis Et Animo

PRECAUTION
PRECISION
SAFETY
INTEGRITY

GRAND CENTRAL AIRCRAFT CO.

GLENDALE, CALIFORNIA • • • TUCSON, ARIZONA

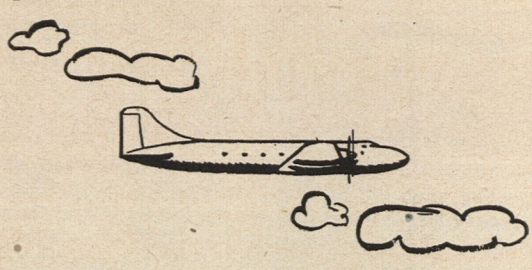
Grand Central Airport — Municipal Airport

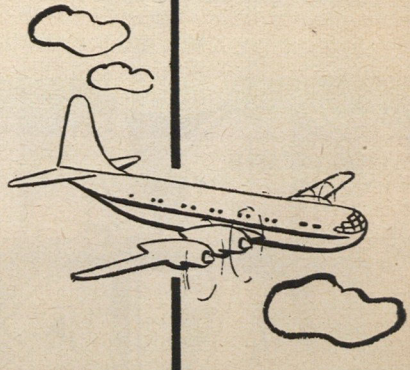
NO FALSE ALARMS IN FLIGHT

THE Kidde visual smoke detector offers new advantages in fire protection for aircraft. It is a small, compact, light-weight detector which cannot give false alarms.

Here's how it works: air from cargo compartments is drawn to the detector on the instrument panel. Two viewing windows show a black chamber through which an invisible beam of light passes. The slightest trace of smoke reflects the light beam, showing through one of the windows as a streak of light.

This foolproof detector eliminates false alarms frequently caused by voltage fluctuations and from foreign matter. Write us for full particulars.





Kidde

Walter Kidde & Company, Inc.
1212 Main St., Belleville 9, N. J.
Walter Kidde & Company of Canada, Ltd., Montreal, P. Q.

Green and Irving Kempner, of Detroit, Illinois Wing Commander George Anderl, and Leroy Kwiatt, representing the Chicago Squadrons. Gus Duda, Organization Director, representing National Headquarters, showed a film made at the Convention in Los Angeles.

INDIANAPOLIS SQUADRON

The Indianapolis Squadron will hold a charter meeting at Central YMCA at 7:30 p.m., December 5. All AFAers are urged to be present. For details, contact Bob Logan, 210 Glenwood, Muncie, or T. J. Fleck, 1914 N. Riley, Indianapolis.

Speaker Series at Taunton

At a recent meeting of the Taunton, Mass., Squadron, Lt. Col. Philip Keating, CO, 2234th AFRCTC, discussed the USAF Reserve Program and its relation to civilians. This meeting was the first in a series intended to give the Squadron a better picture of how it can be of help to the Civil Defense Program and the Air Force. A future meeting will feature Capt. Paul Lappas, CO, Manchester Filter Center, a vital link in the GOC network. Fall and winter meetings of the Squadron will be held in the Civil Defense headquarters, through the courtesy of the CD Director, Vincent O'Neill. The Squadron Commander is Edwin T. Morrell, 41 Grove St., Taunton.

Detroit Plans Auxiliary

Plans are under way to form an Auxiliary Unit to the Detroit AFA Squadron with Mrs. Esther Green, 2950 Richton, Detroit 6, as the principal organizer. Mrs. Green asks that all interested eligible ladies contact her for information about this program.

Headquarters has also been informed, by Mrs. Lela Kelley, President of the Kalamazoo Unit, that the groundwork is being laid for the eventual formation of the Michigan Auxiliary Wing.

Mrs. Rita Hastings, National Vice President, has announced that she has appointed Mrs. Corinne Colthorpe, 4240 Caroline Ave., Toledo, as the new Ohio Wing Auxiliary President.

