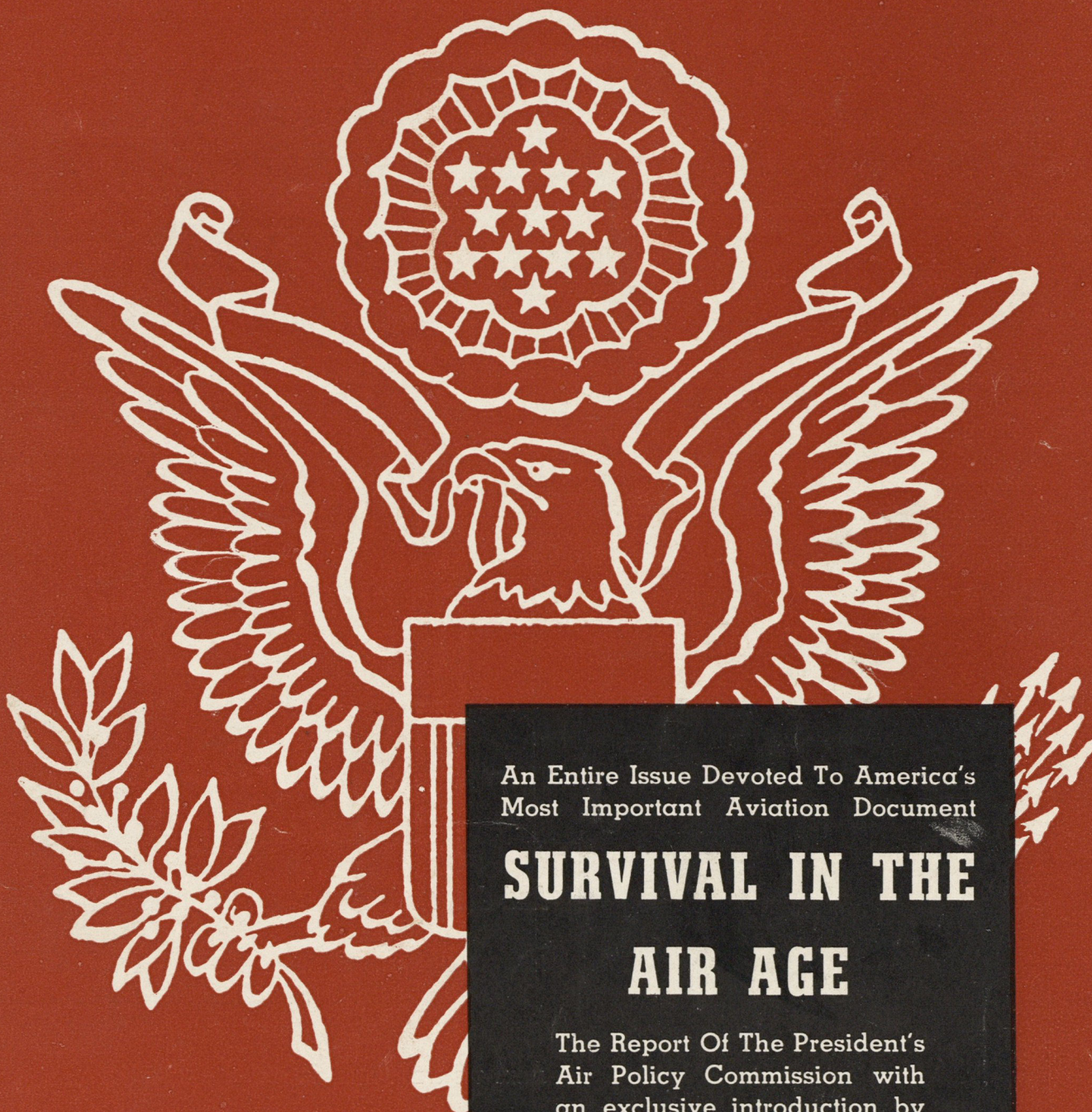


AIR FORCE

THE OFFICIAL JOURNAL OF THE AIR FORCE ASSOCIATION, MARCH, 1948



An Entire Issue Devoted To America's
Most Important Aviation Document

SURVIVAL IN THE AIR AGE

The Report Of The President's
Air Policy Commission with
an exclusive introduction by

CARL NORCROSS

Chief Editor of the Report



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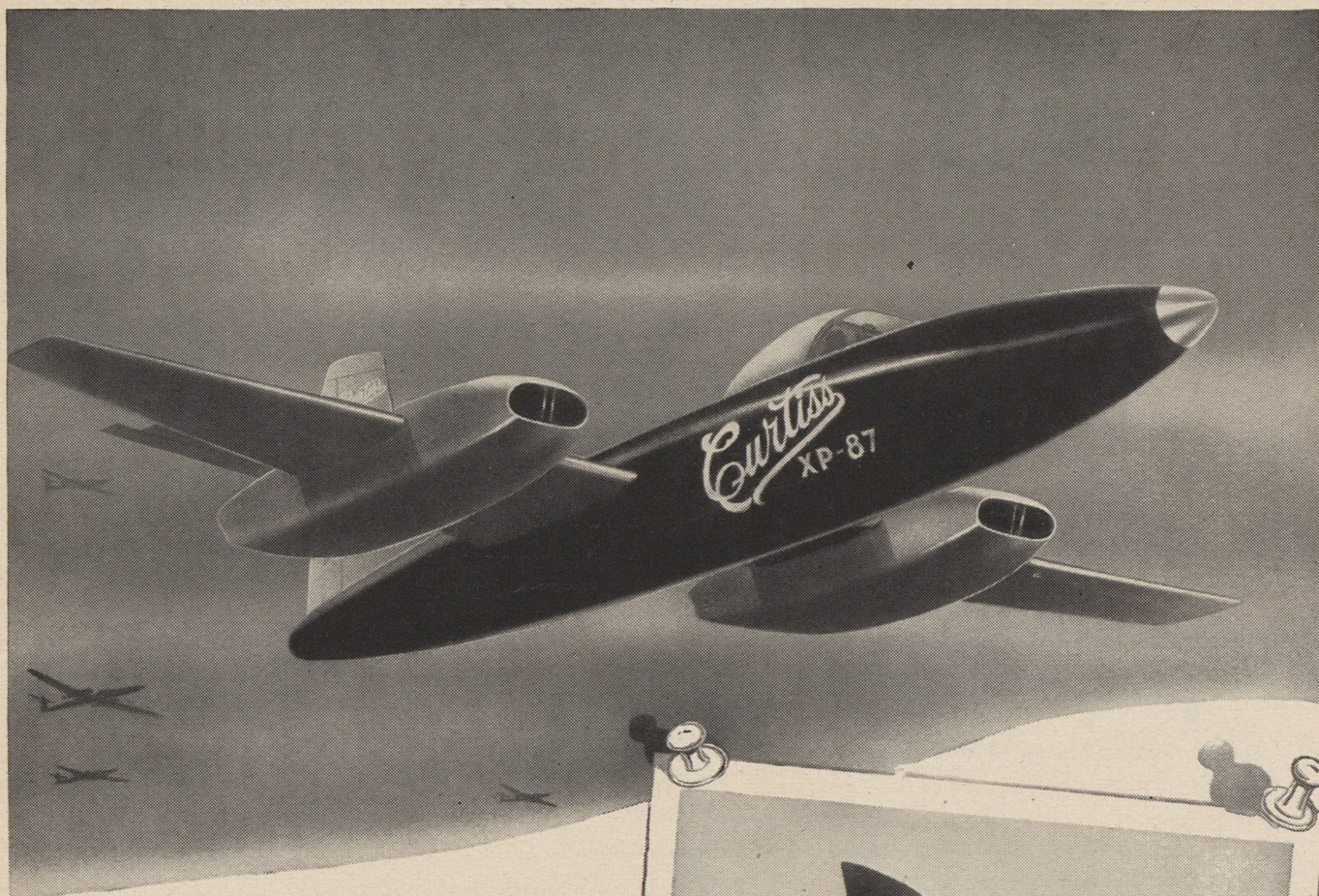
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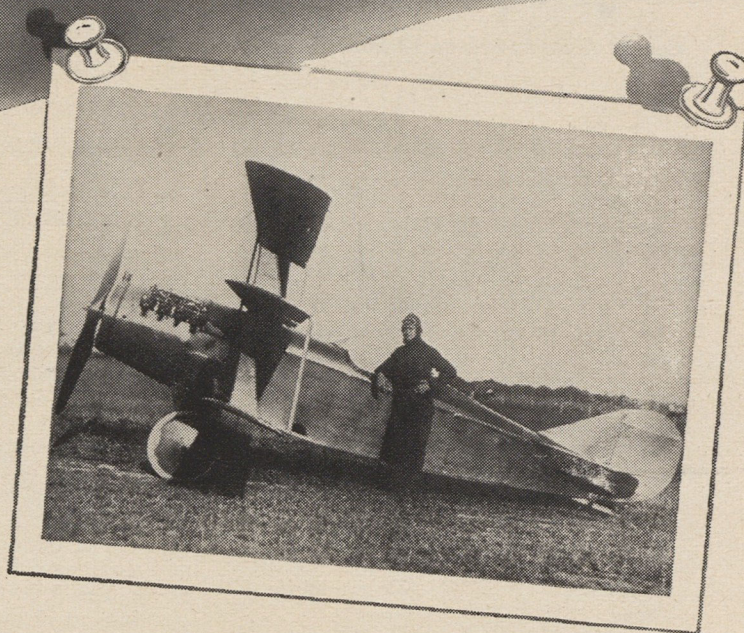


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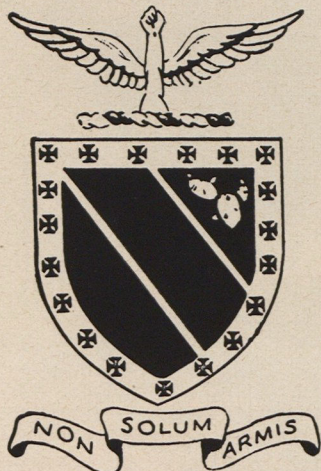
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3rd Bombardment Group



Coat of Arms Approved 17 January 1922

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Hqrs. 3rd Attack Gp. and 60th Serv. Sqdn. redesignated Hqrs. & Hqrs. Sqdn., 3rd Attack Gp.; 1 Sept. 1936; redesignated 3rd Bombardment Gp. (Light), 15 Sept. 1939. Hqrs. Sqdn. disbanded 22 July 1942; designation changed to Hqrs., 3rd Bombardment Gp. (Dive), 28 Sept. 1942. Designation became Hqrs., 3rd Bombardment Gp. (Light), 25 May 1943, and Hqrs., 3rd Bombardment Gp, Light, 20 Aug. 1943.

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Battle participation campaign awards WW II:

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Papua	Luzon
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VOL. 31, NO. 3

MARCH, 1948

AIR FORCE

THE OFFICIAL JOURNAL OF THE AIR FORCE ASSOCIATION

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SURVIVAL IN THE AIR AGE

(condensed)

An entire issue devoted to the Report of the President's Air Policy Commission

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EDITORIAL

This is it.

Here at last, in the Report of the President's Air Policy Commission, is a workable airpower platform—the kind we have been fighting for both as individuals and as an organization.

AIR FORCE is proud to devote this entire issue to the Report, proud that it alone has readers whose unique airpower interests make possible this type of coverage. They are urged to read the issue from cover to cover, with full knowledge that as reading matter it is sober and heavy. For this is a sober moment, heavy with responsibilities.

The future of airpower is at stake. It rests with the people. And in these fateful months Congress must decide what the people want.

The Report, as a blueprint for national air power, has the organized support of the Air Force Association's nationwide network of state and local units. In addition, each of us has an individual responsibility. We must let our representatives in Washington know we are strong for airpower as expressed in the Report. We must let them know by letters, telegrams, and postcards. With airpower at the crossroads, this is the least we can do.

EDITOR and PUBLISHING DIRECTOR, James H. Straubel

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AIR FORCE IS PUBLISHED BY THE AIR FORCE ASSOCIATION

General Forrest got around

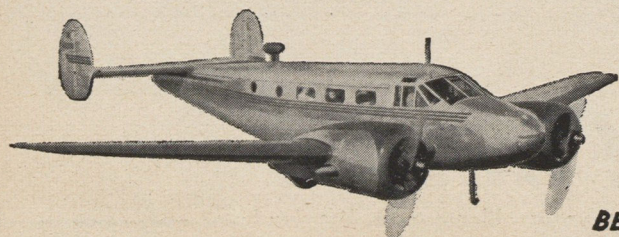


The tactics of General Nathan B. Forrest, famous Confederate cavalry commander, have been studied by military strategists since 1865. Hitler sent Rommel to Tennessee in the thirties to find the secret of Forrest's success. The answer was *speed and mobility*. General Forrest simply got to more places faster than his competitors.

In today's battle to keep industry rolling at an economic pace, America's leading corporations have found that the nine-place, twin-engined Beechcraft Executive Transport gets their executive staff, technicians and salesmen to *more places faster* than any other means of transportation. They maintain their own schedules,

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Wings for the **ALL-AIR ARMY**

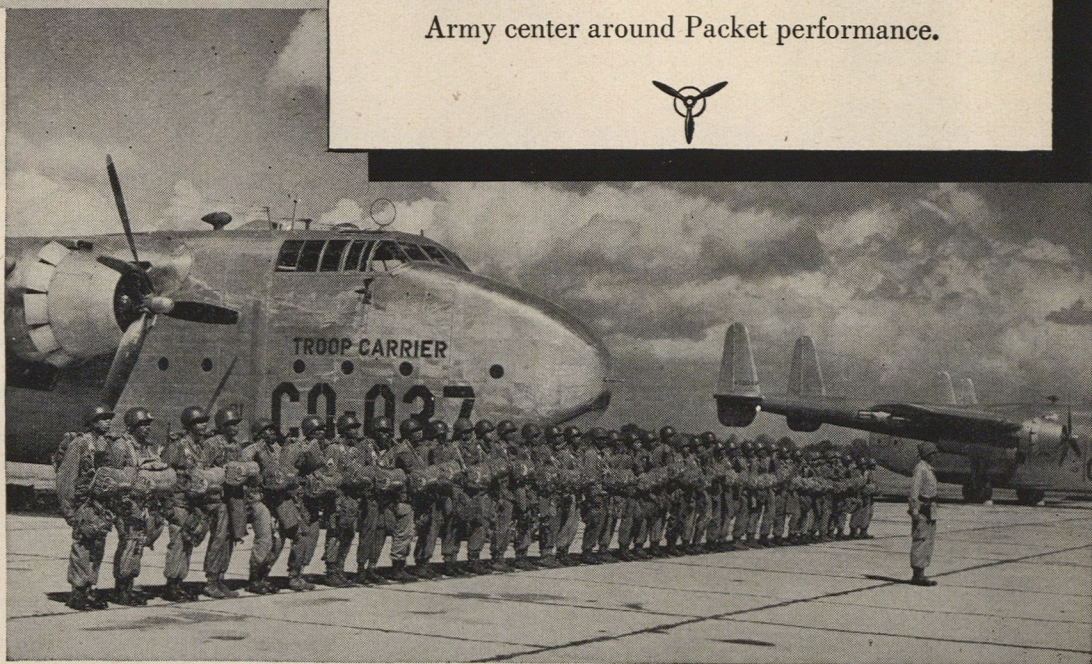
That's a 3-platoon complement of C-82's, the famous Fairchild Packet.

They are carrying 123 men, a fast-hitting, air transportable infantry unit.

The Packet is on duty in ever increasing numbers with the new Army. It lends wings to troops being trained for swift mobility and close ground-air cooperation.

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Fairchild engineers gave the Packet the ability to do many tasks well—so well that the maneuvers of America's new All-Air Army center around Packet performance.

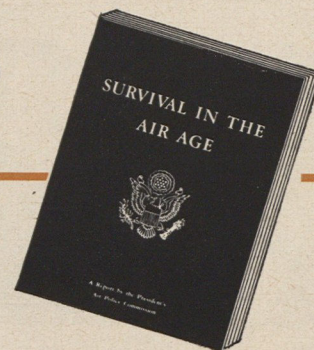


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Survival in the Air Age

The Report of the President's Air Policy Commission (condensed)



THE CHIEF EDITOR OF THE REPORT READS BETWEEN THE LINES:

An Introduction by CARL NORCROSS

Since the end of the war there have been two great events in the life of the Air Force. The first was becoming a separate service equal with the Army and Navy. The second was the Report of the President's Air Policy Commission. These two events, occurring relatively close together, mark a turning point in Air Force history.

In recent years there have been many commissions appointed by Presidents. In the life of political Washington one more commission normally has about the same news value as a publicity-minded Western Senator riding his horse up the Capitol steps. Reports of some commissions get half a column in the newspapers and are seldom heard from again; others catch on and have a real influence on Congress and the public. The Report of the Air Policy Commission seems to have caught on.

It was released one Tuesday night in January and in the next few days was discussed on radio programs, by newspapers and magazines in all parts of the country. The last time I looked, survey figures covering a cross-section of the nation's leading newspapers showed that 55% of the papers carried the original Report story on the front page; the rest, with few exceptions, on the second page. Eighty percent of these papers published editorials on the Report; all but three were favorable. For *Time* magazine it was the story of the week. *Life* gave it four pages. Walter Winchell's eulogy—that it was the greatest document since the Declaration of Independence—was a pleasant piece of hyperbole, but undoubtedly helped to focus attention on the Commission's recommendations.

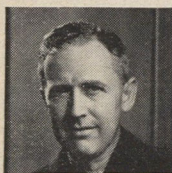
I am convinced that one of the chief reasons the Report received such favorable attention was because word got around among Washington newspapermen that here was a commission composed of impartial, sensible gents who seemed to know what they were after, and who were working in a business-like manner. As you may remember from the newsreels of the past year, not all Washington hearings are con-

ducted that way. The five men of the Air Policy Commission were well chosen. Their names and backgrounds are listed elsewhere and need not be repeated. Only one, Vice-Chairman George Baker, could be called an aviation expert, as he had been a member of the Civil Aeronautics Board for about two years before the war and had been an Air Force colonel during the war. John McCone, in addition to his wartime shipbuilding operations, had operated a B-29 modification center in Birmingham and his firm had also built airframe parts. But he is principally an industrialist and not an airplane maker. Commission Chairman Thomas K. Finletter is a lawyer. Arthur Whiteside is a business man, and Palmer Hoyt a newspaper publisher. They composed a well-balanced group. Each man, because of his background, was able to make a strong and individual contribution to the final result. Fortunately for all of us, each had a wonderful sense of humor. And it always interested me that although they were appointed by a Democratic President, only one Commissioner was a Democrat. Three were Republicans and one was an independent.

The five-man Commission was only a part of the working force. There was also a staff of about 20 men borrowed from Government and from various organizations and business firms. Over-all direction was given by S. Paul Johnston, Director of the Institute of the Aeronautical Sciences, who has been closely connected with aviation affairs for over 20 years.

It was evident from the very beginning that the job would demand a top level organization to match its top level responsibilities. The President had stated in his letters of appointment in July that the Air Policy Commission had been created at the joint recommendation of the Secretaries of State, War, Navy and Commerce, and the Air Coordinating Committee. The Commission, he had explained, was "to make an objective inquiry into national aviation policies and problems." Further, it was to make recommendations that would serve as a guide in formulating "an integrated national aviation policy." The President had pointed out the need in terms of national security and national welfare, but there was little reason to stress the importance of the task. The nation had long been hungry for such a report.

Before I arrived in Washington on September 15, the general subject matter of the Report had already been divided into five fields and most of the consultants appointed. Once the big divisions were settled, it was necessary to decide who should be invited to come to Washington to testify on each of the many subjects which President Truman had asked to be included in the final Report. This list was worked out by the Commission with advice from the staff. Paul Johnston's close acquaintanceship with men in American aviation was of great value here, as he could separate the windbags and cranks from those whose advice was worth getting. The 150 witnesses included the presidents of most aircraft firms and



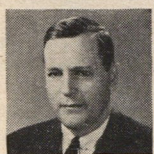
AFA's CARL NORCROSS served as Chief Editor of the President's Air Policy Commission on loan from March of Time, where he is a member of the Editorial Board. One of aviation publishing's leading figures, he has been Aviation Editor of *Fortune*, Managing Editor of *Aviation*, and has authored several books on air subjects. In wartime he was an Intelligence Officer with the 8th Air Force. Now a resident of

Dobbs Ferry, N. Y., Carl is a member of AFA's Westchester County Squadron and on AIR FORCE's Publishing Committee.

THE COMMISSIONERS



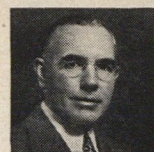
THOMAS K. FINLETTER: Chairman. A conscientious Wall Street lawyer who has piled up votes for "aviation's man of the year" through his distinguished leadership of the Commission. Served as artillery Captain in 1917-18. Was a special assistant to Cordell Hull from 1941-44. Author of the book "Can Representative Government Do the Job?" Was consultant to US delegation at San Francisco conference of UN in 1945. Has been busy since public release of the Report emphasizing that his is a plan for peace—it is not a plan for war.



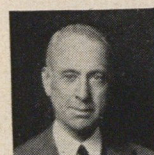
GEORGE P. BAKER: Vice-Chairman. With CAB in 1940 and 1942. Entered Army in 1942. Served on Air Staff 1944-45. In 1945-46 headed Transport and Communications Policy Division of State Department. Now Harvard professor.



PALMER HOYT. Has been a newsman 25 years. Began in Pendleton, Oregon, as sports and telegraph editor. Later moved to the *Oregonian* in Portland. Was with OWI during the war. He is now the publisher of *The Denver Post*.



JOHN A. McCONE. Former president of Bechtel-McCone, West Coast ship builders and war-time operators of AAF modification center in Alabama. Now president of California's Joshua Hendy Corporation, a well-known L.A. iron works.



ARTHUR D. WHITESIDE. With War Trade and War Industries Boards during first war. With peace parley at Paris and London. Member of NRA Board. In last war headed WPB's Civilian Supply. Now president of Dun & Bradstreet.

SURVIVAL IN THE AIR AGE (Continued)

numerous airlines, representatives of many aviation organizations, a number of scientists and many government officials and officers from the military services.

Early in the hearings, newspapermen were impressed with the efficient handling of witnesses. At most hearings of this type, a witness fidgets for an hour or more after his arrival while the man ahead of him rambles on and on. Then when he gets the spotlight, he reads a long speech and after that he answers questions—presuming, of course, that the Commissioners are not too worn out to ask them.

The Air Policy Commission worked more efficiently. Letters were written to witnesses, outlining the main points of the Commission's interests. Those testifying mailed in an eight or ten page statement which was studied by the five Commissioners and by the appropriate staff consultants. Then questions were prepared and a short background statement written about the witness. Then, when he arrived, the Commission knew who he was and what he had done and was familiar with his ideas. There were no lost motions; every minute was utilized.

Those of us who attended the hearings day after day were deeply impressed with the Commissioners' grasp of what for most of them were new subjects, ranging widely from such topics as how the Government makes airmail payments to the characteristics of subsonic versus supersonic missiles. Stenotypist's reports of all testimony were made and copies passed to Commissioners, staff members and to other interested parties and Government agencies. Then digests were made of the testimony and a scholarly cross-indexing system devised that was of great value later when the Report was being written.

In addition to the formal hearings, which were open to the public and reported in the newspapers, there were many private meetings with representatives of the State and Commerce Departments, Army, Navy, Air Force, Bureau of the Budget and with scientists. The Commissioners learned a number of military secrets with the understanding that the Air Force and the Navy, which were the principal agencies concerned, would have a chance later to discuss censorship of any questionable items. But regardless of the type of information received, only one Report was prepared and submitted—the Report which was made public and which is covered herein.

The Air Force and the aviation branch of the Navy realized that their futures might depend on recommendations made by the Commission. So both services did everything possible to help the Commissioners get what they wanted. I gathered the distinct impression that the Navy was on the defensive and considerably worried over whether we might recommend eliminating some of its aviation functions.

