



planes

Vol 8, No. 5, May 1952

OFFICIAL PUBLICATION OF THE AIRCRAFT INDUSTRIES ASSOCIATION OF AMERICA

\$46 BILLION LIMIT ON DEFENSE HELD PERIL

Latest Military 'Copters Could Haul Commuters

The meteoric rise of the helicopter in military operations, resulting from its performance in Korea, may be duplicated in commercial operations, a recent survey of helicopter industry leaders indicates.

Three 'copters capable of carrying from 12 to 22 persons, including crews, are currently in production in the United States, and four others of 25 to about 50 capacity may be available within a comparatively short time, depending upon military demand on production facilities.

Two New Roles

In regular air transport operations, industry spokesmen anticipate two important roles, resulting from the helicopter's unique flight characteristics: (1) short-haul (200 miles) inter-city routes, and (2) airport-to-city (and suburban center) routes.

Industry leaders point to traffic surveys conducted by the Air Coordinating Committee, showing that less than 6% of all airline passengers travel 100 miles or less; whereas more than 90% of all railroad, bus and automobile passengers confine their travels to distances of 100 miles or less. This 90% appears to offer an important potential for the helicopter in short-haul and airport-to-city travel.

Patterns Don't Conflict

Inauguration of helicopter short-haul and airport-to-city routes would permit a great expansion of airport traffic capacity for long-haul operations, helicopter industry experts say. This would be possible because helicopter traffic patterns do not in-

(See HELICOPTERS, page 3)

Airliners Bigger, Better But Air Fares Stay Same

A U. S. aircraft manufacturer reports the following growth in its transport planes in the past 18 years:

Passenger capacity has increased 1,400%, weight 1,600%, useful load 1,600%, and total engine power 1,400%.

During the same 18-year period, however, airline fares have remained on the same level—and in some cases have been lowered.

Aircraft Industry Builds Nearly Half Million Planes in 25 Years Since Lindbergh's Flight

U. S. aircraft manufacturers have built approximately 450,000 airplanes since Charles Lindbergh first flew solo nonstop from New York to Paris—25 years ago this month.

In the same quarter century, they have cut the time required to span the Atlantic by nearly four-fifths, and have built aircraft that can carry loads equal to 20 times that of the "Spirit of St. Louis."

The tremendous number of planes produced since Lindbergh's flight (19 times as many as were built prior to 1927) reflects only partially the phenomenal growth of the aircraft industry in the past 25 years.

Aircraft Revolutionized

During these historic 25 years, American ingenuity and know-how have completely revolutionized aircraft. The speediest planes today are more than eight times faster than the Lindbergh plane. An inter-continental bomber, although 68 times heavier, can fly four times as fast. And it can transport double the weight of the older plane nearly

three times the distance covered by Lindbergh.

Increased instrumentation to insure pilot safety at terrific speeds and in violent maneuvers accounts for much of the added weight and, partially, for the much longer time required to build today's aircraft.

A Dozen Instruments

Lindbergh had only a dozen instruments. A modern jet fighter pilot has about 100 controls to operate, and 24 instruments to observe.

Only about 4,000 Americans worked for the aircraft industry when Lindbergh made his crossing. This number swelled to 500 times that many during World War II; and today, with employment well below the wartime peak, some 600,000 persons are employed in the aircraft and parts industry.

It took a single engineer 850 hours to build the "Spirit of St. Louis." A jet fighter requires hundreds of engineers for design and development—and about 1,300 times as many engineering manhours to build.

Would Slow Vital Plane Output, Say Defense Leaders

America's highest military officials, testifying in recent weeks before the Senate Military Appropriations Subcommittee, have warned that the House-proposed \$46 billion ceiling on fiscal 1953 military spending imperils the nation's defense buildup.

Defense Secretary Robert A. Lovett said "the ceiling's effect would be so serious as to indicate a possible critical blow to military preparedness efforts and the defense of the country."

The nation will enter a period of increased peril about 1954, according to Gen. Omar N. Bradley, chairman of the Joint Chiefs of Staff. At that time, he added, the Soviet Union will have the strength to inflict critical—perhaps fatal—damage to this nation's production potential.