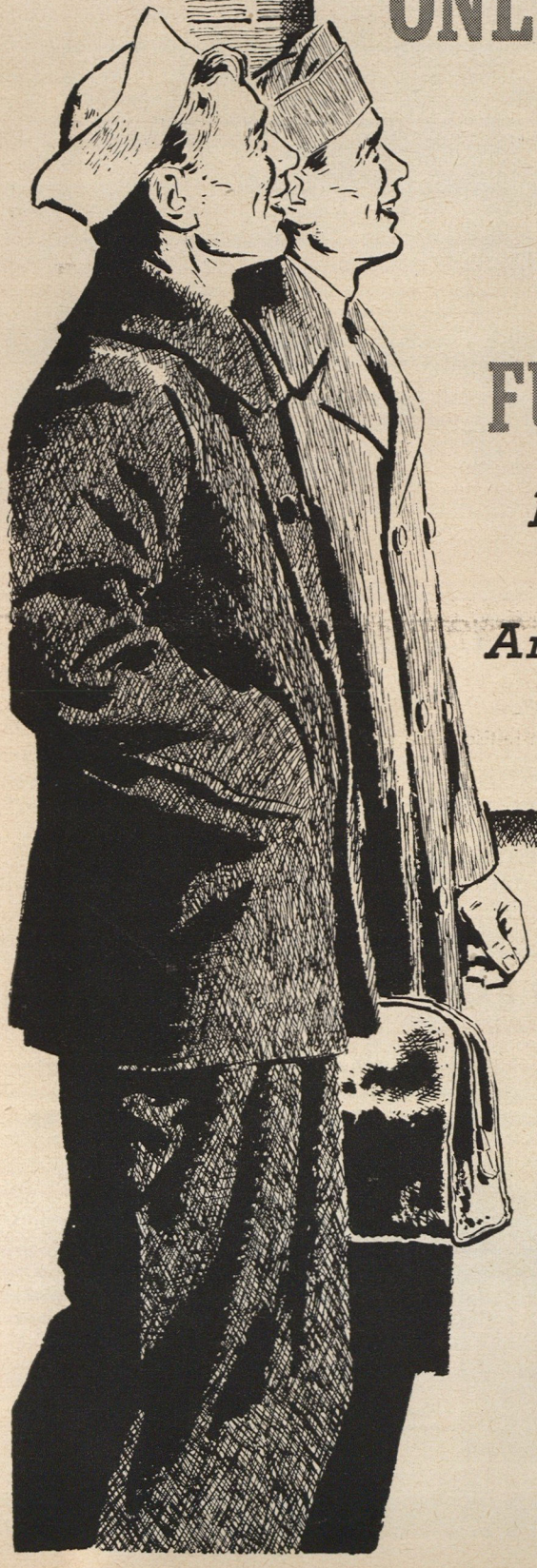
The Toledo Auxiliary Unit has announced plans for a gigantic "barn dance" to be sponsored as a joint Unit-Squadron activity. All Toledo area AFA and Auxiliary members are urged to contact President Mary Bolinger, 536 Foredale Avenue, Toledo.

From Illinois comes the news that the formation of the Auxiliary Wing in that state is a definite plan for the near future. This is announced by Mrs. Marguerite Gran, 4031 W. Monroe Avenue, Chicago 24, Ill., Vice President.

ONLY THE RAILROADS *offer* NATION-WIDE REDUCED FURLOUGH FARES

No weather worries... no highway hazards

America's most dependable transportation system



Travel by Train...

