



# planes

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## TALBOTT SEES SAVINGS IN LONG-RANGE PLAN

### Variety of Planes Needed to Assure Air Power Lead

Twenty U.S. airframe manufacturers today have in production 53 different models of military aircraft for the Air Force, Navy, Army and NATO nations, according to a recent survey conducted by the Aircraft Industries Association.

These 53 aircraft include 12 fighters, 12 bombers, 11 transports, five trainers, six liaison or utility craft, one anti-submarine warfare plane and six helicopters.

#### Twenty-Three Engine Types

Twenty-three different types of engines, produced by eight manufacturers, power these aircraft. Nine of these are jet engines, two are turboprop and 12 reciprocating engines.

The job of maintaining U. S. airpower makes it necessary that the Air Force and Navy continually keep in production several models of each of their major types of aircraft—with some models entering production, others in full production, and others phasing-out of production at all times.

Such steady flow of production enables orderly retention of production teams and maintenance of a broad production base. It also assures the lowest possible unit cost of military aircraft, and constant emergency readiness of late-model planes.

#### Jet Combat Planes

Nineteen of the 25 combat aircraft now in production are powered by jet engines. The remaining 28 types of military planes in production are transports, trainers, liaison and utility craft, and helicopters. Two of the transports are powered by turboprop engines, two of the trainers are jet-powered, and the remainder are

(See GREATER, page 2)

### Airline Passengers Make Steak Dinners Go Farther

A major U.S. airline tells its passengers that they travel approximately the following distances while eating each course of their dinners: appetizer 25 miles, entree 110 miles, salad 40 miles, dessert 35 miles, coffee 35 miles, cigarette 35 miles. One dinner goes a long way—280 miles.

### Air Travel in '53 Five Times Safer Than Riding in Automobile or Taxi

It's five times safer to take a trip by U.S. scheduled airlines than it is to travel an equal distance by automobile or taxi.

The giant air transports of U.S. domestic and international airlines last year established their best safety record in history, carrying almost 31-million passengers a distance of more than 18-billion passenger miles.

#### Set Safety Record

They did the job with a fatality rate of 0.48 per 100 million passenger miles, compared with a rate of approximately 2.80 for autos and taxis.

This is the second consecutive year in which the big U.S.-built transports of the scheduled airlines have established all-time safety records on the domestic and worldwide routes.

Further indication of the unremitting attention given by air transport manufacturers to safety is the per-

fect record achieved in 1953 by the Military Air Transport Service. While the airlines were setting their new safety mark, MATS airlifted in 1953 more than 500,000 passengers and patients *without a single fatality*. During this period, the military airline carried an average of 54 passengers and six patients every hour of the year—and, in addition, flew 82,000 tons of high priority cargo and mail.

#### Planes Built in U.S.

Every plane in the United States scheduled airline and military airlift fleet was produced in this country, and more than 80 per cent of all scheduled airline planes in the world are products of the United States aircraft industry.

Air travel has been at unprecedentedly high levels while these new safety marks were established. In January, the domestic scheduled lines alone were scheduling about 2,089 flights daily.

### Air Force to Put Stress on Quality, Secretary Reports

By Hon. Harold E. Talbott  
Secretary of the Air Force

There will be a "new look" in Air Force aircraft procurement programs over these next years, corresponding to the "new look" in the entire concept of national defense requirements.

The new emphasis in procurement will be based on the maintenance of modernized, qualitatively-superior air strength, once the presently-planned force levels are equipped with modern airplanes—this means jet aircraft.

#### Defense Policy

The basic philosophy of this new concept has been outlined by President Eisenhower: "This policy of ours will not be tied to any magic critical year which then has to be 'stretched out' because of economic or production problems, but will be based on the sounder theory that a very real danger not only exists this year, but may continue to exist for years to come; that our strength, which is already very real, must now be made stronger, not by inefficient and expensive starts and stops, but by steady continuous improvement."

*Air Force Secretary Harold E. Talbott is a long-time aviation executive, appointed to his present post by President Eisenhower on January 20, 1953. He was an officer of the Chrysler Corporation prior to his present appointment, and since before World War I has been associated with aviation enterprises in the United States.*

Under present defense plans, which call for an increasingly important role for the Air Force and for full exploitation of air power, the aircraft industry will be required to maintain a high degree of mobilization readiness—with particular emphasis over the long haul on designing and developing superior aircraft, both manned and unmanned.

