



# planes

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## FLANDERS URGES AGREEMENT ON AIR PLAN

### Total U. S. Air Output Reaches 500,000 Planes

The half-millionth airplane produced by the United States aircraft industry will roll off the production line this month.

Production of Airplane No. 500,000 comes just four months after the nation celebrated the 50th anniversary of the first powered flight, which occurred in Airplane No. 1 on December 17, 1903.

Approximately half of the 500,000 planes have been built in the past 10 years, during one of which (1944) a record of 96,318 aircraft were produced.

The industry's output is currently at a rate of about 1,000 military planes per month.

Several comparisons of performance, weight and size serve to point up the tremendous strides made by (See INDUSTRY, page 3)

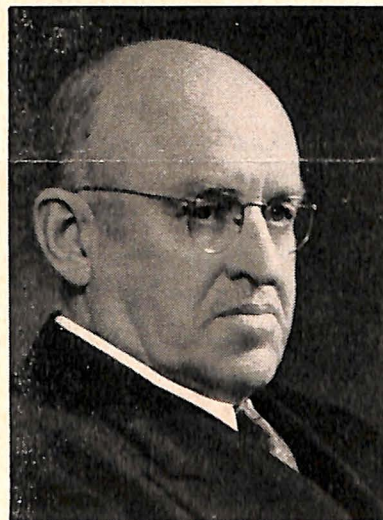
### Air Travel Gets Nod For Overseas Trips, U. S. Data Reveals

For the 12th consecutive year, more overseas travelers in 1953 picked air travel in preference to voyages on ships. And during this same 12-month period, the number choosing airplanes increased at a rate of nine for every one that picked surface travel.

More than 1.7 million persons traveled by air between this country and foreign countries during 1953, according to figures tabulated by the U.S. Immigration and Naturalization Service and the Air Transport Association. This figure compares with a total of almost 1.2 million who went by sea.

This air travel now constitutes more than 60 per cent of all travel between the United States and foreign countries. It is three times the total of average annual overseas travel in the decade prior to World (See AIR TRAVEL, page 2)

### Sen. Flanders



Vermont's Sen. Ralph Flanders is widely-known as one of the key authorities on industrial production in the United States Senate. He is from Springfield, Vt.

### Senator Reports On Air Industry Inspection Trip

By  
SEN. RALPH E. FLANDERS  
Republican of Vermont  
Member, Senate Armed Services Committee

The United States aircraft industry will reach a record peace-time production peak, in terms of airframe weight delivered to the military services, during the current year.

Although the industry's sales to the military are expected to remain at about the same level as in 1953, schedules call for a greater proportion of deliveries of larger, advanced combat aircraft, with relatively fewer training planes and light liaison craft.

The continued high level of activity in the industry reflects the nation's increasing dependence upon air power as a deterrent to aggression.

#### Reliance on Air Power

Because of this growing reliance upon air power for defense, and because of the aircraft industry's importance in the defense mobilization base, I recently traveled through 25 states on an inspection of nine major airframe and engine plants. Such a first-hand view was necessary, in my judgment, in order to increase my personal knowledge of this key defense industry and the complex problems it faces.