Loss of 3,500 Planes

In terms of air power alone, Secretary Lovett reported, the House-proposed spending ceiling would mean that the Air Force would lose 3,000 planes and the Navy 500 planes in an 18-month period beginning next January. This is one and a half times as many planes as were produced in 1949.

Air Force Secretary Thomas Finletter told Congress this slowdown in aircraft output would mean postponement of target dates for achievement of a modern 143-wing Air Force until 1957.

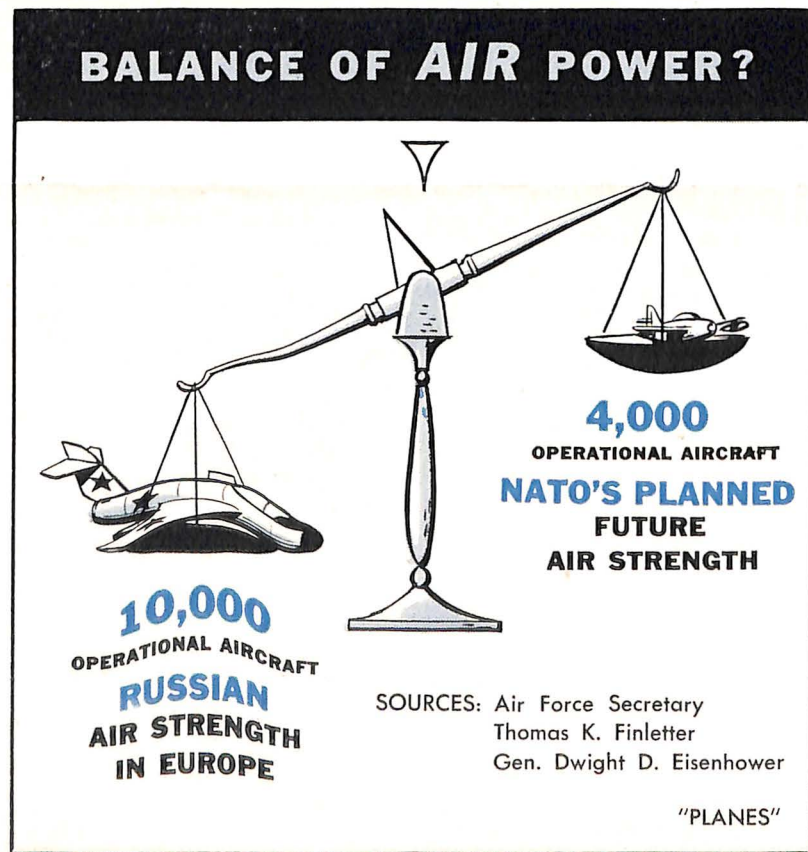
It has been estimated that during 1953, under the proposed ceiling, U. S. armed forces could very well receive fewer planes than they will get this year.

Emergency Potential Reduced

Adm. DeWitt C. Ramsey, president of the Aircraft Industries Association, has called attention to the fact that the spending ceiling would reduce the ability of the nation's aircraft industry to step up plane production in an emergency, by forcing shutdowns of facilities which are just now getting into production. The military forces already have indicated that at least eight aircraft production facilities would be forced to stop production if the ceiling is put into effect.

Since most prime contractors do business with three to four thousand

(See CEILING, page 2)



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.

Publication Office: 610 Shoreham Building, Washington 5, D. C.

New York Office: 350 Fifth Avenue, New York 1, New York.

Los Angeles Office: 7660 Beverly Boulevard, Los Angeles 36, California.

ALL MATERIAL MAY BE REPRODUCED—MATS OF ALL CHARTS ARE AVAILABLE

The High Price of Inconsistency

By DeWitt C. Ramsey (Admiral, U.S.N., Ret.)
President, Aircraft Industries Association

More than five years ago, the President's Air Policy Commission gave the American people a blueprint which might have saved this nation billions of dollars—and which, conceivably, could have lessened the seriousness of the world situation which now confronts us.

At that time, the Commission—headed by now-Secretary of the Air Force Thomas K. Finletter—recommended an immediate start toward building a "minimum" air force capable of mounting promptly an effective, continuing, and successful air counter-offensive against a possible aggressor.

