



## VINSON WARNS AGAINST CUT IN AIR PROGRAM

### Aircraft Makers Employing Unique Methods to Overcome Obstacles

From the standpoint of complexity, today's high-performance planes and their pre-war predecessors are no more alike than a grandfather's clock and the new atomic chronometer, a survey of industry engineering advances would indicate.

While performance has increased sharply since VJ-Day, so has complexity, and manufacturers must employ every bit of ingenuity they have in order to solve near-baffling engineering problems.

Flight near and above the speed of sound has created difficult challenges for both the designer and builder. The designer has had to devise thinner yet stronger wings and structures, new fuselage shapes, and provide for many complicated control systems and devices. The airframe producer has had to develop machines for forming new metals, new tools and processes for machining these metals, and new type production tools and jigs for assembly.

#### Glass Tools

As a means of avoiding tie-ups occasioned by critical metal shortages, one manufacturer has developed a method of making production tools and parts from molded laminate. Several thicknesses of fibreglas cloth are treated with special resins, molded to shape, and baked until as strong as steel. This development will save both time and expense, and protect the industry from shut-downs should our supply of strategic metals be cut off in a future war.

A plane that flies 11 miles a minute must have super-thin wings, both in structure and surfacing, yet strong enough to withstand stresses as high as 18 tons per running inch.

#### Explosive Rivets

In developing thin wings it has been necessary to use thick skins and then mill them down to a taper to save weight. For strength, double-skin construction has been employed. This has required development of explosive rivets to fasten the inner skin in position, for ordinary rivets could not be fastened from inside the enclosed structure.

Since aircraft require so many different un-conventional shapes, metal forming has long been a problem. But one company has come up with

—See "Unique Methods" page 4—

### Wants Steady Output



Congressman Vinson

### Plane Industry Is Vital Factor In U.S. Defense

Written especially for *Planes*

By

Honorable Carl Vinson  
Democrat, Sixth District of Georgia  
Chairman, Committee on Armed Services  
U. S. House of Representatives

Adoption of a definite long-term aircraft program is the most important single requirement for our air defense. Only with such a clear-cut program, faithfully adhered to, can the nation possibly hope to bring costs down and still produce an adequate defense force.

Recently the Hoover Commission's studies of government organization have rightly suggested the imperative need for economy. But our national security, as analyzed by the Finletter Commission and the Congressional Board, requires a minimum air arm much larger than present levels. Altogether, then, these reports make crystal-clear the importance of careful planning of the air power program.

#### Congress Must Act

Last year, speaking on the floor of the House, I pointed out to the Congress that we had adopted the first year of what appeared to be a sound five-year aircraft program—for the 70-group Air Force and Naval Aviation. The point that the country had embarked upon the only course which could guarantee it adequate air power was buttoned down.

I know of no development that should change the decisions arrived at by the Congress last spring. The Congress meant to endorse a long-term program then. I believe we should now take action to remove whatever doubt may remain as to what we intended doing last spring.

Perhaps a five-year program is not enough. It may be that we should have a seven-year program in order to develop a plan for our security in the air providing us the maximum in both safety and economy. Certainly the five-year program is the minimum, and I am going to insist that the Congress adhere to it and take action to make that program as fixed and definite as can be done under our Constitution. In return for such a program we will look forward to and will demand substantial improvement in efficiency of production with

—See "Aircraft Program" page 2—

### U.S. Forest Service Men, Airplanes Team Up to Guard Our Resources

Use of planes for wildlife management and forest fire fighting has increased about 1,000 per cent in the last 30 years, from a few patrol flights by Army planes in 1919 to more than 5,000 hours of flying in 1948, the U. S. Forest Service reports.

Among the leading pioneers in the development of new uses for planes,

the Forest Service, a branch of the Department of Agriculture, now is using a wide range of models, particularly for spotting and fighting fires. When they started fire patrols in 1919 they relied on World War I Jennies. Today either under contract or owned by the Forest Service, are several dozen aircraft, mostly late model transports, jungle-hoppers and helicopters but including four Ford tri-motors.

