



planes

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Government Units In 43 States Use Modern Airplanes

A substantial fleet of publicly-owned non-military airplanes is now in service throughout the United States in specialized work where the use of planes not only has become routine but has been established as the most economical and practical methods available.

A total of 343 aircraft are owned and operated by states, cities and other political subdivisions, police departments, colleges health commissions and similar public agencies, a study of Civil Aeronautics Administration records reveals.

All but five of the 48 states have fleets of publicly-owned civil airplanes, according to the current license records of CAA.

Conservation Uses

A state-by-state resume of aircraft shows the following ownership records:

Alabama (11)—Eight owned by colleges; one by the State Department of Aeronautics; two by the State Department of Conservation.

Arizona (4)—Four owned by junior colleges.

Arkansas (6)—Six owned by colleges and universities.

California (20)—Colleges, high schools and school districts, six; State Aeronautics Commission, three; counties and sheriffs' offices, four; State Fish and Game Department, one; County Mosquito Abatement Districts, four; State Department of Education, one; Kern County Forestry and Fire Department, one.

Colorado (3)—State Game and Fish Department, two; Pueblo Junior College, one.

Industrial Development

Connecticut (2)—Two owned by State Aeronautics Department.

Delaware—none recorded.

Florida (29)—Game and Fresh Water Fish Commission, one; various county anti-mosquito control districts, 11; schools, including county and state boards of education, 14; boards of county commissioners, two; Florida Board of Forestry and Parks, one.

Georgia (1)—State Game and Fish Commission, one.

Idaho—None recorded.

Illinois (41)—Illinois University Institute of Aeronautics, 31; State Department of Aeronautics, five; Military and Naval Department, one; other colleges and schools, four.

Indiana (3)—State Aeronautics Commission, one; State police, one; Board of School Commissioners, one.

Iowa (2)—Iowa Aeronautics Commission, two.

Kansas (1)—Industrial Development Commission, one.

—See 43 STATES page 4—

Air Forces Shrink



USAF

Based on aircraft procurement levels established in the 1951 Budget, the Air Force will continue to operate with only 43 of its 48 groups equipped with modern planes.

NAVY AIR

By 1961, based on currently proposed procurement levels, the Navy and Marines will be able to operate only 3,000 airplanes compared with 6,223 in 1951 and 10,713 in 1949.

Source: Hearings before House Appropriations Subcommittee.

Use of Air Force Jets Urged For Tests In Airline Service

Written Especially for Planes

By
C. R. Smith, President
American Airlines

America is today the undisputed leader in world air transport operations. However, developments of others, including our British and Canadian friends, in the field of new propulsive media, dictate prompt action on our part if we are to retain our leadership.

A long first step in the right direction can be taken by early prosecution of one of the several proposals to operate current military jet aircraft in a long-haul civil cargo operation. Such a pilot plant operation should start at the earliest date consistent with the absolute and recognized need for an acceptable safety standard with respect to design and operation of the aircraft and jet power plant. To start without such a consideration could do untold dam-

age to the long range jet transport program of the nation.



C. R. Smith

From such a day-in-day-out transcontinental jet operation, which would span the nation in some seven hours, we could learn a lot:

1. *Power Plant*—Today's military jet is basically the same power

plant that will propel tomorrow's jet transports. The more rapid accumulation of experience in stable cruising power conditions under a transport operation will be directly applicable to the military as well as the commercial jets of the future. From it we should learn for example:

(a) The basic requirements for maintenance; the frequency with which they are met; and the manpower and cost demands in meeting them.

(b) The allowable period between overhauls; the problem of overhaul and the manpower, parts and overall costs.

2. *Fuel Consumption*—High fuel consumption is a characteristic of current jet experiences. The pilot operation should permit a broad education in this field; we should be able to pin down the range of the fuel consumption characteristics of the power plants involved and more importantly, we should be able to devise and test operating and maintenance techniques to reduce fuel consumptions.

