



planes

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GREATEST SPEEDUP IN PLANE OUTPUT URGED

Skilled Labor Is Critically Needed In Aircraft Work

Skilled labor is urgently needed in the aircraft and engine industry throughout the country to continue stepping up production at the rate required by the defense program. In many areas the shortage of skilled labor already is critical.

Thirty-five thousand additional employees had been put on aircraft manufacturing payrolls by September bringing total employment up to 291,000. The Bureau of Employment Security of the Department of Labor estimates that this total will be increased to more than 330,000 by January. Skills most urgently in demand for these new jobs include the following:

Skills Needed

Aeronautical engineers trained in aerodynamics, in structures, in electromechanics; stress and weight engineers as well as flight test engineers and electronics engineers; tool, die, jig and fixture makers, machinists, including skilled machine operators, sheet metal workers, skilled assemblymen, plaster modelers, bench welders, wood pattern makers, tool designers, engine lathe operators, turret lathe operators, milling machine operators, sheet metal assemblers and mechanics, and welders.

New Training Programs

Training programs have been started by several companies. One company is offering to train as aeronautical engineers any persons with a degree and five years experience in the fields of electrical, mechanical or civil engineering or architectural drafting. Another has more than 2,000 employees in training courses.

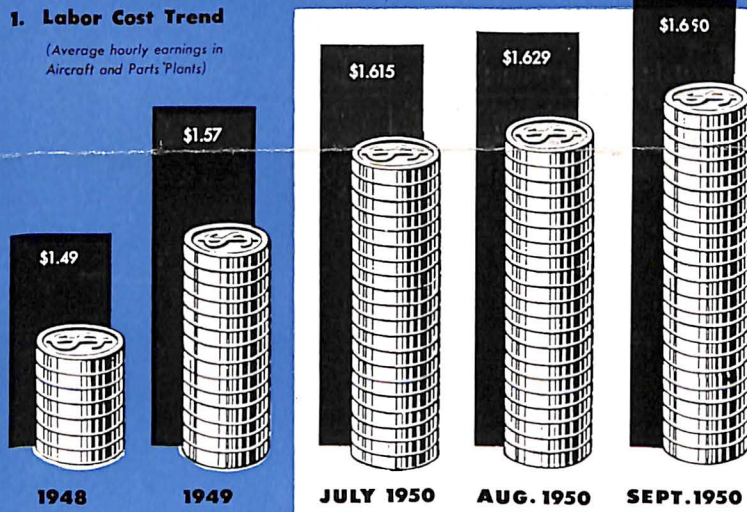
Hiring of unskilled workers will not be heavy for several months. In some places a few women are being hired and applications taken for future consideration. A substantial portion of the production of components is subcontracted to thousands of shops and suppliers scattered throughout the country—in some cases as much as 63%.

Major aircraft manufacturing areas recently reported feeling the pinch in skilled labor supply include New York, Hartford, San Diego, Los Angeles, Seattle, Fort Worth and Wichita. No special draft deferment policies have been set up, although young engineers are critically needed in many engineering departments.

Aircraft Production Costs Rising

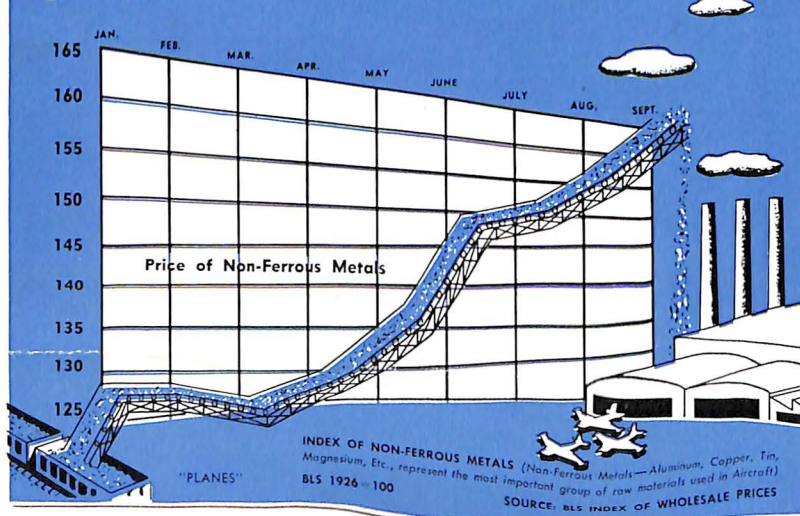
1. Labor Cost Trend

(Average hourly earnings in Aircraft and Parts Plants)