#### Future Strength Levels

By next June, the Air Force will have some 21,000 active aircraft organized in 115 wings—almost a 140 per cent increase in wing strength since the Korean War started—and by June, 1955, we will have 22,900 (See LONG-RANGE, page 3)

**WHERE DOES THE AIRFRAME DOLLAR GO?**

**60¢** to subcontractors and suppliers

**40¢** for prime contractor's own operations—labor, tooling, engineering, overhead, etc.

The manufacturer of a typical modern jet bomber reports that 60 cents of every airframe dollar goes to vendor companies, with only 40 cents used for the prime contractor's own operations.

'PLANES'

Source: Aircraft Industries Association

## 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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## Cost Reduction Pays Off

An impressive document was released recently by the Air Force's Air Materiel Command, which buys, supplies and maintains a large part of the nation's air power.

This command annually purchases more material than General Motors, Standard Oil of New Jersey, American Telephone and Telegraph Company, United States Steel, and the I. E. du Pont de Nemours Company. In a year keyed by the objective of economy in Government, the AMC continued its long-term emphasis on cost-reduction in the procurement and maintenance of USAF aircraft.

AMC's commanding general, Gen. Edwin C. Rawlings, put the Air Force's objective succinctly. He called for "more air power per dollar."

Last month, in a review of the year's activities, AMC reported the results of the previous year's intensive efforts to whittle air power costs to the minimum. It said that AMC economies alone enabled the American taxpayer to get more than \$200 million more Air Force for his money.

This \$200 million means the equivalent of more than 100 jet medium bombers, or more than 570 all-weather jet interceptors. It means enough planes to equip more than two jet medium bomber wings, or more than seven interceptor wings.

AMC points out that last year it handled approximately 38,400,000 items throughout the world—items ranging from tiny nuts and bolts to complete aircraft engines. It handled approximately 4,269,000 tons of equipment, and did maintenance and repair work on some 53 million items.

"In the face of mounting problems of design, experimentation and production on today's miracle planes," the AMC reported, "production rates are up 467 per cent over mid-1950. And during the last six months, industry delivered an average 97.9 per cent of the aircraft called for in current schedules."

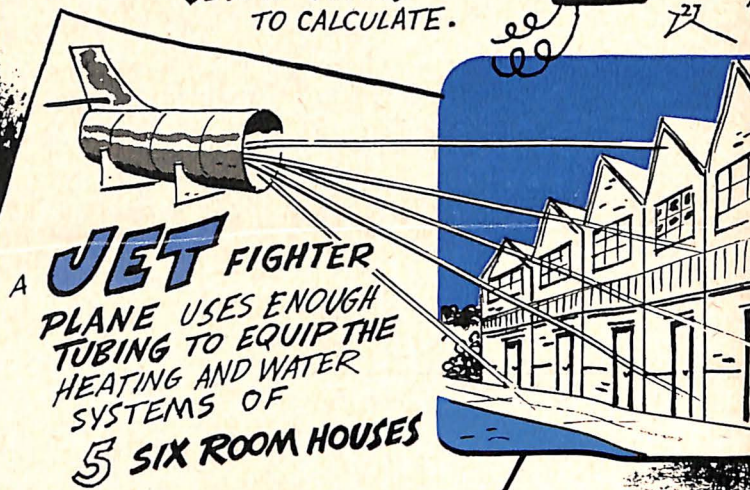
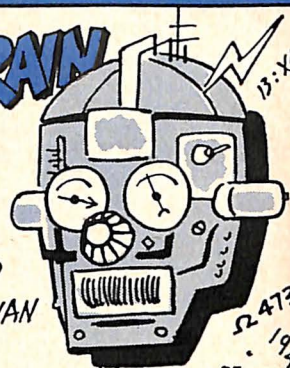
The aircraft industry is proud to have played a part, alongside the Air Materiel Command and the Navy's Bureau of Aeronautics, in giving renewed emphasis to the objectives of cost-reduction in aircraft procurement and production. When the scores of millions of dollars saved by the industry and by the cost-reduction activities of the Navy procurement service are added to the \$200 million saved last year by AMC alone, the American taxpayer received a tremendous dividend on each dollar appropriated and spent for aircraft production.