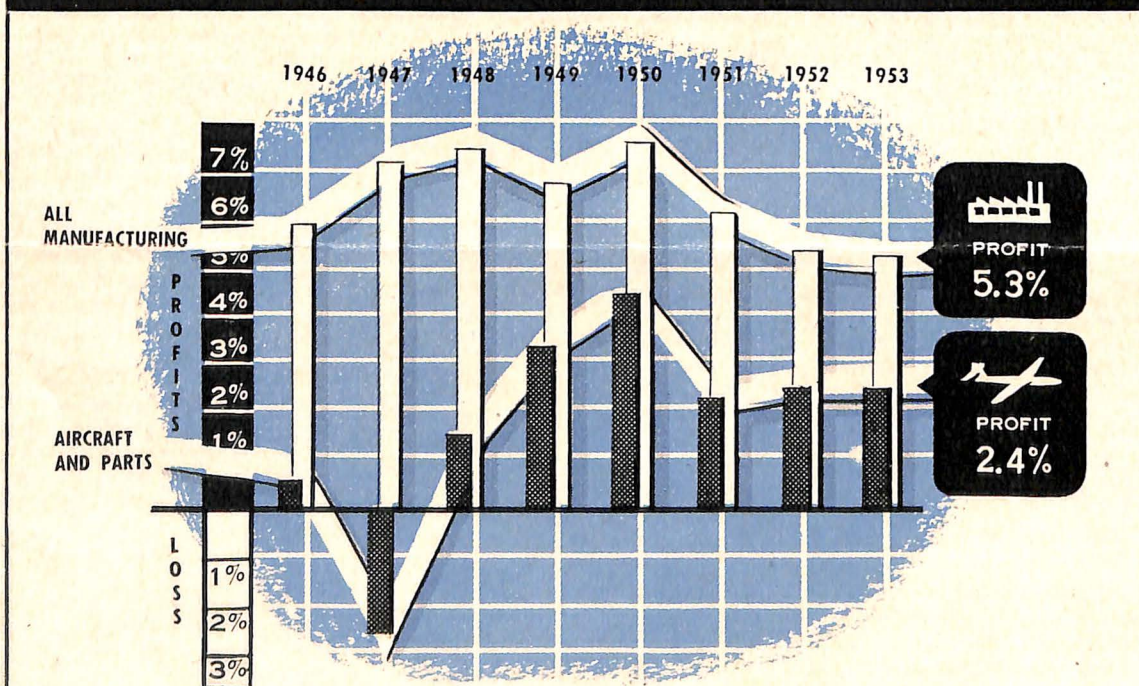
My close survey of the industry, accompanied by on-the-spot investigation of specific problems, brought an insight unobtainable in hearings of the Senate Armed Services Committee and the Armed Services Subcommittee of the Senate Appropriations Committee.

#### Investigated Problems

In particular, a number of problems were brought to my attention, and I had an opportunity to explore them fully with the various company officials. It is my intention to investigate these problems in informal discussions with the military services, and then to determine what can be done to alleviate any conditions which prevent the industry from devoting full time to production and technological development.

I found the aircraft industry in good health, both physically and mentally. For perhaps the first time (See FLANDERS, page 4)

### AIRCRAFT PROFITS CONTINUE BELOW U.S. AVERAGE



The U.S. aircraft industry in 1953 continued its recovery from severe losses following World War II—but net profits remained at a rate less than half that averaged by all U.S. manu-

facturing industries. Aircraft and parts companies averaged a profit of only \$2.40 for each \$100 of sales, compared with an average of \$5.30 for all U.S. manufacturing industries.

## PLANES

*Planes* is published by the Aircraft Industries Association of America, Inc., the national trade association of the manufacturers of military, transport, and personal aircraft, helicopters, flying missiles and their accessories, instruments and components.

The purpose of *Planes* is to:

Foster a better public understanding of Air Power and the requirements essential to preservation of American leadership in the air;  
Illustrate and explain the special problems of the aircraft industry and its vital role in our national security.

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## Air Transport—

### In Peace and War

By

DeWitt C. Ramsey (Adm., USN, Ret.)  
President, Aircraft Industries Association

One of the greatest hidden assets of the nation's military establishment is the fleet of modern airliners operated by the U.S. scheduled airlines.

Today, some 308 of the latest U.S. commercial airliners are available to the military on 48-hour notice in event of war or extreme emergency. These giant planes have a combined lift capacity of more than 20,450 passengers—almost equal to the total combined lift capacity of all U.S. domestic and international airlines in the year 1946.