No "Paper" Answers

3. *Navigation and Traffic Control*—What are the solutions for navigation and traffic control problems created by the introduction of 500 mph jet aircraft into our present patterns? Efforts to work out these answers on paper are meaningless; full exploration and practical operation are the only ways to be sure of what we are up against.

4. *Upper Air* — High altitude soundings give us a *theoretical* picture of the upper air conditions—velocity and direction of movement, temperatures encountered, turbulence, etc. *But again* only actual tests with adequately instrumented aircraft and intensive flight crew debriefing, will give us the *real picture* on which we must predicate future aircraft designs as well as criteria for passenger and crew safety and comfort.

Benefit to Military

5. *Ground Operation*—Jet operating problems are not all in the air. We may need to modify aircraft design, ground facilities and operating procedures as a result

—See JET TESTS page 2—

British Government's Jet Transport Program Costly in Time and Money

The British have spent at least \$300,000,000 in government money over the past eight years to design and build their postwar civil transport planes, including their jet and turbo-prop prototypes.

The program started with a definite government plan as far back as 1942 and frequently has been referred to by the Ministry of Supply as "this vast national venture."

Plans were changed frequently as the undertaking progressed and when private designs were developed many of them were taken over and added to the government program. Consistent support in time and money has been given by the British government since 1942 to aircraft designers and builders for 10 types of transports. Precise figures on the cost cannot be compiled due to drastic changes in valuation of the pound sterling.

American manufacturers have designed, financed and produced five transport types in the postwar

era—the Lockheed Constellation, the Douglas DC-6, the Martin 2-0-2, the Consolidated Convair-Liner, and the Boeing Strato-cruiser, plus the Beech executive transport used as a feeder. Virtually all the world's major airlines now operate some of these craft. The Lockheed plane was already announced for production when World War II started. Announcement of the other designs or potential postwar aircraft came in 1944-45, but under U.S. military policy construction of civil transports as such was not commenced until after the war ended.

In 1942, as officially reported by the British Select Committee on Estimates, "the Government decided to take anticipatory action to safeguard the postwar development of British civil aviation." Originally five types of transports were conceived as necessary but changing concepts and developments resulted in a total of 11

—See BRITISH page 3—

MODERN AIRPLANES REQUIRE 4 TIMES AS MANY MAN-HOURS



WORLD WAR II TYPE

TODAY'S TYPE more costly and complex

The construction of today's military airplanes requires four times as many man hours as comparable World War II types. A modern plane weighs twice as much and its greater complexity requires twice as many man hours per pound of airframe weight.

SOURCE: TYPICAL AIRCRAFT COMPANY.

"PLANES"

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

The Increased Importance of Preparedness Planning

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

The aircraft industry has long regarded realistic, up to date industrial mobilization plans as among the most important requisites of our national defense. Conscious as aircraft manufacturers are of their own responsibilities for increased production in an emergency, they are particularly anxious that everything be undertaken in the way of advance planning which is shown by experience to be helpful in the mobilization task. A large proportion of the testimony submitted by aircraft manufacturers to the President's Air Policy Commission was devoted to this important subject of planning for the mobilization of our resources: manpower, materials and equipment.

In the present situation there are several new factors that more than ever increase the importance of preparedness planning. These factors suggest the need for fully staffing the planning agencies, beginning with the National Security Resources Board and, in turn, for industry to lend its full out effort in providing those government agencies with the assistance they require.

As new factors not experienced in any previous emergency we may cite our obligations under the North Atlantic Treaty and the Mutual Defense Assistance Program. In World War I our allies produced much of the material we used and in World War II our nation gained a head start on the production task in advance of actual involvement owing largely to the orders placed here by the British and the French. Now the situation is reversed. Under MDAP we in this country are to constitute in effect the industrial arsenal before any fighting begins.

We thus may face a material production problem in the event of emergency much greater than that with which we were confronted in either World War I or World War II. Moreover we must assume the burden of expanding our production immediately without any hope of the substantial assistance received from our allies in World War I or World War II. This clearly heightens the importance of the planning Board and the industries charged with the production of war materiel.