Behind the scenes, and with little fanfare, the military has worked consistently to keep aircraft costs to the absolute minimum consistent with attainment of the high performance goals required in this atomic age. In this effort, the aircraft industry has joined with every means at its disposal. The impressive achievements of the Air Materiel Command are indicative of the progress made in this direction.

## PLANE VIEWS

### ELECTRONIC BRAIN

USED BY A  
JET ENGINE BUILDER  
TAKES 15 MINUTES TO  
SOLVE PROBLEMS THAT WOULD  
TAKE A HUMAN MATHEMATICIAN  
SEVEN YEARS  
TO CALCULATE.



IN THE PAST 10 YEARS, ENGINEERS  
AT ONE U.S. AIRCRAFT PLANT HAVE  
SPENT MORE THAN SEVEN MILLION  
HOURS IN DEVELOPMENT OF  
MILITARY PLANES ...



by Aircraft Industries Association

## Greater Percentage Of Combat Aircraft Now Jet-Powered

(Continued from page 1)

powered by conventional engines.

The aircraft in production break down as follows:

Air Force—seven fighters (all jet-powered), five bombers (four jet-powered, one powered by combination of jet and conventional engines), eight transports (one turboprop-powered, the remainder conventionally-powered), four trainers (one jet-powered, three conventionally-powered), five liaison planes (all conventionally-powered), and three helicopters (all conventionally-powered).

Navy—five fighters (all jet-powered), four attack bombers (two jet-powered, two conventionally-powered), three patrol bombers (all conventionally-powered), one anti-submarine warfare plane (conventionally-powered), three transports (one turboprop-powered, two conventionally-powered), one jet trainer, one conventionally-powered utility plane, and three helicopters (all conventionally-powered).

## PLANE FACTS

- A late-model interceptor carries more electronic equipment than the average television station—495 tubes and 6,400 coils.
- The fan rotor for a new aircraft wind-tunnel weighs 122½ tons. The tunnel will generate winds in excess of 900 miles per hour for research in aircraft and guided missile design.
- An electronic temperature control system for aircraft is so sensitive that it can register the temperature rise from a lighted cigarette five feet away.
- Workers at a single midwestern aircraft plant live in 149 towns in Kansas and Oklahoma.
- More than a million take-offs or landings have been made at Washington (D.C.) National Airport since 1947.
- President Eisenhower has been a pilot since 1937.

# Long-Range Plan 'Sound Business' Talbot Reports

(Continued from page 1)

active aircraft organized in 121 wings.

We do not propose to retrace the perilous and expensive pattern followed after World War II, when the nation dismantled its defense industries, demobilized its armed forces, and allowed both to deteriorate almost to the point of impotence.

## Vital Defense Industries

It is no less important that these vital defense industries be maintained in a healthy state, capable of emergency expansion of production, than that the Armed Forces themselves be constantly ready for defense and retaliatory action.

In the case of the aircraft industry, this means that we must sustain a level and variety of procurement which insures that producers are always (1) capable of rapid expansion in event of emergency and (2) competent to design, develop and produce new and better weapons.

## "New Look"

Fundamentally, the "new look" in procurement over the years of international tension which lie ahead will



SECRETARY TALBOTT

enable the military services—as the numbers of aircraft procured are reduced—to favor to an increasing degree those manufacturing organizations which offer improvements in quality, and which are capable of creating the advanced weapons necessary to air leadership.

The key to aircraft procurement will shift to an even greater degree from production to quality and further development.

## Costly Peaks and Valleys

In projecting this new procurement philosophy over the years, the Air Force intends to the greatest degree possible to eliminate the costly production peaks and valleys of the past. The President's Air Policy Commission in 1947 reported that

savings up to 20 to 25 per cent could be obtained through substituting a succession of long-range procurement programs for year-by-year programing. Experience during the Korean buildup has indicated that an estimate of 25 per cent savings through a long-range procurement program may well be conservative.

## "Sound Business"

Consider, for example, what these potential economies would have meant in the light of the Air Force's expenditure of some \$27 billion for aircraft in World War II—or estimated Air Force expenditures of \$26 billion for aircraft during the current buildup.