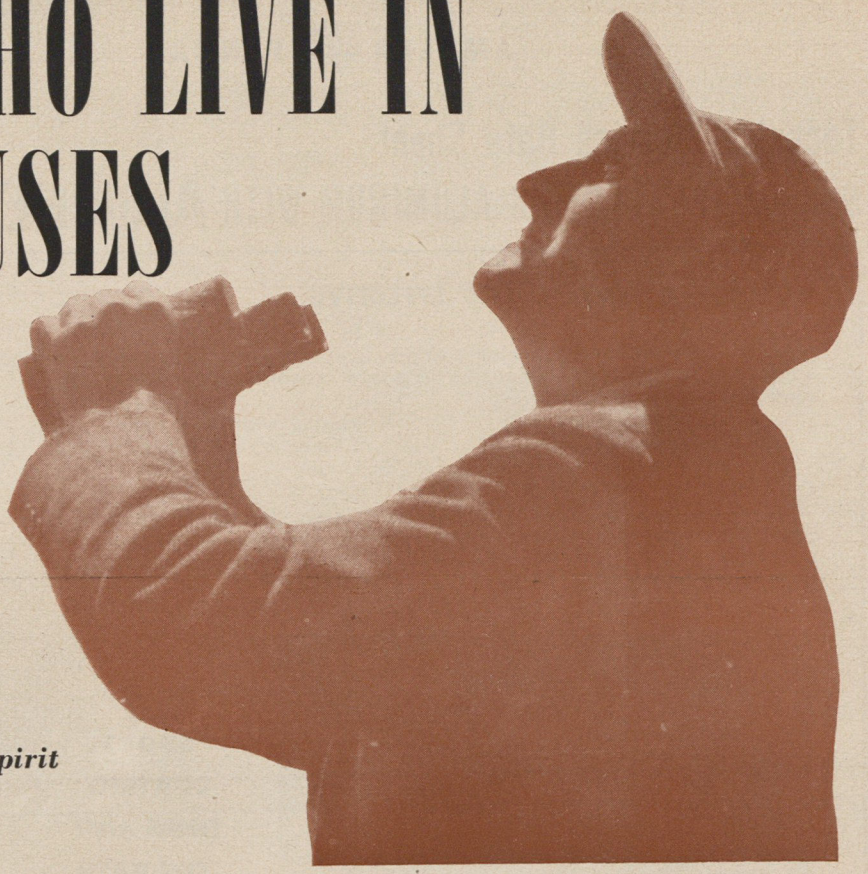
No tax on reduced furlough fares!
No wonder smart servicemen travel by train!
The Railroads get you home... back to duty...
with complete dependability.

Save precious furlough time and money
...why worry...be sure... travel by train.

THE
Railroads
of the United States

PEOPLE WHO LIVE IN GLASS HOUSES

Toledo's Ground Observer post is operating full tilt thanks largely to the AFA Squadron there. It's an example of capable leadership and commendable community spirit



Toledo Skywatchers mean business.

BRAVO LIMA zero two one five . . . north . . . sierra two nine seven metro . . . 0322 . . . one multi motor . . . very low."

That's an Air Force Filter Center flash to an Air Defense Direction Center, reporting an unidentified plane that could be a Russian atom bomber sneaking in low, beneath the radar screen, while a city sleeps. Within moments, all-weather interceptors scramble to head off the incoming plane and identify it as friend or foe.

Who alerted the Filter Center? A ground observer post, manned by unpaid civilian volunteers — patriotic Americans who realize the nation's need for home defense is now.

They could be from one of hundreds of cities across the nation. Take Toledo, where just one of the 600 observation posts in Ohio is located. Toledo's link in the Air Force's Operation Skywatch is now in full swing. Skywatchers man the glass house atop the six-story Willys-Overland Motors administration building there twenty-four hours a day. They watch the airliners climbing to altitude from Municipal Airport. To the southwest they can see the Anderson Elevators in Maumee, and to the north they spot the Consumers Power Company plant in Erie, Mich., nearly twenty miles away. They don't miss much.

Credit for the success of the Skywatch project in Toledo must go to the Air Force Association. Ohio Wing Commander Larry Hastings is giving firm direction to the Ground Observer program there, which is officially sponsored by the Toledo Squadron of AFA. The Toledo spotting post now has 312 volunteers—far more than the original 200 called for—and a new target of at least 500 has been set. All this since AFA lent a hand to an effort that had been floundering.

Under Hastings' supervision the location on top of the Willys building

Inspecting the Toledo GOC post are (from left) Hastings; H. L. Frost, 9522d VARTU; Chief Observer Ted Eleston; Howard Cook, vice mayor; Col. Luther Bivins, PAS&T; and Dean Huffman, commander of the Toledo Squadron.

was made available. The observation post is one of the highest in the state. Willys spent $500 in labor and materials for the eight-by-eight foot observation booth. Others did their part too. Libbey-Owens-Ford Glass Company provided the tinted glass windows that enclose the booth on all sides. The Toledo Chamber of Commerce is picking up the tab for the telephone service—a direct line to the Air Force Filter Center in Columbus.