The budget situation and the need for economy provide still other potent arguments for intensified preparedness planning. Great Britain is the only one of our allies possessing a substantial aircraft production industry. Yet, because of the financial strains imposed on Britain's economy, aircraft production in that country is being sharply reduced. Here in America the procurement for the Navy and the Air Force has been reduced to levels causing real concern to General Eisenhower as expressed in recent Congressional hearings.

The meaning of these reductions to the preparedness planner should be quite clear. The lower the strength of the air striking arms the greater is the task of re-equipping and re-building those arms in an emergency. The bottleneck in any such re-building task usually results from the inevitably intense competition for materials, manpower, and machinery rather than the training of pilots or crews.

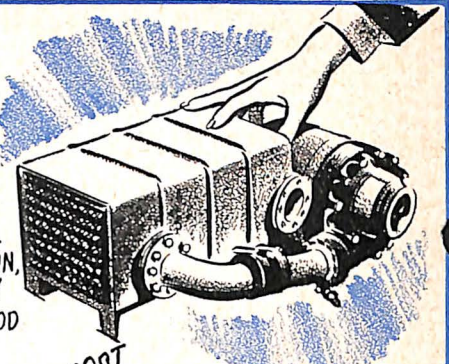
Thus the economy-forced reductions in our air striking arms and in the procurement of weapons such as aircraft focus especial emphasis on the need for comprehensive mobilization planning to reduce the period required to expand production in an emergency.

But there are other factors that make the situation markedly different from that which prevailed in World War I and World War II. The advent of turbine powered aircraft has made the modern

(Continued on page 3)

PLANE VIEWS

A 14 POUND
REFRIGERATOR COOLS THE COCKPIT OF A MODERN JET FIGHTER WHEN TEMP. OFTEN REACHES 190°F. ITS OUTPUT COULD PROVIDE DOMESTIC REFRIGERATION FOR 100 TYPICAL FAMILIES. (WITHOUT PRESSURIZATION, WATER VAPOR IN THE HUMAN BODY WOULD BOIL AT 55,000 FT; BLOOD WOULD BOIL AT 63,000 FT.)



THE COST OF PREPAREDNESS PROPELLERS ALONE FOR ONE INTER-CONTINENTAL BOMBER TODAY COST \$168,000—\$62,500 MORE THAN THE PRICE IN 1945 OF ONE ENTIRE MEDIUM BOMBER.

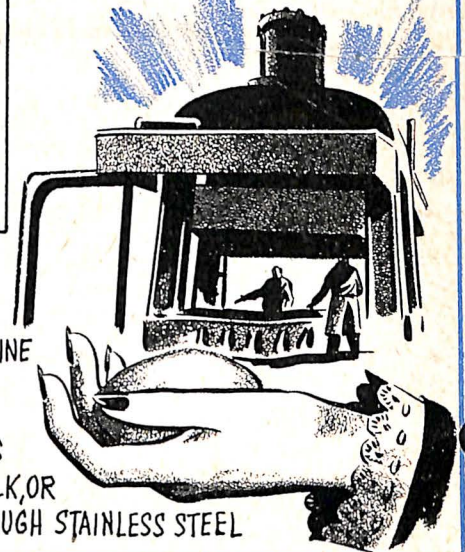
\$6.95 DRESSES BY AIR!

NEW YORK FIRMS FIND IT PROFITABLE TO SHIP \$6.95 DRESSES TO EUROPE BY AIR. HUNG ON REGULAR HANGERS! NO PACKING NEEDED.



POWERFUL BUT DELICATE!

A 20-TON STAMPING MACHINE IN AN AIRCRAFT FACTORY IS SO PRECISE IT CAN GENTLY CRACK THE SHELL OF AN EGG WITHOUT BREAKING THE YOLK, OR FLATTEN A THICK PLATE OF TOUGH STAINLESS STEEL



BY AIRCRAFT INDUSTRIES ASSOCIATION OF AMERICA

JET TESTS

(Continued from page one)

of practical tests which will answer these questions: Does the threat of exhaust damage necessitate special engine-starting facilities specially located? Are special runup areas needed to protect runway pavement? What spacing is possible between taxiing aircraft? Does the necessity for conserving fuel warrant towing the aircraft to the runway end?