#### Extend Foresters' Reach

Chief value of planes in wildlife management is that they make it possible to extend activities to remote areas and largely overcome inaccessible winter weather. Planes are used for counting animals on ranges, such as elk, moose, antelope and sheep. They spot beaver dams and houses, and by radio hookup with a ground officer, the aerial forester can make it tough on fish and game law violators.

Major role of planes in managing America's 600,000,000 acres of forest land has been transportation of supplies, such as medicine, food, camp equipment, and tools into isolated regions.

Probably the only airplane saw mill in the world is operated by the Forest Service out of Missoula, Montana. When they need a ranger station or lookout built in the back country, this portable mill is flown in, assembled, put to work, and then flown out again.

Besides showing farmers and

—See "Forest Service" page 4—

### The Woodsman's New "Seven League Boots"



Demonstrating how aviation has extended the forester's reach, a helicopter under contract by the U. S. Forest Service lands atop a burned-out California peak.

## 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.

AIA was founded in 1919 as the Aeronautical Chamber of Commerce, and the name changed to Aircraft Industries Association in 1945.

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

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

Los Angeles Office: 7046 Hollywood Boulevard, Los Angeles 28, California.

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

## Engineering and Continuity

The airplane is one of the most carefully engineered products used by man. It goes almost without saying, therefore, that the aircraft industry places more reliance upon scientific research and engineering skill than any other manufacturing industry.

This is by no means an overnight development. The relatively simple airplane of World War I became a pretty complex piece of machinery by 1939. In the early '30's, one engineering expert could design and develop an airplane. By 1939-40 dozens were required. Now, for the modern, complex mechanical marvel, powered by revolutionary new turbo-jets, equipped with radio, radar, and electronic firing controls, able to operate up to 60,000 feet and under all conceivable types of climatic conditions, literally hundreds of researchers and engineers are required.

Obviously, nothing is more important to national security than that a nation possess at all times the complement of engineering talent required to keep the nation in the forefront of aeronautical progress.

Yet various members of this Association have found that shortages of engineers and tool makers are becoming increasingly serious. The major aircraft companies are seeking qualified engineering designers, draftsmen and laboratory specialists, as well as template, die, pattern and form block makers, jig tool designers, die finishers, master layout men, and mill machinists.

Quite a paradox results. The aircraft industry is undergoing the greatest scientific revolution it has ever experienced. The nation faces one of its more critical periods in international relations. Our aircraft companies have just initiated an expansion program. Yet under these conditions, the companies are already troubled by a shortage of engineers and skilled technicians.

The paradox well illustrates one of the basic problems of our national security—the need for continuity in aircraft development and procurement. Engineers and other technicians in the past have been reluctant to go into the aircraft industry because of the uncertain nature of employment. Moreover, it has been easy for the relatively stable peacetime industries to recruit and take away the trained technicians, skilled craftsmen and engineers of the aircraft industry because these civilian industries could promise more stable employment along with other benefits.

Memory of the swift demobilization of production "teams" in 1945-6 is a major barrier to recruiting and retraining the skilled craftsmen, scientists and engineers the industry needs.