Then others pitched in. A local jeweler donated an illuminated clock. Two chairs came from a furniture store. The Red Cross volunteered a coffee maker, complete with supplies of coffee, cream, and sugar to keep the skywatchers going in the gloomy, pre-dawn hours.

And people volunteered to man the post, enough people so the four-hour stints wouldn't come around often enough to work hardship on anyone. No mixed teams are used except for husbands and wives, to assure the post will be used for spotting airplanes, not watching the moon. Observer identification cards are issued only after volunteers are screened by the Toledo Police Department in cooperation with the Federal Bureau of Investigation.

Ted Eleston, of Toledo's radio station WSPO, was named chief observer of the GOC station. The first twenty-four-hour tour of duty was pulled by members of the 9522d Volunteer Air Reserve Squadron, who offered their services as a group.

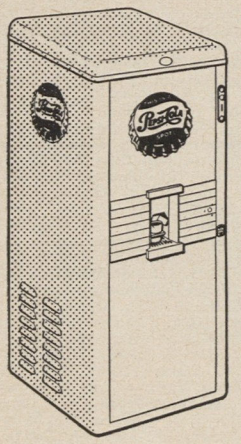
The Toledo observation post is a community project. Press, radio, and television have all cooperated in publicizing the need for skywatchers, and Hastings credits their efforts for much of the success of the drive for more volunteers.

In Toledo, AFA is working in close cooperation with civil authorities, who are responsible for the administration of GOC records and personnel, and with the Air Force, which handles the tactical operation of the program and such things as training of aircraft spotters and reporting methods.

The arrangement is one that has brought AFA praise from both the Air Force and the Toledo Civil Defense people, who recently spoke of AFA as "a great organization." But more than that, the arrangement is one that is clearly getting a vital job done.—END

CREDITS
Front cover—Charles deM. Barnes; pages 7, 17, 28, 31, 32, and 42—Arlo Greer; page 25—International News Photos.

Always Hits the Spot



FROM COIN-OPERATED CUP VENDORS

AT THE FOUNTAIN

IN BOTTLES

PEPSI *always makes a hit*

THIS IS AFA

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

OBJECTIVES

• To assist in obtaining and maintaining adequate airpower for national security and world peace. • To keep AFA members and the public abreast of developments in the field of aviation. • To preserve and foster the spirit of fellowship among former and present members of the United States Air Force.

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 now assigned or attached to the USAF.

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

OFFICERS AND DIRECTORS

Arthur F. Kelly, President

Regional Vice Presidents: 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); Harry B. Johansen (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.

WING COMMANDERS

George A. Anderl, Oak Park, Ill.; L. A. Ballew, Jr., Johnson City, Tenn.; Thomas E. Bazzarre, Jr., Beckley, W. Va.; I. E. Brodsky, Philadelphia, Pa.; W. P. Budd, Jr., Durham, N. C.; Roland E. Frey, Webster Groves, Mo.; Arthur L. Gordon, Honolulu, T. H.; Ashley Green, Portland, Ore.; Larry G. Hastings, Toledo, Ohio; Harry J. Johnson, Jr., Erlanger, Ky.; Richard M. Krannawitter, Albuquerque, N. M.; Robert B. Logan, Muncie, Ind.; Joe Lydick, Fort Worth, Tex.; James H. McDivitt, San Gabriel, Calif.; Stanley K. McWhinney, Lansing, Mich.; George P. Miller, Chickasha, Okla.; Paul C. Potter, Colorado Springs, Colo.; Charles W. Purcell, Baltimore, Md.; Lloyd J. Streifuss, Washington, D. C.; Marcello A. Tropea, Providence, R. I.; Forrest L. Vosler, Marcellus, N. Y.; H. R. Wallace, Spokane, Wash.; Robert Westerveld, Hawthorne, N. J.; Stanley E. Zamachaj, Chicopee, Mass.