These are only a few of the many compelling reasons for early exploration of the practical problems of jet operation. The benefits of the experience will be equally accessible and valuable to the military and commercial air arms of the United States.

Facts and Figures

In Western Australia an air freighter firm, Air Beef Proprietary, Ltd. flies 27,000 pounds of beef a day 170 miles to Wyndham for shipment—saving loss of weight which occurred when cattle were driven overland.

Air parcel post service is now available between the U. S. and Japan. Time saved over surface shipping is three weeks.

"Airport Turfing," a booklet which summarizes the best methods of growing grass on airports, is available from the U.S. Government Printing Office for 25c.

Air Quotes

"There is one factor in the administration of research that should not be overlooked. This



Hunsaker

is the extreme pressure which arises, when budgets must be curtailed, to approve only those research projects which have an immediate bearing on current development.

"In the long run this is a fatal policy.

"Research naturally leads development. If the reverse were attempted, only minor improvements of existing types would result. Procurement-minded, short-range research could never produce such radical developments as supersonic flight, atomic power and radar.

"There is no surer way to fall behind than to perpetuate the old and forego the new by thinking only of today's production and procurement problems."

—Jerome C. Hunsaker,
Chairman
National Advisory Committee
for Aeronautics

Preparedness Planning

(Continued from page 2)

combat plane one of the most complicated instruments known to man and the production of this weapon is a vastly more complex procedure than has been the case in the past. A great amount of special purpose machinery, specialized tooling and more costly and better tooling than that utilized in World War II is involved.

There are, of course, many other types of war material that impose heavy drains on our scientific and industrial techniques and resources. The atomic bomb program, the radar networks, the technical requirements of anti-submarine warfare, the newest tanks and missiles will also demand special purpose machinery, skilled manpower, and many of the identical critical materials. So, too, will many civilian lines which must be continued even in war.

This is, of course, the fundamental problem for the National Security Resources Board to resolve. It is the task of that agency to determine how much of our raw material, of our manpower, and our industrial machinery can be devoted to military production and how much must be reserved for civilian needs. In view of the factors that make the whole mobilization task so much more urgent and so much more difficult than ever before, it is imperative that government and industry join together and expedite the planning procedures with every facility available to them.

Proposals to Foster Jet-Powered Air Transports

Following, in capsule form, is the current status of the various proposals which have been under consideration for the development of jet transport aircraft in the U.S.—a field in which Great Britain is generally conceded to be far in the lead:

1. Complete financing by the Government of prototype and design and development. Embodied in Brewster-Hinshaw bills. Approved by Aircraft Industries Association and Air Transport Association. Favored by Defense Department, provided funds are appropriated separately from regular military appropriation. Disapproved by Budget Bureau as not in conformance with President's program.
2. A Government purchasing corporation which would buy the aircraft and lease them to users. Embodied in Johnson-Kennedy bills. Not widely favored.
3. Government financing of testing and certification costs (exclusive of manufacturing costs). Unanimously favored by Air Coordinating Committee. Now before Budget Bureau to determine if it conforms with President's program. Also favored by AIA and ATA.
4. Use of current jet bombers for airline type tests. Engine and airframe builders anxious to participate in such tests.
5. Plans for jet transports so far announced: Consolidated Vultee Aircraft Corp. and Allison Division of General Motors now fitting up Convair-Liner turbo-prop version for tests. Douglas, Boeing and Martin have announced designs for application of turbo-prop powerplants to their current transports. Lockheed and others have developed design studies of pure jet transports, and a formal announcement has been made by Boeing.