The cost of building these modern air transports, like the cost of building advanced military combat planes, has risen sharply in recent years. These big passenger and cargo aircraft have become more complex as their speeds, ranges, performance and dependability have increased.

This rise in performance has been an important factor in the phenomenal expansion in air transportation in the United States over the past few years. It also has constituted a major contribution to the national security, giving a stand-by military airlift in an age of peril—an airlift which can be maintained in no other way so economically as through its use for peacetime commercial air transportation.

The Air Force Chief of Staff, General Nathan Twining, recently recognized this fact in calling attention to the vital role played by the civil air transport industry in national defense. "In time of war," he said, "air transportation is at a premium. There has never been enough to meet both military and civilian needs. . . . Civil aviation strengthens the total air power we have in readiness."

General Twining pointed out that the Air Force already has determined that air movement of personnel is more economical in the long run "because of the time that is saved." He added that the Air Force is now engaged in a program which is expected to demonstrate that large-scale air movement of supplies and equipment is profitable in peace, as well as vital in war.

At present, the primary method of insuring availability of a stand-by airlift is through conversion of civilian-type transports, purchased by the airlines and designed primarily for commercial air operations. Major modification of the existing fleet of commercial aircraft for military use is, of course, time-consuming and costly.

It is consequently extremely important today that the high costs and lengthy time-cycle required to develop future air transports be recognized in planning for the maintenance of such a modernized stand-by fleet. At present, for example, several U.S. manufacturers already have invested from \$1,000,000 to \$15,000,00 in jet transport design and development, with one jet prototype scheduled to fly in late summer.

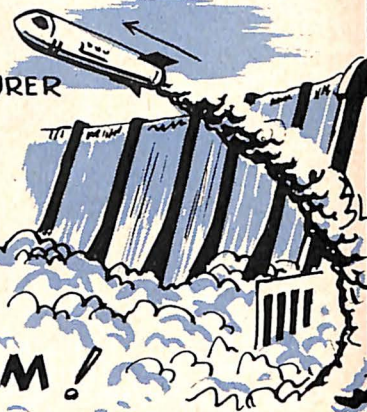
The most rapid and economical avenue toward development of these future transports lies in working out the closest possible common denominator between military and commercial needs, to the point where basic characteristics and important design features can be achieved in a single design. It has been pointed out that, within appropriate limits, such multi-purpose design is desirable, since doubling the number of aircraft produced cuts their costs by at least 20 per cent.

It would appear logical, therefore, that the creation of a reservoir of emergency air transportation can be accomplished with the greatest economy through fulfilling the military's requirements for cargo and transport aircraft by providing development funds for such types in the military appropriations.

## PLANE VIEWS

### POWERHOUSE

AN AMERICAN MANUFACTURER HAS BUILT AND TESTED A ROCKET ENGINE THAT CAN DELIVER OVER A SHORT PERIOD OF TIME, MORE HORSEPOWER THAN THE TOTAL OUTPUT OF BOULDER DAM!



A NEW

### AIRCRAFT WIND TUNNEL

HAS A 122½ TON

ROTOR TO HELP GENERATE SUPERSONIC WINDS!



CAA OPERATES 174,885 MILES OF LEASED WIRE TO LINK TOGETHER THE FEDERAL AIRWAYS SYSTEM...



by Aircraft Industries Association

## Air Travel Gets Nod For Overseas Trips U. S. Data Reveals

(Continued from page 1)

War II.

The Port of New York Authority says that at New York airports a plane arrived from or departed for foreign airports every 15 minutes, day and night, during 1953. It reports a total of 33,373 plane movements for the year, as a daily average of 91 overseas aircraft arrived or departed.

Handling the bulk of all international air travel (721,499 passengers), New York was the leading American hub of overseas airline travel. But Miami, which came into prominence during the war years as a port of entry, was second and accounted for over half a million passengers.

The Department of Commerce reports that American travelers spent \$1.3 billion abroad last year. Of this figure, an estimated \$780 million was spent by air travelers.