However, the Navy came out all right—better than many expected.

The Commission made several field trips that were instructive. The longest was a week spent touring the country in President Truman's new DC-6, the *Independence*. Visits were made to Wright Field, Indianapolis, Wichita, Ft. Worth, San Diego, Los Angeles, Muroc Lake, Hamilton and Moffett Fields, and Seattle.

I had been on a number of junkets to airplane factories and military establishments before, but never had I seen the red carpet rolled out as it was for this party. The trip was a pleasurable one but there was a lot of strenuous work involved. We walked miles through from two to four large airplane plants a day, talked aviation at lunch and dinner and often had meetings at night. Everything was scheduled to the minute. In addition to seeing jet fighters, bombers, new transports and a bewildering array of missiles, there were many opportunities to talk with top people. We all got a realistic view of the troubles that some producers were having due to lack of orders. We also saw the airplanes that were in production, and experimental models of fighters and bombers that might soon be on the lines. At Muroc a special air show was put on for us and all the new planes that were flyable were put through their paces. On later occasions the Commissioners visited half a dozen Eastern airplane and engine factories and also spent a day on a Navy carrier.

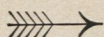
After only a few hearings it became obvious to the Commission that nearly everyone in aviation wanted special favors from the Government. At a press conference one afternoon Charlie Corddry of UP said to the Chairman: "It looks to me like everyone comes to you with his hand out. Everyone wants something." This was certainly true, but in a sense it was what we wanted. We were trying to determine what the Government could do, as well as what it should do, to help aviation.

The Commissioners took their jobs with great seriousness; to sort out and weigh the merits of many conflicting appeals required long deliberation. None of the five, by any stretch of the imagination, could be called a warmonger or a munitions maker. They are peace-loving citizens who abhor war and who believe that the vast expenditures they have recommended for airpower can do the world infinitely more good if spent for schools, housing and other civilized purposes. Chairman Finletter is a staunch believer in world government and has written at some length in its favor. All Commissioners believe the United Nations is the only permanent means to world security. They recognize, however, that the United Nations has not yet reached the stage where we can scrap our defense weapons and rely on the high ideals of the UN to keep us out of war.

(Continued on page 8)

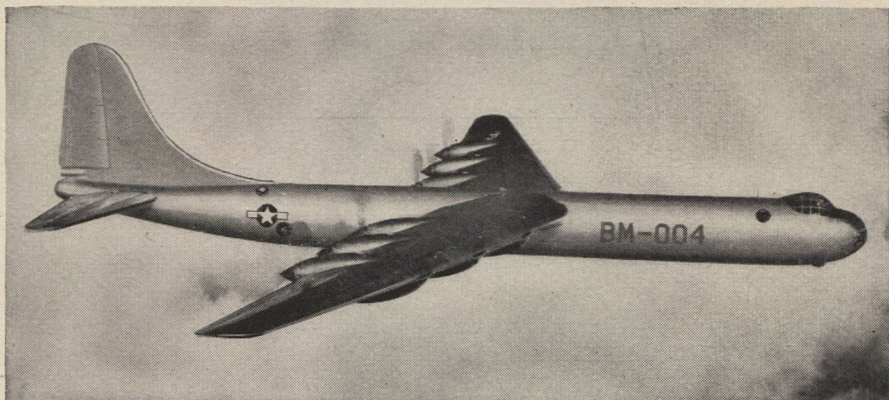
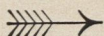
Convair Builds Better Planes

For the
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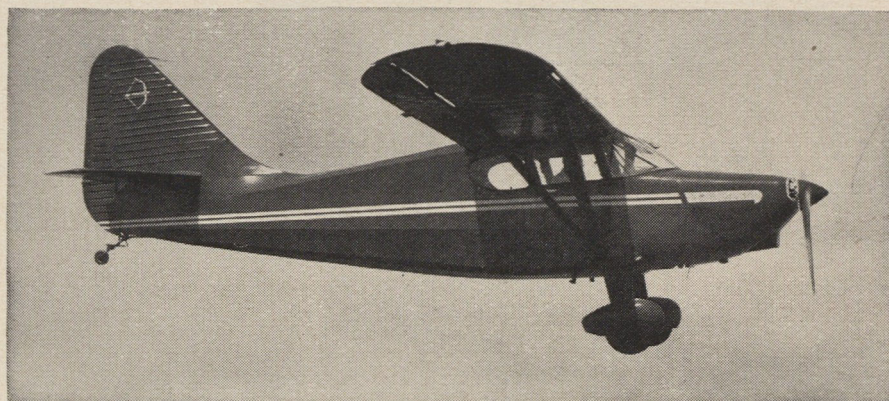
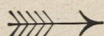
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SURVIVAL IN THE AIR AGE

(Continued from page 6)

"If the United Nations won't provide us with national security," they asked themselves, "what will?" In the course of the next four months they discussed all phases of this question with Government, military and civilian experts. Clear proof that they were facing the problem objectively was given us by the way the Commissioners changed their minds. This, and the fact that they were so long in reaching conclusions, made life extremely difficult for those of us who were trying to prepare drafts for different sections of the Report. But looking back on the process, one realizes that the final recommendations were sound because they were given such careful consideration.

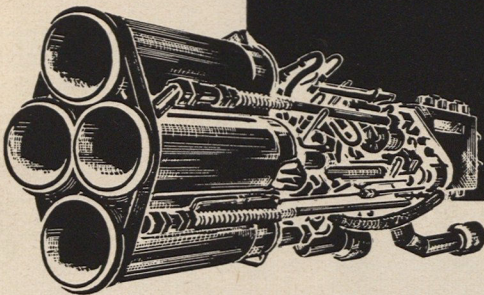
Some of us within the Commission's staff—and I'm sure many outside it—hoped the final Report would be a little more critical of present-day weaknesses in the defense organization. Everyone who had anything at all to do with the war knew that we could have fought it more efficiently if at times things had been different in high places. It soon becomes apparent to anyone in Washington today that despite the Unification Act the three services are, in many important matters, still pulling and hauling in three different directions. The Navy seems jealous of the Air Force. The Air Force at times acts like a boy with growing pains. And the Joint Chiefs of Staff is far from a smoothly running organization. As our Report said, the Joint Chiefs were asked for their air defense plan and none was forthcoming. They didn't have an over-all plan. I, for one, hoped our Commissioners would knock a few heads together.

But there is this to be said for the quiet, restrained Finletter type of journalism as contrasted with the rough-and-tumble (or Drew Pearson) school of writing. The bitter fights over Unification have left scars among Navy and Air Force people that may not heal for years. It would probably be a serious mistake to revive these battles in public. Secretary Forrestal had moved from the Navy Building to his new National Defense offices in the Pentagon while our Commission was in Washington. He had not had time to get the Department of National Defense, and its three sub-divisions of Army, Navy and Air Force, into the new routine. The principles of Unification could not be expected to function in a few weeks time. So undoubtedly the Commission's attitude was right in concentrating on recommendations to get the nation's air defense into the best possible shape in the shortest possible time.

Now people may wonder what comes next.

That depends on Congress. And in Congress the airpower job has been in the hands of the Joint Congressional Aviation Policy Board. There is no doubt whatever that the favorable re-

(Continued on page 48)



DESIGNED TO PIERCE THE SONIC BARRIER

In the regenerative rocket engine which powers the Air Force's XS-1, RMI transformed two decades of unmatched research into the finest of rocket engine design. Adding the developments of experimentation for both the Air Force and the Navy to its own rocketry experience, RMI now is designing for even greater speeds.



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fly the skies...



SHELL will make the fuels they burn!

BECAUSE Shell was the first oil company to establish a major jet fuel laboratory . . . because Shell Jet Fuel was chosen for testing and proving today's record-breaking pursuit planes . . . it's pretty safe to say that Shell will have a prominent role in the future of jet propulsion.

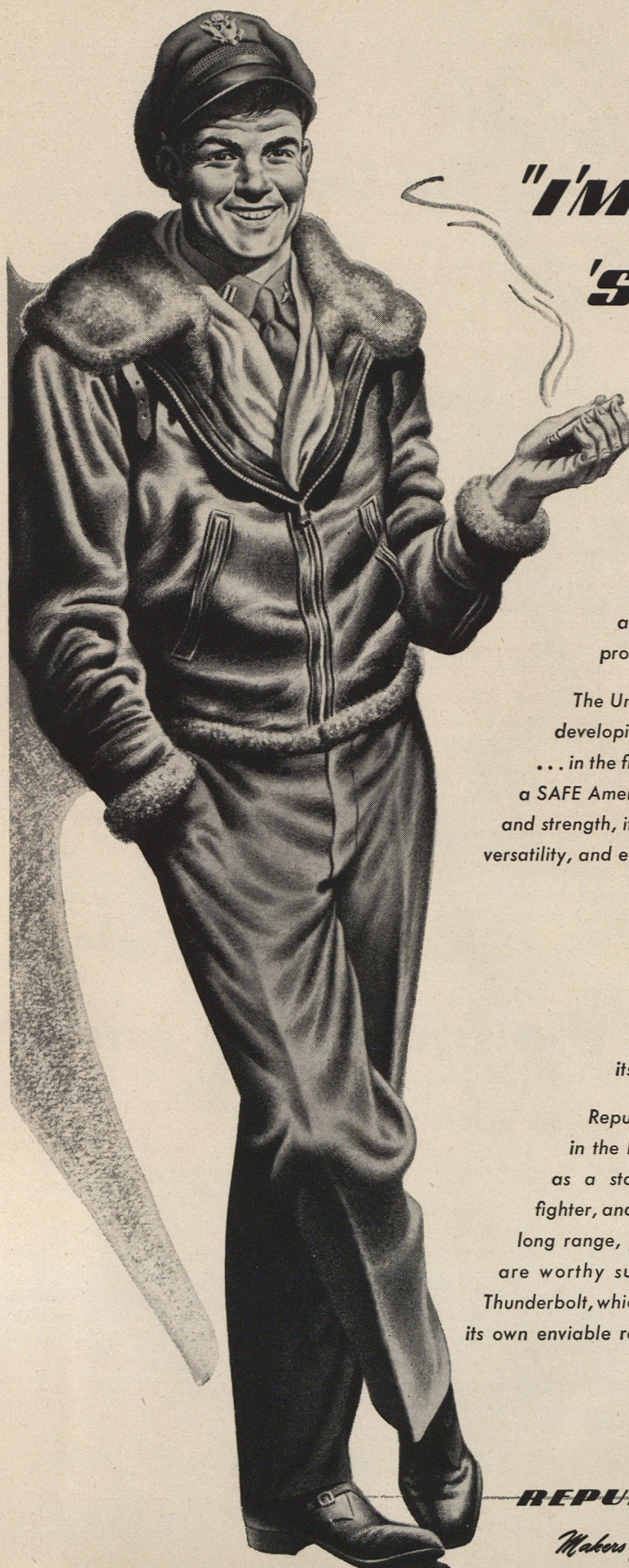
But in the meantime . . .

Today's plane operator can enjoy the superior performance of Shell Aviation Fuels that are blended with the same skill and handled with the same know-how that have made them the favorite of so many major airlines for so many years.



FINER FUELS FOR THE AGE OF FLIGHT

SHELL AVIATION FUELS • AEROSHELL LUBRICATING OILS AND GREASES • SHELL HYDRAULIC FLUIDS



"I'M A 'SCIENTIST' NOW"

Remember the hot rock pilot of just a year or so ago? . . . Well, luckily for all of us, this lad's still around. Today he's likely to be designated as project engineer and be flying research, or experimental planes . . . But whatever the assignment, he's still there . . . doing a job to protect our way of living.

The United States Air Force is alert . . . as ever developing new equipment, training personnel . . . in the firm belief that a **STRONG** America is a **SAFE** America . . . Despite a reduction in size and strength, it is making every effort to retain versatility, and effectiveness.

The aircraft industry too continues to serve its principal customers . . . the people of the United States . . . and the air services which guard their well-being, keeping under peace-time restrictions . . . an alert nucleus of its resources.

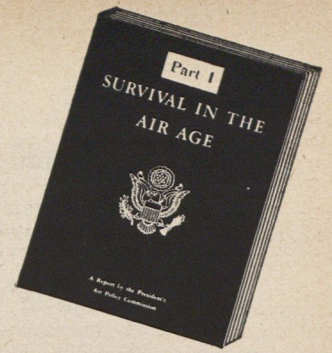
Republic's share of this responsibility is reflected in the P-84 Thunderjet, now going into service as a standard United States Air Force jet fighter, and the XF-12, four-engine, 450 M.P.H., long range, photo reconnaissance plane. They are worthy successors to the Mighty P-47 Thunderbolt, which in World War II established its own enviable reputation.



REPUBLIC AVIATION 

Makers of the Mighty Thunderbolt • Thunderjet • XF-12

Airpower and the National Security



Since world peace and national security are now one and the same, the US must . . .

- ▶ **Develop a new strategic concept of defense based on airpower and build our inadequate Air Force to a position of world leadership**
- ▶ **Expand this Air Force to 70 combat groups and 22 special squadrons, 34 Air Reserve groups, and 27 National Guard Groups**
- ▶ **Outfit this Air Force with a minimum of 12,400 modern planes plus an adequate reserve now estimated at 8100 aircraft**
- ▶ **Increase appropriations for this Air Force by \$2,600,000,000 more than is now scheduled for the calendar years 1948 and 1949**
- ▶ **Allocate to the Navy 10,893 front line and supporting planes, and increase 1948 and 1949 naval aviation appropriations by \$502,000,000**
- ▶ **Consolidate functions within the overall military establishment to increase dollar efficiency, including merger of ATC and NATS**

There was a time when the United States could tolerate with safety a world in which war was the final way of settling disputes among nations. For even if war came the United States could be reasonably sure not only of winning it but even of keeping enemy forces away from its shores. Our geographical position, our Navy, our industrial capacity, our manpower, and the armies, navies, and air forces of nations allied or associated with us, protected us against direct attack in the two World Wars through which we have just passed. But, with the recent revolution in applied science for destruction which is still going on, these safeguards are no longer enough.

Our national security must be redefined in relation to the facts of modern war. Our security includes, as always, winning any war we may get into; but now it includes more than that. It includes not losing the first campaign of the war if the loss would mean that the country would be invaded and occupied. It includes not having our cities destroyed and our population decimated in the process of our winning the first campaign. And it further includes not having our way of life,

and particularly our civil liberties, taken from us in preparing for war. Our national security, when we define it in this way, can be assured only by the elimination of war itself.

World peace and the security of the United States thus are now the same thing. World peace, however, is not yet in sight. We will not be rid of war until the nations arrive at the great agreement to live together in peace and to this end give to the United Nations organization the legal and physical powers under a regime of law to keep the peace. As yet there is almost no sign that this agreement will be made within the future with which this Commission has to deal. The hope that the United Nations will be given authority to prevent war is therefore not one on which we can base our policy of security.

The Commission believes that the United Nations can never develop as a permanent instrument of universal peace except on a foundation of free communication throughout the world. Such freedom of communication must include freedom of travel, freedom of intercourse by mail, telegraph, cable, and radio, and equal availability of news and public information.

AIRPOWER AND THE NATIONAL SECURITY (Continued)

At present there are fixed and impenetrable barriers to freedom of communication. The gathering and transmission of news is subservient to the purposes of state in a large part of the world, with the result that the peoples are not able to reach judgments based on common sets of facts. There is accordingly no common compulsion to eliminate war despite the development of weapons so deadly and efficient as to shock the imagination.

We believe that the understanding necessary for permanent world peace cannot be achieved except on the basis of freedom of travel and communication, the universal availability of news, and the elimination of censorship. In the long run only an informed world can be free and only a free world can be secure.

There are those who believe that peace can never come about by force and that the United States should show the way to peace by disarming. This is not the opinion of this Commission. We believe that it is the policy of the people of this country—and that this policy is right—that before the United States will give up any of its weapons, it will insist that there be set up a foolproof system of security which will assure it that no nation can take advantage of it in its disarmed state. And since the only foolproof system which would give this protection is one which would make war impossible under a system of world law and since the nations have not yet been able to agree to set up this system, unilateral disarmament is not now a possible policy for the United States.

For these reasons the United States must have a double-barrelled policy abroad. It must work to achieve world peace through support and development of the United Nations. At the same time it must prepare to defend itself for the possibility that war may come. Not being able to count on the

Approach to the security program.—The Commission does not subscribe to the proposition that armaments are a guarantee of peace. An authoritarian government bent on aggression may calculate that it can arm better and faster than the nations it has chosen as its victims, and that if it hits hard enough and with no warning, it can conquer. Indeed, an authoritarian government may seek war for war's sake or to divert attention from its internal troubles, even though it may not be certain that it will win.

Nevertheless, the Commission believes that a strong United States will be a force for peace. Our armaments will not guarantee that peace absolutely. But the chances of avoiding a war will be greatly increased if this country has the available force to strike back and to defeat anyone who breaks the peace. A strong United States will be welcomed by all peace-loving nations. The countries who want to live under regimes of freedom will see in our armaments not a threat but an assurance.

Already the payments which have to be made every year on account of past wars and current preparations for possible future wars are draining away a large part of the money and energy of the country that should be applied to better things—things that could add to the wealth of the country and the intellectual and physical well-being of its people. The taxpayers' money goes mainly for war. The Bureau of the Budget has informed us that about 80 percent of the budget for the current fiscal year ending June 30, 1948, is for payments for past wars or for our present Military Establishment. Indeed, the figures show that since 1915 about 85 percent of our total Federal budgets have been spent for war or preparation or payment for war.

And yet, as will be seen, this Commission has been com-

Difficult to Attack

"... it is a policy so well thought out, so sanely presented, so well buttressed by straight thinking that it is difficult to see where it can be attacked except in small details."—*New York Times*

creation, within the future for which it now has to prepare, of a world settlement which would give it absolute security under law, it must seek the next best thing—that is, relative security under the protection of its own arms.

Reluctantly this Commission has come to the conclusion that this relative security is to be found only in a policy of arming the United States so strongly

▶ That other nations will hesitate to attack us or our vital national interests because of the violence of the counterattack they would have to face, and

▶ That if we were attacked we will be able to smash the assault at the earliest possible moment.

The alternative policy—of having inadequate arms in a world in which war must be reckoned with as the final solution of international differences—would be foolhardy. Nothing would be more likely to provoke aggression than the spectacle of an unarmed or inadequately armed United States. This country, therefore, if it is to have even relative security, must be ready for war. Moreover, it must be ready for modern war. It must be ready not for World War II but for a possible World War III.

To realize this double-barrelled policy will be as difficult a task as this country has ever taken on. Nothing less than a reversal of our traditional attitudes toward armaments and national sovereignty can make it succeed.

Our policy of relative security will compel us to maintain a force in being in peacetime greater than any self-governing people has ever kept. Our policy of seeking world order under law is even more difficult. If it is to be successful we will have to reverse all our notions of our sovereign independence and, equally difficult, persuade others to do likewise.

pelled to report that the evidence is overwhelming that even this amount is not enough and that

▶ The Federal Government should increase substantially its expenditures for the Air Force and naval aviation in the years 1948 and 1949, and

▶ Expenditures may be needed in later fiscal years up to the end of 1952 substantially in excess of the 1948 and 1949 figures.

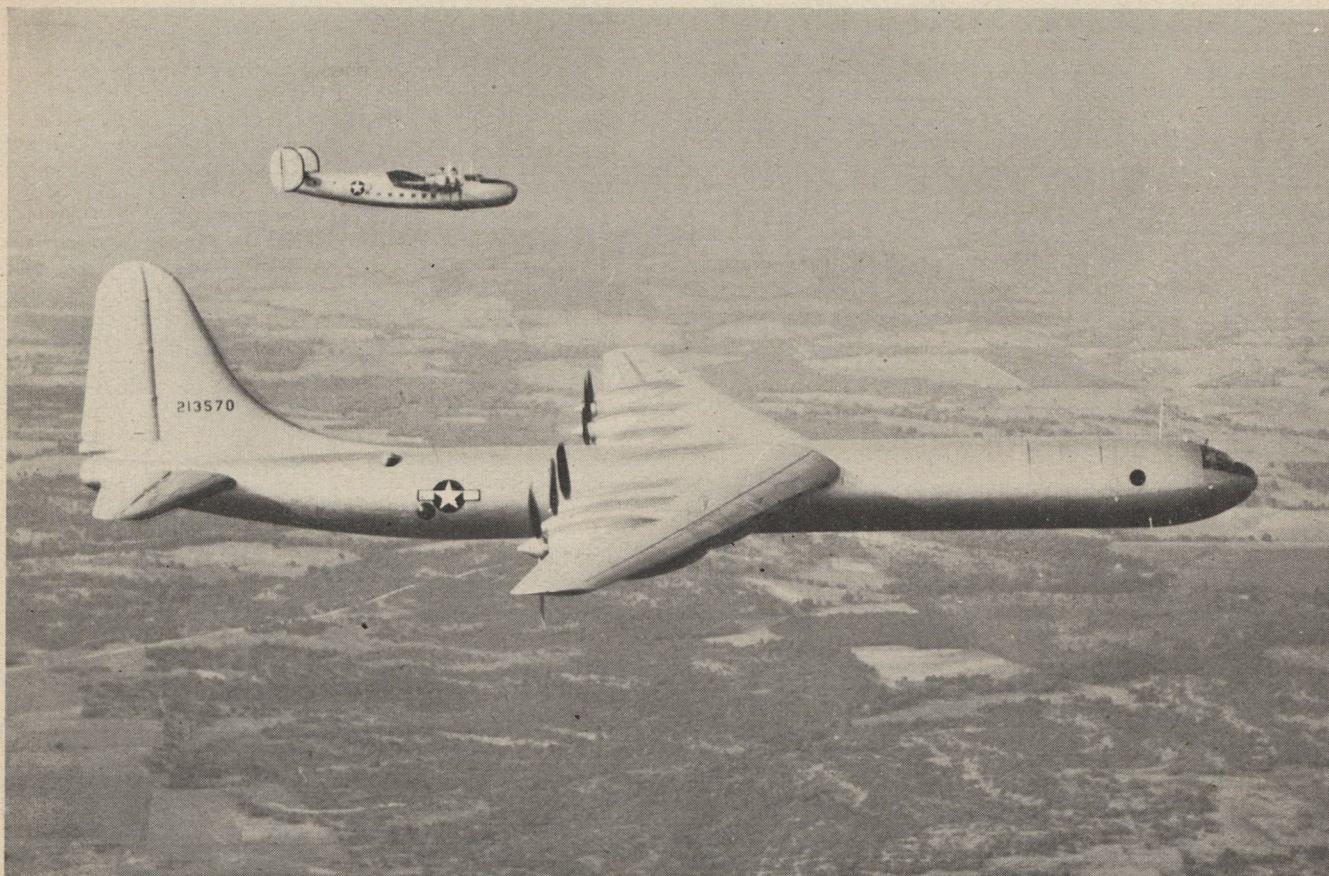
The Commission has reached its recommendations for increased military expenditures with the utmost reluctance. Every dollar spent for military establishments is a dollar to be grudging. Large military expenditures will help to keep taxes high and will drain away from the people a large part of the product of their labor.

For these reasons we have not accepted military estimates without submitting them to critical analysis and we have required that all estimates meet the test of strict necessity under the broad principles as to the strategic needs of the country which are set out in this report.

On the other hand we believe that self-preservation comes ahead of economy. No concession should be made from the principle that our Military Establishment must be adequate for the defense of the country. Economies, desirable as they are, must not be made if making them would jeopardize our safety.

The expenditures which we recommend would be small in comparison with the cost of another war.