PLANES QUIZ ✈️

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

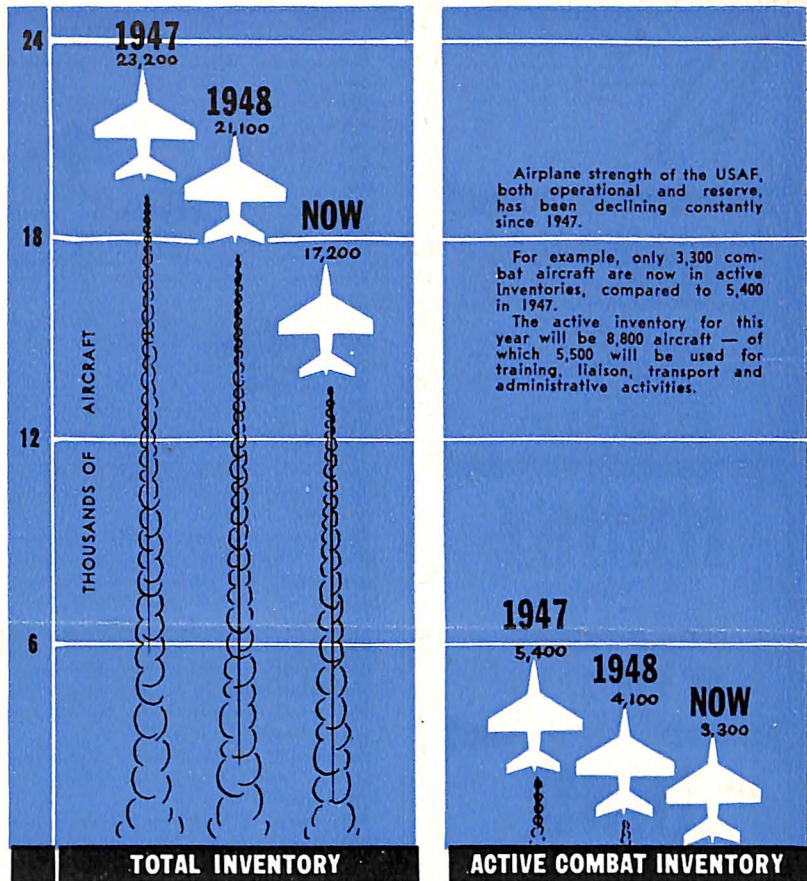
1. The heaviest bomb load ever carried by an airplane was (a) 42,000 pounds; (b) 60,000 pounds; (c) 84,000 pounds?
2. The power of a jet engine increases with the speed of its flight. True? False?
3. Parts and materials in a modern airliner represent (a) one-fourth the plane's cost; (b) one-third; (c) one-half?
4. Crop dusting with light planes costs as low as (a) \$1.25 per acre; (b) \$5.00 per acre; (c) \$10.00 per acre?
5. The first round-the-world flight took a total of (a) three months; (b) six months; (c) one year?



6. At the present rate of procurement, it is estimated that the Air Force will have in 1954: (a) 34 modern groups; (b) 48 modern groups; (c) 70 modern groups?
7. Small gliders without engines can actually go higher than powered lightplanes. True? False?
8. The altitude record for U.S. rockets is (a) 91 miles; (b) 150 miles; (c) 250 miles?
9. Which has the most effect on airplane propellers (a) heat; (b) cold; (c) moisture?
10. Air mail revenue produced for the government by the scheduled airlines in 1949 was (a) 10% greater than in 1946; (b) 33% greater; (c) 42% greater?



U. S. AIR POWER DECLINES



Airplane strength of the USAF, both operational and reserve, has been declining constantly since 1947.

For example, only 3,300 combat aircraft are now in active inventories, compared to 5,400 in 1947.

The active inventory for this year will be 8,800 aircraft — of which 5,500 will be used for training, liaison, transport and administrative activities.

BRITISH

(Continued from page one)

types financed very largely by the government.

Planning was under the direction of a government committee headed by Lord Brabazon of Tara. In February, 1943, after some 60 meetings, it recommended "immediate action on the design of five new types of aircraft." It assigned priority to a London-New York express landplane which became the Brabazon I.

In August, 1943, the committee brought out its first interim report urging that "no time be lost in the issue of a specification to designers," adding that "if the exacting operational requirements of this service are to be met, financial considerations must necessarily be subsidiary."