Central and South America, the most popular destinations a year ago, were again in the lead in 1953.

## PLANE FACTS

- The generator in a new jet interceptor furnishes approximately the same amount of electricity as is used in 20 average homes. The plane contains 750 radio tubes, about 3½ miles of electrical wiring—and its systems are operated by nearly 200 electrical switches.
- Approximately 1,600 technical personnel at a major airframe plant shared in the many phases of research, testing and design that finally resulted in the detail drawings from which a late-model jet fighter was built.
- A recent survey shows that the \$138 million annual payroll of one typical aircraft manufacturer is spent in 246 different communities.
- A major engine manufacturer is developing a gas turbine powerplant for helicopters that is no larger than an automobile engine but six to eight times as powerful.

# Sales Hit Peak in '53—But Earnings On Airframes Still Below U.S. Average

Sales, earnings and backlog of the 12 leading U.S. airframe manufacturers reached a post war high in 1953, as the rebuilding of U.S. air power reached its scheduled production peak.

But the rate of profits to sales remained less than half the national manufacturing average.

Prospects are that this level of industry activity will continue through the coming year, with a gradual production decline thereafter to a sustaining rate at about half the present level by late 1956.

Sales for the 12 major airframe manufacturers totaled \$5,120.1-million in 1953, up 37.2 per cent over 1952. Earnings amounted to \$116.6-million, after payment of \$200.5 million in Federal taxes. And the backlog at year's end amounted to approximately \$11.6-billion—sufficient to provide for about two year's operations at the present volume.

## Tremendous Risks

An AIA survey of the financial situation of the airframe manufacturing industry points to the "tremendous risks that accompany the production of military aircraft." It cites the example of a major airframe company which last year lost 22 per cent of its net worth as a result of the termination of a single contract.

The report says that "ever-increasing emphasis by the military services on quality, reliability and all-around performance of the airplane as a military weapon has greatly amplified the keen technical competition within the industry. It is, of course, due to this technical competition that this country has been able to maintain continued leadership in the air."

In order to fulfill military production requirements, the industry has found it necessary to invest tremendous amounts of money in test facilities, the survey says. In contrast to pre-World War II years, when relatively small investments in facilities were needed, vast sums of private funds have become essential in order to maintain plant, equipment and test facilities required for military design competitions.

The technological revolution experienced by the industry since World War II has brought "grave financial problems for management," as needs have mounted for "sizeable

## Need for Research Workers Jumps Ten Times Since '50

A typical U.S. aircraft manufacturer needs ten times as many research and development workers today as were required in 1950, when the Korean War started.

For basic research and development work alone, the manufacturer has 1,000 full-time men at work today, compared with 100 in 1950.

Rising technological requirements in the aircraft industry have resulted in serious manpower needs for first-class engineers, physicists and experts in almost every known branch of science.

company-owned test facilities . . . for the verification and authentication of proposals submitted in design for military aircraft or guided missiles."

The AIA survey indicates that the airframe industry has continued its efficient use of working capital, with an inventory turnover rate of 2.8 times per year—which exceeds, for the first time, the industry's pre-Korea turnover rate of 2.74 times per year.

The AIA survey covers only the 12 leading airframe manufacturers. For earnings rates of 37 aircraft and parts manufacturers, see chart on page 1, based on National City Bank of New York figures.

## Giant Hydraulic Press Speeds Jet Production

A mammoth hydraulic press, weighing 600 tons, is speeding jet aircraft production at a West Coast plant.

The powerful machine is capable of exerting pressures of 7,000 tons. That's equal to the weight of a herd of 2,000 elephants.

Required for work with the large parts and heavy materials used in construction of modern aircraft, the giant press took more than three years to plan, design and build. It cost almost \$800,000—and 12 freight cars were required to haul it from Ohio to the West Coast plant.