The United States can build a Military Establishment which will keep up with any nation and be a powerful force for peace. In our opinion this Military Establishment must be built around the air arm. Of course an adequate Navy and Ground Force must be maintained. But it is the Air Force



Graphic illustration of reason airpower costs come so high. In the last war we paid \$250,000 for a 66-foot B-24. Today a B-36, strategic successor to the "Lib," is two and a half times longer, \$2,250,000 costlier.

and naval aviation on which we must mainly rely.

We have reached this conclusion as a result of prolonged discussions with the Armed Services and with many private citizens who have appeared before us. We believe that it is the overwhelming view of those most qualified to know that the country must have a new strategic concept for its defense and that the core of this concept is airpower.

We need a much stronger air establishment than we now have. The reason for this is that we can no longer follow our traditional procedure of relying entirely on the Navy as our force in being in peacetime. Heretofore the United States has been able to make most of its preparations for war after war began. In World Wars I and II the oceans lay between us and the enemy. Protected by the Navy, and by the land, sea, and air forces of our Allies, we were able to convert our great industrial machine and our manpower for war after war had begun.

This will not be the case in a future war. Our surface fleet can have and does have a supremacy of the seas which is so nearly complete that it can guarantee the safety of our cities and our factories from surface attack by water. This supremacy should be maintained. But there is a new element through which this country may be attacked—the air. And the new weapons which can be delivered through the air make it vital that we protect ourselves from attack by way of this new element. An air attack could be so terrible that we must at once create the best conceivable defense against it. This means an air force in being, strong, well equipped and modern, not only capable of meeting the attack when it comes but, even more important, capable of dealing a crushing counteroffensive blow on the aggressor.

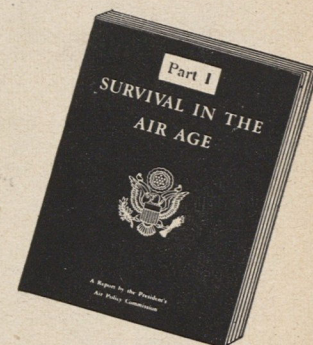
Atomic weapons will not long remain our monopoly. And there are other weapons of comparable destructiveness. Mankind has not indulged in biological warfare on a large scale so far; but the biological sciences are evolving so rapidly that it is impossible to predict the future. And sabotage—hereto-

fore a relatively unimportant means of warfare—is in the process of becoming a serious menace. The preplacement of atomic and biological weapons may soon become a major military problem.

This means that the traditional peacetime strategy of the United States must be changed radically. We must count on our homeland becoming increasingly vulnerable as the weapons increase in destructiveness and the means of delivering them are improved. And we must assume that if future aggressors will have learned anything from World Wars I and II it will be that they must never let United States industrial power get under way; they must destroy it at the outset if they are to win.

The strategy to meet these new conditions is obviously that which we have described above—to have in peacetime a force in being which will protect to the greatest extent possible our air space as well as our water approaches and hold out to anyone who thinks of attacking us the prospect of a counter-attack of the utmost violence. The hope, of course, is that the existence of such a force will do more than win a war; the hope is that by serving notice that war with the United States would be a most unprofitable business we may persuade the nations to work for peace instead of war.

If present official estimates are right we have not yet reached the point where other nations have atomic weapons in quantity. On the other hand, according to these same estimates we must make our military plans on the assumption that they will reach this point soon. No one can forecast definitely the date, and therefore we must arrive at a time, for planning purposes, beyond which it would not be safe to assume that the US will be immune from atomic attack.



AIRPOWER AND THE NATIONAL SECURITY (Continued)

Our estimate is based on our composite appraisal of a large number of estimates and of the facts on which they are based.

Our conclusion is that we should make our strategic plans for the defense of the United States on the following assumptions:

► It is impossible to know certainly when other nations will have atomic weapons, but it is proper to assume, for our present planning purposes, that other nations are not now producing such weapons in quantity.

► It is known that other nations are working diligently on the problem of atomic energy; that they have available to them some of the raw materials, the quantity naturally being indeterminate; and that they possess scientific minds capable of solving the many intricate and complex problems involved.

► If an effective system for reviews of the strategic situation and for the adapting of our procurement and research and development policies to our strategic needs is established, it would be safe to assume, in making our plans for the next 2 years, that possibly hostile powers will not be producing atomic weapons in substantial quantities before the end of 1952. We point out that this does not assume that such powers may not have a few atomic weapons prior to that date.

► It would be an unreasonable risk, and therefore, a reckless course, to rely on other nations not having atomic weapons in quantity by the end of 1952.

► It would be an unreasonable risk to assume that this country will surely have warning of the manufacture of atomic weapons by others. We may learn of the existence of atomic weapons in the hands of other countries only when they are used against us.

The possession by an enemy of these weapons, in quantity, changes all the rules and requires a different strategy by a nation which may be attacked.

The possession by a possible enemy of the mass-destruction weapons is, of course, not all that he must have before he attacks the United States. He must also be able to deliver these weapons against us. He must have the planes and missiles capable of making a sustained assault on our mainland. At the moment no possible enemy could make such an assault.

An attack on the United States by piloted aircraft in the immediate future would not give an enemy air superiority over our mainland; although it could inflict serious damage on our industry and our cities before our defenses could be developed. But without such air supremacy and without atomic weapons, it is not likely that an enemy could so disrupt our country that we would be unable to repeat the formula of World Wars I and II and build up our war industry and our Army, Navy, and Air Force after war had begun.

Nor is it possible for an enemy now to deliver an assault on the United States mainland with guided missiles which would be so serious as to prevent our preparing to win after the fighting started. By the term "guided missiles" we mean any uninhabited airplane of the conventional kind or any winged or unwinged projectile which is guided in its flight.

Guided missiles of the German V-2 type traveling at supersonic speeds are now impossible to intercept; they are, however, as yet of relatively short range. Guided missiles of the subsonic type also are still of limited range. The problem of guidance, which is the obstacle to range, has not yet been solved.

Sobering View

"... the president's air policy commission has given the American people a sobering view of the essentials of national security in the age of the supersonic airplane, the atomic bomb and the deadly agents of biological warfare."—*Denver Post*

Biological weapons are undoubtedly being studied in all parts of the world. They differ from atomic and conventional weapons in that their most destructive effect is not on impact but by slow or epidemic spreading. That extremely violent bacteria and viruses exist is common knowledge. The problem in their military use is effective dissemination. They may be delivered by the air, or by preplacement by enemy agents. So delivered or placed, they would create great damage to humans, animals, and crops. In any all-out attack on the United States the possibility that they may be used should not be overlooked. The danger from these weapons is, however, not only in time of war. They can be distributed in our cities and among our crops and herds in advance, say a year or so, of a planned attack, or as part of a campaign to weaken us, without any intention of following up with a conventional military attack. Our plans to anticipate and prevent such sabotage, insofar as this can be done, must be intensified.

In focusing our attention on the weapons of mass destruction we must not minimize the other, more conventional weapons. These are comparable in destructive power, when used in large quantity, to atomic bombs, as the cities of Germany and Japan testify. And it is certain that conventional weapons will be developed in the next few years so that their destructive power will be even greater than in World War II.

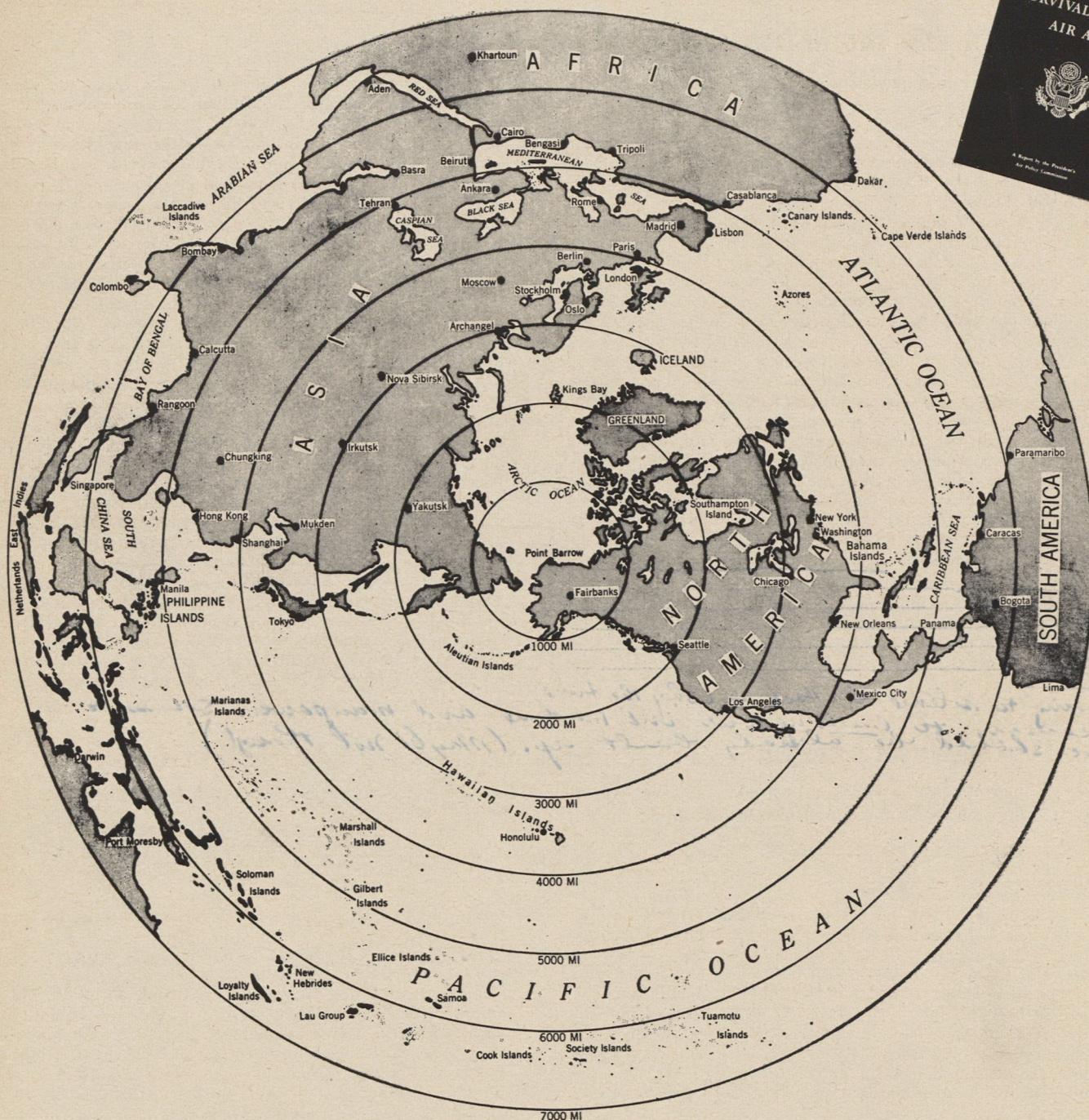
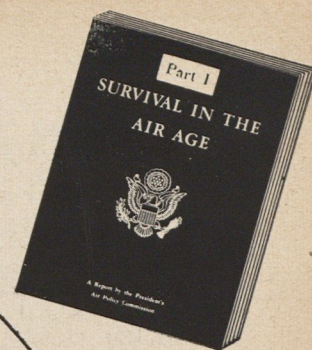
Nevertheless, it is the mass-destruction weapons which now exist and almost surely will be developed within the next few years which radically change the strategic needs of the United States. An enemy has to have air superiority, a great industrial production and a very large fleet of aircraft if it is to overwhelm a country by using conventional weapons only. But an enemy can inflict enormous damage with the mass-destruction weapons even if he does not have air superiority.

Neither of these two means of delivery—the piloted aircraft or the guided missile—is a vital threat to this country in its present form. Nor is the only remaining possible method of delivery, sabotage—that is the preplacement of weapons by enemy agents in this country—a vital threat at this time. The United States, in the opinion of this Commission, could now undergo the ordeal of an attack delivered by the presently available piloted or unpiloted aircraft and by sabotage, and under the heavy handicaps which such an attack could create, still be able to follow our traditional course of building up our war machine after war has begun.

So far we have spoken only of the means of delivery as they now are. The current scientific revolution is, however, working on the means of delivery at the same time as it is working to make the weapons to be delivered more destructive. There is a race between the two. When either reaches its next stage of development, the threat to the United States will be great.

If other nations develop the means of direct assault on the United States by supersonic piloted aircraft, the threat to this country will be serious, even though these vehicles are not equipped with atomic or comparable weapons. Similarly, if other nations develop atomic weapons in quantity, or some other weapon of comparable destructiveness, the threat to this country will be great even though these nations have only the present means of delivery at their disposition. The addition of supersonic transpolar or transoceanic guided missiles would intensify the damage that could be done by an atomic attack. Should all these developments exist at the same time, the situation would be very grave indeed.

When will these things happen? We see nothing in the present situation to justify fear that the development of super-



As shown in this azimuthal equidistant projection centered on Point Barrow, "supremacy of the seas" will serve little purpose in protecting us from an "over the top" air attack.

sonic transpolar or transoceanic piloted aircraft or guided missiles by any possible enemy will threaten our air supremacy and our homeland within the immediate future.

The conclusions which the Commission has reached as to the development by other nations of the means of delivering a direct attack on the United States by transpolar or transoceanic aircraft or missiles are these:

- ▶ It is probable that other nations will develop atomic weapons before they develop supersonic bombers in quantity with a striking range of 5,000 miles, or supersonic, accurate, guided missiles with a 5,000-mile range.
- ▶ Nevertheless, it would be unwise to assume, in the planning of our defense establishment, that other nations will not

have the planes and missiles capable of delivering a sustained attack on the United States mainland by the same date we have assumed they may have atomic weapons in quantity—namely, by the end of 1952. If they want them enough they can surely have them at some date; just when will be determined by the amount of effort they put into getting them.

▶ It is not certain that the United States will be the first to develop such aircraft or missiles. On the contrary, the Germans were ahead of us in these matters at the war's end and other nations may well be even with or ahead of us now.

▶ The United States must press most energetically and immediately its basic and applied research and development programs in aerodynamics, power plants, electronics, and related fields with a view toward the development at the earliest possible date of the most effective piloted aircraft and guided missiles and the defenses against them.

The conclusions of the Commission thus fix as the target date by which we should have an air arm being capable of dealing with a possible atomic attack on this country at Janu-

AIRPOWER AND THE NATIONAL SECURITY (Continued)

ary 1, 1953. For convenience we will refer to this date as A-day.

We believe that A-day divides the future into two clear phases for strategic purposes. The first phase is that which begins now and extends to A-day. We call this Phase I. The second phase is that which will exist on and after A-day. We call this Phase II.

The next question is whether we must begin now to build the force we must have on and after A-day. How long will it take to build this force? Do we have to start building it now?

There is no doubt about it. The force we need by the end of 1952 must possess the complicated defensive equipment of modern electronics and modern defensive fighter planes and ground defensive weapons. A radar early warning system must be part of our defense; but such a system, if designed to give complete and continuous coverage, would be extraordinarily expensive. Worse yet, it might divert us—as the Maginot Line diverted France—from the best defense against atomic attack, the counteroffensive striking force in being.

We also must have in being and ready for immediate action a counteroffensive force built around a fleet of bombers, accompanying planes, and long-range missiles which will serve notice on any nation which may think of attacking us that if it does, it will see its factories and cities destroyed and its war machine crushed. The strength of the counteroffensive force must be such that it will be able to make an aggressor pay a devastating price for attacking us. It must, if possible, be so strong that it will be able to silence the attack on the United States mainland and give us the time again to build up our industrial machine and our manpower to go on to win the war.

If its going to silence the attack — why the time necessary to build up our ind. machine and manpower. Seems to me these should be already built up. (Maybe not though)

Important Document

"... no more important document has been placed before the American people in our history. Our existence and our future are wrapped up in it."—Dallas Morning Star.

Such a force does not grow overnight. It takes four to seven years to develop a new plane from the engineering board to production. It takes longer than that to develop many of the weapons which will be used in any future war.

The method of gradual build-up, that is, a build-up in a line or curve of progression from the force we now have to the force we must have on A-day, is the most effective and cheapest way of getting the force we need. To delay beginning the construction of this force, to hope to make a sudden jump to the A-day force in a year or so is unrealistic. Moreover, to delay in starting the build-up would leave us without the force we need right now. We have no breathing space in which we do not need airpower.

We therefore consider the kind of air establishments we need during Phase I. On first impression it might seem that a major war during this Phase I is unlikely; and this opinion has been expressed to this Commission by high military authorities. However, we cannot be sure.

We must therefore be prepared for war during this Phase I. Moreover, we must not think that the atom bomb alone will win a war. If we get into war during Phase I we cannot drop atomic bombs and sit back. What we need during this Phase is an integrated Military Establishment, (1) capable of an atomic attack, (2) stronger in airpower than that of any other country, and (3) capable of a sustained and powerful air counteroffensive, either directly or by the way of intermediate bases.

What is the kind of force which we need during Phase II? The attack which we must anticipate determines the kind of force which will be needed to meet it. The first thing to consider therefore is the nature of the assault which could be made by an enemy equipped with atomic or comparable

weapons, and possessing the aircraft and missiles capable of delivering them against the United States mainland. As to this, our conclusions are as follows:

► We must assume, in making our plans, that there will be a direct attack on the United States mainland, in any major war in which the United States will become engaged, on and after January 1, 1953. It may be that the war will not open with this direct assault. It may be that the fighting will start at some point in the world where our forces will come in contact with those of other nations. It may be that the fighting will be localized at that point, on the model of the practice war between Germany and Russia in the Spanish Civil War. But this is not likely; and certainly we must not count on it. We must assume, in making our plans, that if the enemy can do it he will make a direct air assault on the United States' mainland regardless how or where the first shooting starts.

► It must be assumed that there may be no warning of the attack. We must assume that the force we will bring into being by the end of 1952 will be the force which will have to handle the attack. We will get no further warning than that which we already have.

► An attack by an enemy equipped with atomic weapons would be of a violence which is difficult for us to imagine. The first bombardment assault by an enemy equipped with mass destruction weapons would probably have as its objective the destruction of our capacity for resistance and counter-attack. No one who appeared before us had suggested that we could turn back completely such an attack. Indeed, if we were not fully prepared, a mass destruction attack might be followed by invasion by air-borne land troops for the purpose of taking advantage of the first confusion to seize strategic

points in the United States and to destroy utterly the country's resistance.

It is apparent that the Air Establishment which we need is substantially different from the two phases. During Phase I we may assume that we will be free from an attack which would prevent our building up for war after war begins. But an attack during Phase II might be such as to cripple at the very outset our capacity to resist and to build up after hostilities start. For this reason, the force which is needed on and after the beginning of Phase II must be a force of considerably more power than during Phase I.

In neither phase can we have in being a counteroffensive force capable of winning the war outright in the first counter-blow. We cannot support in peace a force capable of dominating the enemy's mainland. What we must have and can support is a reasonably strong defensive establishment to minimize the enemy's blow, but above all a counteroffensive air force in being which will be so powerful that if an aggressor does attack, we will be able to retaliate with the utmost violence and to seize and hold the advanced positions from which we can divert the destruction from our homeland to his.

Recommendations.—In considering the recommendations of the armed services as to the air establishment which is needed during Phase I and Phase II, we have reached the conclusion that the Air Force as presently composed is inadequate. It is inadequate not only at the present time when we are relatively free of the dangers of sustained attack on our homeland, but is hopelessly wanting in respect of the future Phase II period when a serious danger of atomic attack will exist.

The present Air Force consists of 337,000 uniformed and about 125,000 civilian personnel. It is equipped with a total



Pilots of the 412th Jet Fighter Group at March Field, Calif., prepare for an operational flight to Memphis. Unfortunately too few of the USAF's 55 groups have such modern equipment. We have no jet bomber units.

of 10,800 aircraft in active status, including about 580 heavy bombers and 2,300 fighters. Backing up this force is a reserve of about 12,800 World War II aircraft usable at any time during the next two or three years to replace losses of planes due to current peacetime attrition or, in the event of war, caused by combat losses.

Our present Air Force is divided into 55 groups. Each group is trained for specific missions such as strategic bombing, tactical reconnaissance, fighter escort, interception, and troop carrier and transport.

From evidence received from the Secretary of the Air Force, its Chief of Staff, and many of its ranking generals as well as informed authorities outside of the military establishment, we conclude that the 55-group force, if engaged in action in this present Phase I, could not carry out the missions assigned to it because it is lacking in the essential air units for effective combat action. It would be even less capable of carrying out the missions which would face it in Phase II conditions. Even more alarming is the statement by the Air Force that the funds presently available will not permit the maintenance of the present inadequate Air Force and that if appropriations are not increased the establishment must be cut back to approximately 40 groups with reductions starting in July, 1948.

None of this must be permitted. There is a minimum force in being below which we must not go if we are to protect our country and its vital interests.

We have concluded that the minimum force necessary at the present time is an Air Force composed of 12,400 modern planes, organized into 70 combat groups, and 22 special squadrons, supplemented by 27 National Guard groups and 34 groups of Air Reserve. All these forces, with the exception of the Air Reserve, must be equipped, trained, and ready for immediate action in the event of war. We should build to this force as rapidly as possible and once it is achieved, never permit it to drop below this level. Nor should we permit it to

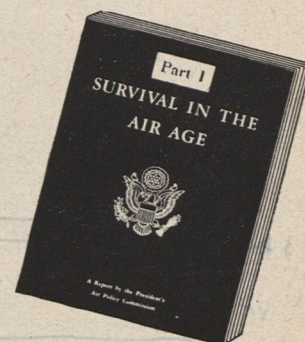
become impotent and ineffective because of failure to keep it modernized with the very best planes and equipment available.

At first we seriously questioned the need of an Air Force of these proportions because it was obvious that building it and supporting it would involve a substantial increase in expenditures. However, as we studied the strategic and tactical needs of the Air Force we came to the conclusion that:

► The 70 groups would include the very minimum number of interceptor fighters necessary for our home defenses; and their effectiveness would be almost entirely dependent upon having a satisfactory radar early-warning system and adequate ground and air defensive missiles. We emphasize again, however, that no plans for defense should be made in derogation of the striking offensive air arm in being.

► The 70 groups would provide only 700 very heavy bombers for the strategic bombing of enemy targets. This force of bombers seems minute as compared with the 14,000 bombers of the United States Air Force and the Royal Air Force committed to combat in the European theater during the war. Only by using the very best equipment and the latest techniques will so small a force be able to carry an effective war to the enemy.

Unless there are planes in reserve, combat forces would diminish rapidly after the beginning of hostilities and we would be left without a fighting Air Force after a few months of war. The solution of this problem is one of the most serious tasks faced by the Air Force and the aircraft industry. Plans for the rapid expansion of industry will help, but no evidence presented to us indicates that any plan can



AIRPOWER AND THE NATIONAL SECURITY (Continued)

be devised which will insure the production of planes by industry in time to replace combat losses in the first year of a war. Moreover there is the grave danger that enemy attack may so disrupt our industrial production that all forecasts of plane manufacture after war begins will prove to be unrealistic. Therefore, a reserve of aircraft in storage must always be maintained. This reserve is expensive to procure and costly to keep modernized.

At the present time, we are reasonably well off because World War II surplus planes are still usable. Fortunately the Air Force retained a substantial number of planes as a reserve and sold or otherwise disposed of only those planes considered unusable. This reserve is gradually being used up. It must be replenished before the end of 1952. Estimates by the Air Force show that 8,100 new planes must be procured for this reserve between January 1, 1950, and January 1, 1953. The 8,100 figure for reserve planes is reached by establishing the deficiency between losses, based on past experience, and replacement forecast under a theoretical mobilization plan.

In summary, the problems of the Air Force are threefold:

- ▶ The force in being must be increased from its present level to a minimum regular establishment of 70 groups (6,869 front line aircraft), an Air National Guard of 27 groups (3,212 front line aircraft) and an adequately equipped 34 group Air Reserve.
- ▶ The level of procurement of new aircraft must be high enough to keep this force modern at all times. And
- ▶ An adequate reserve, now estimated at 8,100 aircraft must be created and maintained in a proper state of modernization.