In its report, the Commission said that "year-to-year planning of aircraft production, which has been forced upon the services by current budgeting practice, must give way to long-term planning. Evidence submitted to us indicates that the savings on the uninterrupted production of airplanes over a five-year period, as compared to five annual procurements of the same total number of planes, could run as high as 20 to 25 percent. Such savings result in part from the ordering of materials and parts in larger quantities and to the more extensive tooling warranted by the larger number of airplanes in a single order, but even more from the more effective use of such tools and manpower."

Several months after the Finletter report was released, the Congressional Aviation Policy Board reached similar conclusions. "A five-year plan for aircraft procurement is believed the most efficient method of stabilizing procurement and of promoting a healthy industry available for mobilization in an emergency," the Board declared.

Since the date of these reports, the strength authorized for the Air Force and the Navy has from time to time been increased, standing at present at 143 wings and 16 carrier air groups, respectively. The pattern of this air power buildup, especially from the standpoint of aircraft production, has unfortunately been one of peaks and valleys, of expansion and contraction, with their accompanying high cost to the American taxpayer.

In May, 1948, only a few months after the release of these two fundamental reports on American air policy, the Congress voted substantial increases in funds for aircraft. Air Force and Navy plane procurement thereupon was accelerated. But late in 1948, after weighing the effect of higher defense spending against the benefits of increased air power, the Government ruled in favor of economy. Air power funds were impounded, and the Air Force and Naval air arm began an immediate retrenchment.

In 1950, after outnumbered American planes and troops were committed in Korea, another expansion program got under way. This buildup, based on a philosophy of "guns and butter," continued unabated until early this year, when budgetary considerations caused a stretch-out in production targets of some 18 months. Today, possible cuts in appropriations and a House-proposed \$46 billion spending limitation in fiscal 1953, point to further delays in the achievement of our readiness to cope with a major emergency.

Such stop-and-start production has, inevitably, been costly. In 1948, the aircraft industry was asked to expand; in 1949, to contract. Again in 1950, spurred by the demands of Korea, the industry entered into a large-scale expansion; in 1952, it is faced with the prospect of contraction.

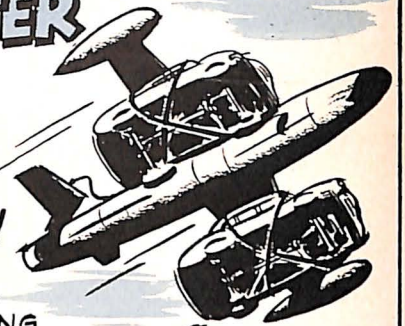
If, as the Finletter Commission estimated, a 20 to 25 percent savings could be accomplished by a five-year aircraft procurement program, the American people could have saved since Korea, by conservative estimate, some \$2 to \$3 billion dollars, and substantially increased savings could accrue during the next two to three years.

By far the most important step the Congress could take to assure effective air power, an adequate aircraft industry, and long-range economies would be the enactment of a five-year aircraft procurement policy. The industry as such can have no voice in shaping the size or content of such a program, nor does it aspire to, but it is our obligation to point out that a longer-term mission would permit realistic planning—and would enable achievement of greater economies and efficiency in the use of facilities, tools and manpower—with resulting tremendous savings to the American taxpayer.

PLANE VIEWS

WEIGHT LIFTER

FIRST U.S. JET TO FIGHT IN KOREA COULD CARRY MORE THAN ITS OWN WEIGHT IN BOMBS, ARMAMENT, FUEL, EQUIPMENT AND PILOT! PILOTS HABITUALLY TOOK OFF WITH WEIGHTS EQUAL TO TWO CHEVROLETS SLUNG UNDER THE JET'S SLENDER WINGS.

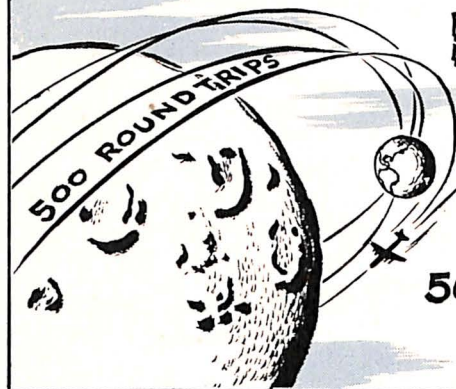


FLAME FLIGHT.