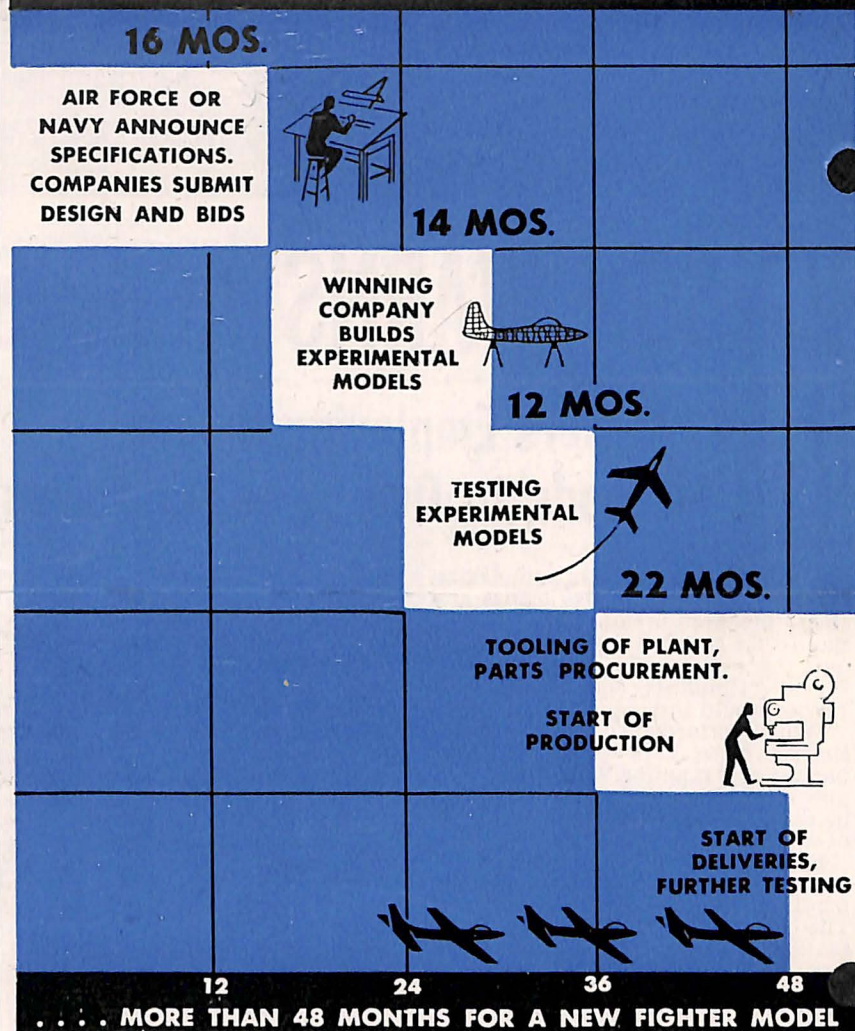
Easily the most encouraging recommendation to come out of the surveys conducted last year by the President's Air Policy Commission and the Congressional Aviation Policy Board was their emphatic assertion of the need for continuity in aircraft development and procurement. Their forthright pleas were more responsible than any other factor for the start of the five-year program adopted by Congress when it passed the Supplemental National Defense Appropriations Act of 1948. The statements issued by the Board and the Commission and repeated on the floor of Congress, concerning the need for continuity and for a long-term program, gave considerable basis for feeling that the principal problem in aircraft designing and engineering—namely retention of the necessary corps of skill and knowledge—could be solved.

The current difficulties of the aircraft companies in trying to recruit skilled labor and the necessary aeronautical scientists and engineers highlights, as perhaps nothing else does, the all-important need for a sustained program.

Oliver P. Echols

President, Aircraft Industries Association of America, Inc.

## Why a 5 Year Procurement Plan? PRODUCTION OF NEW COMBAT PLANES MUST BE SCHEDULED FAR AHEAD OF NEED



"Planes"

## AIRCRAFT PROGRAM

(Continued from page one)

*Lower unit costs on aircraft supplied to our Armed Forces.*

Costly Hit or Miss Policy

Our traditional practice of authorizing sudden expansions in our defense forces, and especially in the aircraft programs, and then a year or two later resorting to drastic cut-backs—even scrapping—of the programs is exceedingly costly. The starting and stopping of production programs necessitated by such hit and miss procedures raises costs all along the line.

Of far greater importance, however, is the effect upon the aircraft industry. It is very expensive to build up an aircraft production line with haste. It is flagrant waste if a year later we scrap that aircraft production line solely to justify some budget goal.

The waste of this planless procedure becomes even more apparent if a new crisis arises and the country is once again forced to go through the whole time-consuming costly process of rehiring laid off people, building up new production teams, and so on.

But even more important than the economy factor, we must remember also that reliance upon a fixed long-term program is the only way of assuring that we at all times have a going aircraft industry, capable of rapid expansion. Such an industry is absolutely vital to our security.