It is sound business practice as well as sound defense planning, I am convinced, to take advantage of such potential savings while maintaining an adequate level of air power during what President Eisenhower has called an "age of peril."

## Transport Spends 6½ Years In Air in 15 Years

In a 15-year period, a typical twin-engined American transport plane spent a total of 6½ years in actual flight.

Operated by a major U.S. airline during the 15 years, the plane carried 213,000 passengers and flew an average of 10½ hours each day of the year.

The flying workhorse logged a total of 8,517,300 miles—this single plane flying a distance equal to more than a round-trip to the moon each year it was in service.

## U. S. TAXPAYERS SAVE

\$2,000,000



## ECONOMY IN AIR POWER



A new method of testing jet engines, developed by a U. S. engine manufacturer, saves the American taxpayer approximately \$2,000,000 annually.

\$269,500



A new-type support for aircraft wiring cuts total production-run costs on one late-model aircraft by \$269,500.

\$1,500,000



One aircraft manufacturer recently saved \$1,500,000 in a single year through materials conservation and reclamation programs.

► The aircraft industry works to make each air procurement dollar produce the maximum dividends in air power, by constantly improving methods and procedures and by keeping a continual watch for new ways of cutting costs.

'PLANES'

Source: Aircraft Industries Association

## Manufacturers Use Ingenious Methods To Speed Modern Aircraft Production

Aircraft manufacturers frequently come up with ingenious solutions to production problems.

Among the answers: a giant pair of socks that helps build bombers . . . a bathtub that speeds aircraft output . . . and a deep freezer that aids plane parts production.

The mammoth pair of socks, made of nylon parachute-strap webbing, saves time and money on a jet bomber production line. Formerly, a cumbersome and costly "bird-cage" contraption was fitted over the nose of jet bombers as a steel guard to prevent injuries in case of explosions during pressurization tests. Today, the sock-like protector fits tightly over the nose—and it costs only one-third as much to pressure-check a cockpit.

## Keeps Parts "Soft"

At another plant, a quick-freeze box (with temperatures of 20 degrees below zero, Fahrenheit) is used to keep huge aluminum alloy parts "soft" after they have completed a heat treatment. If allowed to return to normal room temperatures, the parts become brittle and break in the forming operations—but the freezing process holds the parts in a sort of "suspended animation" and facilitates the later straightening and forming operations.

An airframe manufacturer reports that it now has in operation a chemical bathtub "big enough to dunk

like-a-doughnut the largest airframe part ever built." The tub is a nine-unit metal processing tank which features the new chromodize-iridite method of preparing and cleaning aluminum prior to painting. Through immersion in the special chemical solutions, a tough, pliable paint-adhesive film is deposited on the metal surfaces. The airplane-style bathtub, which replaces a more expensive and less efficient system, has cut the time for metal processing in half.

## Eighteen Thousand Blueprints Needed To Build Jet Plane

It takes 18,000 blueprints to build a single medium jet bomber.

In one plant, 40 copies of each blueprint are required to keep production rolling—a total of 720,000 prints which must be kept up-to-date and accurate at all times.

The tremendous scope of this job is partially indicated by the fact that, in a period of rapid technological change such as that at present, there are an average of 200 changes per day on a single set of prints.

Such up-to-the-minute changes are essential, the manufacturer reports, to prevent costly modifications when plane production is further advanced.

## WINGS OVER THE WORLD

Between 1952 and 1953, air traffic on scheduled world airlines increased—



**UP 16%**



**UP 10%**



**UP 16%**



**UP 7%**



**UP 5%**

For the first time in history, more than 50 million passengers were carried by air on the scheduled airlines of the world in 1953.

## Tests Show Aircraft Can Spot Oil Fields With 90% Accuracy

Recent tests have shown that aircraft flying at 200 to 300 feet over potential oil fields are able to spot oil and gas deposits with 90 per cent accuracy by using an airborne scintillation counter.

This counter, which measures the distribution of radioactive elements in the earth, has proved seven times more accurate than methods used in recent years when geologists picked drilling sites by seismic methods.

With the counter, low radioactive intensity is registered over oil or gas deposits because radioactive solubles in rocks and shale around the deposits cannot penetrate the oil and gas accumulations.

Power for operating the scintillation counters is obtained from the planes' electrical systems.