We must start now on such a program and complete it before the end of 1952.

Navy requirements.—We also have examined and analyzed the requirements of the Navy and its plans for the perform-

us from representatives of the Air Force and the Navy. These are independent statements of each of the services and give no effect to the consolidation of functions and savings which must be made to result from the National Security Act.

It is the responsibility of the Secretary of Defense acting under the President to see to it that the Joint Chiefs of Staff prepare integrated strategic plans for the defense of the country and consolidate the functions of the services in such a way that the plans can be carried out with the minimum of personnel and equipment and a maximum of effectiveness.

We requested the Secretary of Defense to furnish us the requirements of the Air Force and the Naval Air Establishment as they should be now and at various specified future periods. The Secretary of Defense has been unable to comply with this request. The completion of the necessary studies and the integration of the three services without which our strategic plans will not be efficient and economical will require much time. Figures, of course, can be prepared quickly but they would be little more than a verification of the independent and separate requirements of the Air Force and the naval air arm as presented to us by the respective services. The real task—which cannot be done quickly—is to consolidate and integrate the functions of our total military establishment and to increase the dollar efficiency of every segment of it.

The Joint Chiefs of Staff are carrying on their analyses of requirements and their work to create an integrated and economical peacetime force in both Phase I and Phase II. In addition, of course, they must develop the wartime requirements of our consolidated military establishment. These requirements must be worked out with two clear objectives in mind. We must have a military establishment capable of defending the country: any recommendation that comes from

Required

“... if there were such a thing as required reading for every American citizen, we would place near the top the report of the President's Air Policy Commission. . .”—*New York World-Telegram*

ance of its war missions both now and in the future. In one important regard the role of the Navy will differ in the future from that of the past. It will not be called upon to engage an enemy surface navy since none exists and it is questionable whether any will be built by a foreign power within the next decade. This changed condition alters the mission of the Navy and the type of equipment it must use in the future, but it does not eliminate the need for a Navy. *This is right*

The new strategy in the Navy is airpower. The carrier has become the major ship—the battleship now is of only secondary importance.

In order to equip properly the carriers in operation and to conduct other air activities considered the responsibility of the Navy, one of the most important of which is protection against modern submarines, the Navy requires 5,793 front-line planes, plus about 5,100 in support.

The Navy now has the planes necessary to equip its active carriers and its supporting air operations. The Navy, however, needs funds for the procurement of new replacement aircraft. Like the Air Force, the Navy wisely placed a large number of World War II planes in reserve and since VJ-day has been replacing its operational losses of active planes by withdrawals from this storage. Knowing the reserve would be of value for only a few years because planes in storage become obsolescent, the Navy has followed the commendable policy of limiting procurement of new planes and making maximum withdrawals from reserves. This policy will soon exhaust the storage planes, and therefore we must increase our rate of procurement of new planes or face the danger of seeing our great carriers tied to the docks because of lack of planes.

Unification and Joint Chiefs.—The strategic plans and requirements which we have been discussing were received by

the Joint Chiefs of Staff should never go below this minimum requirement. And the cost of such an establishment must be built on the most economical basis possible.

The military establishment we must have will put a heavy strain on the economy of the country. The recommendations of the Joint Chiefs of Staff must require the most rigorous efficiency in operations and in the consolidation of strategic functions. The Unification Act was passed to achieve these two purposes.

The cost of the Military Establishment as reflected in this report shows beyond any doubt the critical need of carrying out the intent of the Unification Act to the greatest extent possible and at the earliest possible moment. We believe that there is an enormous opportunity for savings, and that as these savings are effected, the forces essential for our security can be maintained in being within the safe limits of our financial resources.

But to attain these economies vested interests must be set aside, traditional divisions of appropriations must be ignored, and every unnecessary activity must be abandoned if the war of the future no longer requires them. We are concerned by the fact that a majority of the Joint Chiefs of Staff, who represent three separate services, may find it difficult to achieve these results. A heavy responsibility rests upon the Secretary of Defense to exercise fearless and independent judgment to see to it that integration means more than a mere consolidation of the requirements of each of the individual branches of the services.

We view with great anxiety the pressures from many sides directed towards the maintenance of yesterday's establishment to fight tomorrow's war; of unwillingness to discard the old and take on the new; of a determination to advance the

interest of a segment at the sacrifice of the body as a whole. All this is understandable. For it comes in large part from loyalty of each service to its traditions. But we can no longer afford the waste it involves. Hope rests only with the ability of the Secretary of Defense under the President to discharge effectively the authority vested in him with one objective in mind—the maximum in security for the minimum cost. It is imperative that this be done; for unless it is we will not have a military establishment capable of defending the country.

Appropriations for Air.—We are informed by the Bureau of the Budget that for the current year the Military Establishment is supported by budget expenditures of \$10,098,000,000 (exclusive of terminal leave, stock piling and certain miscellaneous items). Of this amount, according to Budget figures, \$4,037,000,000 are for the Navy including naval air, \$2,850,000,000 are for the Air Force and \$3,211,000,000 for the Army. Out of the total budget of \$10,098,000,000, \$4,050,000,000 is for the Air Force and naval aviation (exclusive of the cost of construction and operation of carriers).

We are impressed with the need for a proper balance between the three services and have concluded that such a balance does not exist now because of the relative and absolute inadequacy of the Air Force Establishment.

We make no recommendations for change in the appropriations for the Army and the surface Navy, but confine ourselves to recommendations for the maintenance of naval aviation and an immediate build up beginning January 1, 1948, of the Air Force.

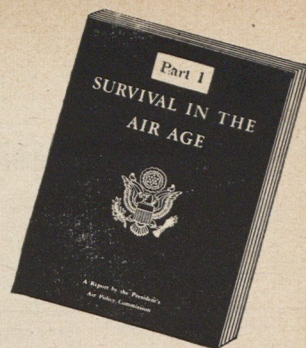
The increase in the Air Force must be started at once and be completed by the end of the year 1952. The 70 groups should be organized, equipped, and ready for service by January 1, 1950. An adequate reserve of planes, now estimated at 8,100, should be in being by the end of 1952. Uniformed personnel must be brought to the 401,000 figure now planned by the Air Force.

Our recommendations are for the calendar years 1948 and 1949 only. For the calendar year 1948 we recommend an increase in appropriations for the Air Force in the amount of \$1,300,000,000 and a further increase of \$1,300,000,000 for the calendar year 1949.

We recommend that, as part of the appropriations for the Air Force for 1948 and 1949, there be included \$350,000,000 more for the procurement of aircraft in the calendar year 1948 than the present rate of such procurement (\$550,000,000 for the current fiscal year); and that there be included for the calendar year 1949 \$660,000,000 more for the procurement of aircraft than would be procured in 1948 under our

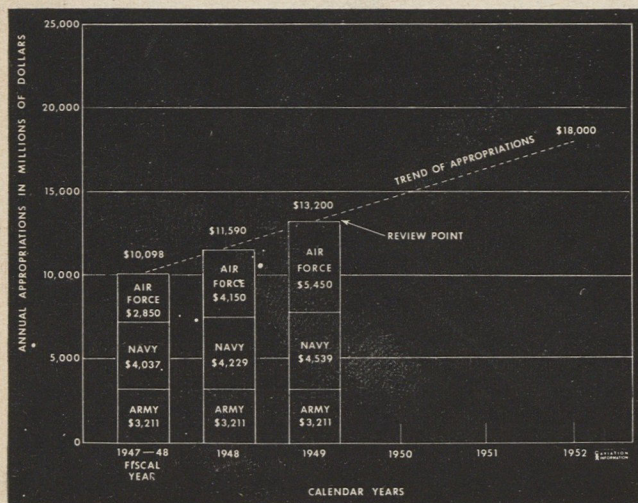
recommendation. These dollar figures would require the purchase of about 9,000,000 pounds of air frame more in 1948 than the present rate of Air Force procurement; and about 16,000,000 pounds of air frame more in 1949 than in 1948.

The building of the reserve of new planes, now estimated at 8,100, need not begin until January 1, 1950. Reserves of World War II planes in substantially adequate amounts are available for the years 1948 and 1949. We recommend, however, that in the calendar year 1949 there be allocated, out of the appropriation for that year, \$300,000,000 of contracts to begin the build-up of the 8,100 plane reserve. These contracts, placed in 1949, would produce planes only in the years subsequent to 1949.



In the future the Navy, according to the report, will not be called upon to engage an enemy surface Navy. The new strategy of the Navy is airpower built around its carriers.

Estimated Appropriations for National Defense Program



In terms of dollars and cents here is what the committee recommends for the next two years. From a 1947-48 fiscal budget of less than three billion the group recommends that USAF allotment be jumped to five and a half billion in '49.

Because of this deferring of the build-up of the 8,100 plane reserve program, it is likely that the increase in expenditures for the Air Force in 1948 and 1949 will be less than in the third, fourth, and fifth years. The power of the Air Force will progressively increase, reaching the full 70 group strength with modernized reserves only at the end of 1952. We believe that this is the most economical way of building the Air Force we need and at the same time satisfies, within the limits of a calculated risk, the strategic requirements of the country for the present and the future with which we are dealing.

The Navy must immediately increase the annual rate of contracting for the procurement of aircraft (now at the rate of \$338,000,000 per year) in order to equip properly the present fleet with the modern aircraft needed as World War II reserves are exhausted. To accomplish this result contracts for new aircraft should be in the amount of \$530,000,000 for the calendar year 1948 (an increase of \$192,000,000 over the current rate), and \$840,000,000 for the calendar year 1949 (a further increase of \$310,000,000 over the 1948 figure). These dollar figures would require the purchase of about 4,000,000 pounds of air frame more in 1948 than the present rate of naval air procurement; and about 6,000,000 pounds of air frame more in 1949 than in 1948.

We have received strong arguments that the air arm of the Navy should be increased from its present level to 8,000 first-line planes in being and 6,500 planes in support. Since

AIRPOWER AND THE NATIONAL SECURITY (Continued)

any such increase would be part of a program of expansion of the Navy as a whole, we feel that a decision on this subject should be deferred until the Joint Chiefs of Staff have completed their strategic plans and their statement of integrated requirements and then should be made only if the security of the country demands the expansion of the naval establishment.

The present budget of the Air Force is at the rate of \$2,850,000,000. The recommendations of the Commission call for Air Force appropriations in the calendar year 1948 of \$4,150,000,000 and for Air Force appropriations in 1949 of \$5,450,000,000.

The present budget of the Navy is at the rate of \$4,037,000,000. The additional procurement of aircraft would increase this figure to \$4,229,000,000 for the calendar year 1948 and \$4,539,000,000 for the calendar year 1949.

The present total military budget is at the rate of \$10,098,000,000. The recommendations of the Commission would increase the total military budget for the calendar year 1948 (assuming that there are no changes in appropriations for the Army, the surface Navy, or the expenses of naval aviation other than for the purchase of aircraft) to \$11,590,000,000 and would call for a total military budget in the calendar year 1949 of \$13,200,000,000.

We do not believe that any integration of our military operations under the National Security Act will lessen the need for the 70 group Air Force in being or for the replacement of existing naval aircraft. The likelihood of these savings should not therefore be considered as a reason for reducing the appropriations recommended in this report for the years 1948 and 1949.

Necessary

"... it is a consensus of all the people — military governmental and civilian—who have been charged with responsibility for designing an air force capable of protecting the United States, that something on the order of the organization here described is necessary."—*St. Louis Post Dispatch*

For my part this is absolutely right

Military and commercial transport services.—The Air Force and the Navy each has its own transport service which was organized in World War II. The Air Force service is the Air Transport Command (ATC); the Navy service is the Naval Air Transport Service, referred to as NATS. In addition, the Marine Corps has a combat air transport service which is occasionally used as an auxiliary to NATS. Each of these transport services is a sizeable operation.

We recommend the consolidation of ATC and NATS into one Military Air Transport Service to handle all scheduled military transport services for the Army, the Navy, and the Air Force.

We make one further recommendation on this subject. Advantage should be taken of our World War II experience in working out in advance the required coordination between the armed services and the commercial air lines.

Mobilization planning.—It is not enough to have an Air Force in being on the day war begins. Plans must also be made in peacetime for the rapid mobilization of our manpower in event of war. In the case of our Air Establishment this problem centers on the so-called civilian "components" of the Air Force and naval aviation. In the case of the Air Force the civilian components are the National Guard and the Air Force Reserve. In the case of the Navy, they are the Organized Reserve and the Volunteer Reserve.

The problem is to have enough trained personnel to man and handle the planes which are in storage and those which will be built after war begins.

We have examined this question but are not prepared to make specific recommendations with respect to the air components. There is no point in developing a training program until the plans to provide the planes are farther advanced.

The Secretary of Defense has appointed a committee within the Military Establishment to study this question which presents problems of long historical background and great difficulty. The problem assumes importance because the Air Force is depending upon 27 National Guard groups as part of its first line forces. The report of the committee established by the Secretary of Defense and the necessary action to insure satisfactory and economical functioning of the civilian components are therefore of the highest importance.

Periodic reviews.—We recommend that there be periodic reviews of the Military Establishment of the United States in the light of the then international situation and the military strength of other nations.

We must at all costs avoid a hit or miss armaments program. We must not believe that any program which may be adopted now will solve once and for all the problem of national defense.

Unless there are such reviews, duplications and ineffective use of the security dollar are inevitable. There now are arrangements for such reviews by the highest officials of Government.

We believe, however, that the arrangement lacks an essential element—the direct participation by the people of the country in the preparation of the plans.

Some national policies touch the people so intimately and so seriously that the ordinary processes of government are inadequate. Under our system of representative government, national policies usually are made by the Executive and the Congress, with the role of the public an indirect one. Some policies, however, cannot be made by the elected representatives alone. The making of war is one such policy. The prep-

aration in peace for the defense of the country in the atomic age is another.








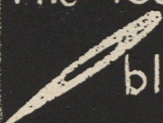








This Commission does not believe that we will ever have an adequate Military Establishment unless the people of the country know fully what the international military and political situation is, what kind of a military force is necessary if we are to be ready for that situation, and how much it will cost to have this force. With these facts before them they may choose, with full knowledge of what they are doing, whether they will or will not pay the bill.

We make the following recommendations:

► That the National Security Act of 1947 be amended to provide that the President appoint on June 15th in each second year, or more frequently if he sees fit, and subject to confirmation by the Senate, a commission of five citizens with no connection with Government who shall review the Military Establishment of the country and its adequacy in the light of the then international military and political situation and shall submit a report of their findings and recommendations to the President by the following January.

► That the report of this Commission of citizens be made public by the President. Not to tell the people the military facts they are facing would not only deny to them what they are entitled to know, but also would make it impossible to have an adequate preparedness program.

We believe that our policies as to military secrecy in relation to our Military Establishment require overhauling. Less information should be given out as to the technical facts of our air establishment. More information should be given out as to the broad lines of the military situation which confronts the country and of the Military Establishment needed to handle this situation.

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 The four reversible propellers,  with their hollow steel
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 than 650 pounds per plane.  As a result, the
 airline operators  will be able to take on the
 equivalent of three extra  passengers, haul that
 much  extra cargo, or carry an additional
 100 or more gallons of gasoline 
 for added range—all of which means more revenue
 for the airlines.

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CONFIRMING THE REPORT . . .

We're ready, willing and able



● In one paragraph on helicopters, the President's Air Policy Commission says much that is important with admirable brevity. We re-publish it here with the one comment that, as a "young and vigorous company", BELL Aircraft is ready, willing and able to continue pushing helicopter development. Bell Aircraft Corporation, Buffalo 5, New York.

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Report by the President's Air Policy Commission

"Helicopters...The direct-lift, rotary-wing type of aircraft appears so promising that continuous research and development effort is warranted. It has many possible military and commercial uses. Its capabilities for rescue work at sea and in isolated areas has been well demonstrated by the United States Coast Guard. There are many other applications that should

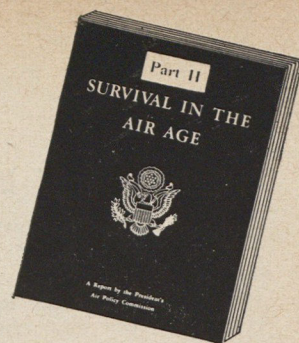
be thoroughly explored. The direction of the research and the priorities to be assigned to helicopter investigations are matters to be decided by the NACA. There are several young and vigorous companies in the field that may be counted upon to push helicopter development as fast as the basic data becomes available to them."

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The Aircraft

Manufacturing Industry



Since a strong aircraft industry is vital to national security, the US must . . .

- ▶ **F**oster an industry capable of turning out technically superior, readily producible air weapons at the lowest possible costs
- ▶ **P**lace orders for a minimum of 30 to 40 million pounds of military aircraft annually as a sound basis for expansion in an emergency
- ▶ **O**der its aircraft for delivery over a 5-year period whenever possible through forward contract authorization
- ▶ **E**xercise a greater degree of planning and control to avoid undue concentration of military aircraft business in a few companies
- ▶ **A**dopt long term aircraft production planning to replace the year to year planning necessitated by current budgetary practice
- ▶ **E**stablish an industrial mobilization program and budget to assure adequate aircraft production expansion in an emergency

Our air establishment would be useless unless backed by a manufacturing industry skillful in technological application, efficient in production, capable of rapid expansion, and strong in basic financial structure.

On the basis of the evidence, the over-all aircraft industry of the United States now meets only the first of these specifications. A parade of witnesses has testified as to its current productive weakness as an industry, its general lack of preparation for rapid expansion, and its general financial instability. How to remedy the deficiencies is a matter that has engaged the Commission's close attention.

As a point of departure, it is necessary to calculate the minimum level at which the industry must be held to provide a safe base for expansion in an emergency. Our own studies, together with figures supplied by the industry and the military services, tend to confirm the general range of requirements set by the Air Coordinating Committee in its report of October 22, 1945.

Two levels were set by the Air Coordinating Committee. The lower level was an estimate that the aircraft industry required military purchases in the amount of 30,000,000 pounds

of airframe weight annually. This was considered "as a minimum which could be reached only after maintenance of world peace is well assured and a substantial degree of disarmament has taken place." The Air Coordinating Committee also proposed an alternate level of about 60,000,000 pounds of airframe for the event that world conditions were such that "we have need for a substantial striking force ready at all times to cooperate in the maintenance of world peace." The military requirements listed in Part I of this report would lead to a steady build-up throughout this range over the next four years.

This Commission believes that military requirements for 30,000,000 to 40,000,000 pounds annually, in addition to demands for commercial and private planes, would provide a sound basis for expansion in an emergency.

No artificial stimulation to achieve this result appears to be necessary. If the program outlined in Part I is carried out, the necessary base for expansion of the aircraft industry will exist. The rate of procurement recommended in Part I would increase the present military procurement (which is now at the rate of about 21,000,000 pounds annually) by contracts

THE AIRCRAFT MANUFACTURING INDUSTRY (Continued)

for an additional 13,000,000 pounds during the calendar year 1948, and for 22,000,000 pounds in 1949 more than in 1948.

This, of course, is not a permanent solution. It satisfies only the demands of the immediately foreseeable future. If the threat of war diminishes, or if war becomes imminent, new levels of military demand (lower or higher) must be calculated and maintained. As is recommended throughout this report, periodic reviews of the military needs must be made, and plans and programs adjusted to fit conditions as they change.

It was widely predicted before the end of World War II that rising demand for commercial aircraft, both transport and personal, would tide a number of companies over the postwar adjustments of 1946 and 1947. For various reasons these hopes have not been justified. Although conditions may change in the future, it is certain that current commercial demands alone will not carry us through the present crisis. Whether we like it or not, the health of the aircraft industry, for the next few years, at least, is dependent largely upon financial support from Government in the form of orders for military aircraft.

To justify that support, the aircraft industry of the United States must be capable of turning out superior war weapons. The importance of adequate aeronautical research programs cannot be over-emphasized. This phase of the problem is discussed in Part III of this report.

At the time the Morrow Board convened (1925) the design of a successful military aircraft depended largely upon the efforts of a single man—the final product was almost wholly a reflection of one individual's ideas. Today, every design is the end point of many contributions by many individuals. The concept of the engineering team is almost universally accepted. Group engineering know-how is one of the most valuable assets carried forward by aircraft manufacturers out of the World War II period. If, for any reason, too many of the war-trained teams are dispersed, we are in danger of losing this hard-won knowledge and experience.

But the aircraft industry must do more than design aircraft of top performance. It must also design them for efficient production in quantities to meet the needs of the armed services. Since World War II, military aircraft have become much more complicated. The net result has been to increase the number of their component parts and to complicate their final assembly. The most efficient aircraft in the world, no matter how brilliant its performance, is of little value to the national

of experience and to justify planning and tooling to a reasonable level for emergency expansion is one of the most important questions facing the services.

In a freely competitive economy the number of companies manufacturing a particular product levels off at a point determined by the ordinary laws of economics. In the case of the aircraft industry, however, it would be dangerous to rely only on the operation of these laws. The demand factor fluctuates too violently from peace to war. If a reasonable degree of expansibility is to be maintained for periods of emergency, it is necessary to exercise some industry-wide control in the interests of national security. It may even be desirable to keep a few marginal manufacturers in business who might be forced out if the normal laws of supply and demand were allowed to operate.

Based on considerations of maximum security, it is essential to maintain at least two sources of supply for similar products. It has long been the practice for the procurement agencies of the Army and Navy to keep alive at least two separate producers of each type of aircraft, as well as two or more separate sources for each of the major components. We believe that this policy is sound and should be continued. It develops automatically a degree of manufacturing dispersal which might otherwise not exist. In a field in which the technology is changing rapidly, competition between design and development groups results in continuously improved products, and price competition between suppliers results in lower unit costs.

The financial difficulties which harass the aircraft industry today stem from many causes. Uncertain Government policies account for many of them. Some reflect faulty judgment by management. Others have come about from particular circumstances which have surrounded this peculiar industry in the postwar period of readjustment. Some of them are:

- ▶ A product that is, almost indivisibly, a weapon of war and a carrier of commerce;
- ▶ A market with but one major customer, the Government, which purchases 80 to 90 percent of its entire output;
- ▶ A violently fluctuating demand, due to uncertainty of requirements of its major customer;
- ▶ A lack of the production continuity which is vitally important in sustaining a trained work force and in keeping production costs to a minimum;
- ▶ A rapidly changing technology which causes a high rate of design obsolescence and abnormally high engineering costs;

Expensive but Cheap

"... it will be expensive, but as insurance it will be cheap."—*Los Angeles Times*

defense unless it can be manufactured quickly in large quantities.

The team concept is not limited to research and design. Production planning and production control groups are equally necessary, but it is more difficult to keep such teams together in peacetime. When production drops off to mere jobbing levels, their functions simply disappear. Means must be found to keep alive the special skills that have been evolved in these particular fields during the war years. If they are allowed to be dissipated, time and effort will be needed to replace them in a future emergency.

The techniques of aircraft manufacture vary widely with changes in the volume of orders. It is uneconomical to do extensive special tooling, either for manufacture or assembly, to turn out a few units. If, on the other hand, thousands of similar airplanes are required, the expenditure of relatively large sums for special jigs, fixtures, and tools is justified. Between the two extremes are wide areas in which the exercise of good judgment is the only controlling factor. The only way such judgment can be generated is through actual production experience. How to provide the aircraft manufacturer with orders in sufficient quantity in peacetime to develop that kind

- ▶ An extremely long design-manufacturing cycle;

- ▶ An organization in excess of present requirements.