## Defense Expert

Representative Carl Vinson, Democrat, of Milledgeville, Ga., whose plea for a long-term aircraft program is featured in this issue of *PLANES*, is one of the best-informed men in Congress, particularly on matters of national security.

Now chairman of the House Armed Service Committee, Mr. Vinson served 15 years as Chairman of the House Naval Affairs Committee. He was a member of the famous Morrow Board of 1925 responsible for the Air Corps Act of 1926 and the Air Commerce Act of that year.

## Missouri Is Air-Minded

President Truman comes from one of the most air-minded states in the union, judging by what Missouri accomplished in aviation education during 1948.

Six state colleges conducted aviation workshops during the summer, with attendance of 17,300. Missouri reports 74 movies were shown and more than 100,000 pieces of air age literature distributed during these workshops.

During the year, 32 airport tours were conducted, resulting in 900 educators or students taking first flights.

# Whole Population of Williamsport Turns Out for "Air Power Day"

Written especially for Planes

By

John E. Person, Jr.  
Secretary, Sun-Gazette  
Publishing Company  
Williamsport, Pa.

Even inmates of the city's jails were allowed to leave their cells to watch the aerial demonstration on Air Power Day at Williamsport, Pa.—first community in the nation to hold such an observance.

Purpose of the event was to help bring to every individual in the community a realization of the importance to our national security of Air Power—a modern air force, a stable aircraft industry, and a sound air commerce. It was sponsored by the Aviation Committee of the Williamsport Community Trade Association—the local chamber of commerce.



John E. Person, Jr.

## Big Air Show

At the committee's request, the U. S. Air Force participated in the observance. It provided speakers, a ground exhibit, and aerial demonstrations by P-80 jet fighters and a six-engined B-36 bomber—world's largest. The 148th Fighter Squadron, National Guard, also took part, landing over a flight of six P-47's.

Modern aviation's speed and reach was brought strikingly home to the public in the aerial demonstration. The huge B-36 flew up from Fort Worth, Texas, and returned—a trip of 3,200 miles. And the jets dashed over from Washington in a scant 20 minutes at 500 mile-an-hour speeds.

A flash from Washington announcing the takeoff of the jets was broadcast over Williamsport's station WRAK. At the same time sirens and whistles at industrial plants and fire stations sounded. School children marched from their classes to school grounds and offices and factories recessed work. Jail inmates were allowed to go into the courtyard and up onto the roof. Hardly had this alerting been completed when the jets made their first pass over the city.

## Whole City Watched

An estimated nine-tenths of the city's 50,000 population watched from streets, windows and housetops.

Thousands also saw the ground exhibit set up on a roped-off downtown street. It consisted of a B-29 fuselage along with special windows cut into the sides and a special ramp built alongside, and examples of modern guided missiles.

Civic leaders at a luncheon heard Brig. Gen. Albert A. Kessler, Jr., Deputy Chief of Staff, Materiel, USAF, discuss the 70 Group Air Force program and the need for a stable aircraft industry. A brochure distributed at the luncheon described Air Power and Williamsport's part in it.

The Air Power Day program was carried into the city's schools with motion pictures, assembly speeches, and special classroom projects. Such things as bulletin board displays, aircraft hobby displays, class visits to the airport, pupil talks, and scrapbook collection of newspaper clippings on Air Power were utilized.

## COMPLEX NEW PLANES LBS. OF INSTRUMENTS CARRIED ON FLIGHT TESTS

**1937 BOMBER NEEDED  
50 LBS. OF INSTRUMENTS**

**NEW TYPE BOMBER  
REQUIRES 1,970 LBS.**

"Planes"

Williamsport's morning and evening papers, the Gazette-Bulletin and the Sun, and the Sunday weekly, Grit, as well as radio station WRAK, cooperated with the Community Trade Association in publicizing the activities. A reporter survey following the event showed how widespread was public understanding of Air Power Day objectives.