Additional company-wide wage increases have been announced since September

2. Raw Materials Costs—1950 Trend



Priorities on Scarce Materials are Vital to U.S. Air Transport System

Continued access to priorities on scarce materials and parts is absolutely essential to the functioning of our air transport system, now setting new, all-time records in passenger, express and cargo shipments. The problem of delivering essential new transport aircraft and the parts and supplies required to maintain the existing fleet will become all the more acute as the defense program gathers momentum and thus greatly enhances the flow of priority traffic.

Figures for the World War II period show that at the peak, priority passenger traffic actually averaged more than 50% of the total. On the vital, long transcontinental runs, it was, of course, far higher, as many a traveler will recall.

The airlines currently are carrying a record volume of passengers and the trend has been sharply upward throughout the year. For the first time in history U. S. domestic and international airlines

—See MATERIALS page 3—

President's Goal Far Greater Than In World War II

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

The production goal projected for the aircraft industry in 1951 by President Truman will require a far more rapid expansion in output than was attained in World War II.

Such an increase manifestly is not within the capabilities of the aircraft industry alone. It can only be attained by maximum possible cooperation and support on the part of the supplying industries and every government department and agency in any way concerned.

The President's goal is the greatest challenge ever faced by the aircraft industry. It is fortunate that the management and engineering teams that coped with the expansion problems of World War II remain largely intact.

The President told the nation on December 15 that, "Within one year we will be turning out planes at 5 times the present rate of production." Our present rate of military aircraft production is slightly under 4 million pounds airframe weight a month. In units, the current total is probably somewhere around 250 per month.

World War II Record

During World War II, the industry was not able to expand much more than three times within a 12-month period as compared to the 5-fold increase called for by President Truman. Production in May, 1940, at the time President Roosevelt announced his 50,000 plane goal was at the monthly rate of 1,900,000 pounds. A year later in May, 1941, the production rate had risen to 6,229,000 pounds. By May, 1942, production had risen to 23,202,000 a month; and by May, 1943, the rate was 60,500,000 pounds monthly.

The figures for production in units show a similar trend. In May, 1940, production was 450 planes. A year later, the monthly output was 1,380; and in May, 1942, the rate was 3,983. The peak was in March, 1944 with an output of 9,113 planes.

Throughout World War II, therefore, the industry was able to triple its output in a 12-month period. If it is now to meet the goal of a 5-fold increase set by the President, the necessary production contracts should be placed

—See SPEEDUP Page 4—

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

Historic Production Goals

The aircraft industry has frequently been handed production assignments that seemed difficult or impossible to achieve. (See statement by President Ramsey on p. 1.)

On May 16, 1940, in his famous message calling for the expansion for America's defenses President Roosevelt gave the aircraft production program for World War II its first great stimulus. He told the public that during the past year American productive capacity for war planes had risen from about 6,000 planes per year to more than double that number. President Roosevelt said "our immediate problem is to superimpose on this production capacity a greatly increased additional production capacity. I should like to see this nation geared up to the ability to turn out at least 50,000 planes a year. Furthermore, I believe that this nation should plan at this time a program that would provide us with 50,000 military and Naval planes."

In 1939 and 1940 America's plane builders were in the process of expanding their facilities to deliver the aircraft required to fill foreign orders. They had in great part recovered from the financial difficulties of the middle thirties which had forced many producers to the verge of bankruptcy. Materials and tools had been ordered; a substantial program of plant expansion was under way; thousands of additional employees had been hired and additional employees were being recruited daily. The tremendous expansion in plant, facilities and manpower that contributed to deliveries of thousands of planes per month began from that base laid by foreign orders.