Estimates Quadrupled

History of this plane is typical of others in the program. The Brabazon Committee proposed originally a 150,000-pound 25-passenger craft with convertible sleeping berths. As studies proceeded, upon recommendation of the Bristol Aeroplane Co., this was increased to a 250,000-pound plane capable of carrying 70 passengers westbound across the Atlantic and 100 eastbound. Piston engines were used in the first one, but with greater development of gas-turbines, plans were revised in November, 1945, to use eight turboprops in the second. Changes in fuselage and wings were then required and the undercarriage had to be re-designed. In March, 1946, decision was reached to build two prototypes.

Target date for the first flight was April, 1947; but the Brabazon I did not actually fly until Sept. 4, 1949. Target date for Brabazon II was the Autumn of 1949; it is still under construction.

The authoritative British magazine "Flight," reporting on costs

of the project, said "Some 6½ millions for the Filton assembly hall and runway, represent about four times the estimated cost of the two prototypes alone; but, granted an adequate operational life, a small fleet of Brabazons may yet earn millions in dollars." The Brabazon is still labeled experimental, though intended for use on Atlantic and Empire air routes.

Bought by Government

The deHavilland Comet, the world's first pure jet transport to fly has a similar history. It is a 36-passenger, four-engined plane developed concurrently with the Brabazon and first flew in July, 1949. As of last November authoritative sources estimated that the Ministry of Supply had spent around \$1,000,000 on the airframe alone and "expects the project to cost more from government funds as time goes on." Eighteen of the Comets are on order by the Government-owned airlines.

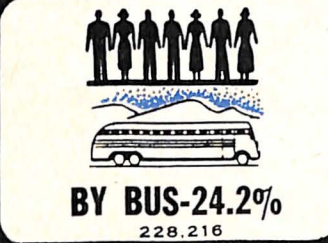
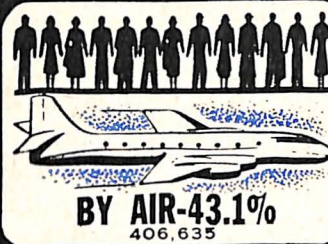
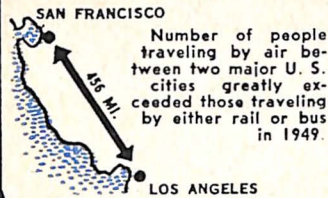
Other transport types developed largely with government funds include: the Ambassador, Viscount, Apollo, Tudor, Hermes, Bristol 175, Saunders-Roe 45 Princess, and Cierva Air Horse, a transport helicopter. These planes range from small 14-passenger feeders up to 50-passenger craft for Atlantic Empire routes.

Britain's biggest bid to date in the small transport market is the Dove, a feeder-type plane developed privately by deHavilland. It has been sold in several countries and a total of 300 are being built.

Facts and Figures

A rocket developed by an eastern aircraft manufacturer is designed to attain a maximum speed of 5,800 miles per hour. (The moon could be reached in 4½ hours at that speed.)

First Time in History



SOURCE: CALIFORNIA P.U.C. "PLANES"

Answers to Plane Quiz

- (c) A USAF heavy bomber has carried two 42,000-pound bombs from Fort Worth to Muroc, Calif., dropped them, and returned to Fort Worth non-stop.
- True. In one typical fighter the jet engine develops about 4,600 horsepower at 375 miles per hour, but at 600 mph turns out eight to 10 thousand hp.
- (c) One-half. One of the best-known passenger planes has components ranging from tiny aluminum rivets at 80c a pound to engines at \$43,000 each.
- (a) Pennsylvania authorities estimate the cost of crop dusting by ground methods at \$25 per acre, by air at \$1.25 per acre.
- (b) Three Army planes flew around the world in 1924 with elapsed time of almost six months. Actual flying time was 15 days, 11 hours. It is now possible to go around the world by scheduled airline in four days, 23 hours, and 47 minutes.
- (a) Thirty-four modern groups. Attrition and obsolescence will consume existing planes faster than the rate of replacement.
- True. John Robinson of Arcadia, Calif., soared to a record altitude of 33,800 feet in a single place sailplane early this year.
- (c) 250 miles for a two-stage rocket fired at White Sands, N.M.
- (c) Moisture. Neither heat nor cold has much effect upon a propeller's resistance to fatigue. Moisture can reduce fatigue strength but engineers have developed protection against corrosion.
- (c) Air mail revenue produced by the airlines last year was 42% greater than in 1946, a gross increase of about \$125,000,000.