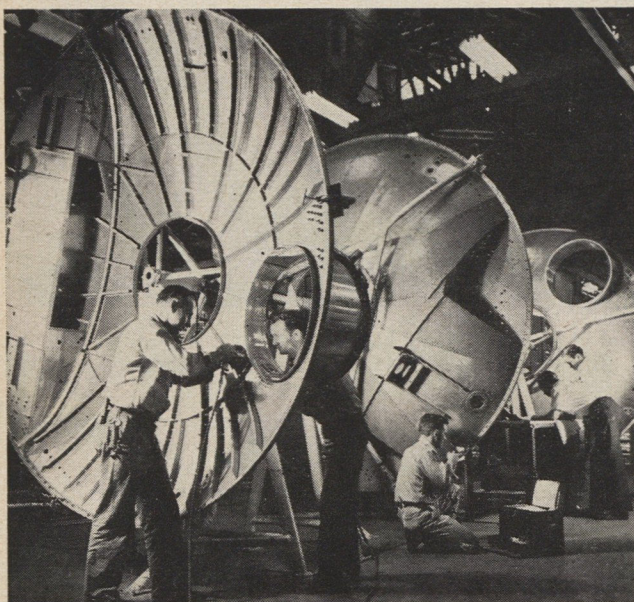
The financial strength of any individual company or of the industry cannot be measured by the amounts of sales, the extent of working capital, or the total floor space of its plants. It depends upon profitable operation. A profitable organization will attract capital and credit. It will be able to employ and retain the most capable engineers and craftsmen. The concern which consistently loses money will deteriorate, its financial position will weaken, and the quality of its product will suffer as its best employees drift away in search of better opportunities.

The Government cannot guarantee profits. Government can and should, however, create an atmosphere as conducive as possible to profitable operations in the aircraft manufacturing business. This can be done by longer-range planning, adequate volume, and the abandonment of uneconomic procurement practices. Under these circumstances, it will be the task of each manufacturing company to work out its own salvation.

The aircraft manufacturing industry covers all those manufacturers whose products are included in finished aircraft, military or civil. The normal airplane consists of the airframe



Report recommends that each company have one plane type in design, one in development and one in production all the time. Above, the Martin XB-48 now in "development" stage.



In 1944 the aircraft industry produced more than one billion pounds of airframes. As a peace-time minimum the Report asks for an annual figure of 30 to 40 million pounds.

(fuselage, wings, tail surfaces, landing gear); the propulsion system (engines, turbo-jet units, rocket motors, propellers); instruments (control, navigational, recording); communication equipment; accessories (pumps, generators, landing lights); and furnishings (seats, fire-extinguishers, and miscellaneous fixtures).

The airframe manufacturer is responsible for the final product. He designs and builds the basic structure and installs the numerous components. He also test-flies the airplane before delivery to the customer and is responsible for its satisfactory performance.

Most of the problems which beset the aircraft-manufacturing industry in 1946 and 1947 resulted from:

- ▶ Over optimistic development and production of commercial aircraft;
- ▶ Low-level military procurement and
- ▶ The absence of long-range military planning.

The services must undertake more extensive planning and control of procurement. We recommend that they be given the legislative authority to do so.

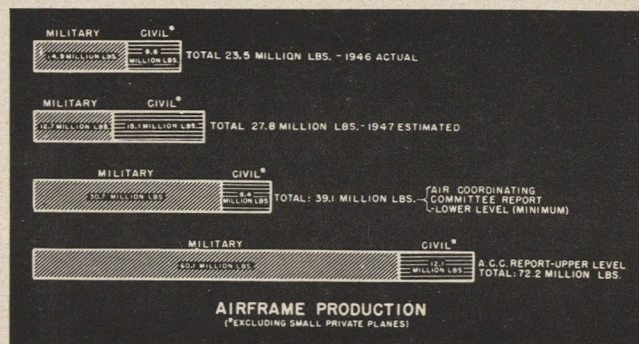
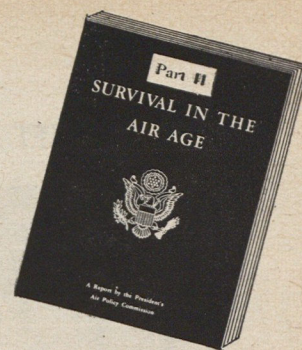
We have pointed out that the industry comprises a number of separate companies. Although competition between these units should be utilized to provide incentive to low costs and low prices, the aircraft manufacturing industry, being essential to the national defense, cannot be freely competitive to such an extent that vital design teams or production organizations are liquidated. Means must be devised to avoid undue concentration of business in a few companies. This, it is recognized, implies a greater degree of planning and control than the services have heretofore undertaken, or is, in fact, permitted by the peacetime procurement legislation which will again become effective on the expiration of the War Powers Act. Some continuation of those special powers must be allowed if we are to achieve a balanced aircraft industry.

Such planning must be directed toward avoidance of discontinuities in production. As has been stated repeatedly in testimony, such breaks in production result in high costs. Not only do many expenses continue while production is interrupted, but the training of a new labor force on resumption of operations involves a great increase in unit costs.

Long-range planning.—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 5-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 on the single order, but even more from the more effective use of tools and manpower.

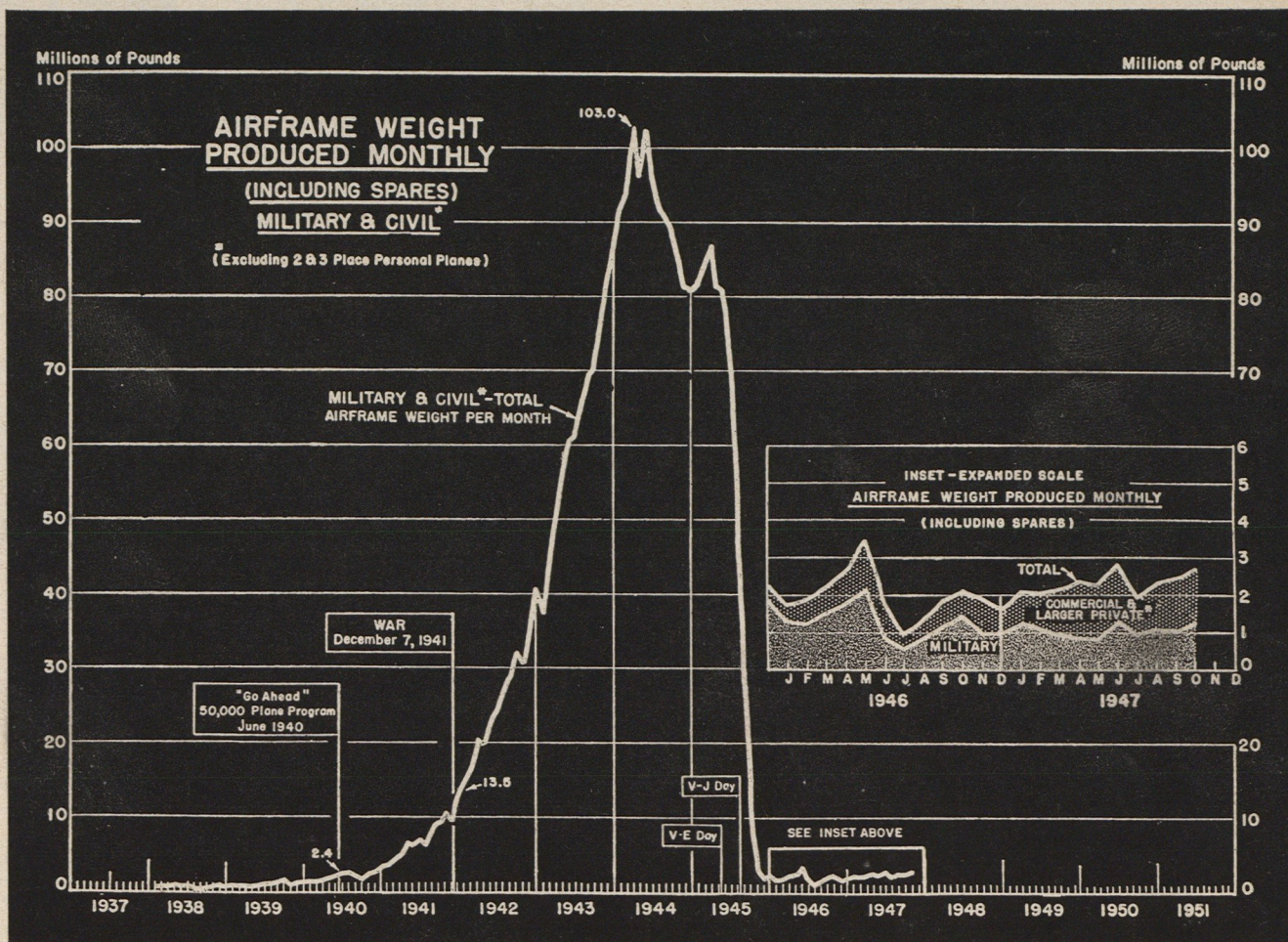
Long-range planning does not imply a single frozen procurement program for a period of years, but rather the integration of several concurrent plans, the duration of each of which will depend on its particular character. While many projects can be planned for 5 years, others are of such a nature that they cannot be planned for more than 2, 3, or 4 years ahead. The aggregate of such 2-, 3-, 4-, and 5-year plans will constitute the "plan" for which a budget must be prepared. All of these plans should be reviewed at least annually.

Forward contract authorization.—We recommend that the services plan their aircraft procurement as far in advance as possible and that the Congress provide the legislative base for such planning. We recommend the placing of orders for planes for delivery over a 5-year period whenever possible. We propose that the budget be charged each year with the necessary progress payments and the funds needed to pay for



The relative importance of civil aircraft production is illustrated in this chart prepared by the Air Coordinating Committee. All weights include spares but not test models.

THE AIRCRAFT MANUFACTURING INDUSTRY (Continued)



This is what happened to the aircraft industry at the end of the war. From a high of 103,000,000 pounds a month in 1944 it dropped to a low of about one million in 1946, climbed back to a little under three million in October, 1947.

the airplanes accepted in that year. Congress might provide funds for such planned procurement by appropriating funds disbursement in the current year and for 5 or more years ahead. To do so, however, would commit current funds needlessly.

We propose, instead, that the Congress make appropriations only of the moneys to be disbursed in the current fiscal year, and provide for the additional years of the procurement program by forward contract authorization, permitting the services to contract for deliveries over the following 5 fiscal years. We recommend that the Congress retain complete control over such procurement through its subsequent annual appropriation of funds to liquidate the forward contract authorizations.

Industrial mobilization planning.—The ability of the aircraft manufacturing industry to expand will control, to a large extent, the magnitude of our strength in a future war. In Part I of this report we have concluded that the Air Force will need a storage reserve of 8,100 airplanes to replace combat losses in the early months of war, because industry will not be able to supply the needed planes in time. This reserve would cost, at present standards and prices, from \$6 billion to \$7 billion and, in addition, would require about \$2 billion a year to keep modern. An industrial mobilization plan which can be depended upon to speed production after war starts may reduce the size of the reserve which will be required.

According to the National Security Act of 1947, the co-ordination of military, industrial and civilian mobilization is the responsibility of the National Security Resources Board. Based on the advice of the Board, the President may direct the Secretary of Defense and the heads of the appropriate

civil departments to undertake the planning of military and industrial mobilization. On the military side the Secretary of Defense holds the Secretaries of the Army, the Navy and the Air Force responsible for military and industrial mobilization planning within their respective services. On the civilian side, it is our recommendation outlined in Part V of this report that the Secretary of Commerce and the Secretary of Civil Aviation take an active part in mobilization planning.

We urge that the Under Secretaries of the Army, the Navy, and the Air Force give special attention to effecting such planning. We recommend that, at the administrative level, industrial mobilization planning receive attention comparable with that given to research development, and procurement.

It was urged on the Commission that all procurement and mobilization planning functions of the Air Force should be carried out by civilian personnel rather than by pilot officers whose tours of duty in such activities are likely to be interspersed with other assignments. We believe that it would be extremely difficult, because of Government pay levels and civil service restrictions, to recruit and hold the quality of civilians necessary for this type of work in numbers sufficient to do the job adequately. We recommend, however, that the practice of passing combat officers through such assignments on the assumption that a well-trained officer must have had experience in all branches of the Air Force should be discarded. With its maturity as a full-fledged service under the National Security Act, the Air Force should accept the fact that procurement and mobilization planning call for officers with specialized industrial training who wish to make a life-long career in those fields. Such officers should have the same

opportunity for advancement in rank as those in other commands.

We recommend that, in the industrial mobilization planning program, studies be made for all planning necessary to place one model of each basic type of aircraft in production in a reserve plant in an emergency, such planning to include the preparation of shop drawings, operation sheets, bills of material, work orders, and the design of all jigs, fixtures, and special tooling. This planning must also include continual revisions to keep all material up to date.

We believe that top level attention should be given in each aircraft manufacturing organization to industrial mobilization planning in peacetime. Subcontract arrangements should be worked out in advance outside the aircraft industry. Licenses or other agreements for the production of aircraft, power plants, propellers, instruments and accessories by nonaeronautical firms should be entered into, ready for activation in an emergency. The peacetime integration of such companies within the air industrial mobilization plan should expedite any expansion greatly.

Mobilization authority.—Industrial mobilization planning is futile if the mobilization cannot be carried out according to plan when the emergency comes. To give value to such planning it is essential:

- ▶ That the National Military Establishment reflect such plans annually in a mobilization budget showing the appropriations and forward contract authorization necessary to put this budget into effect should mobilization be initiated in the then current fiscal year;
- ▶ That the Congress authorize (but not appropriate for) such mobilization budget annually;
- ▶ That the National Security Resources Board set up an Office of War Mobilization, with the necessary subsidiary offices for the control of materials, production facilities, machine tools, and other capital goods, to be held ready for activation upon declaration of a national emergency and mobilization by the President; and
- ▶ That in the event of such mobilization the Congress immediately vote the necessary forward contract authorization and appropriation to support the authorized mobilization budget. These first three actions, taken by the National Military Establishment and by the Congress in peacetime, when they

cost, and (c) maintenance of expansibility.

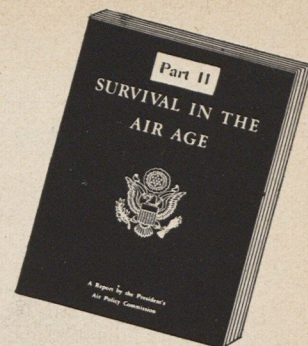
Design and development.—Aircraft are initially designed and developed on contracts which provide for the reimbursement of cost, plus a fixed fee for administration. We believe this type of contract is desirable for such initial procurement because the cost of developing a new airplane cannot be ascertained in advance, and because the contractor should have the greatest possible freedom in making changes both to increase performance and, by improving producibility, to develop an airplane which will be cheaper to build in quantity production.

Under present contracts, all rights for reproduction of a new design become Government property although the success of the airplane may be due largely to the contractor's particular knowledge and special skills. The retention of some rights by the developing contractor would provide an incentive to superior effort. We recommend that some consideration be given to this point in drafting future legislation.

Producibility.—The importance of superior performance is so obvious that the attention given it has, in the past, tended to obscure the equally important factor of producibility. An airplane must be superior both in performance and in producibility if it is to be an effective military weapon. Of only slightly less importance is the ease of maintenance which, in general, is related to producibility. An aircraft easy to produce is also usually easy to maintain. We recommend that the services put heavy emphasis on producibility in all future aircraft-development contracts.

Low cost production.—The aircraft procurement program we have recommended will cost the American taxpayer a great deal of money. Every effort must be made by the procurement agencies to see that the most effective use is made of that money. All possible incentives must be provided for production at low unit costs and at low prices.

Expansibility.—Lowest cost production will sometimes be incompatible with expansibility, which would be increased by a greater degree of tooling than is economical for the number of articles being produced. Such additional tooling should be



Most Comprehensive

"... the most comprehensive survey in modern aviation history ... no one who recognizes the danger that stalks can quarrel with the military objectives the report seeks."—*Washington Post*.

can be considered calmly and carefully, will avoid the necessity for a repetition of the hasty and costly improvisations of World War II. We emphasize the importance of this preparation. It is essential, in any future emergency, that all controls and all planned procurement be initiated immediately upon the declaration of an emergency by the President.

Strategic materials.—No mobilization planning can be carried out in the absence of the materials from which the aircraft and other aeronautical equipment are to be constructed. The Strategic and Critical Materials Stock Piling Act (Public Law 520, 79th Cong.) and the National Security Act of 1947 establish the authority and responsibilities of the National Security Resources Board, the Munitions Board, and of the Secretaries of Defense and of the Treasury, in respect to the stock piling of strategic and critical materials. Attention is directed to the importance of maintaining domestic sources of critical and strategic materials as an effective and advantageous alternative to the stock piling of certain imported items and materials.

Procurement policies.—We point out that the procurement policies of the services must be directed to the provision of incentives to (a) the design and development of aircraft which are both technically superior and readily producible, (b) the production of such aircraft at the lowest possible

regarded as a part of industrial mobilization planning and its added cost not charged against the production contract.

Design, development, and production continuity.—To be able to plan for reasonable continuity of production, each company should, at any given time, have at least one type in production, one in development, and one in the design-study stage. The type or type of planes to be developed and produced by each company should be determined (a) by the needs of the service, and (b) by the interest and special skills of the manufacturer. Companies which fail to develop successful aircraft or which fail to produce at competitive cost levels will, of course, eliminate themselves from military business. Conversely, a new group submitting a promising design should be encouraged and given the opportunity to become a producer upon demonstration of its capabilities.

In as far as possible aircraft should be produced by the developing company. More often than not the production airplane differs materially in detail from the original design. Engineering changes resulting from the changing requirements of the services are frequent during all stages of production. They may be complicated, and may exert an important influence on the ultimate performance and the final cost of the aircraft. It is considered essential, therefore, that the company which initiated the design should be responsible for

THE AIRCRAFT MANUFACTURING INDUSTRY (Continued)

all design changes during the course of production. It is accordingly recommended that as a normal procedure, production contracts be given to the organization which made the original design.

Where such a production order would overload that manufacturer's facilities however, the contracting service should require him to subcontract a certain percentage of the new contract (or the equivalent man-hours on a prior contract) elsewhere in the industry. Such a subcontract could involve complete aircraft, or any parts or subassemblies thereof. If the placing of such an order with the developing company would concentrate too much production in a single area, the service should place it elsewhere, arranging with the developing company for any necessary engineering assistance to enable the producing company to build the aircraft economically, and to keep up with any design changes.

Accessory development.—In the procurement of equipment from companies which do not operate exclusively in the aircraft field, it is important to provide incentives for military development. The Attorney General has recently proposed that all rights to patentable inventions made in the course of performing a Government-financed contract be assigned to the Government. The adoption of such a policy would turn research and development brains from Government developments to commercial and industrial developments. Unless instrument and accessory companies are permitted to retain design rights commensurate with the risks taken, they will tend to avoid Government development contracts.

Plant dispersion.—At the end of World War II, the aircraft and aircraft engine plants were well dispersed. A large part of our total production of military aircraft is now concentrated in the Los Angeles area, on Long Island, and at Seattle.

It is regrettable that the wartime-plant dispersion was not maintained. Our reserve plants (*i.e.*, Government-owned

the economy and other advantages of having modification and overhaul of military aircraft done by such civilian organizations under contract. This is particularly true when the same types of cargo or transport aircraft can be overhauled in the same shops for both the military services and the civil airlines. The services are not in agreement and stress the need for training their own overhaul personnel in their own shops. We recognize the validity of the argument but recommend that the services weigh carefully the savings possible through contract overhaul, and the possible long-term advantages of building up civilian staffs trained in such work.

Federal regulation of personal aircraft.—The present detailed requirements for certificating light aircraft of new design are complex, and tend to retard experimental design. The Commission agrees with the Administrator of Civil Aeronautics that it is time to recognize and encourage the moral and legal responsibility of the light aircraft manufacturers for the safety and integrity of their products. The Federal Government should continue to promulgate aircraft design standards in collaboration with established technical groups, research agencies and safety organizations, but compliance with these standards should be the primary responsibility of the manufacturer. After careful initial checking for competence, each should be required to certify to the airworthiness, the proper flight characteristics and operational limitations of the production type and to the fact that the airplane has been submitted to an exhaustive performance and service test. The present testing procedure of the CAA should be conducted and sworn to by the manufacturer.

To discourage the entrance of irresponsible or technically ill-equipped firms into the private aircraft industry and to prevent the deterioration of standards among established firms, we recommend that the Government establish simplified but adequate standards of fitness and ability to be met and main-

Excellent Blueprint

"... not only comprehensive, but notably intelligent. The five commissioners who prepared it have given the nation an excellent blueprint for development of air defense and air commerce ..."

Miami Herald

plants not now in operation) are still well dispersed. If, in response to a mobilization order, reserve plants are brought into production, the total aircraft manufacturing plant pattern would represent an effective geographical dispersal. If, on the other hand, an attack should precede activation of the reserve plants, the industry will offer highly concentrated targets. We recommend that, in future plant expansion, the services avoid further concentration in these areas as far as possible.

Plant reserve.—The Air Coordinating Committee proposed that a reserve of industrial plant be established and maintained, consisting of 16,000,000 square feet of specialized airframe plant area (19,000,000 square feet if plant dispersion were not maintained) and 10,000,000 square feet of specialized engine plant area. The program for a reserve of specialized plant has been modified to the extent that certain plants have been sold or leased, or are being offered for sale or lease, subject to recapture on 90 days' notice in event of an emergency. We recommend that this program be maintained to assure the continuing availability of these plants.

Machine tool reserve.—It was proposed by the Air Coordinating Committee that a reserve of general purpose machine tools be established and maintained, with 65,000 machine tools as a minimum. These reserve tools are being acquired and placed in storage by the Air Force and Navy under Public Law 364 (80th Cong.). We recommend that this program be completed.

Contract overhaul.—A number of substantial civilian organizations are engaged in the overhaul of transport aircraft. This is a specialized type of business quite separate from the manufacture of airplanes. Testimony before us has indicated

tained by each company selling personal aircraft. A manufacturer's certificate based on proven ability should be issued by the Department of Commerce. Periodic spot checks should be made, and the Department should have the power of revocation for just cause. By thus certifying qualified manufacturers they could, in turn, certify all personal airplanes.

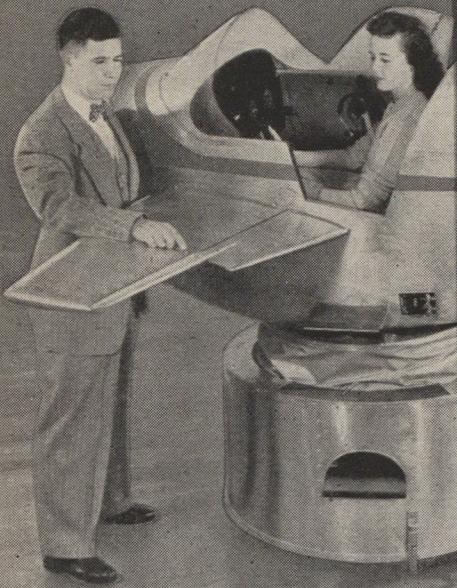
Export assistance.—The export of aircraft and aeronautical material provides a volume of business which, by helping to sustain the industry, contributes to the national defense potential and to our economic welfare. The Export-Import Bank should, we believe, be utilized as a financing medium to aid in making sales of aircraft and aeronautical equipment in foreign countries. The Export-Import Bank now requires that the manufacturer assume up to 25 percent of the credit risk. This is beyond the financial means of most of the American aircraft manufacturers at the present time. In view of the national defense advantage, we believe the Bank should be authorized to assume a larger share of the credit risk on export sales of aircraft and aircraft equipment.

Conclusion.—Setting up the National Military Establishment was one of the most important moves in the long struggle to provide the United States with adequate air power. As it settles down into a smooth running organization it can, and must, deal with the many policy problems that have long plagued our aircraft manufacturing industry in peacetime.

The above recommendations embody our opinion of the minimum requirements of the aircraft industry at the present time. The needs of this important element of our national defense must be dealt with sympathetically by those charged with the future security of the United States.

AIR AGE STUDIES

Professor Edward Cole



These Kids ASKED to Stay After School...