Despite the expansion brought about by the earlier foreign orders and the stimulus of the 50,000 plane production program an annual production rate of 50,000 was not reached until August 1942—27 months later when deliveries totalled 4,274 aircraft.

125,000 Plane Goal

In the meantime the goals of America's aircraft production program had again been tremendously increased. In his message to Congress on January 6, 1942, President Roosevelt called for the production of 125,000 planes during 1943 of which 100,000 were scheduled to be combat types. Actual production during 1943 reached 85,898 military planes of all types. The production expansion reached its peak in early 1944 when the monthly production rate exceeded 9,000 planes equivalent to an annual rate of almost 110,000 units. Cutbacks by military planners began to reduce plane production rates after that date.

In 1939 producers of aircraft, aircraft engines and parts employed 48,638 people. At its war time peak 2,102,000 were on the payrolls of American plane builders and subcontractors.

The aircraft industry had become the largest single industry in the world.

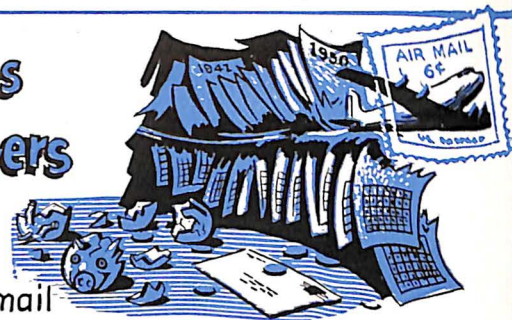
The organization of these thousands and thousands of employees into production teams and the tremendous expansion of facilities and floor space accomplished by the aircraft industry during the war was the result of outstanding cooperation between labor, management and governmental agencies responsible for aircraft production. This cooperation enabled the aircraft manufacturing industry to triple its production rate every year.

As Admiral Ramsey points out, the rate of increase projected by President Truman calls for a more rapid rise than that following either of President Roosevelt's historic production announcements.

PLANE VIEWS

Penny Losers VS. Time Savers

The U.S. Deficit for handling air mail during the past 11 years is less than the deficit from penny post cards in any ONE YEAR!



Wage Increases ...granted by aircraft companies in the first 6 months of 1950 will equal annually the cost of 100 Modern Jet Fighters



Flying Bricks It cost \$11,000 to fly \$600 worth of fire bricks from New York to Cairo. But furnaces of an oil company's tanker costing \$4,000 per day while idle, were quickly repaired at a big saving!



BY AIRCRAFT INDUSTRIES ASSOCIATION OF AMERICA

PLANES QUIZ

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

1. A modern U. S. military cargo plane can drop a 25,500 pound load of military equipment by parachute in 12 seconds. True? False?
2. The Air Force is now organizing a fleet of (a) 50, (b) 110, (c) 180 tanker planes for mid-air refueling of bombers.
3. What is the record flying time between Moscow and Washington?
4. In airline equipment maintenance, cost of engine maintenance alone represents (a) 24%, (b) 44%, (c) 64%?
5. The first turbojet airplane was successfully flown in (a) 1939, (b) 1942, (c) 1944? By: (a) Germany, (b) Britain, (c) the U. S.?
6. One U. S. cargo plane can carry up to 100,000 pounds of payload. True? False?
7. The U. S. is scheduled to adopt knots and nautical miles as the measurement for air speeds and distances. True? False?
8. Research wind tunnels can now study air flow problems at more than 7,500 miles per hour. True? False?
9. Caterpillar type landing gear now make it possible for airplanes to land on soft or on rough terrain. True? False?
10. The heaviest airplane to land successfully on an aircraft carriers weighs (a) over nine tons, (b) over 12 tons, (c) over 17 tons?



Facts and Figures

A complete tabulation of state laws affecting civil aviation throughout the U. S. is available on request from the Civil Aeronautics Administration, Washington.

Preliminary search for oil by helicopter is under way in Canada's vast and partly-explored Northwest Territory, 500 miles above Edmonton.

Extensive research is now being done on precision-casting of large airframe parts.