# Company Airplanes Give Executives More Productive Time, Survey Says

Seven out of eight New York firms with company-operated airplanes find that the planes increase the productive time of their key executives, according to a recent survey of 83 firms in the Empire State.

What's more, 73 per cent of the reporting companies say that they use the airlines as much—or more—

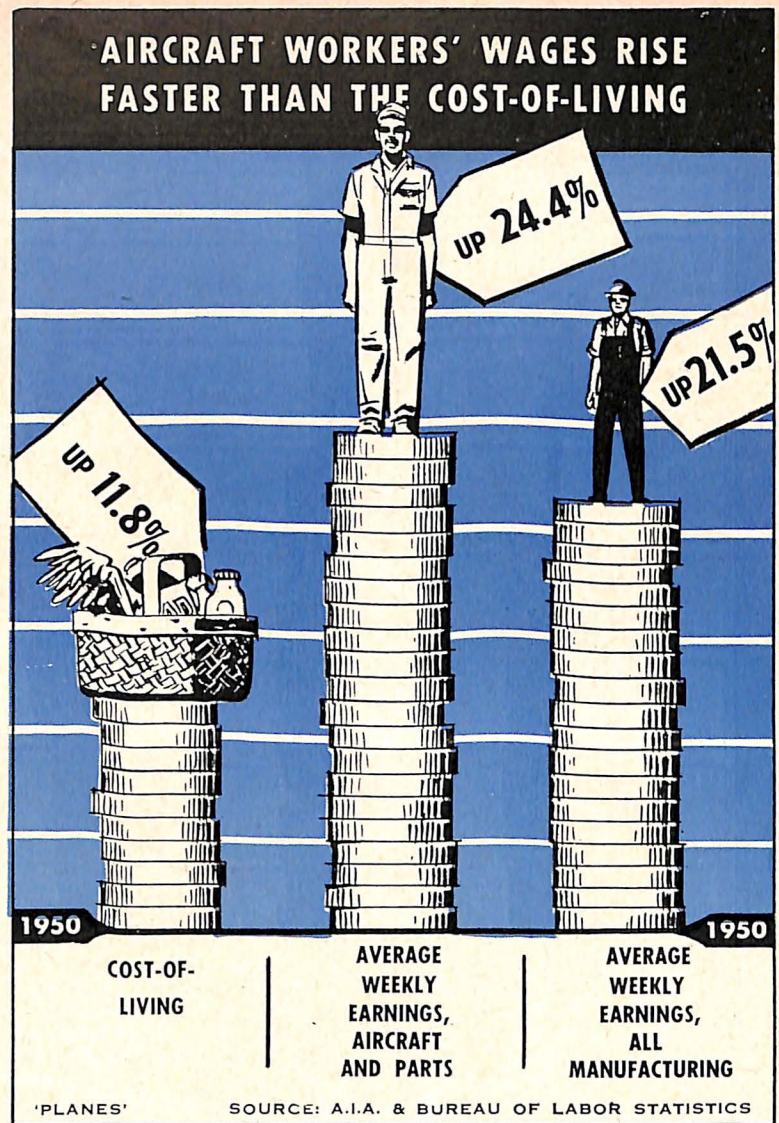
## Industry Has Produced Half-a-Million Planes

(Continued from page 1)

the aircraft industry in the slightly more than 50 years of its production history.

It took 12 seconds for the Wright Brothers' plane to fly 120 feet on December 17, 1903. In 12 seconds, a modern research plane can fly 5½ miles—more than 242 times as far. That first flight, incidentally, covered a distance only about one-half the wingspan of a modern heavy bomber.

The maximum horsepower developed by a presently operational jet bomber is 10,000 times greater than that developed by the engine in the first Wright plane. The engine and nacelle alone on a modern aircraft weigh 16 times as much as the first Wright plane; and a giant cargo plane today can carry cargo equal to the weight of more than 140 Wright planes.