43 STATES

(Continued from page one)

Kentucky (4)—State Department of Aeronautics, four.

Forestry, Wild Life Work

Louisiana (8)—State Forestry Commission, one; State Department of Public Works, one; State University, one; New Orleans Aviation Division, one; State Department of Wild Life and Fisheries, four.

Maine (10)—State fish and game and fisheries departments, seven; State Aeronautics Commission, two; State Forestry District, one.

Maryland (2) State Aviation Commission, one; Tidewater Fisheries Department, one.

Massachusetts (2) State Aeronautics Commission, one; Plymouth County commissioners, one.

Michigan (9)—Department of Conservation, two; State Aeronautics Department, five; Western Michigan College, two.

Minnesota (12)—State Conservation Dept., one; State Board of Vocational Education, one; State Bureau of Game and Fish, two; State Department of Aeronautics, two; Minnesota University, six.

Mississippi (3)—State Aeronautics Commission, one; State Forestry Commission, one; Sunflower Junior College, one.

Missouri (5)—State Highway Patrol, four; State Conservation Commission, one.

Montana (2)—State Aeronautics Commission, one; Fish and Game Commission, one.

Nebraska (4)—State Dept. of Aeronautics, three; Game and Forest Parks Commission, one.

Nevada—None recorded.

New Hampshire—None recorded.

New Jersey (1)—Teterboro Instrument Flight Academy, one.

New Mexico (10)—State Board of Vocational Education, three; State Highway Dept., one; schools, six.

Helicopters for Police

New York (15)—State Commerce Dept., one; State Conservation Dept., six; Suffolk County Mosquito Control, two; schools, two; New York City Police Dept., four. (Note: New York Police Dept. craft include one helicopter; two or three more are to be bought this year. Westchester County police also plan to buy one helicopter.)

North Carolina—None recorded.

North Dakota (1)—State Game and Fish Dept., one.

Ohio (17)—State highway patrol, two; Ohio State University, nine; State Agricultural Experiment Station, two; State Aviation Board, two; Central Vocational High School, one; State Forestry Division, one.

Oklahoma (18)—State Aviation Commission, two; Oklahoma City, one; Game and Fish Commission, one; Norman Civil Air Patrol, one; colleges and boards of education, 13.

Oregon (2)—City of Portland, two.

Pennsylvania (14)—Pennsylvania Community Property Dept., one; State Property and Supply Dept., three; Williamsport School District, 10.

Rhode Island (1)—Aeronautics Division, Department of Public Works, one.

South Carolina (3)—State Aeronautics Commission, two; State Port Authority, one.

South Dakota (2)—State Aeronautics Commission, two.

Tennessee (2)—Bureau of Aeronautics, one; Game and Fish Division, one.

Budget Slashes U.S. Navy Defense; Must Use Many Second Line Planes

The 1951 budget will result in a sharp decrease in the naval defense of the United States.

In recent testimony before the House appropriations subcommittee, both Navy Secretary Francis P. Matthews and the Chief of Naval Operations, Admiral Forrest Sherman, pointed out that the provisions for naval aviation and anti-submarine warfare in the budget were not "adequate."

With only 817 aircraft scheduled for procurement during 1951, compared to an attrition rate of approximately 840 aircraft per year, Secretary Matthews said the rate of modernization of the Navy's air arm would be "below the standard required to maintain this force in first line condition."

The testimony brought out the extent of the severe reductions in combat effectiveness of Naval aviation from the 1950 levels, which in turn represented substantial reductions from 1949. Carrier air groups are reduced over 35%, Marine air squadrons over 47%, patrol air squadrons over 33%, and anti-submarine squadrons over 12%.