FOR THE FIRST TIME, THE OLYMPIC FLAME WILL BE FLOWN BY AIR FROM ATHENS TO THE 1952 GAMES — IN HELSINKI.



TO THE MOON AND BACK



500 TIMES!
U.S. DOMESTIC CERTIFICATED AIRLINES FLEW 250 MILLION TON-MILES OF FREIGHT IN 1951—EQUAL TO CARRYING ONE TON ON MORE THAN 500 ROUND TRIPS TO THE MOON!

by Aircraft Industries Association

CEILING

(Continued from page 1)

subcontractors and suppliers, this could well mean that some 24,000 to 32,000 subcontractors and suppliers would be forced to curtail their activities.

Discussing the implications of the House-proposed action on the aircraft industry, Admiral Ramsey said "thousands of trained aircraft workers certainly would have to be dismissed, breaking up skilled production teams that take years to build. Subcontracting programs would have to be curtailed, with the inevitable hardships on small business.

"Experience has shown that the most costly method of mobilization is the peak-and-valley, stop-and-start system. A roller-coaster defense production program inevitably is accompanied by high costs of training new workers, overtooling, opening and expanding new facilities, dislocation of labor forces, cancellation costs for materials and tools, and the other penalties of short-range planning."

Testifying before Congress, Adm. Donald B. Duncan, Vice Chief of Naval Operations, warned that "the method proposed in this amendment will result in waste of effort and money, will limit the combat readiness of the forces, will delay their

modernization, and will disrupt the industry of the nation, all of which are essential for our national security."

Commenting particularly on the air power aspects of the budget limitation, Air Force Chief of Staff Hoyt S. Vandenberg predicted that "unless the crippling effects of the House actions are undone . . . control of the air, with all that it implies, will then be within the grasp of the Soviet Union."

FACTS and FIGURES

The first jet fighter to be equipped with an afterburner obtained a speed increase of 100 miles per hour over earlier versions without tailpipe burning.

* * *

A bombardment division of two medium jet bomber wings corresponds to an industry of 4,000 employees and a net worth of about \$120 million.

* * *

More than 68,000 high-priority personnel and 23,000 tons of critical material were airlifted to the Far East during 1951 by U. S. military and civil aircraft in the Pacific Air-lift operated by MATS.

How To Stretch A Dollar

U. S. aircraft manufacturers are stretching America's defense dollars farther than ever before, as a result of wide-scale cost-reduction activities in airframe, engine, propeller and components plants throughout the country. Among recent typical examples of savings to American taxpayers:

Airframe

Engineering design improvements, resulting in greater production efficiency in parts and assemblies, recently saved \$272,500 on military contracts in a two-month period, a major airframe manufacturer reports. This is a reduction in production costs of approximately \$1,600,000 per year.

Engine

An aircraft engine manufacturer recently introduced a new method of machining turbine-blades for jet engines, resulting in an annual savings of \$311,136 in defense dollars.

Helicopter

Cost of a late-model helicopter was reduced \$1,400 per 'copter by three recent production refinements: (1) skid landing gear was substituted for wheel-type landing gear, saving \$1,000; (2) tail cowling and covering were removed, increasing payload and saving \$300; and (3) gravity feed fuel system, instead of fuel pump, was installed, saving \$100.

Accessories

An aircraft electronics manufacturer recently installed a new machine for winding armatures. Use of the machine will reduce winding time from 66 minutes to only six minutes per armature.

Testing

An engine testing device recently perfected by a U. S. airframe manufacturer will save the Government \$118,291 per year. It reduces testing manhours by 77,088 per year—or the equivalent of 37 men working full time for 12 months. The device cuts manhours in locating engine trouble from 150 hours per flight to four hours per flight.