## Air Quotes

"New and more powerful weapons, like old weapons, are expensive. We cannot have an unlimited quantity of each. It is inevitable that we must rely, first of all, on the most powerful weapons, even if this means a lesser



capability for traditional methods of warfare.

"If the Air Force had to rely entirely on older weapons, it would have to be much larger than we

have planned.

"The rising effectiveness of air power and the multiplied impact of new air weapons provide this nation and its tiny 8% of the world's population with a means of survival against the unlimited manpower available to [Russia].

"Even if we were able to confront every Red soldier with an American soldier at every point around the Iron Curtain, we would scarcely wish to do so. Since we cannot confront every five Red soldiers, or even every ten, with an American soldier, we must rely primarily on our superior ability to strike through the air."—Gen Nathan F. Twining, USAF Chief of Staff.

than before they acquired their own plane or planes.

"The conclusion might be drawn," says the New York report, "that increased air-consciousness in such firms, produced by the availability of a company plane, leads to more new demand for air travel than the plane can accommodate."

## New York Survey

The survey, conducted by the New York Bureau of Aviation, covers 83 firms operating a total of 147 aircraft. Most of the companies operate their planes in connection with purchasing or sales, or to facilitate internal control, supervision and administration.

Almost three of every eight firms credited their aircraft with expediting emergency delivery of materials. Other benefits from company operation of planes, says the report, are good will, increased customer service, expediting transportation of personnel to meet peak requirements, improved advertising, and increased ability to meet "pipeline emergencies."

## Tons of Planes

A U.S. aircraft producer used more than 13,570,000 pounds of rivets, stainless steel and aluminum sheet last year in producing fighters for the Air Force.

## Major Share of Air Profits Goes Back in Business

Sixty-five cents out of every dollar of profits made by the 12 largest airframe manufacturers in 1953 was reinvested in the aircraft industry to maintain the nation's defense mobilization base.

In investing a substantially greater portion of earnings in advanced facilities equipment and operations, the industry maintains a state of continuing technological superiority in the development of U.S. air power.

In 1953, \$78.2-million in earnings were reinvested in the aircraft industry by the 12 airframe manufacturers, and an additional \$24.8-million in operating funds was allocated for plant improvement. This total of \$103-million went for such items as advanced test facilities, purchase of better machines and equipment, modernization of factories and offices, conduct of research and development projects, development of new models and continuation of test programs.

For each dollar of sales in 1953, the 12 largest airframe manufacturers earned 2.3 cents. In 1952, the average profit was 2.2 cents.

This compares with an average of 2.4 cents in profit for both years on aircraft and parts companies surveyed by the National City Bank of New York. (See chart, page one.)

Although comparable figures are not available for all manufacturing industry in 1953, a survey by the National City Bank shows that 77 leading U.S. manufacturers earned an average of six cents on every dollar of sales in 1952.

These 77 manufacturers reinvested an average of 50 per cent of their earnings in their businesses; this compares with an average of 64 per cent in 1952 and 65 per cent in 1953

# FLANDERS URGES U. S. AIR POLICY

(Continued from page 1)

in the peacetime history of the nation, the industry is operating at an adequate level, and is a smoothly-functioning national industrial asset. Production, in general, is on schedule—at a rate of 900 to 1,000 aircraft per month. And detailed plans have been made for expansion of production in event of all-out emergency. In this respect, primary emphasis is placed on potential use of present facilities under multi-shift operations. In the event of extreme emergency, it is also possible to incorporate existing dispersed facilities into the production picture.

### Inventory to Increase

Current schedules call for an increase in the active U.S. military aircraft inventory in the next three years from today's approximately 33,000 aircraft, one-third of which are jet-powered, to more than 40,000, half of them jet-powered.

A major task which we face today is to set the pattern for sustained air preparedness in what President Eisenhower has called an "Age of Peril." In this task, Congress will play a key role in approving the level of the aircraft industry's ac-

reinvested by the 12 leading airframe manufacturers.