THEIR school day is over, yet they asked for more . . . after hours. Their bicycles and ball bats wait forgotten at home . . . while they crowd eagerly around a new instructor.

For wings have come to America's schools. And these kids are as air-minded as eaglets and just as eager to learn how it feels to fly . . . Overlook the importance of this and you overlook the biggest thing since the teen agers of the 20's started to tinker with automobiles.

Their heritage of mechanical ingenuity

has now been directed toward the airplane. Today, in every state in the union, thousands of boys and girls are seeking knowledge about aviation. They will determine the nation's airborne economy. They will be the standard bearers in America's struggle for survival in the Air Age.

And on the job in the nation's schools—helping these pupils as it is aiding their older brothers in the Air Force, is Link training equipment . . . designed to make aviation and its effects meaningful to youngsters and oldsters alike.

FLIGHT TRAINING



ON THE GROUND

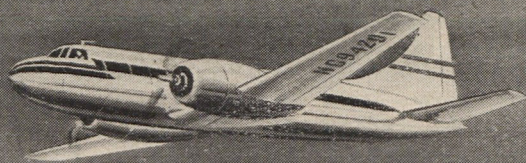
LINK

AVIATION, INC.
BINGHAMTON, NEW YORK

DEDICATED TO THE "AIR CONDITIONING" OF AMERICA

Convair-Liner...

the newest twin-engine airliner flies with Curtiss Propellers

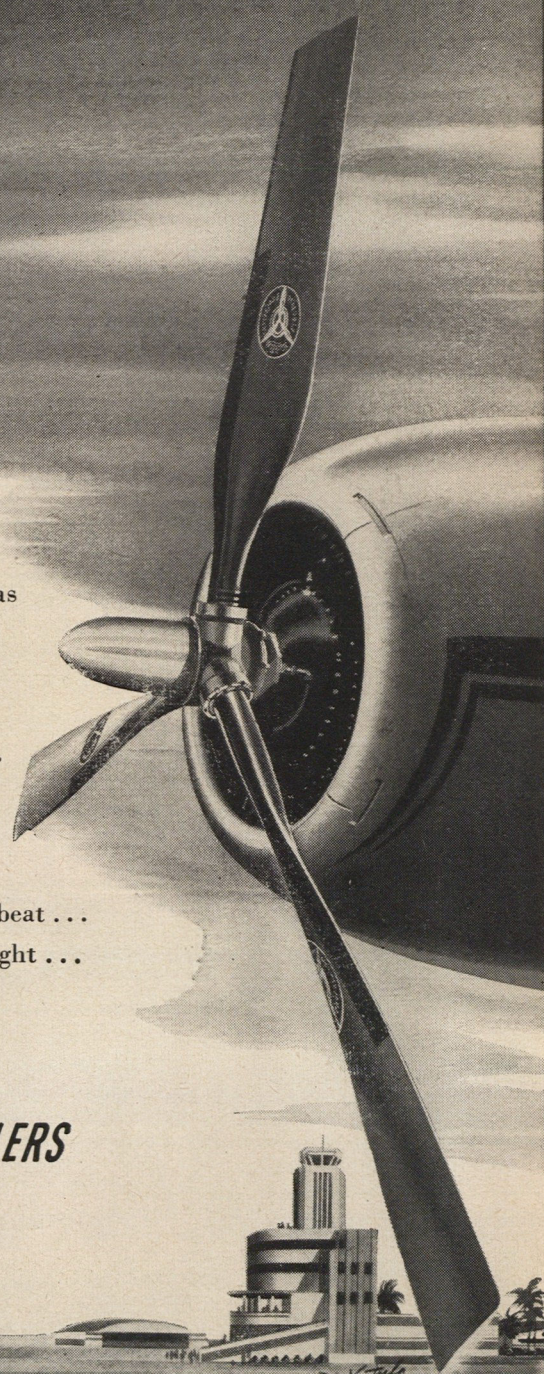


- ▶ The Convair-Liner now flies with Curtiss Propellers—the type which has proved so successful on the Boeing Stratocruisers, Douglas DC-6's, Lockheed Constellations, and other four-engine aircraft.
- ▶ Thus, Curtiss brings to twin-engine airplanes propeller features long associated exclusively with four-engine airplanes. *No other propeller* provides all these service-proved advantages...
- ▶ *Reverse thrust* for smooth, air-cushioned landing, effective braking on wet or icy runways, backing or maneuvering without ground assistance, reduced brake and tire wear ... *automatic synchronization* for elimination of noisy, tiring, off-rhythm engine beat ... *hollow steel blades* for greater durability and reduced propeller weight ... *selective fixed pitch, dependable feathering, thermal de-icing.*

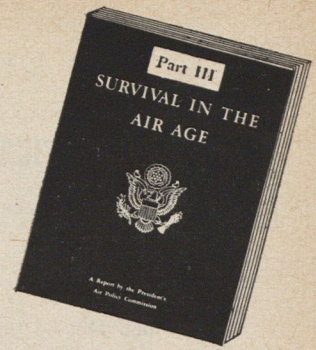


CURTISS ELECTRIC PROPELLERS

A PRODUCT OF
PROPELLER DIVISION CURTISS-WRIGHT CALDWELL, N. J.
FIRST IN FLIGHT



Aeronautical Research and Development



Since air research and development are a form of national insurance, the US must . . .

- ▶ **Extend its fundamental knowledge of aerodynamic phenomena, especially in the supersonic speed range**
- ▶ **Grant the highest priority to coordinated research in guided missiles, and not limit such effort by failure to provide adequate funds**
- ▶ **Intensify coordinated research activity in the employment of atomic energy as a propellant for aircraft and guided missiles**
- ▶ **Continue research on piston type engines while pursuing research and development on gas turbines and rocket engines**
- ▶ **Allocate to each aeronautical research agency an annual lump sum appropriation and an annual revolving fund for new facilities**
- ▶ **Authorize aeronautical research contracts covering a 5-year period, and liberalize cost allowance policies on research work**
- ▶ **Give a high priority to education in the aeronautical sciences, and remove the salary ceiling for top-calibre government scientists**

There is little need to stress the point that intensive research and development in aeronautics are essential to the national defense and to the national welfare. No witness before the Commission presented a contrary view. All agreed that whatever money is spent for the purpose can be looked upon as a vital form of national insurance, a direct contribution toward maintaining our leadership in the air.

Evidence placed before the Commission, however, indicated some need for reappraisal of certain phases of our research programs and policies. During World War II we concentrated on the development of existing types of aircraft for production, and practically abandoned fundamental research in the aeronautical sciences. By VJ-day our reserve of research information was largely exhausted. If we are to have

an air establishment of the first quality, we will have to concentrate, as other nations are doing, on our fundamental aeronautical research. Development—that is the making of new aeronautical devices—cannot move ahead faster than our fundamental research.

Most witnesses urged the necessity of increased appropriations for the purpose of expanding research activities. In this we concur. We have been convinced that there is urgent need for extending our fundamental knowledge of aerodynamic phenomena in all speed ranges, particularly in the supersonic (above 760 m. p. h. at sea level), as such speeds are of particular importance in the design of high-speed piloted aircraft and of long-range guided missiles. Also, we are seriously deficient in our knowledge of theory and its application in

AERONAUTICAL RESEARCH AND DEVELOPMENT (Continued)

the matter of accurate guidance of missiles to selected targets. Evidence is in the record that we lack the minimum facilities necessary to do an adequate research job in those new areas.

The provision of additional funds, however, will not of itself solve the problem. The most serious shortage is in personnel. Due to the hiatus of the war years in the output of young engineers and scientists, we are short of qualified people. Recognizing this need, the Commission is unanimous in its belief that every possible encouragement should be given to our universities and scientific institutions to train more, and better aeronautical scientists. Undergraduate courses should be strengthened and exceptional students encouraged to continue in advanced work. The proposed establishment of a National Science Foundation with its program of grants and fellowships would help materially. Government contracts for supplemental research granted to educational institutions offer one of the most effective means of providing funds for the purpose. The Commission recommends that this method be developed as far and as fast as is consistent with the results obtained.

For national security, second best military aircraft are simply not good enough. On the commercial side, inefficient or unsafe aircraft and unreliable or inadequate navigational aids cannot be tolerated.

We must keep ahead in the race for military supremacy. And it is a race. Although the great aeronautical laboratories of Germany, Italy, and Japan have been dismantled and destroyed, other strong contenders are now in the field. Britain, France, and Russia are vigorously pushing new aeronautical research programs. The British, in spite of a generally strained economy, have made drastic sacrifices to make available this

imately \$450,000,000, roughly \$100,000,000 over the wartime peak. The following fiscal year appropriations dropped back to some \$240,000,000.

For fiscal 1948, the Government is spending about \$312,000,000 for aeronautical research and development. This figure represents the total direct effort toward the solution of problems in the aeronautical sciences. Other branches of the physical sciences, however, are making increasing contributions to the field of aeronautics. For example, research in the ceramic industry may lead to improvements in the design of jet turbine blading, or physiological research may yield results that may change the design of pressurized cockpits for high altitude fighters. It is difficult to evaluate the worth of such contributions in dollars, but it is evident that the total amount of money going into aeronautical research is considerably greater than the figures specifically earmarked in the budgets.

Aeronautical research and development programs within the aircraft industry are almost entirely supported by the armed forces. Although some very important research is carried out by industry at its own expense, the cost is small when compared with that financed by the Government. The work carried on by the aircraft companies is chiefly development of particular items under contract with the services. If, for example, the services need a ground-to-air missile with certain characteristics, contracts may be let to several aircraft companies to provide a number of design studies. The development—that is, the attaining of the desired result—is left to the ingenuity of the companies.

The armed forces will allocate approximately \$168,000,000 for research and development contracts with the aircraft in-

Cold Analysis

“... what the committee sets forth is not fear-mongering. It is a cold, reasoned analysis of conditions which cannot be denied and which it would be a fantastic extreme of folly for the American people, their Congressmen or their Government, to ignore.”—*Philadelphia Inquirer*

year some £30,000,000 (\$120,000,000) for air research.

The French, although seriously hampered by postwar fiscal and social problems, are reported to be building a large group of high-speed wind tunnels somewhere in the French Alps. A huge hydroelectric station, developing some 100,000 horsepower, is being installed at the site to provide the necessary power. Other prewar research facilities are being reactivated as fast as general economic conditions permit.

There is published evidence that aeronautical research and development programs on a very large scale are under way in Russia.

Since our national security is keyed directly to the state of our aeronautical knowledge, it is only logical that the responsibility for planning and guiding of the Government's overall development programs (as distinct from research) should be vested in the military. The recently established Research and Development Board within the new National Military Establishment, is charged with this responsibility. Through its several technical committees and subcommittees it coordinates the aeronautical programs of the Air Force, Navy, and other agencies with activities in other related scientific fields, authoritatively within the National Military Establishment and on a voluntary basis with respect to external agencies. The establishment of this Board, is, in the opinion of the Commission, a proper and sound means of advancing and coordinating this very important work.

The financial support of aeronautical research in the United States has been accepted as a proper responsibility of Government. The work contributes directly to the national defense, and the scale of operations is now so great that no civilian organization could foot the bill. Expenditures for the purposes actually increased in the first postwar year to approx-

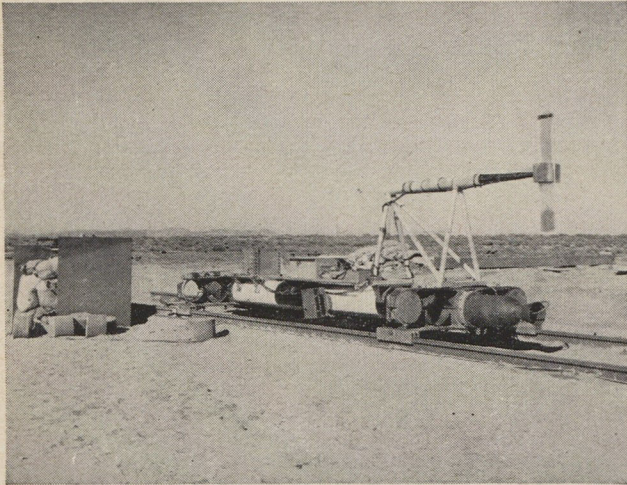
industry during the fiscal year 1948. In the main, the work performed under such contracts is prototype development—the experimental construction of new aircraft, propulsion units or allied equipment for test purposes only. In some cases the studies are more academic in nature, and no physical article, except a report, is called for under the contract.

Aeronautical research work in educational and scientific institutions is almost entirely supported by the Government. Few universities could sponsor extensive aeronautical projects with their own funds. The total to be allocated by all Government agencies for such work in universities, during the year 1948, is \$31,000,000. The share of the National Advisory Committee for Aeronautics is \$800,000.

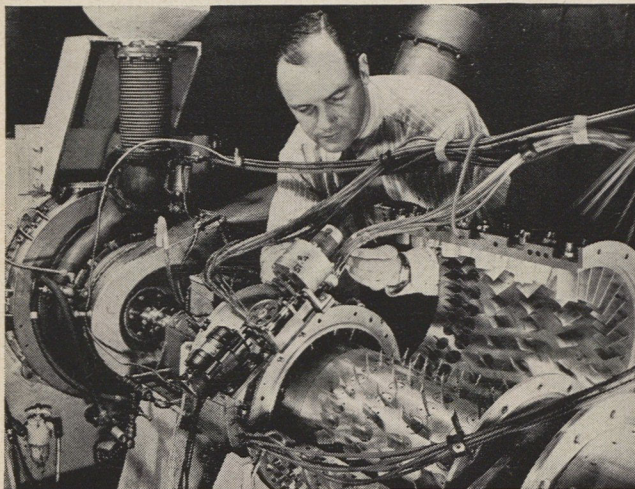
Thus, of the total appropriations to the services, approximately \$200,000,000 goes for research and development work carried on by the aircraft industry and in educational and scientific institutions under contract to the services. The balance is spent in planning and evaluation by the services in their own facilities.

This Commission does not consider it within its province to evaluate specific research projects, nor to recommend detailed programs to be followed by research laboratories. During the course of the testimony, however, a number of suggestions were made concerning additional research projects or desirable changes in specific current programs. They are listed below. Doubtless there are many others which did not come to the Commission's attention. The arrangement is alphabetical, and does not in any way reflect an order of relative importance.

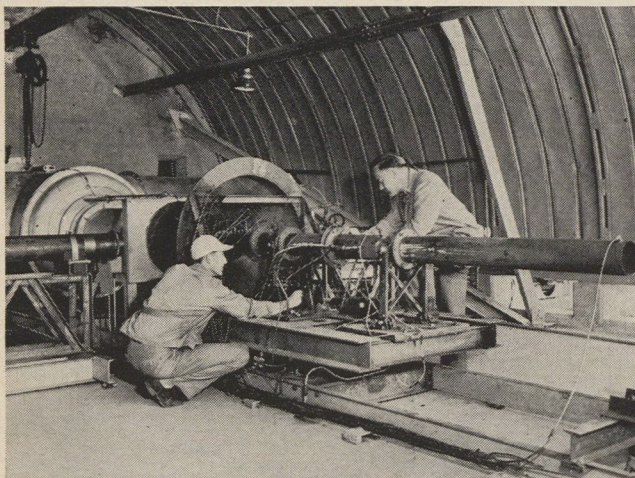
Atomic propulsion.—The possibility of employing atomic energy for the propulsion of aircraft and guided missiles is sufficiently important to warrant vigorous action by the Atomic



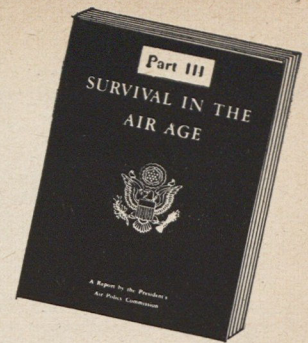
A 1000 mph trolley developed by Northrop to test equipment for supersonic planes in lieu of adequate wind tunnels. NACA has now begun large scale tunnel building program.



The gas turbine holds much promise for aircraft propulsion. Now coming into general use in high speed military fighters, engine has indicated high efficiency and power potential.



At present the USAF's research program lacks trained personnel as well as money. Above, two aircraft engineers inspect simplest of all means of propulsion—the ram-jet.



Energy Commission, the Air Force, the Navy, and the NACA. Some work of a preliminary nature has already been done in this field by the AEC, the Air Force and its NEPA project. Immediate steps should be taken to intensify research effort in this field under a plan which would be supported by all of the above agencies and under which the project would be given the benefit of all the background information in the atomic field actually needed by the recipients for the appropriate performance of their respective functions.

Electronics.—The science of electronics contributes to almost every segment of modern industry. It makes a vital contribution to our national security.

At least three very important phases of current aeronautical development involve extensive use of complicated electronic devices—(1) the detection of the approach of enemy aircraft or missiles; (2) the guidance of our own missiles and pilotless aircraft to targets, and (3) the navigational and blind landing requirements of all aircraft. As a result, the Air Force is expending approximately 12 percent of all research and development funds for the current year on electronics—and the Navy's Bureau of Aeronautics, 18 percent.

It has been suggested to the Commission that the extent and diversity of electronic research calls for better means of coordination than now exist. The question has been raised as to whether or not the results obtained in the various laboratories are being made available in full to researchers in guided missiles, and in the more highly specialized fields of aeronautics. To resolve these problems, the establishment of a new Government agency, a National Advisory Committee for Electronics paralleling the NACA, has been suggested. Its primary function would be coordination, but the plan, as proposed, contemplates also the establishment of research laboratories, including an extensive firing range for free-flight tests of guided missiles.

After studying plans submitted by existing research agencies for new laboratories and new flight test stations and missile firing ranges, it would appear that adequate facilities to handle the electronic requirements for aeronautical research for the foreseeable future will be forthcoming. The injection of an entirely new organization into the field would tend to complicate rather than simplify the problems. It will be difficult enough to find technically qualified people to man the presently projected facilities without considering another one.

Guided missiles.—During the latter phases of World War II, Germany, after a great amount of basic research and experimentation, evolved two forms of guided missiles—the subsonic airborne "buzz bomb," V-1, and the supersonic, high altitude rocket, V-2. Both were reasonably successful at ranges up to 200 miles. In intercontinental warfare of the future, both types may prove to be useful, but their characteristics must be greatly improved and their range must be greatly extended.

The German techniques are now well known, but the development of successful missiles for extremely long ranges is still a tremendous problem. It will require the most intensive application of our best research talent, coupled with the expenditure of very large amounts of money for experimentation, before we can hope to produce a pilotless weapon of either class that will have a reasonable chance of hitting a distant selected target.

We must also consider the defense against missiles launched against us, an even more difficult problem. Nothing was developed during the war that could cope with the V-2, yet we must be prepared to intercept and to destroy invisible missiles that will plunge toward our cities out of the stratosphere at speeds of over a mile per second. The practical difficulties involved in detecting, tracking, intercepting, and destroying them with our missiles miles above the earth are enormous. Whether or not this can ever be done is not clear.

The rapid development of long-range missiles for offense, and of accurate, high-altitude target-seeking missiles for de-

AERONAUTICAL RESEARCH AND DEVELOPMENT (Continued)

fense are of great importance to our national security. Research in these areas must be given the highest priority. Further, research effort must not be limited by failure to provide adequate funds. What may appear to be overgenerosity in appropriations now may easily prove most economical in the long run.

The funds being spent this year on guided-missiles research are not insignificant. Some \$75,000,000—almost one-quarter of the total research and development appropriation—are earmarked for the purpose. This work also benefits indirectly from appropriations for research in many other fields.

The figures which have been furnished us indicate some disparity of effort in the subsonic and in the supersonic, pointing up a trend toward the abandonment of the slower, more vulnerable, missiles. The Commission has been advised, however, that the subsonic missile offers the most practical means of testing and developing the intricate guidance mechanisms for the supersonic types, and it suggests, therefore, that the technique be fully exploited before funds for subsonic research are entirely eliminated.

The Commission has noted that at least four agencies of the National Defense Establishment are concerned with research on guided missiles. It understands that their activities are coordinated through a very active committee of the Research and Development Board. In view of the extremely high cost of this work, such coordination should be given high priority.

From the evidence submitted, it appears that there may be some danger of overrunning our basic knowledge in an effort to develop production articles too soon in order to

development of aircraft suitable for private use by the NACA continuing some research directly applicable to small aircraft. Any device that would make possible lower landing speeds coupled with higher top speeds would be significant from the standpoint of the private pilot and would have useful military implications.

The military services cannot offer much in the way of direct financial assistance to the individual experimenter who may have a new idea for the development of a new type of personal aircraft. They should lend what encouragement they can, however, in the form of loans of surplus or semiobsolete equipment for experimental purposes. The prewar practice of lending engines, instruments, propellers, etc., should be pursued whenever occasion offers. When such equipment is thus loaned, the services should be given first information on any new inventions or developments which may result.

Power plants.—The Commission has been advised by witnesses that gas turbines and rocket engines will ultimately replace reciprocating engines in future military aircraft. There is no doubt that these new and powerful power plants hold great promise for the future and research and development on them must be pursued diligently. The jet engine is applicable to high-speed fighters and fast bombers. It is the power plant that will make possible routine flights in the supersonic-speed range. Its development, therefore, is of prime importance. The present limitation of the jet engine is its high fuel consumption, which reduces the range of the plane. Its service life is also relatively short. Research must be directed toward overcoming both handicaps. The turbine-propeller combination offers possibilities for range improvement at somewhat

Thrice Urgent

"... the new strategic concept outlined by the President's Air Policy Commission ... is thrice-urgent for the United States."—*Pittsburgh Post Gazette*

justify the optimistic predictions of the "push-button warfare" protagonists. We must first be certain that we are on the right track, and not permit ourselves to be led up blind alleys by too great impatience for results.

Here is a case where making haste slowly will certainly pay. A modern long-range military missile is an exceedingly complicated device built of the finest materials to watchmaker's standards. It depends for its proper functioning on the solution of the most complex problems in aerodynamics, ballistics, electronics, and metallurgy. It is extremely expensive. Time and money will be wasted unless a reasonable balance can be maintained between research progress and development demand.

Helicopters.—The direct-lift, rotary-wing type of aircraft appears so promising that continuous research and development effort is warranted. It has many possible military and commercial uses. Its capabilities for rescue work at sea and in isolated areas has been well demonstrated by the Coast Guard. There are many other applications that should be thoroughly explored. There are several young and vigorous companies in the field that may be counted upon to push helicopter development as fast as the basic data becomes available to them.

Lighter-than-air.—We have been advised that nonrigid airships (blimps) of the type used during World War II will be useful in the future for carrying radar and other devices for the detection of submarines. The Navy should continue whatever research and development effort may be necessary to insure suitable lighter-than-air equipment. The decision made by the Army and Navy some years ago that the large rigid airship had little military use appears sound.