Helicopters Reach New Utility Peak; Military Services Ordering Over 500

The helicopter has become a full-fledged and successful component of U. S. aviation and air power, evidenced most strongly by the fact that more than 500 have been ordered by the military services in recent weeks. In an industry where orders formerly were placed in increments of two or three, or perhaps half a dozen, this is a major development.

This new military emphasis marks the emergence of the helicopter not only as a tactical tool but also as a transportation vehicle of extraordinary importance and characteristics. Preponderance of the new production will be of 10-to-20 place transport-size machines.

The Navy is vigorously pushing development of the helicopter for anti-submarine work and the Army's Transportation Corps plans helicopter transport companies for all Army divisions.

Two recent important developments contribute to both the commercial and military serviceability of helicopters by providing mechanical assurance of stable flight with maximum passenger comfort. A company which has been flying air mail from Los Angeles to all of its suburbs for the past three years has perfected the use of instruments in helicopter flight comparable to the all-weather aids used in modern fixed-wing transports. Exhaustive Navy tests have established the ability of helicopters to fly satisfactorily by means of automatic pilots.

Performance in Korea

Stellar performance of a small number of helicopters in the Korean war gave the greatest impetus yet to rotary-wing aircraft production. The machine's already well proved role in rescue work took on greater importance. Of 498 lives saved in combat areas through the month of October by the Third Air Rescue Squadron, 265 of them were by helicopter. Battle casualties were picked up behind the lines, crashed flyers were rescued as deep as 125 miles in enemy territory in rough terrain where they could not have been reached by any other means. In several instances blood transfusions were performed in the helicopters as patients were being flown to field hospitals. Sea rescue work was equally effective and helicopter patrols were successful in destroying many floating mines.

The copter also proved to be an invaluable tactical tool, directing artillery fire and fighter planes, providing reconnaissance, and dropping men and weapons in

strategic spots. It also disproved a long-held belief that it was too vulnerable to enemy fire; one machine evacuating wounded landed safely with 50 bullet holes in it.

The Marine Corps, which has been outstanding in developing the varied uses of the helicopter since World War II, has adopted it for assault landings to move in troops, weapons and supplies. One major advantage is lessening of the regrouping problems encountered in the use of gliders and paratroops. Maj. Gen. Merwin Silverthorn, Acting Commandant of the Marine Corps, told the House Armed Services Committee on Oct. 6 that the one really new lesson learned in Korea was "the practicability of the use of the helicopter."

More Transport Uses

The rise of the helicopter as a transport vehicle has been more rapid than is generally realized. Not more than 400 machines were built during the World War II years and few civilian models were available before 1946. Only about 1,100 helicopters had been built in the U. S. prior to the Korean war.

Their commercial uses have expanded rapidly and now include such work as power line and pipe line patrol, geophysical survey, mapping, and agricultural and city spraying. Police and traffic departments are adding more and more. Use of air mail in Chicago and 55 surrounding communities was doubled during the first 12 months helicopter mail service was provided there. First use of helicopters for scheduled passenger transport has been recommended by a CAB examiner for part of the New York City area; Los Angeles expects to have it by next spring, and Detroit is actively petitioning for it.

President's Air Travel Ahead of Surface Trips

When President Truman returned to Washington from his spectacular flight to Wake Island for his conference with General MacArthur, he had rounded out a little more than 100,000 miles of air travel since taking office on April 12, 1945.

During the same period, White House sources said, the president had traveled by all other forms of transportation — ship, railway and automobile — only slightly over 70,000 miles.