Cutter Does 45-Minute Job in Seven Minutes

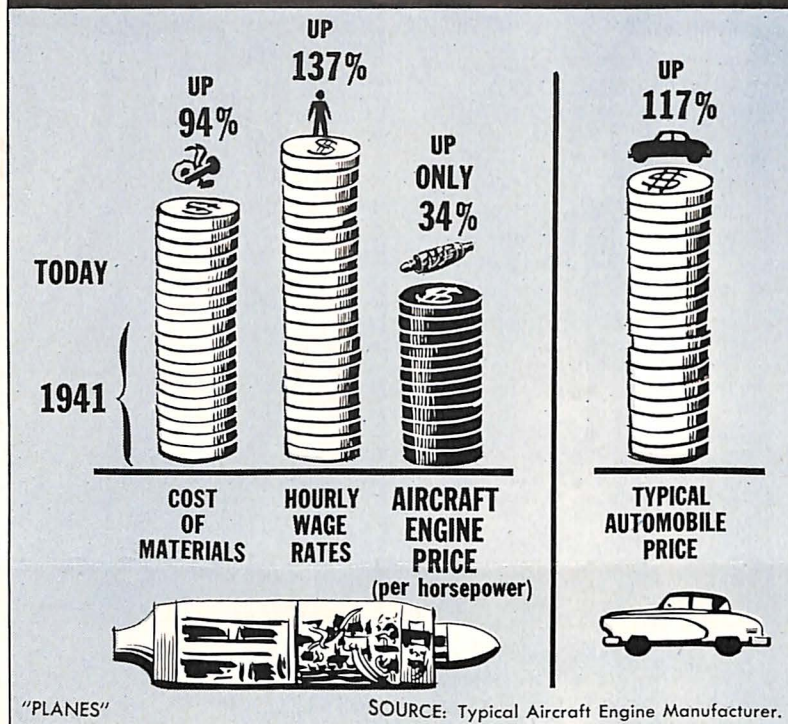
Valuable manhours are being saved in the manufacture of airframes by the use of new-type metal cutters which, in one milling operation alone, have reduced manhours nearly seven times.

Using helical carbide cutters, one airframe builder reports a machining job that formerly took three quarters of an hour can now be whisked through in seven minutes.

Airborne Vehicles

Operational transports of the Air Force are capable of carrying 95% of all types of military vehicles now used by the Army, Navy, Marine Corps and Air Force.

AIRCRAFT PRODUCTION EFFICIENCY SAVES TAX DOLLARS



HELICOPTERS

(Continued from page 1)

terfere with normal fixed-wing traffic patterns.

"Much emphasis has been placed on the helicopter in its life-saving and rescue operations not only in Korea but also under peacetime conditions," says Don Ryan Mockler, director of the Helicopter Council of the Aircraft Industries Association. "A statement issued by the Army Corps of Engineers is especially significant in pointing to additional fields of accomplishment for the 'copter. The Aviation Detachment of the Engineering Corps is authorized a total of 50 aircraft. Of this number, 45 are helicopters. The Army points out that the 'copters not only facilitate transportation in otherwise inaccessible areas, but are proving

HELICOPTERS IN KOREA

Shortly before leaving his Far Eastern command, Gen. Matthew B. Ridgway paid tribute to the role of the helicopter in Korea. Writing to the American Helicopter Society, he said:

"Please pass on . . . my great respect for the designers, manufacturers, pilots and maintenance crews of American helicopters. Together they have made a proud contribution, nowhere more conspicuous than in Korea. The innumerable command and liaison missions flown under all types of weather conditions and the like number of search and rescue missions and flights for the evacuation of wounded, involving as they have many acts of conspicuous gallantry under fire and courage and determination of the highest order at other times, are a source of great pride to us all in the Far East Command."

valuable in surveying activities.

"The statement stresses that 'classification of ground information such as forest types, stream widths, road capacities and other items which appear on the finished map is largely done by helicopter'."

In like fashion, Mockler predicts, commercial helicopters when available in quantities should find a leading place in many civil operations such as mining, forestry checking, pipe line surveys, and other projects where terrain conditions slow up or completely block the use of ground or other forms of transportation.

Over 350 U. S. cities are now served by local service airlines.

PLANES QUIZ ✈️

Seventy per cent score on this quiz is excellent. Sixty per cent is good. Answers on Page 4.

- The USAF's largest rescue helicopter, designed for Arctic missions, can carry 12 litters and a medical attendant, or a load of (a) 10; (b) 12; or (c) 22 persons?
- Over a billion pieces of domestic letter mail were sent via airmail in fiscal year 1951. This was an increase over the previous years' total of (a) 10%; (b) 25%; or (c) 15%?
- A U.S. airline has completed more than 22 years of operations without a single fatality or serious injury to a passenger or crew member. True? False?
- What was the top speed of the first U.S. military aircraft? (a) 40 m.p.h.; (b) 75 m.p.h.; (c) 90 m.p.h.?
- How many fighter aircraft in a USAF fighter wing?
- More than 6,500 engineering drawings were required in the development (to first flight) of one jet

Built-in Navigator May Simplify Flight

Pilots may eventually fly on the "bug" instead of on the "beam" with a pictorial computer intended to simplify navigation and increase air safety.