# PLANES QUIZ

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

1. A recent inventory showed (a) 61 per cent; (b) 95 per cent; (c) 48 per cent of Air Force planes were World War II types.
2. True False. A national of the USSR can hold a CAA commercial pilot certificate.
3. Production of airline transport type planes in 1948 reached (a) 843 units; (b) 170 units; (c) 316 units.
4. How many colleges are conducting Air ROTC training, (a) 1,251; (b) 12; (c) 100.
5. It is 3,173 auto miles from New York to San Francisco. By airline it is (a) 2,606; (b) 1,500; (c) 2,381 miles.
6. When was the world speed record for



# The Proposed U. S. Budget and Military Aviation

## THE NATIONAL DEFENSE BUDGET:

(submitted by the President January 10, 1949)

Air Force	\$4,600,000,000
Navy	4,600,000,000
Army	4,500,000,000
U.M.T.	800,000,000
Stockpiling	525,000,000

## AIRCRAFT PROCUREMENT AND THE BUDGET:

(millions of dollars)	Current 1949	Proposed 1950	% Change
Air Force	2,045	1,640	Down 20%
Naval Aviation	753	693	Down 8%

## RECOMMENDED MINIMUM ANNUAL MILITARY AIRCRAFT PROCUREMENT AND THE BUDGET:\*

Air Coordinating Committee—1945

	Airframe Pounds
Minimum "after" world peace is well assured	30,000,000
Minimum to "cooperate in maintenance of world peace"	60,000,000
President's Air Policy Commission—1948	
Recommended for 1948 (calendar year)	34,000,000
Recommended for 1949 (calendar year)	56,000,000
Congressional Aviation Policy Board—1948	
"Initial strength to mount promptly an . . . successful air offensive"	110,000,000
"Strength necessary to prevent the loss of a war"	63,000,000
Stanford University Survey (quoted by Associated Press 12/26/48)	
"Minimum annual production level"	80,000,000
*Volume provided by Proposed Budget	34,000,000
[Estimated actual deliveries in 1948 calendar year 22,000,000 - 25,000,000 pounds]	

## New Metal in Sight

U. S. metallurgists are nearing the development of a metal to withstand temperatures of 2,000 degrees Fahrenheit, fond hope of jet engine designers, according to Hiland G. Batcheller, Pres. Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Planes now flying are operating at something near 1,600 degrees, Mr. Batcheller testified recently before a joint Congressional committee. In another year or two, he predicted, metallurgists will be up to 1800 or 1900 degrees, and eventually to 2,000.

## "Big 3" Vets Ask More Air Power

The "big three" among America's veterans' organizations, with a combined membership of nearly 5,000,000, are on record this year in support of a drive for U. S. air supremacy, following adoption of a detailed air power resolution by the American Legion.

At conventions which preceded the last national Legion meeting, both the Veterans of Foreign Wars and the Amvets voted to back measures increasing U. S. air strength.

## Ask World Leadership

As a special project, the Amvets are endeavoring to get restrictions lifted from giving of flight instruction under the GI Bill of Rights. In connection with their campaign, Amvets National Commander Harold Keats recently stated "I submit that anything contributing substantially to our world aviation leadership is worth every cent it costs. I submit that anything which saps at this contribution to our supremacy is a cause for alarm and serious misgivings."

The Legion has called for a 70-Group Air Force, together with an adequate Naval air arm, and a succession of five-year aircraft procurement programs, to give America "the strongest striking air arm in the world." It recommends procurement of 5,200 planes annually and states that a long-range aircraft program is needed for "maintaining a rapidly expandable industry."

Atlantic dirigible crossings set? (a) 1936; (b) 1933; (c) 1940.



7. When was the first sinking of a battleship by planes? (a) 1917; (b) 1921; (c) 1941.

8. What will be the overall length, counting hull and flight

deck, of the new 65,000-ton super-carrier the Navy proposes to build? (a) 980 feet; (b) 1230 feet; (c) 1090 feet.

9. For the first three months of operation, the U. S. Airlift for Berlin averaged per day (a) 5,000 tons; (b) 2,100 tons; (c) 3,600 tons.

10. True False. U. S. researchers are working to develop a control center for guided missiles, located in outer space as a satellite of the earth.