Jet Engine Progress

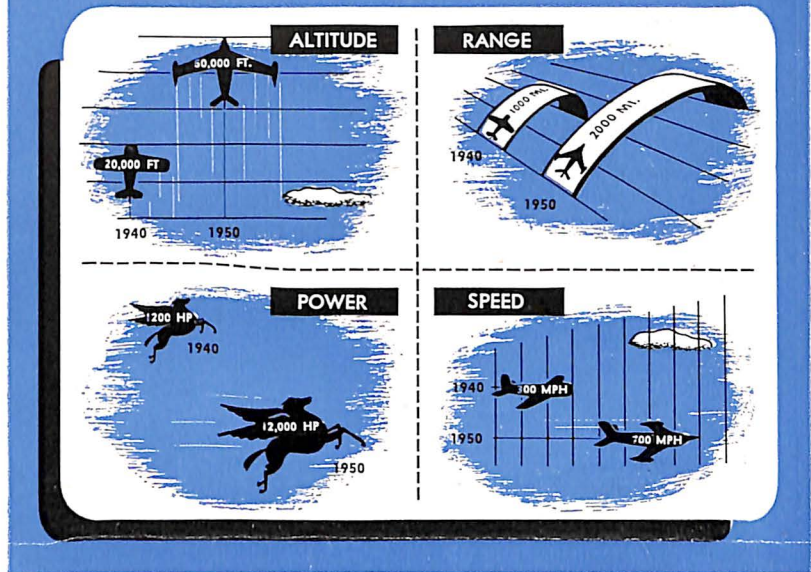
One U. S. aircraft engine manufacturer, pushing new developments in jet and turbo-prop engines to meet constantly increasing technological requirements, reports major improvements during the past three years which it says mean "profits for the customer" — the government's military procurement departments.

The company lists the following progress data on one turbo-engine for the period 1947-1950:

Unit price	29%	decrease.
Pounds of thrust	31%	increase.
Price per pound of thrust	41%	decrease.
Weight	7%	decrease.
Pounds of thrust per pound of weight	40%	increase.
Fuel consumption	3%	decrease.
Authorized time between overhauls	445%	increase.

GREATER PLANE PERFORMANCE

(Makes Airplane Costs Higher)



MATERIALS

(Continued from page 1)

have gone above the mark of a billion passenger miles in two different months, June and August — and nearly to that mark in October.

Full Story Untold

In an all-out war economy, swift transportation is an absolute essential. The full story of the airlines' contribution to the defense program in World War II has never been told statistically. Research shows that the airlines, stripped of half of their planes for purely military purposes, often found priority passengers and cargo being "bumped" for higher priority passengers and cargo, so great was the need for quick movement of men and materials.

The priority movement of air express and mail expanded in similar proportions from the outset of the war. In one two-week period as high as 15.4% of the air mail was displaced because of more urgent loads. In one period 41.6% of all air express was high priority.

The percentage of priority passengers for a typical two-week period in April, 1943, was 41.6%. A few months later in August, 1943, the percentage of priority passengers had risen to 52.1%, and in April, 1944, the percentage of priority passengers exceeded 56% of the total passengers. These figures were in an era before air travel had reached its present state of acceptance.

Aircraft manufacturers have on hand orders for more than 200 commercial transport planes, by far the largest backlog in more than two years. Airline operators say these new planes will be desperately needed during 1951 and 1952 either as replacements or for additional capacity.

The appeal of the Aircraft Industries Association and the Air Transport Association to the National Production Authority to establish Defense Order (DO) ratings for the manufacture of transport-type aircraft asked for treatment similar to that accorded the railroads.

How Training of Workers Speeds Plane Production

How volume of orders, training of workers, and production line techniques speed the output of aircraft is demonstrated by World War II records. One aircraft company with a peak of 29,400 people during the war produced 46 airplanes per month, then ended the war with 16,700 people producing 100 airplanes per month.

Air Quotes

"The Air Force and the Navy are doing an outstanding job. The close-up air support for the ground troops has been reported to me in the most glowing terms. It has exceeded our most effective work at the end of World War II. The Navy has done a magnificent job in supporting us with their carrier forces, in combining with us on the ground with the Marines, and in the gunfire support they have given from their off-shore ships." — Gen. Omar Bradley, Chairman Joint Chiefs of Staff, in a radio interview Oct. 12, 1950.