Three U. S. manufacturers have produced models of a highly accurate airborne device which automatically calculates an airplane's distance and direction from a known point of ground radio transmission, and projects it as an electronic "bug" which crawls across a navigational chart.

The visual computer, now being evaluated by the Civil Aeronautics Administration, is designed for use with a ground network of Distance Measuring Equipment (DME), yet to be completed.

Air Quotes

"Aviation recently has been suffering much criticism from the uninformed on the subject of danger to residents near airports from falling planes. You and I



know how rare is this type of accident and yet how difficult it is to convince the average person that it is rare. I made a check recently and found that those hard-hearted and practical businessmen—the insurance writers—estimate that it would cost more to print a policy covering this type of accident than the premium they could charge for such a small risk."—F. B. Lee, Deputy Administrator of the CAA.

fighter. Development of a typical World War II fighter required only (a) a sixth; (b) a third; (c) a fourth as many drawings?

- Estimated airframe tooling costs for a jet fighter today (during initial production) is \$23,425 per plane. This is more than 11 times the tooling costs for the airframe of a typical fighter of the last war. True? False?
- The Air Force recently flight-tested two new all-jet heavy bombers. How many jet engines does each of these planes have? (a) four; (b) six; (c) eight?
- It costs about \$257 per hour for fuel oil and lubricants alone to fly today's largest operational military aircraft. True? False?
- How many U.S. airframe and engine manufacturers are currently engaged in development of atomic-powered airplanes?



First Planes Ordered After Korea Now Coming Off Production Lines

The first jet planes ordered after outbreak of the Korean War are now coming off assembly lines at U. S. aircraft plants. These jet fighters, most of them ordered the month U. S. troops were committed in Korea, are models that were in production at that time.

Defense Department officials have warned, however, that jet plane production is not yet in high gear—and that substantial output of aircraft cannot be expected for another six months to a year.

Quantity orders of new planes were not placed immediately following the start of the war in Korea, it was pointed out in recent Congressional hearings. The U. S. air buildup received its primary impetus from several supplemental appropriations by Congress late in 1950 and early in 1951.

It takes 22 to 25 months between order and delivery of a production-model jet fighter, and up to 30 months for a heavy bomber. Consequently, barring cutbacks in production caused by appropriations reductions or a spending ceiling, substantial output should be reached about December, 1952.

Standardized Models

Aircraft delivered at that time, it has been emphasized, will be models that were standardized and accepted when the North Koreans crossed the 38th Parallel. Design and development of later-type models adds additional years to the time element in producing aircraft.

Thomas K. Finletter, Air Force Secretary, told Congress recently:

"It used to be said that it took seven years to bring an aircraft from the drawing board to the completed article coming out the factory doors. This time has probably increased with the complexity of the modern machine."

Finletter warned that actual design, development and production time is accompanied by "more time involved on each end of the spectrum." There is time between the Congressional appropriation and the placing of the contract, he said. Then, too, there is the "shake-down" time after the plane has come out of the factory—the time to move it to its base, the time to get it into a unit, and the time required for possible modifications.

Reasons for Lead-Time

Reasons cited by the Air Force Secretary for the long lead-time in modern aircraft production include (1) complexity of new planes, (2) high quality standards of U. S. aircraft, (3) the fact that the U. S. is in a buildup period where facilities must be procured and the "complex of component and prime production brought into motion," and (4) the fact that the present buildup is being accomplished on a "partial" mobilization basis.

Canopy Complexity

It takes 205 separate parts, not including rivets and bolts, to construct the canopy frame on a modern sweptwing jet bomber. The frame connects the pilot's plastic compartment to the aircraft fuselage.