## Facts and Figures

Marshal Joseph Stalin's son, Vassili, is a major general and jet pilot in the Soviet Air Force.

CAA tests of a new big transport consumed two miles of movie films, recording as many as 12,000 meter-readings a minute.

In its first 22 months of operation the new Los Angeles airport handled 2,000,000 passengers.

The Turkish government has recently allocated 15,000,000 dollars for the construction of new airports.

There are 102 CAA-licensed aircraft mechanic schools in the U. S.

First flying time between Miami and Buenos Aires was 11 days. Today it is less than 22 hours.

A new 70-ton luxury airliner has been dive-tested at a speed of 498 mph.

An electronic slide rule has been developed that will solve about 90 per cent of all computations required by research engineers.

About 7,600 different tools were required to manufacture one of the latest turbo-jet aircraft engines.

All the planes ordered this year by the armed forces represent less than two weeks' output of the aircraft industry at peak war capacity.

## Vintage 1921



Early Forest Patrol Plane Over Olympia Forest, Washington.

### Forest Service

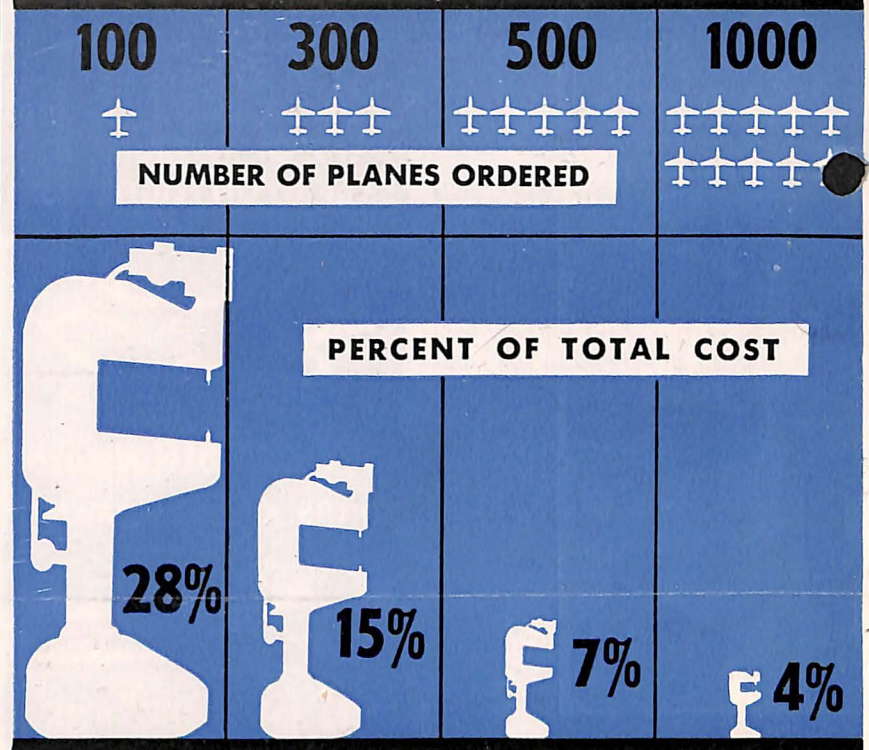
(Continued from page one)

ranchers how planes can both make and save money for them, the Forest Service has developed equipment and techniques vital to national security. Their parachute experiments, started in 1939, not only speeded the development of cargo and personnel chutes but demonstrated feasibility of airborne troops.

### "Smoke Jumpers"

Laden with equipment and looking like men from another planet in their steel mesh face masks, Forest Service "smoke jumpers" are dropped at the fringes of isolated fires. This saving of time often means the difference between a quick victory and a costly siege. In ten years they estimate they have saved a million dollars in fires.

## WHEN FEW PLANES ARE ORDERED, TOOLING COSTS MORE PER PLANE



"Planes"

### UNIQUE METHODS

(Continued from page one)

a machine, the result of long, careful planning, that not only forms the metal but stretches it at the same time to desired strength. Known as a "stretch former," it is expected to revolutionize this phase of plane production.