Some 20 wells have been drilled on the strength of surveys made with the airborne scintillometer; in all but two cases, oil was found.

### Plastic Parts for Planes

Two thousand pieces of plastic are used in a late-model jet fighter-bomber, reducing weight, strengthening, and making possible complex design.

## Air Quotes

"Since the end of the war, we have seen violent fluctuations in the funds available for research, as a result of upheavals in our aircraft production program. The fact that we very nearly scrapped the aircraft industry at the end of the war, and since 1950 had been plunging vast sums of money into our effort to build to 143 wings is known to every school boy. What every school boy doesn't know, however, is one of the basic reasons for this precipitate and costly build-up. It is a fact—and I have had it personally checked — that during the period from 1947 to 1949, for lack of funds, not one single new aircraft or guided missile research project was undertaken by the Air Force.

Fortunately, in one respect, the limited nature of the Korean war gave us, for the third time in our generation, another cushion of time in which to rebuild our air power, but it would not be possible to find a more dangerous or more extravagant method than we were forced to use. We are now getting our air power . . . but we have been lucky."—Roger Lewis, Assistant Secretary of the Air Force (Materiel), August 21, 1953.

## Six Top Administration Officials Fly 397,000 Miles in 12-Month Period

Six top Government officials flew more than 397,000 miles — almost 16 times the distance around the earth at the equator—on official business in 1953.

President Dwight D. Eisenhower set a new record for Presidential air travel.

Vice-President Richard Nixon established a record for distance traveled on a single trip via the Military Air Transport Service.

And four other top officials —Dulles, Wilson, Talbott and Stassen — covered a combined total of 305,000 miles on air trips to all parts of the world. If these top officials had used conventional surface transportation, it has been estimated their total travel time in 1953 would have amounted to approximately 14 months. By air, the total travel time was less than eight weeks.

### Eisenhower Sets Record

President Eisenhower, whose 32,143 miles of air travel topped by over 5,000 miles the previous single-year record set by ex-President Harry S. Truman, was able to set up a Little White House at Augusta, Ga., only two airline hours away from Washington. When he established a Little White House in Denver, he was only five airline hours away from the Capital. If necessary, moreover, fast jet planes could have delivered urgent papers to him in a fraction of the airline times.

Vice-President Nixon flew a total of 39,544 miles on his tour of 19 Far Eastern and Middle Eastern nations.

This trip brought his total air travel mileage for the year to 58,604.

The record air mileage for Administration officials in 1953 was amassed by Air Force Secretary Harold E. Talbott, with 115,000 miles.

Foreign Operations Administration Director Harold E. Stassen traveled approximately 78,100 miles. On two extended trips with Secretary of State John Foster Dulles, Stassen visited 22 foreign cities. He also made flying trips to numerous U.S. cities.

**It took Christopher Columbus 71 days to discover America.**

**Today, his entire 90-man crew could travel 131 times as far in a single plane in the same amount of time.**

**The Santa Maria, the Pinta, and the Nina averaged 2.8 miles per hour during their momentous trip. The latest American-built airliners can fly more than 400 miles per hour.**

**If Columbus had had one of these new planes, it would have taken him half-a-day to discover America.**

Secretary Dulles ranked third in air mileage among the six top Government leaders with over 64,000 miles. One trip to the Mediterranean countries covered almost 19,000 miles, and another trip to Europe took him almost 11,000 miles.

Defense Secretary Wilson rounded out the top six Government air travelers with close to 48,500 miles.

## Eight-Ounce Motor Plays Vital Role In Operation of 150-Ton Jet Bomber



Though modern bombers weigh as much as 150 tons, some of their most important parts weigh only ounces.

Typical of the complex miniaturization required in advanced aircraft is a two-thousandth horsepower motor used in the defense systems of late-model bombers.

This tiny 8-ounce motor, about the size of an ordinary ink bottle, is so sensitive that it is controlled by the output of two small vacuum tubes. It will operate at sea level atmospheres or at altitudes as high as 50,000 feet—and in temperatures as low as minus 65 degree Fahrenheit.

The manufacturer reports that the principal "mass production" problem faced in building the motors was the necessity of winding 40,000 turns of two-thousandth inch wire into coils. Upwards to two miles of the fragile wire are laid in place tightly, yet with a featherlight mechanical touch which minimizes stretching.