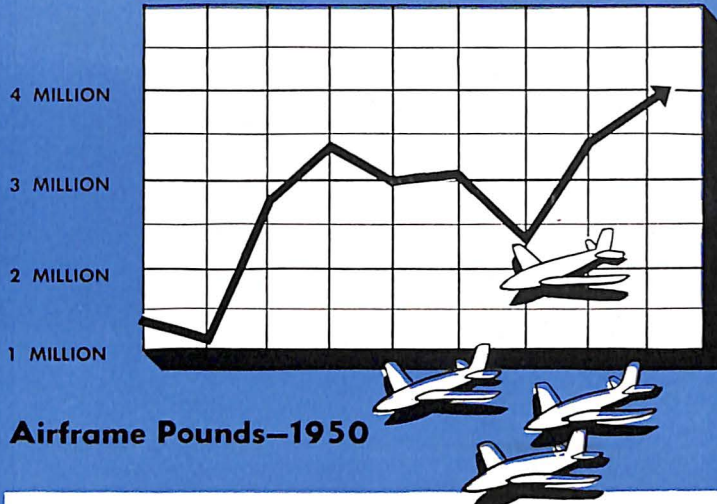


Gen. Bradley

"The heavy reliance which the country, and indeed all of the free world, places on our Air Force in being is such that we must spare no effort to see to it that this force is right. We will therefore move on urgently to strengthen our air arm. We will seek to build those installations, acquire the equipment and make the planes and missiles which will make our Air Force capable, within the limits of present applied science, of carrying out its task. I am sure that the American people expect nothing less." — Thomas K. Finletter, Secretary of the Air Force.

Military Aircraft Output Reaches New Post War Peak

JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT.



Airframe Pounds—1950

Military aircraft production in September reached its highest post war peak. The 3,828,800 airframe pounds produced by the aircraft industry was the highest monthly production since September 1945 when World War II orders were tapering off. Irregular production in the first seven months of this year was due to labor disturbances and difficulties in getting equipment and materials.

"PLANES"

Teams of 150 Colleges Used Chartered Planes

Additional scores of football squads traveling by air during the 1950 season added a spectacularly growing volume to the acceptance of air travel because of its many advantages over slower and more circuitous surface transport.

A rough survey showed that at least 150 colleges and universities during the past season chartered modern multi-engine planes to carry their football players and other necessary personnel to games where more than 200 miles of travel was involved. The number of planes chartered by parties of football fans also ran high. One airline alone carried the teams of 85 different colleges.

Famed Coach Frank Leahy of Notre Dame outlined some of the strongest reason for air travel by athletes when he wrote a special article for the McNaught Syndicate telling why his Irish had broken precedent to adopt—as many other teams already had—air charter travel to distant games. Some excerpts from his statement:

"First of all, looking at air travel from the point of view of the University, flying causes the players to miss less time in the classroom. Last fall when we made trips to both coasts, one to Texas, and two in the Midwest, our players found it difficult to keep abreast of their academic work. This fall (by air) only one trip will cause us to leave before Friday afternoon, so the boys will miss very few classes. . . .

"Flying is good for the individual players because quick trips do not allow them time to worry about the game. . . .

"Most important is the fact it allows us to practice on our own field the day before the game. . . .

"It is my belief that flying is good for the school and for the football team."

SPEEDUP

(Continued from page 1)

immediately. Adequate priorities for machine tools, production tooling and all other equipment used to expand output must be provided. The supply of critical materials available for aircraft production must, of course, be increased proportionately to the larger output goal.

Aircraft today are roughly twice as large and are far more complicated than the aircraft produced in World War II. As a result, it takes approximately four times as many man hours to build a current model as compared to the planes of 10 years ago.

Training programs to augment appreciably the force of skilled labor in aircraft plants must therefore be started promptly and

Jet Stability

Advantages of the use of jet fighters in the Korean war were described recently by Gen. Hoyt S. Vandenberg, Chief of Staff, USAF, in hearings before the Military Subcommittee of the House Appropriations Committee.

"The jet airplane, while it costs more money for fuel, is the most stable bombing platform in the fighter class that we have," Gen. Vandenberg said. "It is more stable than the conventional type of plane. In addition to that, while the jet fighter can spend less time over the target, it can get around much faster and cover much ground. . . .

"The boys who were flying the jets said they could slow them down and do a more accurate bombing job than with a conventional fighter, that they could see better, and that they could cover more area."