Will Drop to 3,000

Rep. Robert L. F. Sikes (D., Fla.) brought out that in 1949 Congress had authorized the Regular Naval air arm to operate 8,035 aircraft but that the new budget would only permit the operation of 4,389 aircraft, a reduction of nearly 50 per cent. In discussing this reduction, Rep. Sikes inquired if the defense picture was any less complicated today than in 1949, and if the defense problems of the Navy are now less serious. Admiral John H. Cassady replied, "I would say that the difficulties are increasing."

Although the operating aircraft strengths proposed for the current year are at the lowest levels since the war, Admiral Cassady stated that even this modest force could not be satisfactorily equipped with modern planes. He said that with these procurement levels and by using up second line planes a force of this size could be operated until 1954, but that by 1961 the Navy would be unable to support more than 3,000 operating aircraft in

Universities and Colleges

Texas (32)—Universities and colleges, 25; game, fish and oyster commissions, two; Wharton County sheriff, one; State Forestry Service, two; State Aeronautics Commission, one; State Public Safety Dept., one.

Utah (3)—State Agricultural College, two; State Aeronautics Commission, one.

Vermont (1)—Vermont Aeronautics Commission, one.

Virginia (13)—Game and Fish Commission, one; State Police, four; State Aeronautics Division, two; Virginia Polytechnic Institute, five; Commission of Fisheries, one.

Washington (9)—State Game Dept., one; Department of Fisheries, one; public schools, seven.

West Virginia (9)—State Conservation Commission, one; State Aeronautics Board, one; West Virginia University, seven.

Wisconsin (2)—State Aeronautics Commission, one; State Conservation Dept., one.

Wyoming (1)—State Adjutant General's Dept., one.

which there would be an increase in proportion of second line aircraft.

To maintain a modern force at the levels established for 1951-6, 233 operating aircraft for both the regular and reserve forces—Admiral Sherman said that "it will be necessary to buy on the order of 1200 aircraft a year," an increase of 383 aircraft over the present program.

Women Qualified For Many Aviation Roles

Recent years have brought a marked gain in the number of women taking an active part in the technical aspects of everyday aviation.

The latest count, published by the Civil Aeronautics Administration in February, 1950, showed a total of 9,678 women pilots—compared to 5,122 in July, 1945.

Of the current list, 8,115 held private pilot certificates, 1,561 held commercial ratings, and two had airline transport pilot ratings.

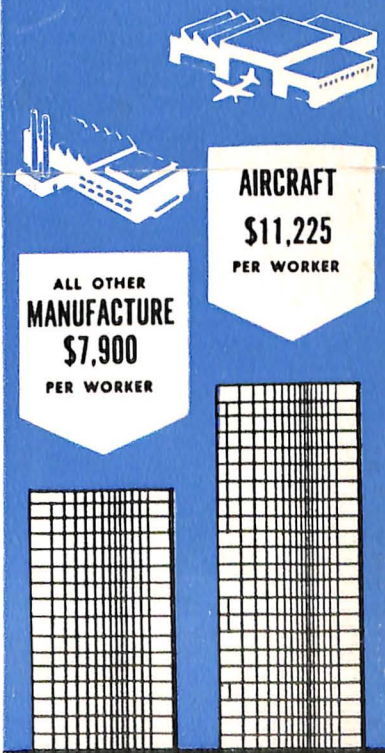
California reported the largest number of women pilots with 1,154. Texas was next with 473.

Other airman ratings held by women included: 1,811 air traffic control operators; 1,221 ground instructors; 400 parachute technicians; 47 mechanics; 16 glider pilots; and four dispatchers.

Women had approximately 20 per cent of all the air traffic control operator and parachute technician certificates on record.

WHY AIRPLANE COSTS ARE HIGH

Comparative Amounts Invested for Each Production Worker in Machines, Equipment, Plant and Materials:



SOURCE: National Ass'n. of Manufacturers and Typical Aircraft Plant. "PLANES"