In another case, a new metal had to be developed, as well as special techniques of forming and machining it, just to produce a turbine wheel in a refrigerating unit. This wheel, which took six years to perfect, revolves at supersonic speed. The whole unit is no larger than a baseball. But for this device, high speed flight might not have been possible, for at 670 miles per hour, friction raises the cockpit temperature 80 degrees. On a hot day this would turn the cockpit into an oven.

### Industry Schedules Plane Owner Survey

Industrial and agricultural users of personal and executive type airplanes soon will have a chance to tell manufacturers their ideas on improving the utility of these planes, the Personal Aircraft Council of the Aircraft Industries Association announces.

Now being readied for distribution by the PAC are 4,000 questionnaires, to be directed equally to industrial and agricultural interests.

A similar survey conducted on a smaller scale last year evoked considerable comment, provided much valuable data useful to designers, and gave the producers a much-needed insight into the problems of their customers, the PAC reports. This year a special effort will be made to determine how many employers consider ability to fly an important qualification for prospective employees. From replies to this query it is hoped to find evidence strengthening the position of veterans seeking to take flight instruction under the GI Bill of rights.

The new survey will be the first concentrated user survey aimed at the great agricultural and ranching areas, where aircraft now are considered as necessary a piece of equipment as tractors, reapers, etc.

## Japanese Wings To Stay Clipped

Any re-birth of civil aviation Japan, even for such peaceful uses as forest patrol, crop dusting, or disaster relief, must await the writing of a peace treaty with Japan, according to the Far Eastern Commission of the Allied Powers.

### Can't Own Planes

For the duration of the occupation the USAF or Army is responsible for any such services that normally would be performed by civil planes.

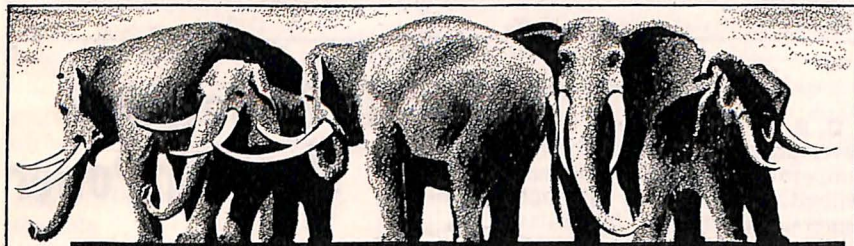
Policies developed under the Potsdam Declaration prohibit the re-establishment of war industries during the period of occupation. This extends to "the development, manufacture or assembly of civil aircraft; and the participation by the Japanese Government or Japanese nationals in the ownership or airborne operation of civil aircraft," says the Commission.

### Answers to Planes Quiz

- (b).
- False. To qualify for a pilot certificate a foreigner must be a citizen of a government which grants reciprocal pilot privileges to U. S. citizens.
- (b).
- (c).
- (a). And by air it is a matter of hours, vs. days by auto.
- (a). In June, 1936, the German dirigible Hindenburg crossed from Ireland to Newfoundland in 22 hours, 50 minutes.
- (b). In July, 1921, seven U. S. Army bombers sank the German vessel Ostfriesland off the Virginia Capes.
- (a).
- (c). And the British were hauling an additional 1,100 tons per day.
- True.

## PLANE VIEWS

from A.I.A.



INDUSTRY DESIGNERS ARE STUDYING A NEW HIGH SPEED FIGHTER WITH WINGS SO STRONG THEY'LL WITHSTAND STRESSES OF NEARLY 18 TONS PER SQUARE INCH!

NAVY'S NEW BIG PUNCH!  
65,000 TON AIRCRAFT CARRIER

50 FEET LONGER THAN THE HEIGHT OF THE CHRYSLER BUILDING!

FLIGHT DECK COULD ACCOMMODATE 3 FOOTBALL FIELDS!



ALL THE PLANES ORDERED THIS YEAR BY AIR FORCE AND NAVY COULD HAVE BEEN MANUFACTURED IN 2 WEEKS AT PEAK WORLD WAR II OUTPUT!