Insignificant Quantity of Scarce Materials Needed For Lightplanes

	Total National Production (Tons)	Used by Non-Transport Aircraft Industry (Tons)	% of Total Used by This Industry
Steel	77,978,176	1,337	.00172
Aluminum	603,462	1,666	.275
Copper	1,072,000	137	.0128
Rubber	1,211,582	91	.0075

Although only an insignificant portion of the nation's output of basic materials is needed, manufacture of all personal airplanes used by the highly essential non-airline segment of the aviation industry will be stopped unless high priorities on a continuing basis are provided for these materials.

Chaotic conditions would result throughout the non-scheduled civil aviation activity of the entire country since manufacture of spare parts would be very difficult, due to the starvation volume involved. Grounding of increasing numbers of existing aircraft would be inevitable. Thus, the civil aviation industry, recognized in official Government reports as essential to the national security, would be crippled.

The small amounts of short-supply material needed to keep this entire essential industry in production are shown in a survey just completed by the Personal Aircraft Council of the Aircraft Industries Association. During

accorded needed government support. The work week will have to be lengthened, with the government authorizing overtime payments called for in federal law.

1950 AIRCRAFT YEARBOOK

The 1950 edition of the Aircraft Yearbook, official publication of the Aircraft Industries Association, will be published on January 15, 1951. The yearbook will present an authoritative up-to-date recapitulation of all aspects of American aviation during the year.

Answers to Planes Quiz

1. True. A fully automatic parachute system can drop such a load in 12 seconds in an area 150 feet wide by 2400 feet long.
2. (c) Each of nine medium bomber groups will have 20 tanker planes.
3. Immediately after the German surrender, a U. S. transport plane flew from Moscow to Washington in 35 hours and 35 minutes. This is still the record.
4. (b) 44% was the average last year on U. S. trunk lines.
5. (a) The first turbojet airplane was flown in Germany on Aug. 27, 1939. First U. S. jet plane was flown in the fall of 1942.
6. True. This plane has been undergoing high load lifting tests at Kelly AFB, San Antonio.
7. True, effective July 1, 1952. A nautical mile is 6,080 feet or one minute of arc on a great circle. Knots are the number of nautical miles traveled in an hour.
8. True. A new wind tunnel at California Institute of Technology has been operated at 10 times the speed of sound (760 mph at sea level).
9. True. Caterpillar type landing gear have been used successfully on large type planes but are still the subject of intensive research.
10. (c) Latest Navy plane adapted to carrier operation, powered by two piston engines and one jet engine, weighs over 17 tons empty.

1949, six lightplane and three engine manufacturers who produced more than 95% of all such planes turned out in the U.S. used only an infinitesimal percentage of scarce basic materials produced in this country.

Other basic materials used in production of these civil planes showed even smaller percentages of the national total. Altogether 3,358 personal planes were built during the year. While this industry manufactures largely on a current sales basis and large backlogs are seldom on its books, the PAC survey showed that most companies see a firm demand for at least 25% more planes in 1951 than they delivered in 1950. This is due almost entirely to increasing executive, industrial and agricultural use of the airplane.

Danger Recognized

However, the impending danger of a forced shutdown of the lightplane industry was recognized as far back as last August in a report to the CAA Administrator by his Aviation Development Committee.

The inter-relation of the military and civil functions of the personal plane industry is as evident now as during World War II when it produced thousands of training planes, liaison, small transport and reconnaissance craft in addition to a heavy output of components for larger military planes.

This quasi-military relationship is again being proved and are at work on sub-contracts for military plane makers. The danger they face is that their lightplane manufacturing potential will be destroyed and as a *light aircraft industry* they face extinction for want of a comparative trickle of basic materials.

Jet Armament

The tremendous power which can be packed by a jet fighter in ground support or tactical air warfare is described in a recent statement by Col. William M. Gross, Deputy for Requirements, Tactical Air Command:

"Standard jet fighters used by the Air Force for close tactical air support are now able to deliver as much as one thousand pounds of bombs plus eight 5-inch HVAR rockets, plus six .50 caliber machine guns at ranges acceptable in tactical warfare. If only rockets are desired, as many as 32 5-inch HVARs may be loaded on a single aircraft.

"Let me point out that in a salvo in this last configuration, one aircraft exceeds the potential destructive power of one salvo from eight four-gun batteries of 105 mm guns."