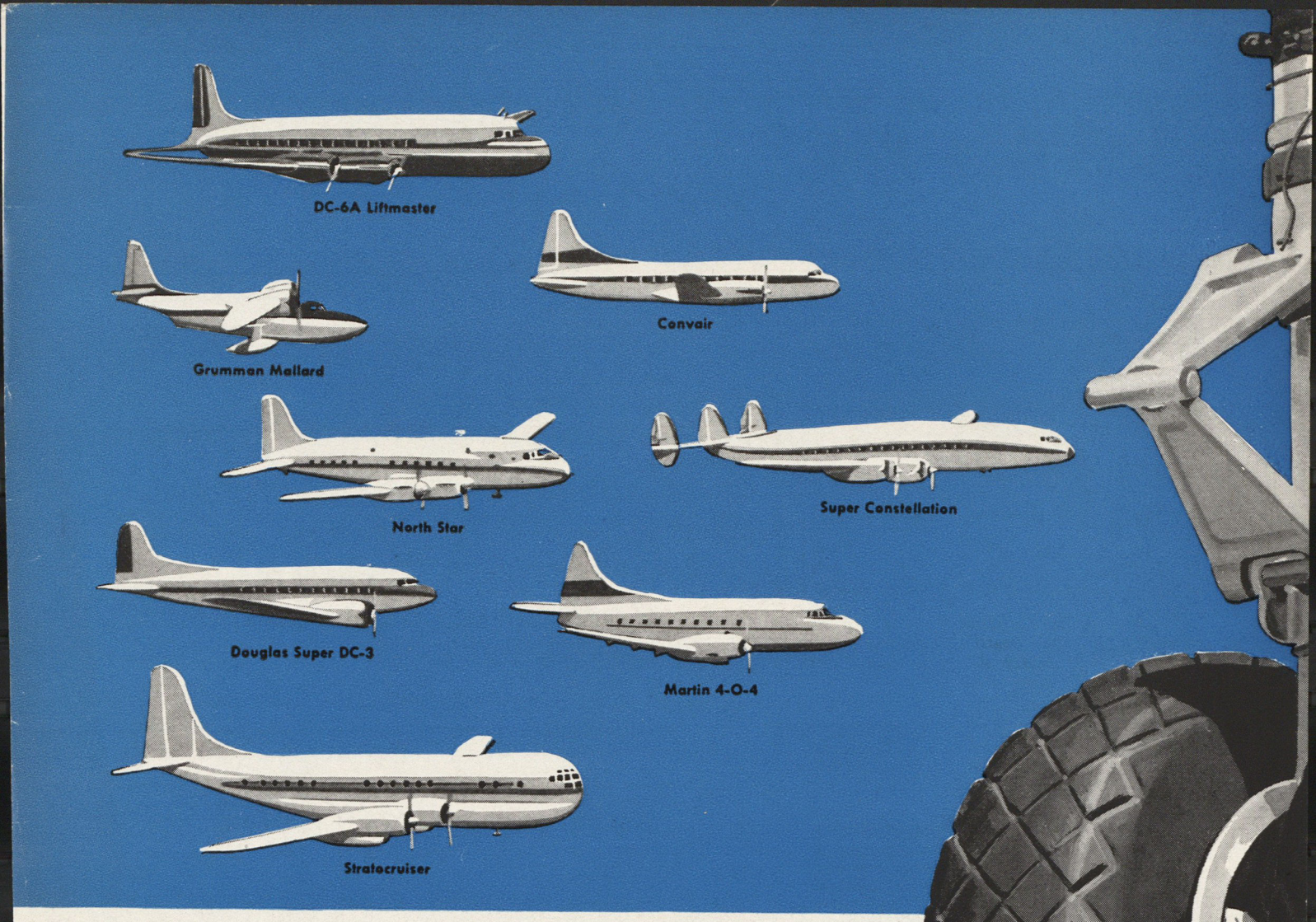
COMMUNITY LEADERS

Albuquerque, N. Mex., Richard P. Woodson III, Korber Bldg.; **Baltimore, Md.**, John S. Warner, P. O. Box 3725; **Battle Creek, Mich.**, Frank W. Ward, 63 Highland Ave.; **Beckley, W. Va.**, Estil Thorne, 106 Nathan St.; **Brooklyn, N. Y.**, Stanley C. Denzer, 1086 Ocean Ave.; **Chicago, Ill.**, Cameron S. Orr, 5702 W. 65th St.; **Chickasha, Okla.**, George P. Miller, 1001 Dakota St.; **Chicopee Falls, Mass.**, Francis E. Whittaker, 76 Taylor St.; **Cleveland, Ohio**, Kenneth G. Vetter, 2679 E. 121st St.; **Colorado Springs, Colo.**, Richard F. Love, 1511 E. Boulder St.; **Columbus, Ohio**, Carl F. Glade, 292 N. Warren Ave.; **Dallas, Tex.**, Rex V. Lentz, 3824 Wentwood Dr.; **Dayton, Ohio**, Norman Miller, 4237 Briar Pl.; **Detroit, Mich.**, Jerome Greene, 2950 Richton; **Drexel Hill, Pa.**, Lloyd R. Meredith, 2217 Ardmore Ave.; **Durham, N. C.**, Walter P. Budd, Jr., 115 W. Chapel Hill St.; **Fort Mitchell, Ky.**, Charles D. Walker, 42 E. Orchard Rd.; **Fort Worth, Tex.**, Joe Lydick, 1301 Foch St.; **Galesburg, Ill.**, Ivan E. Harrison, 1274 Florence Ave.; **Green Bay, Wis.**, Arthur E. Norgaard, Jr., 216 Cherry St.; **Hamilton, Ohio**, Harold T. Kramer, 625 Ridgelawn Ave.; **Honolulu, T. H.**, Joseph M. Murphy, P. O. Box 1618; **Indianapolis, Ind.**, Thurman J. Fleck, 1914 N. Riley; **Johnson City, Tenn.**, L. A. Ballew, Jr., P. O. Box 829; **Kalamazoo, Mich.**, John E. Kelly, 9125 Portage Rd.; **Kirksville, Mo.**, Dr. John L. Biggerstaff, c/o Citizens Nat'l Bank Bldg.; **La Mesa, Calif.**, Edward C. Kranch, 8447 La Mesa Blvd., Apt. 8; **Lansing, Mich.**, Robert F. Emerson, 423 Allen St.; **Lewistown, Pa.**, Rudolph M. Reynolds, RFD 3; **Los Angeles, Calif.**, Merrill E. Levy, 1115 S. Orange Dr.; **Martinsville, N. J.