POWER

IN THE AIR

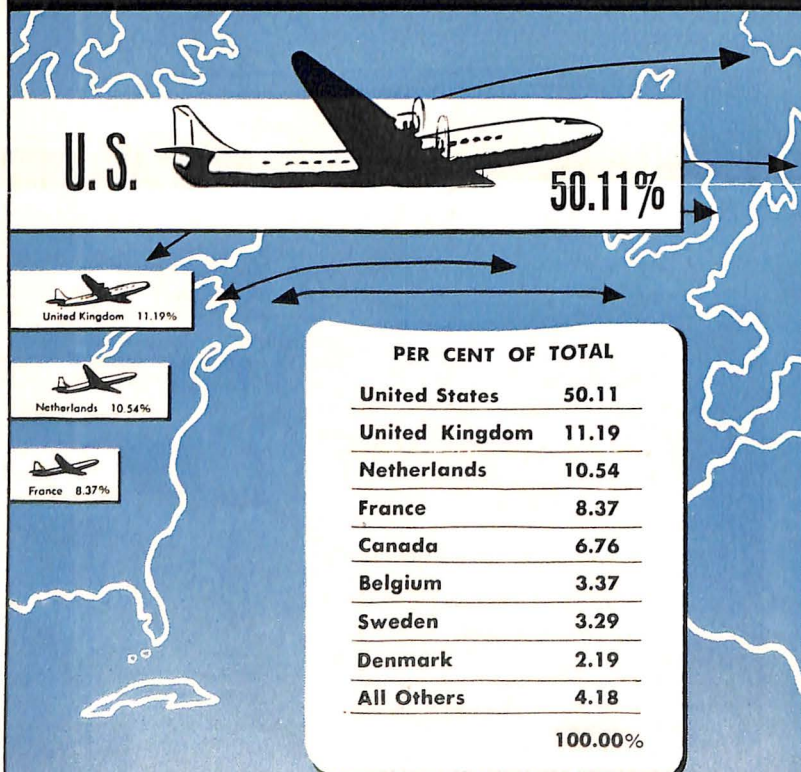


ONE of today's modern jet fighters has enough power to pull six 60-car freight trains, fully-loaded. The six Diesel locomotives normally required for the job weigh 90 times as much as the whole plane, and over 480 times as much as the jet powerplant.

"PLANES"

SOURCE: U. S. Air Force and Diesel Division of General Motors.

HOW THE U. S. LEADS IN ATLANTIC FLIGHTS



PLANES

SOURCE: International Air Transport Assn.

'Brain' Cuts Time, Cost Of Aircraft Engineering

In the time it takes to read this sentence, an electronic calculator used by a U. S. aircraft manufacturer's engineering staff can add a column of more than 32,000 figures—and always get the right answer.

In one second, the calculator can do 2,714 additions or subtractions, 79 multiplications or 65 divisions.

By performing as many as 360,000 single operations an hour, the machine saves time and money in developing aeronautical products.

Answers to Planes Quiz

- (c). It can carry 20 troops in addition to a pilot and a co-pilot.
- (b). Air parcel post increased in about the same ratio with approximately 12,500,000 pieces handled.
- True.
- (a).
- Seventy-five.
- (a). A World War II fighter required only 1,100 engineering drawings.
- True.
- (c). Two new heavy bombers, recently flight-tested by the USAF, are each powered by eight jet engines.
- True. It costs approximately \$257 per fuel-hour to fly an inter-continental bomber.
- Four. Two airframe and two aircraft engine manufacturers are developing nuclear-powered aircraft under contracts awarded by USAF and AEC.

Midget Machine Does Work of Giant Press

A major airframe manufacturer is speeding production and cutting costs with a newly-developed lightweight press that reduces by half costly hand-forming of thousands of metal parts.

Less than a man's height, the new hydro-press is only a tenth as large as conventional types but exerts triple their pressures in forming heavy-gauge metals.

Besides being economical to build and install, the hydro-press requires little steel and no other critical materials. Designed originally for cold forming of metals, a future application will be hot forming of titanium and magnesium.

Plane Devices Produce Heat, Snow in Twinkling

To solve the cockpit cooling problem in high-speed aircraft, a U. S. manufacturer has produced a cooling device (no larger than a man's hand) so powerful that it can transform a searing 600° blast of air into snow within 2/10 of a second.

At the opposite extreme, the same manufacturer has designed a heater for aircraft engines in Arctic regions that can raise temperature 345° in one second.