In both 1952 and 1953, the 12 top airframe manufacturers distributed an average of eight mills (eight-tenths of one cent) in dividends to stockholders out of every dollar of sales. This eight mills compares with an average of three cents in dividends distributed by the 77 leading manufacturers out of every dollar of sales.

tivities. My personal inspection tour was particularly beneficial in gaining solid facts upon which to judge policies presented by the military, and upon which to base my votes in Committee and on the Senate floor.

### Grave Responsibility

The responsibility for establishing military and production policies on air power is a grave one. Congress must approve a course which will not allow our strength to sink below the level necessary for national security. At the same time, it must insist that the program be as economical and efficient as is possible.

We are all aware that the cost of air power is high. The vast increases in aircraft size, performance and complexity, and the multiplicity of complicated electronic equipment required, account for the major part of that cost. But we must recognize, too, that the repeated fluctuations in the size and production of the aircraft industry have brought recurrent need for rebuilding production facilities—and that this reconstruction of production potential adds its share to the cost of each military plane.

### Defense Fluctuations

It is, of course, not possible to eliminate entirely the fluctuations of industries which are part of our defense mobilization base. This is true of the aircraft industry, just as it is true of the machine tool and shipbuilding industries, with which I have been intimately familiar for many years. We cannot, for example, prevent fluctuations due to drastic changes in the international situation. We can, however, take a tremendous stride toward building both

a stronger industry and stronger air power if we are able to eliminate or minimize those fluctuations due to internal policies and politics. There is no need, or justification, for the nation to continue to bear the financial burden imposed through aircraft production fluctuations that could be avoided by foresight and intelligent planning.

### Inconsistency Adds to Cost

It has long been recognized that the greatest unnecessary costs incurred in aircraft production are those due to just this kind of peak-and-valley production.

I am convinced that the national best interest lies in the establishment of a sound, long-range procurement plan for the military services, based upon all the facts available to the Administration and the Congress. If we can arrive at such a long-range plan with the approval of the military, the legislative, and the executive branches—and particularly if we can define a policy that is so sound it can be carried over from Administration to Administration—then I believe we will have an accomplishment of the highest order.

### Competition Brings Efficiency

My survey of the aircraft industry's current activities confirmed my belief that any procurement program established for military aircraft should encourage, insofar as possible, the competitive, free-enterprise environment in which the industry now operates. Experience has taught us that the lowest aircraft prices to the Government can be obtained through a procurement structure in which the health and financial strength of the producing industry is promoted through traditional processes of our economic system—adequate return for efficient, low-cost production.

### Benefits to Taxpayers

Such a system does not, of course, offer the maximum of protection to individual companies or groups. It does not assure a continued market for any manufacturer. Orders should go, as they do in the civilian market, to those companies that create better products at lower costs. In this way, efficient and economical producers are kept in business—and the taxpayer is benefited.

There is no question that, while the threat of atomic and hydrogen war remains, this nation must have a strong air mobilization base and a steady flow of aircraft production. But all Americans are agreed, I believe, that such sustained preparedness must be achieved through stringent economy in all non-essential areas—and through the most efficient and economical processes.

I can report that this feeling is shared by the aircraft manufacturers whom I visited on my recent tour of inspection. I returned to Washington greatly impressed by the energy, efficiency and virility of the industry—and with confidence in its dedication to fulfillment of the role assigned to it in national defense.

## MORE POWER FOR PLANES



WORLD WAR I, 400 h.p.



WORLD WAR II, 2,000 h.p.



Today 30,000 h.p.

Horsepower in aircraft engines increased at an average rate of 65 h.p. per year between World War I and World War II . . . Between World War II and today the increase averaged 2,800 h.p. per year!

'PLANES'

SOURCE: AIRCRAFT INDUSTRIES ASSOCIATION