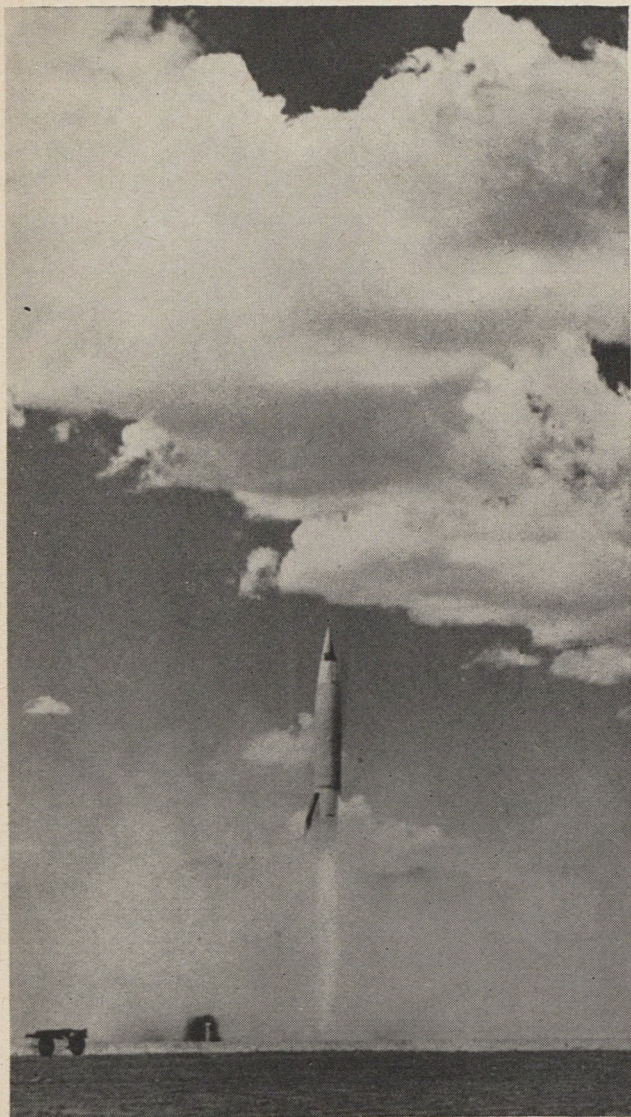
Personal aircraft.—Government may properly encourage the

lower aircraft speeds. Continued research and development on this type is also important.

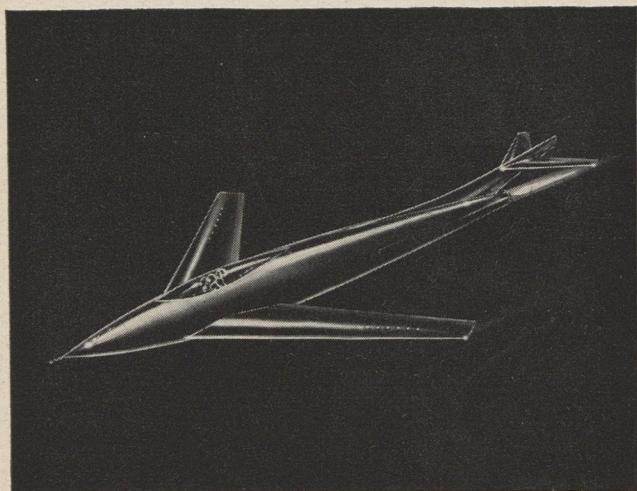
The suggestion has been made that all research and development on piston-type engines should be abandoned to permit full concentration on the newer types. In this we cannot agree. The conventional combination of the piston engine and propeller will be useful for many years for both long-range bombers and transports and, therefore, any suggestion of the abandonment of research and development in this field seems premature. Moreover, it is not impossible that new applications of ducted fan or compressor jet designs may actually open up new uses for the piston engine. These potentials should be completely exhausted before the conventional engine is discarded.

Transport equipment.—The design of transport and cargo aircraft benefits directly from research and development on military types. As far as basic theory is concerned, laboratory data secured for one class applies equally well to the other. For this reason there appears to be little need for specialized basic research (apart from development) on the airplanes themselves. It is obvious, however, that there is an urgent need for improvement in equipment and methods required to increase the safety and regularity of transport operations, civil or military. The most important single item for intensified research is in the field of navigation, particularly the problem of making safe landings on airfields where visibility is limited because of bad weather conditions.

The Commission has heard a great deal of testimony regarding the several systems that have been devised for making blind landings with aircraft. Whether Ground Controlled Approach (GCA) or Instrument Landing System (ILS) or any combination thereof is proper for any particular site is



In intercontinental warfare of the future, Finletter group believes V-2 type guided missile may be useful if adequate research is devoted to improving characteristics, range.



An artist's conception of USAF rocket ship now on the drafting board. Regardless of such "advanced" designs we must, says report, extend knowledge in supersonic aerodynamics.

a matter that must be decided on a purely technical basis. The systems are not competitive. One supplements the other, but the combination is extremely expensive. There may be more effective and more economical ways of doing the job.

The Government is now making installations of one or both systems at some major airports in the United States. This is certainly a long step in the right direction. At best, however, these installations do not permit full operation under all weather conditions. More money and more research effort must be put on the problem.

Since the blind landing of military aircraft in wartime may be even more important than the handling of commercial aircraft in peacetime, the Research and Development Board of the National Military Establishment should take the matters under immediate advisement in its Air Navigation Committee.

The Commission has, of necessity, limited itself in the preceding paragraphs to outlining certain suggestions for particular avenues of research. Paradoxically, it can be more specific in the broader areas of policy.

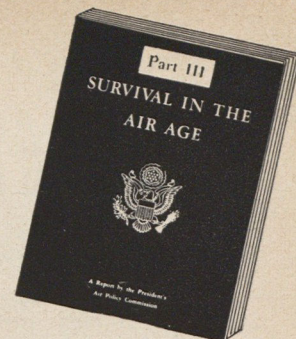
Budgetary policy.—The ordinary procedures laid down by the Bureau of the Budget for the procurement of specific articles are inadequate when applied to research projects. When a particular object is the end-point of a purchase order, a specification may be written, a definite delivery date agreed upon, and an estimate of cost may be made. A research project, on the other hand, particularly in a field which is as fluid as that of the aeronautical sciences, does not lend itself to this approach. It is practically impossible to forecast the outcome of a pure research project, to say nothing of detailing the procedures that must be followed, the inventions that may be necessary, or the wastage that may develop in the course of the work. To try to satisfy a formula which involves a detailed description of the proposed research and its expected results approximately a year in advance of the beginning of the work is a sheer waste of effort for the research agency and for the Bureau of the Budget alike.

To simplify procedures and to eliminate restrictive budgeting limitations on urgent research programs, the Commission recommends that each aeronautical research agency be allocated a lump sum annually. No fixed amount should be allocated to any particular piece of research. The agency should have blanket permission to distribute funds to meet the needs of the several projects on its program. At the end of each fiscal year it would be required to present a detailed accounting of the utilization of its funds to the Bureau of the Budget and to the Congress.

The above applies to funds required for the conduct of research. Frequently an agency is hampered because an unexpected need arises within a fiscal period for the construction of a new facility or for the installation of some equipment urgently required to carry out a particular project. To meet such emergencies the Commission further recommends that each agency be allotted annually a revolving fund for the construction of new facilities. Expenditures from this fund should be approved by the Director of the Budget and should be reviewed annually by the Congress.

One of the most serious limitations on research at the present time is the inability on the part of a research agency or a contractor to commit funds for a period greater than two years beyond the fiscal year for which the funds are appropriated. Research is inherently a long-term matter. Few projects can yield satisfactory results if rushed to completion to meet a short-term contractual deadline. The Commission recommends, therefore, that appropriate legislation be passed so that research agencies may be granted contracting authorization to cover a five-year period, and that research contracts covering work in universities and outside laboratories be drawn on a five-year, rather than a one- or two-year basis. It urges the enactment by Congress of H. R. 4035 (80th Cong.). This bill facilitates research and development by and for the Air Force and Navy.

Some safeguards must be provided. A limit must be put on



AERONAUTICAL RESEARCH AND DEVELOPMENT (Continued)

the current rate of expenditure to insure that the large volume of contract carry-over will not be used up at an improper rate and run out too soon. Also some provision should be made to recover funds that may become frozen in contracts that prove to be impracticable of completion, and should be terminated.

It would appear worthwhile to encourage manufacturers to accept research and development contracts more readily by liberalizing policies regarding cost allowances. It is now the practice to disallow most of the items that would usually be included as normal overhead in negotiating commercial contracts. As a result, manufacturers tend to shy away from taking contracts on projects that may be inherently worthwhile, but on which they stand to lose money.

Items for research are generally disallowed in aircraft contracts, unless it can be shown that the research involved applies directly to a particular contract. Pure research can seldom be so specific. The net result has been to discourage general research on the part of aircraft manufacturers. They have been forced to rely almost entirely on the output of the NACA for their fundamental information.

The Commission would not argue that research effort by the NACA be reduced in any degree, but it does recommend that Government auditors be allowed more leeway in accepting reasonable costs for research by manufacturers as legitimate charges against development contracts.

The Commission recommends that the NACA be granted funds to strengthen its organization where necessary for the proper coordination of all aeronautical research. The heads of all Government agencies involved in aeronautics are urged to establish and enforce a policy of seeking the advice of the

directive, undertook the job in midsummer of 1945. With the help of the industries and the services, it evolved "A National Program of Transsonic and Supersonic Wind Tunnels," now known as the "Unitary Plan."

The Plan provides for 16 small tunnels to be located in universities and other educational institutions throughout the United States; several new supersonic tunnels at existing Government laboratories; and the establishment of two new research centers.

We are thoroughly convinced, however, that the United States is dangerously short of equipment for research in the transsonic and supersonic speed ranges. This deficiency should be remedied as quickly as possible. We recommend that the 16 supersonic tunnels projected for the universities be authorized and installed as quickly as possible. We recommend also that we proceed without delay in supplementing existing laboratory equipment under the Unitary Plan in whatever order of priority and at whatever rate will be recommended by the Research and Development Board.

The most serious bottleneck in the research and development picture as laid before the Commission, is not money nor facilities—but men. During the course of the war, the output of engineering and scientific graduates from our schools and universities suffered a serious decline. We are short-handed now, so there is real danger that we may find ourselves without qualified personnel to man the new wind tunnels and test centers that are being planned. The problem is acute in all scientific fields.

The Commission recommends that education in the aeronautical sciences be given high priority in research policy discussions.

Defense Against War

"... the 'defense' the commission speaks for is at best a defense against war itself, at worst a defense against the danger of defeat if, in spite of everything, war comes."—*Dayton Daily News*

NACA in the planning and execution of any of their own aeronautical research projects.

It has been suggested that the NACA should expand its program of research outside of its own laboratories in order to bring to bear as much of the nation's air research potential as possible on the urgent problems in the field. We agree. The NACA should take the leading role in sponsoring supplementary aeronautical research in educational and scientific institutions. There is a limit, of course, to the rate at which Government funds can be expended efficiently in such institutions. The availability of qualified personnel is usually the controlling factor, but it is unlikely that the capacity of our educational institutions to absorb additional research in aeronautics has yet been reached. It should be expanded to its fullest extent. It would appear to be profitable for all Government agencies dealing in aeronautics to have a limited program of this nature, coordinated, of course, through the NACA.

As far as research is concerned, a clear distinction should always be made between *coordination* and *control*. Research of all kinds welcomes coordination, but resists control. Researchers must be kept informed of the work of others in their own and in related fields in order to avoid duplication of effort, but it is fatal to try to steer their thinking toward any predetermined goal. Development may be kept within planned limits, but research must be unrestricted.

A growing need for intensified research in transsonic and supersonic aerodynamics has led recently to many proposals for new supersonic wind tunnels. Because high-speed tunnels are expensive and supersonic research is costly, some coordination seemed necessary to avoid waste and duplication of effort. The NACA, quite properly, within the scope of its

The placing of supplemental research contracts in universities and other educational institutions is one way of improving the situation, but that in itself is not enough. Without further encouragement, the demands for scientific personnel of all kinds will cut into the available supply of those who might normally tend toward specialization in the aeronautical sciences.

One way to attract capable men for aeronautical research, particularly in Government, would be to lift the current limitation on salaries. Under the present Classification Act, the limit is \$10,000 a year, unless raised in individual cases by special act of Congress, or under certain limited powers within the National Military Establishment. In view of the impossibility of attracting top-calibre scientists at such a figure, with industry also bidding for their services, we recommend that the Congress remove the salary ceiling.

Continuity of leadership in research is highly desirable, particularly in view of the long-range nature of aeronautical problems. The research and development work of the armed services has suffered because of frequent transfers of officer personnel from engineering to operations or from shore to sea duty.

The Commission recommends, therefore, that the services offer every possible inducement for capable officers to enter aeronautical research and development work. They should be given opportunity to take graduate work in their specialty in the best civilian schools in the country at Government expense. They should be assured that they will be allowed to work in their special fields without interruption, and that their opportunities for advancement in rank will not be prejudiced as a result. Only by so doing will we be assured of the continuity of research leadership that we require.



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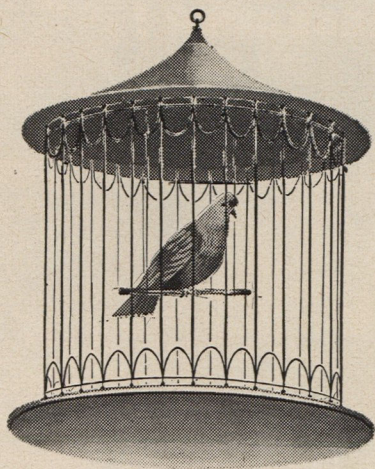
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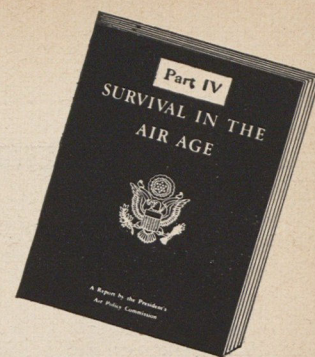
For the welfare of our nation in the air age, we must become a truly *air-faring* people. When millions instead of thousands travel and trade by air, the benefits inherent in air transportation will become as much a part of our existence as air itself.

Leading the way in creating a public attitude of mind compatible with air progress is the responsibility of the persons connected with aviation. Their opportunity is equal to their responsibility. In those who guide the destiny of air transportation, a courageous pioneering spirit must remain alive.

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Civil Aviation



Since national security requires that the airlines be kept strong, the US must . . .

- ▶ **Increase air mail rates, give serious consideration to carriage of all first class mail by air and to inauguration of air parcel post**
- ▶ **Specify that new type transport planes be operated regularly on non-passenger schedules before carrying passengers**
- ▶ **Provide a nation-wide system of air traffic control, navigation and landing aids to increase safety and improve regularity of service**
- ▶ **Control international air rates and continue the policy favoring limited competition among US operators on international routes**
- ▶ **Exercise economic control over all air carriers for hire, and prevent surface carriers from gaining control of air transport**
- ▶ **Foster commercial airport development and appropriate annually the full amount of funds permissible under the Federal Airport Act**

The airlines, the most important element of civil aviation, are passing through one of the most serious crises of their history. The domestic trunk lines of the country suffered an operating loss of approximately \$22,000,000 in the fiscal year ending June 30, 1947.

This situation is significant for two reasons. If not relieved it will contribute to the rapid deterioration of airline service to the public. A second reason is now of even greater importance. The airlines have a fleet of aircraft of great value to the military services as a reserve in time of war. As a potential military auxiliary, the airlines must be kept strong and healthy. They are not in such a condition at the present time.

Most of the airlines are in financial difficulties for a number of reasons. Both their management and Government aviation officials were overoptimistic as to the volume of postwar passenger traffic. Starved for both airplanes and personnel during the war, the lines hired large numbers of new people when the war ended, ordered many new airplanes and in several instances made what may prove to have been unwise route extensions.

Losses for a number of lines began in the latter half of 1946. There were high expenditures due to the changeover from war to peacetime conditions. These included costs from the expansion of routes, services, and organizations; the introduction of new types of airplanes; rapid and unforeseeable cost increases; a reduction in passenger fares and mail rates coupled with a decline in mail volume; the reappearance of seasonal declines in passenger traffic; a series of dramatic accidents; and public dissatisfaction resulting from lack of

dependability. Strikes and the grounding of airplanes have added additional heavy financial burdens on some lines. To a large extent the causes of these losses are temporary, but only if the airlines and the Government profit by the recent experience.

The revenue from passengers and cargo, plus a revenue for the carriage of the mail roughly equal to the passenger rate, will not support the operations of many of the companies. If they are to continue in operation and start again up the ladder toward self-sufficiency the Government will have to increase the mail rates.

We consider that direct Government financial aid to commercial airlines is fully justified on grounds of national security and economic welfare. We believe the air transport system of this country can, with such aid now, become self-supporting in the future. We are convinced that any impartial investigators of air transport would endorse the use of public funds to obtain such a sound air transport system. This means the continued granting of subsidies to airlines for an additional period.

It is not only necessary that the Civil Aeronautics Board act quickly in determining air mail rates but that it grant enough mail pay to keep all the lines in business to the extent required by the public interest, provided their difficulties are not due to dishonest, uneconomical or inefficient management. This can be done at a total cost that appears reasonable compared with other Federal expenditures for aviation purposes.

When the Civil Aeronautics Board made temporary up-

CIVIL AVIATION (Continued)

ward adjustments in mail payments for certain carriers in financial difficulties in the spring of 1947, at the same time it wisely initiated field investigations into the efficiency and economy of those carriers. It is admittedly difficult for any Government regulatory agency to determine whether the management of a particular company in any field is in fact efficient and economical. Yet such a requirement is imposed upon the Board by the mail rate provisions of the Civil Aeronautics Act.

It has therefore been suggested to us that standard operating costs for various types of services be developed by the Board. These standard costs would be kept current with changes in the general price level by frequent adjustments to conform to an industry cost index. Components making up the index would be the major items which enter into airline costs. The standard operating costs could then be used as yardsticks on which "need" air-mail payments could be based. We recommend that the Board give this problem further study and investigation.

A suggested financial aid to the airlines would be the carriage of first-class mail by air where delivery would be expedited. The test as to what first-class mail shall move by air should be the best mail service to the public.

Our recommendation is that the step of carrying by air all first-class mail which can be expedited thereby and the step to parcel post service by air not be taken until the airlines achieve a satisfactory regularity status. At that time we recommend that the Congress should give most serious consideration to these proposals.

The question of safety in commercial aviation is of prime importance. Airplane travel is, in fact, far safer than the public believes. The increasing size of planes, with the resultant increase in number of passengers killed in any one accident, has increased public anxiety out of all proportion to the actual conditions of safety. The disproportionate amount of publicity inevitably given airline crashes gives an unwarranted impression that airline travel is basically unsafe. Statistics on scheduled airline operations compiled by the Civil Aeronautics Board show that the chances of fatality in terms of passenger miles flown are very slight.

Normal competitive business factors, between manufacturers and between airlines, as well as the pressures of traffic upon equipment, result in a strong tendency to put new planes into service as quickly as possible. In spite of this, new planes have been put through long and careful test periods. It is our belief, however, that events have proved that these periods have not been long enough.

We recommend that new types of transport planes be operated regularly on nonpassenger schedules for a specified mileage before passengers are carried. The period should be sufficiently long to permit mechanical or design weaknesses to become apparent under normal operating conditions.

Next in importance to increased safety on the airlines is an increase in regularity of service. Air travel will never be mass transportation until people are reasonably certain that they can depart and arrive on schedule.

For safety and regularity on the airlines a basic requirement is a nation-wide system of air traffic control, navigation, and landing aids.

We consider that adequate airways and airports coupled with ground aids for traffic control, navigation and landing are so important to the preservation of our air transport system that the Government must accept the financial burden until the users of these aids are in a financial position to pay their fair share of the costs.

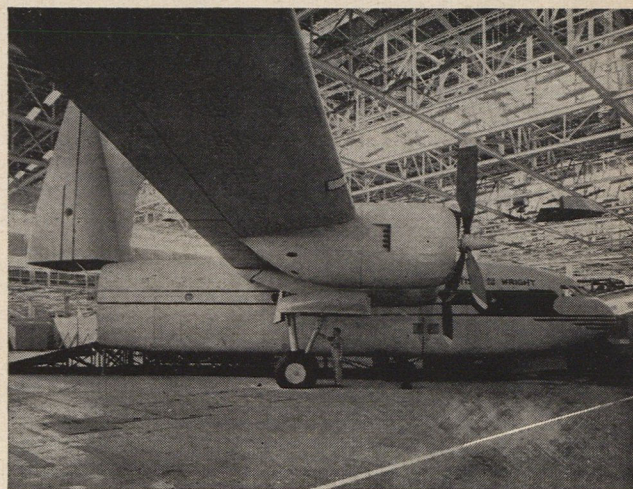
All-weather flying will not be achieved until adequate instrument landing systems are installed and operating at a majority of airline stops. Systems have been developed which would go far toward increasing reliability and safety.

The Civil Aeronautics Administration has already installed improved-type radio and high intensity lighting facilities at a considerable number of air fields. But the program has only been started. Before Congress can be expected to appropriate the large sums necessary for the development proposed, the various interested private groups and responsible Govern-

ment agencies must reach agreement on a common system of landing aids for immediate installation which will adequately serve both civil and military needs. Such agreement is now being sought by a technical group of experts. As soon as agreement has been reached, the Executive Branch of the Government should request the Congress for funds to carry out the necessary programs.

Equally important is early agreement on research and development programs in the field of electronic aids to aviation, which will insure that the means of handling traffic will keep pace with the steadily increasing traffic. The Research and Development Board is now engaged in exploring the types of research and development in electronic aids which will have application to both military and civil aviation. The work of this Board should be expedited and coordinated.

Larger expenditures for electronic aids to air traffic control, navigation, and landing will do more than anything else fore-



In the air cargo field, Report recommends establishment of commission to develop an all-cargo design for either civil or military use. CW-32 above, Curtiss bid for type needed.

seeable today to build the airlines toward economic self-sufficiency. They will also materially bolster certain phases of the national defense.

We believe that Government money can be spent more productively on the means for increased regularity of operation than by increasing subsidy payments to support additional competition in the present airline system.

The question of dependability with safety is not exclusively a domestic matter. It affects the international operations of our air carriers as well. Testimony has been submitted which shows that aviation communications and electronic aids are in a very unsatisfactory state on most of the international routes now in operation. We have investigated the "joint support" program of the International Civil Aviation Organization. Under this program each nation whose airlines expect to use a facility outside its own territory which is not being constructed by the state where the facility is found to be required, contributes to the cost of its establishment and operation in proportion to the use made of the facility. It was under this program that the nations flying the North Atlantic agreed on the Ocean Weather Stations Program for that area of the World. We believe that the "joint support" program of ICAO provides the best and fairest means of insuring the installation of adequate aviation aids along the routes of the world, and accordingly recommend that the Congress appropriate funds necessary to permit the US to participate.

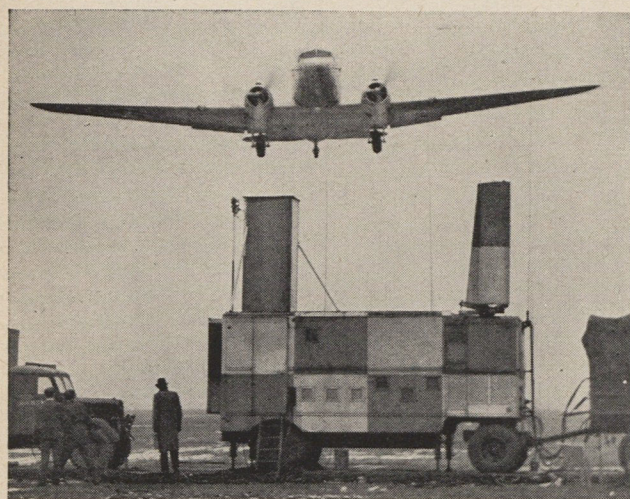
In cities where existing airport facilities are inadequate to

handle growing traffic, local government action, plus federal aid under the Airport Act, can and must remedy the situation. The Government can and should do much to improve regularity of service on the airlines. But the airlines themselves have control of a large share of their own destiny.

Domestic route pattern.—We recommend that the Civil Aeronautics Board defer for a short time decisions in new route certification cases. There is need for a comprehensive survey of the present situation and the development of a more cohesive philosophy. The resulting clarification of policy should bring about acceleration of subsequent route decisions.

As a part of such review, if the Board should find any routes no longer now required by public convenience and necessity, it should use any present legal powers such as suspension or reduction of "need" payments to reduce the effect of any errors in the present system. This appears preferable to causing instability in the industry through granting to the Board the right of outright revocation of routes.

Contract carrier regulation.—Although the Civil Aeronautics



Regularity of service and safety is so important, says the Commission, that the Government must continue to be responsible for development of equipment such as GCA unit above.