**, Robert Russell, Neuman's Lane; **Martinsville, Va.**, James B. Jones, Jr., Box 1112; **Memphis, Tenn.**, William H. Hadley, Jr., TV Station WMCT; **Milwaukee, Wis.**, Anthony LaPorte, 4930 N. 53d St.; **Minneapolis, Minn.**, Edwin A. Kube, 4516 42d Ave., S.; **Mobile, Ala.**, Charles P. Powell, 3069 Belmont St.; **Montvale, N. J.**, Lloyd Nelson, 89 Grand Ave.; **Muncie, Ind.**, Robert B. Logan, 210 Glenwood Ave.; **Nashville, Tenn.**, Frank T. McCoy, Jr., 1114 Tyne Blvd.; **Newark, N. J.**, Conway T. Bearby, 12 Beaumont Pl.; **New York, N. Y.**, Gill Robb Wilson, 366 Madison Ave.; **North Attleboro, Mass.**, Edwin T. Morrell, 41 Grove St.; **Oakland, Calif.**, John M. Barnes, 2019 Mastlands Dr.; **Oil City, Pa.**, George Henderson, Division St.; **Pasadena, Calif.**, Cecil C. Howard, 359 N. Los Robles; **Pittsburgh, Pa.**, Alexander M. Campbell, 643 Gettysburg St.; **Portland, Ore.**, James R. Sparkman, 9840 N. Burgard St.; **Sacramento, Calif.**, C. J. Collins, 5601 Stockton Blvd.; **St. Petersburg, Fla.**, John E. Most, 4801 Hyacinth Way, S.; **San Francisco, Calif.**, Charles O. Morgan, Mills Tower; **San Juan, P. R.**, John H. Garcia, P. O. Box 3744; **Savannah, Ga.**, Thomas D. Carlton, 1652 Winter Dr.; **Seattle, Wash.**, Winfield G. Young, 2039 E. 103d; **Slingerlands, N. Y.**, Joseph E. Burkart, 1903 New Scotland Rd.; **South Bend, Ind.**, Irving Duddleson, 201 N. Walton; **Spokane, Wash.**, H. R. Wallace, P. O. Box 2203; **State College, Pa.**, Ernest R. Shull, 219 S. Sparks St.; **Stockton, Calif.**, Thomas R. Nichley, 3611 Coronado Ave.; **Syracuse, N. Y.**, J. William Lowenstein, 1026 Wescott St.; **Toledo, Ohio**, Dean W. Huffman, 511 Congress St.; **Washington, D. C.**, George D. Hardy, 2501 Allison St., Mt. Rainier, Md.; **Webster Groves, Mo.**, Richard W. Wassall, 611 N. Rock Hill Rd.