Board has economic control over common carriers, it has no such control over contract carriers.

Much of the development of air cargo over the past two years is due to the aggressive and capable management of certain contract cargo carriers. Unfortunately, some passenger contract carriers have misrepresented their services, and have operated illegally as common carriers.

We believe that the economic regulation of contract carriers is necessary to prevent unstable conditions in the air transport field.

Air cargo development.—The question of air cargo development has been widely discussed. The issues appear to be two:
 ▶ Should the potential market for air cargo by common carriers be spread among more lines than now exist in the category, and

▶ Should there be subsidy stimulation of cargo carriage by common or contract carriers, or both?

In regard to the first issue, most common carrier airlines certificated for the carriage of passengers, property and mail, after a steady progression toward self-sufficiency from 1938 to 1946, have suffered a serious set-back. To advocate at this time the entry into this field of a large number of new carriers would certainly seem to postpone rather than hasten the attainment of such a state.

In regard to the second issue, we feel that the only excuse for the subsidization of cargo carriage by air at this time would be to develop a fleet of cargo planes to act as a mili-

tary pool for emergency use. One way to meet the military need would be for the services to buy the air transports they need in the same way that they buy combat aircraft.

The problem seems to warrant a more coordinated study of the number of transports needed, the potential commercial cargo traffic, and the possible subsidy cost to the Government than has been carried on. We recommend that the problem receive the immediate attention of the Air Coordinating Committee.

Witness after witness has testified to the difficulty of obtaining the amounts of private capital that are needed to develop new and advanced types of airplanes.

The soundest way to build up a pool of cargo planes for an emergency is to develop a cargo plane that can operate on a profitable basis. We are recommending the creation of an Aircraft Development Corporation whose initial and primary task could be the development of an all-cargo transport airplane. Such a plane would of course have to be useful to the military; but it should be designed primarily with a view to economic commercial operation.

Feeder airlines.—We recommend that the experimental period for existing feeder airlines remain for the present at 3 years, unless, it becomes evident that this period can be extended without burdensome cost in mail pay. Then, and only in that case, it should be extended, even if the initial testing period has not been completed. We also recommend that new certifications, if any are found to be required by the public convenience and necessity, be made for 5 years.

Surface carriers in air transportation.—The question of whether or not surface carriers, such as railroads, busses, and steamship lines, should be permitted to enter the air transport business is an important policy matter.

We recommend that the Civil Aeronautics Board prevent the control by surface carriers of the United States air transport system or any important segment thereof.

Airline finance.—Loans secured by equipment are difficult to obtain in the air transport field. Railroads are able to secure financial aid to buy new equipment through the sale of equipment trust certificates at low interest rates without restrictions on their operations or finances. It would be desirable if the equipment-trust method of financing, so successful with railroads, could be used for the purchase of air transport equipment.

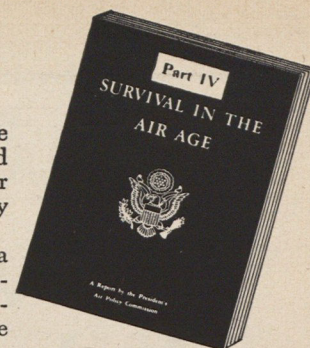
Competition vs. monopoly.—We agree with the present Civil Aeronautics Board policy which favors limited competition among American operators on international routes.

Some forecast that we shall carry less and less international traffic through inability to compete with low-cost, heavily-subsidized, foreign airlines and that we shall be driven from the skies, as our Merchant Marine was once driven from the sea. We do not agree with this pessimism. We believe that our international operators should receive such Government aid as will permit them to compete effectively with their foreign rivals.

Restrictions on travel.—International air travel can reach its fullest development only when governments have taken steps to do away with or improve the restrictive conditions which now exasperate the passenger. Requirements for the issuance of passports and visas; customs rules, and public health and quarantine regulations must be greatly simplified subject to proper security regulations.

International rights of operation.—The Commission has seen with regret the failure of the International Civil Aviation Conference at Geneva to agree on a multilateral treaty covering rights and obligations in international air operations. We feel, however, that agreements should not be sought at the cost of abandoning the so-called Bermuda-type provision in regard to the right to carry passengers between any two foreign countries on a route.

We feel that there should be no change in our present policy of exchanging operating routes through executive bilateral agreements, and fixing universal standards of practice and procedure through multilateral treaties.



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CIVIL AVIATION (Continued)

Economic control needed.—The Civil Aeronautics Act of 1938 gives the Civil Aeronautics Board control over all types of domestic traffic rates. Similar control over international rates is conspicuous by its absence from the act. We see no valid reason why rate control is not just as necessary in international operations as in domestic operations. We recommend that the Congress comply with the Civil Aeronautics Board request that it be given authority over all international rates.

Personal aviation.—Personal aviation clearly proved its value to the military services in the last war. In any future conflict there is little doubt that an air-minded nation is better prepared for an air war than a nation with undeveloped civil air facilities.

The usefulness of civilian instructors in military training is constantly being diminished by the advancement and refinement of military techniques and equipment. But most important is the fact that according to evidence submitted to the Commission civilian instructors are unlikely to be required for any emergency within the next 15 years because of the availability of World War II pilots. This 15-year availability of World War II pilots for instructor, patrol, and transport duties ensures personnel for these three important emergency functions which were largely performed by private pilots in the early years of World War II.

In the past 10 years the Government has paid for the training of hundreds of thousands of military and civilian pilots who compose the largest ready-made market for personal planes and for airport facilities that has ever existed. This great mass of pilots will decide the near future of personal aviation. If enough of them do not continue flying to support the personal plane industry, their neglect should be an unmistakable sign to airplane designers that a new airplane is needed which will provide more utility at a lower cost.

This Commission, trying to judge personal aviation impartially, believes that a healthy, personal plane industry is of value to the nation. We believe that it should be encouraged by the continuation of funds for airports, for navigation and landing facilities, and for basic improvement in personal plane design. We believe that the appropriations to personal aviation for these purposes, plus the very substantial financial assistance provided for veterans' flight training, are sufficient.

Federal regulation of personal aviation.—We recommend that every effort be made by Government aviation agencies to simplify and reduce the air and ground regulations affecting the personal flyer as a further step toward the development of personal aviation.

State enforcement and participation in federal aviation policy.—The postwar expansion of personal aviation has made impossible the direct Federal enforcement of Civil Air Regulations without the creation of a large and

cumbersome Federal policing agency. Rather than expansionism of the Federal payroll, the Commission recommends that the Civil Aeronautics Act be amended to authorize State aviation officials or courts to enforce the noncarrier safety regulations of the Federal Government. We emphasize, however, our belief that the Government should retain its power to promulgate Civil Air Regulations in order to preserve national uniformity.

To give official recognition to state and local aviation organizations at the federal level, we recommend the establishment of a state-local aviation panel, advisory to the Air Coordinating Committee. The panel will permit responsible state and local aviation officials to express their views on the larger issues of national air policy and will guarantee their associations official status in consulting with departments and agencies represented on the Air Coordinating Committee.

An adequate domestic airport system can best be achieved through the combined efforts of the federal and local governments. By enactment of the Federal Airport Act in 1946, which provides for federal participation with local governments in building new airports or improving old ones, Congress has reaffirmed its long-established policy of furthering such cooperation.

The President requested \$65,000,000 in financial grants under the Federal Airport Act for 1948. Congress appropriated only half that amount. We recommend that Congress appropriate each year the full amount of federal aid permissible under the law.

Whether a public airport should grant exclusive rights to any fixed-base operator or other person to engage in an aviation or a nonaviation business is at best a difficult question and one which is ordinarily best answered on the merits of each airport situation.

Due to the relatively small business potential at many airports, some local communities find it difficult to assume the financial burden of airport maintenance and operation without the power to grant exclusive rights. In these circumstances, there may be some cases where exclusivity is justified.

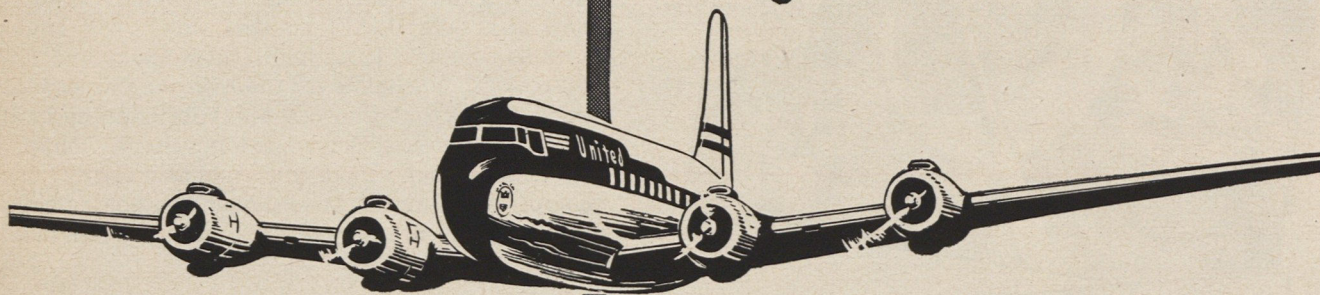
On the other hand, fixed-base operators and others prevented from establishing themselves at public airports argue that they are built with public funds and should be open to all desiring to engage in business.

We feel there is no question but that the landing area should be available for the use of all aircraft on a nonexclusive basis. The difficult question to decide is whether exclusivity should apply to such services as gasoline and maintenance facilities. The Civil Aeronautics Administration is now in the process of working out regulations to cover these questions. We believe that experience under the new regulations should be watched carefully with an eye to amendment in the light of results over the next few years.

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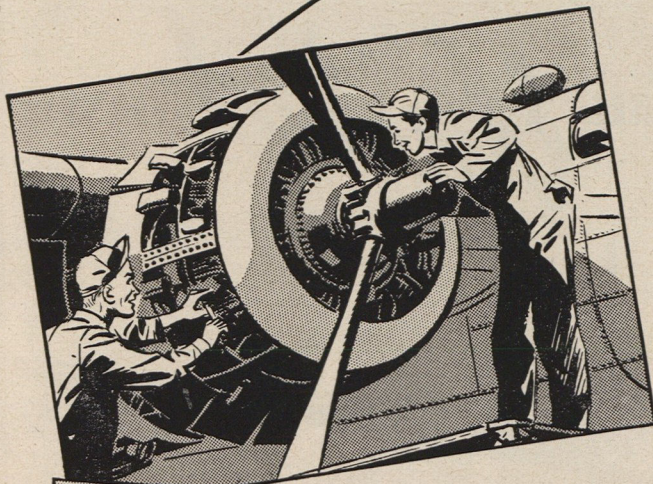


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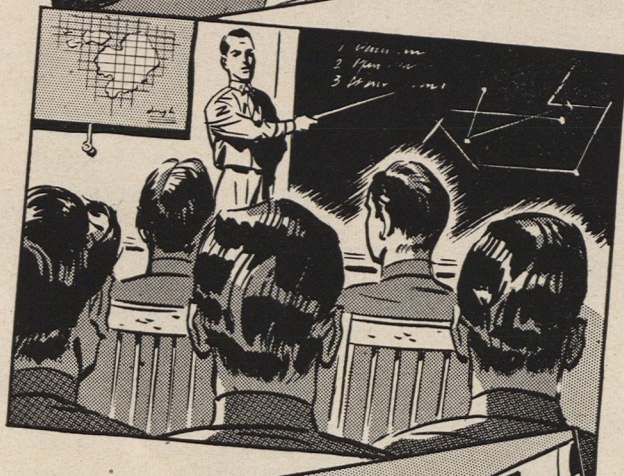


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To high school graduates

All high school graduates are immediately eligible for the Aviation Career Plan. If they enlist for 3 years, they may select and be accepted for an Air Force Specialist School *before they enlist*. They may also apply for Administrative Officer Candidate School when they are between 20 and 28½ years old. And, if they complete 2 years of college courses under USAFI, are single and between 20 and 26½ years old, they may become eligible for Aviation Cadet Training.



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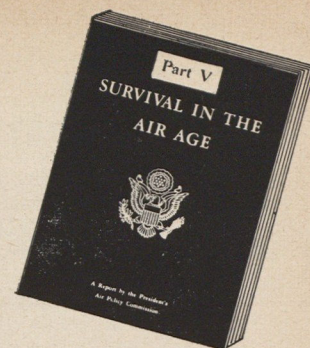
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Government Organization



Since airpower demands a new organizational concept of Federal agencies, the US must...

- ▶ Establish a Department of Civil Aviation under the Secretary of Commerce to replace the Civil Aeronautics Administration
- ▶ Continue the Civil Aeronautics Board as an independent agency, expand its staff and increase the salary of its members
- ▶ Establish an Air Safety Board within the Department of Civil Aviation to be responsible for investigation and analysis of air accidents
- ▶ Appoint the Secretary of Commerce to the National Security Council, the Secretary of Civil Aviation to head the Air Coordinating Committee
- ▶ Establish an Aircraft Development Corporation authorized to finance the building of cargo and other non-military planes

Never before in our history have we maintained a large military organization in peacetime. After each war, we have demobilized most of our ground and air forces, keeping as our only force in being the Navy. In the immediate years to come, however, we will face a new situation. We must also keep a stronger air force in being, and our ground Army, because of occupation duties and the need for a skeleton force capable of rapid expansion, must be larger and more mobile than in the past. This degree of preparedness—new in American life—calls for a new concept for the organization of the civilian branches of the Government whose activities directly relate to military plans.

Accordingly, the Commission has been influenced in its recommendations for changes in the organization and procedures of the Government dealing with aviation by the need to make the civilian agencies having to do with aviation more efficient in themselves and to strengthen them in relation to the growing military establishment.

We recommend that the Government's executive functions relating to civil aviation remain under the direction of the Secretary of Commerce, who shall have immediately under him a Secretary of Civil Aviation in charge of a Department of Civil Aviation. The position of Administrator of Civil Aeronautics should be abolished and the functions, activities, and duties of the Civil Aeronautics Administration transferred to the newly formed Department.

We believe that when and if all executive transportation functions of the Government are centralized within the Department of Commerce the title of Secretary of Civil Aviation should be changed to Secretary of Transportation and the organization reporting to the Secretary of Transportation should be set up to conform with the change.

A Department of Civil Aviation would have all the functions of the present Civil Aeronautics Administration as well as the responsibility for safety regulations now in the Civil Aeronautics Board. The Department of Civil Aviation would also have certain duties in connection with the Aircraft Development Corporation which is discussed below. In addition it would perform administrative housekeeping functions for the civil Aeronautics Board and the Air Safety Board.

The Secretary of Civil Aviation would have the responsibility of initiating our broad domestic and foreign civil aviation policy, subject to the direction of his superior officer, the Secretary of Commerce, who in turn would consult with the Secretary of State on matters of foreign policy. The Secretary of Civil Aviation also would have the responsibility of making recommendations with respect to the mobilization of our aircraft and air transport industries resources as part of the industrial mobilization plan of the country.

We lay special emphasis on the duties of the Secretary of Civil Aviation in connection with the Industrial Mobilization Plan. Of the many important tasks which American industry

GOVERNMENT ORGANIZATION (Continued)

performed during the last war as part of our industrial mobilization, the building of aircraft was of major importance. In any future war aircraft production would form an even greater part of our industrial mobilization. We must therefore have a close and smoothly coordinated relationship between the civilian and military departments of the Government.

The Department of Commerce could effectively act as the chief representative of the Government as to civil aviation and related matters.

The organization of the Department of Commerce would be on a pattern comparable to the Military Establishment. The Secretary of Commerce would have under him the Secretary of Civil Aviation and the Secretary of Industry and Trade which we recommend below.

Cargo development.—In the preceding section, we have discussed the importance of air-cargo development as a mean of building a fleet of commercial planes that could be used by the military services in war. From testimony presented to us, we have concluded that a major handicap to such a development is the lack of a suitable cargo aircraft.

We propose that a Government Aircraft Development Corporation be set up within the Department of Civil Aviation. The corporation would be authorized to pay all or a portion of the development cost of cargo or other non-military planes, components, navigational aids and safety appliances, which the Board of Directors would decide should be developed in the national interest and could not be developed by private enterprise. The Corporation also would be authorized to make loans to manufacturers for the development costs when such financing could not be obtained from private sources.

At the outset we believe that the Aircraft Development Corporation will be concerned with the development of an efficient and economical cargo plane. Its authority, however, would not be

limited to this type of plane. It would finance the development of such types of planes, components, navigational aids or safety appliances as would be shown to be necessary from time to time in the judgment of its Board of Directors.

Safety requirements.—There is no phase of commercial aviation that is more important than safety. We believe that an Air Safety Board should be established within the Department of Civil Aviation. We recommend that it consist of three members appointed by the President, subject to confirmation by the Senate. The Air Safety Board would be responsible for the investigation and analysis of air accidents and for submitting reports to the Secretary of Civil Aviation to be made public.

We believe that the Civil Aeronautics Board should continue to be an independent agency, located within the Department of Civil Aviation for house-keeping purposes only.

We have heard considerable criticism of delays by the Civil Aeronautics Board in the processing of cases before them and of the resultant high cost to the carriers in these cases.

Routes and rates.—The route and rate functions of the CAB are judicial functions. The procedures for the determination of these cases are judicial. These procedures therefore are subject to the delays that are inherent in the judicial process; for the theory of this process is that where the rights of individuals are affected, these individuals shall have the fullest opportunity to present their case and defend their interests.

It may be argued that because of the high national interest in the domestic and international route pattern, the determination of routes and possibly of the rates to be charged should be decided by an administrative process rather than by a judicial process. If this were done, it would be possible to speed up substantially the decisions to be made. But if this were done, the guarantee of a full hearing which the judicial process provides might well be lost. We are not prepared to make a recommendation that the determination of

routes and rates be determined otherwise than by judicial forms.

For these reasons, then, we must anticipate some delay in the processing of route and rate cases.

We believe that the membership of the Civil Aeronautics Board should be increased from five to seven.

We also recommend that the salaries of the Board members be established at \$15,000 a year.

Single department.—We believe that sometime within the near future all executive transportation functions of the Government should be centered in a single executive department, in order effectively to coordinate the development of all forms of transportation.

There is an evident need of executive coordination in the over-all field of transportation. At present there is no official in the administration who has responsibility for such coordination. We believe that bringing the various executive functions in regard to transportation within one department will satisfactorily fill the present requirements.

The independent, semijudicial bodies in the transportation field should be brought into the Department of Transportation for administrative housekeeping purposes only. These independent regulatory agencies should maintain full independence in the way the Civil Aeronautics Board has maintained its complete freedom of action in all policy matters. This is not a recommendation to consolidate all regulatory agencies dealing with transportation into one regulatory body. We doubt that one judicial body could handle the many and diverse cases which are presented in the whole transportation field.

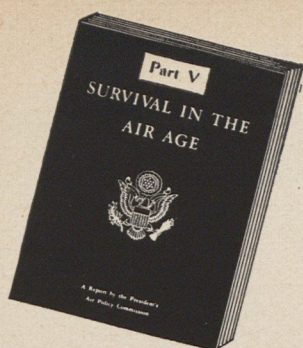
Industry and trade.—We recommend the establishment within the Department of Commerce of a separate Department of Industry and trade. All activities of the Department of Commerce would be divided at the outset between civil aviation on the one hand and industry and trade on the other and later between transportation (including aviation) and industry and trade.

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Security Council & Sec. of Commerce.—The Secretary of Commerce is the chief governmental representative for two important activities which must be coordinated with national-defense planning: Civil aviation, and major segments of commerce, industry, and some phases of transportation other than aviation. It is appropriate that the Secretary of Commerce be a member of the National Security Council to insure the representation of these important activities in national-defense planning.

The Air Coordinating Committee, as is evident from all the testimony presented to us, has served a useful and effective purpose. It should continue as the over-all coordinating agency in aviation matters of the Government.

Air spokesman.—The Secretary of Civil Aviation, in his individual capacity and as Chairman of the Air Coordinating Committee, should be recognized as the governmental spokesman on civil aviation matters except for those activities which are the responsibility of other agencies, such as the Department of State and the Civil Aeronautics Board. He should be able to give adequate time and attention to ACC problems, most of which will have common factors with those within his Department.

It has been forcefully presented to us that the Air Coordinating Committee should have a permanent full-time Chairman appointed by the President, subject to confirmation by the Senate. It has also been suggested that there should be an administrative assistant to the President to advise on civil aviation matters. Our basic concept is that the President should look on military matters to the Secretary of Defense and on civil aviation matters to the Secretary of Commerce except where these matters lie primarily within the responsibility of the Secretary of State or the Civil Aeronautics Board. Where the Air Coordinating Committee cannot resolve differences, the Secretary of Civil Aviation as Chairman of the Air Coordinating Committee should have the responsibility of referring the matter to his superior, the Secretary of Commerce. It would then devolve upon the Secretary of Commerce to work out a solution at the Cabinet level. Failing in this the matter should be referred to the President. We do not therefore subscribe to either of the recommendations.

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SURVIVAL IN THE AIR AGE

(Continued from page 8)

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had an influence on the Congressional
Board and upon most members of Con-
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Colorado, has somewhat embarrassed
his fellow members by introducing a
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rying out of the entire Report of the
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comes out into the open we must re-
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and everything, even national defense,
is mixed up in the election battle. Be-
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rejected if possible. What finally hap-
pens depends on what Congress thinks
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strength, we can influence other nations
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Peace Power," takes on significance for
the first time. We are close to getting
it, for the temper of both the public
and of Congress is definitely in favor of
having a large enough Air Force to pro-
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But how much money Congress will
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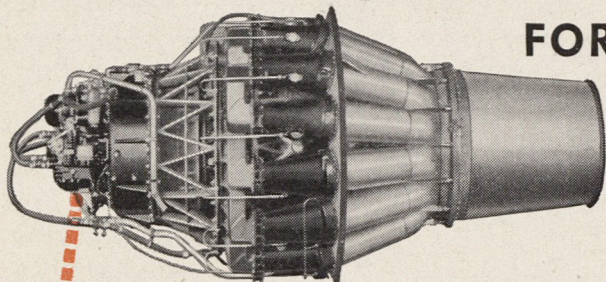
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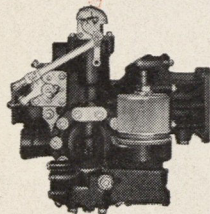


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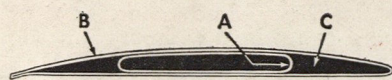
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duced with selected features—reverse pitch, instant-feathering, de-icing, etc. Models with application up to 10,000 horsepower are in production or design.

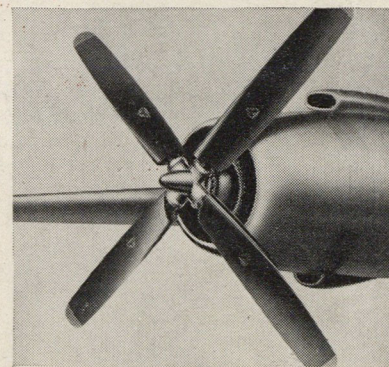
Like all Aeroprops these propellers demonstrate again that Aeropproducts—backed by the vast research facilities of General Motors—can help today with your planning for tomorrow.



Tubular Blade Cross Section. (A) Main structural member—seamless tapered tube flattened and formed. (B) Air-foil contour—one-piece die-formed sheet of steel silver-brazed to tube; trail edge roll-welded. (C) Aeropproducts' light, cellular blade-filler material bonded to steel stabilizes secondary vibratory stresses.

Aeroprop

BUILDING PROPELLERS FOR AIRCRAFT TODAY
DESIGNING PROPELLERS TO MEET TOMORROW'S NEEDS



This is the Aeroprop—Available in single or dual-rotation, with hollow tubular or hollow ribbed-steel blades. Regulator, hub and blade assemblies are designed for unit installation or replacement. It is strong, light, simple.

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