NATIONAL HEADQUARTERS STAFF

Executive Director: James H. Straubel
Program Director: Ralph V. Whitener

Organization Director: Gus Duda
Personal Service Director: Jake Culpepper



On the World's Finest Airliners

Bendix IS FIRST IN FUEL METERING, LEADER IN LANDING GEAR

On the great ships that fly the commercial air ways of the world, you will invariably find Bendix fuel metering equipment and landing gear speeding service and adding safety from take-off to landings.

The rigid performance standards set by airline operators and plane builders alike permit no compromise with quality.

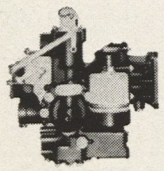
That's why Bendix carburetion, direct fuel injection, shock absorbing struts, wheels and brakes are the choice wherever planes fly.

Bendix is justifiably proud of this overwhelming endorsement of its products and the part these vital components play in helping American aviation lead the world.

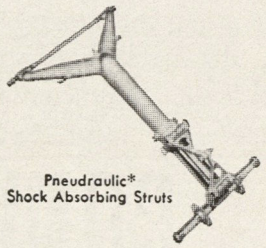
BENDIX • PRODUCTS DIVISION • SOUTH BEND

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

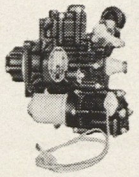
Bendix AVIATION CORPORATION



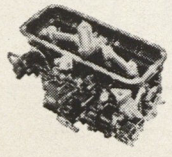
Fuel Metering Unit for jet engines



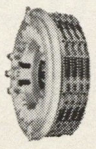
Pneudraulic* Shock Absorbing Struts



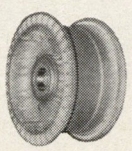
Speed-Density Fuel Metering Unit



Stromberg* Injection Carburetors



Segmented Rotor Brakes



Landing Gear Wheels for all types of airplanes

Bendix Products Division

*REG. U.S. PAT. OFF.

More airlines have chosen the Convair than any other modern passenger plane:

Now Flying
Aerolineas Argentinas
American
Braniff
C. A. T. C.
Continental
Ethiopian
Garuda Indonesian
K. L. M. Royal Dutch
Mid-Continent
Northeast
Orient
Pan American
Sabena-Belgian
Swissair (Switzerland)
Trans-Australia
United
Western

Soon to Fly
Aero O/Y (Finland)
Aeronaves de Mexico
Aerovias Venezolanas (Venezuela)
Canadian Pacific
Chicago & Southern
C. M. A. (Mexico)
Cruzeiro do Sul (Brazil)
Delta
Hawaiian
National
Philippine
Pioneer

WELCOME ABOARD THE CONVAIR! Twenty-nine leading airlines at home and abroad proudly invite you to fly the Convair ...the world's most popular passenger plane. Ask your favorite airline or travel agent to make *your* next flight a Convair.

CONVAIR

San Diego & Pomona, California • Fort Worth & Daingerfield, Texas

As a transport-trainer for the U. S. Air Force, the Convair is setting new records for versatility and performance . . . another evidence of Convair's ENGINEERING TO THE Nth POWER