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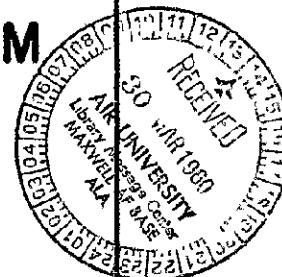
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LEGISLATION
RELATING
TO THE
AAF
MATERIEL PROGRAM

1939 - 1945



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Headquarters, United States Air Force
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August 1949

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ALLY AIR FORCES HISTORICAL STUDIES: NO. 22

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RETURN TO:

LEGISLATION RELATING TO THE AAF MATERIAL PROGRAM

1939-1945

Air Historical Office
Headquarters, United States Air Force
Department of the Air Force
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Congressional sanction for the procurement of aircraft and other air equipment was one of the most important elements in the building of an effective air force for World War II. As war threatened in Europe late in the 1930's, the United States took steps to strengthen its air arm. This study examines the series of legislative authorizations for the execution of the AAF materiel program from 1939 to the end of the war in 1945, grouping the measures in five broad categories: (1) authorization and appropriation for new aircraft; (2) provision of funds to prepare industry for mass production and for expediting deliveries; (3) provisions concerning contracts and the limitation of profits; (4) creation and support of research facilities; and (5) foreign sale and lend-lease of air material. Some phases of materiel legislation, such as action concerning acquisition of land, construction of bases, and maintenance of facilities, have been excluded as belonging more specifically to the histories of the bases and to field service activities than to a history of materiel legislation.

An earlier version of this history, prepared by Dr. Chase C. Mooney, carried the account to the summer of 1945. Dr. Chauncey E. Sanders has supplied additional material to cover the story for the remainder of the war.

Other AAF Historical Studies treat different portions of the legislative acts discussed here. They are No. 7 (Rev.), Legislation Relating to the AAF Training Program, 1939-1945; No. 16 (Rev.), Legislation Relating to the AAF Personnel Program, 1939-1945; and No. 39, Legislation Relating to the Air Corps Personnel and Training Programs, 1907-1939.

Readers familiar with the subject matter are invited to furnish the Air Historical Office with criticisms, additional facts, or interpretations.

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Legislation Relating to the AAF Materiel Program

1939-1945

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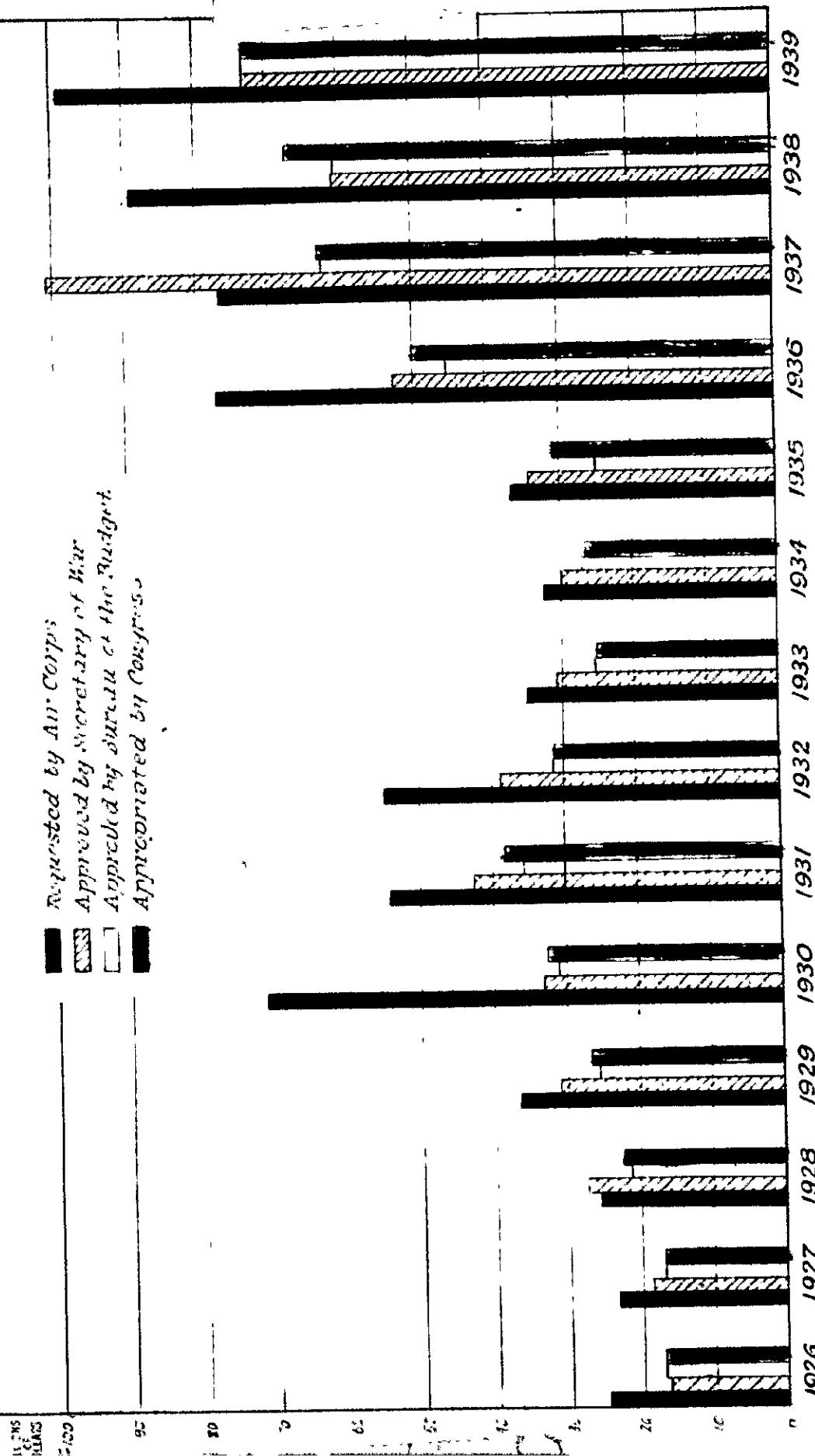
Chapter I

AUTHORIZATION AND APPROPRIATIONS FOR AIRCRAFT, SPARE ENGINES
AND SPARE PARTS

On 2 July 1926 Congress created the Air Corps and authorized a maximum strength of 1,800 serviceable planes within five years. Because of action by the War Department and the Bureau of the Budget,¹ the Air Corps was not even able to accomplish this program in 10 years. (See Chart, on following page, and App. I.) By that time the Baker Board had recommended an increase of 520 planes, and Congress sanctioned this increase, the 2,320-plane program, on 24 June 1936.² Of this number there were on hand only 842 on 30 June 1937. It was expected that a total of 1,376 would be on hand within a year and 420 more by the end of the fiscal year 1939.³ In an effort to attain the established objective, the Air Corps had submitted estimates of approximately \$100,000,000 for the fiscal year 1938, but the War Department Budget Advisory Committee had reduced these by \$13,000,000 and the final appropriation by Congress was only slightly more than \$77,000,000.⁴

In testifying on the military establishment appropriation bill for 1939, Gen. Malis Craig, Chief of Staff, stated that the program called for the procurement of 535 planes for the Regular Army and Organized Reserve from 1938 funds and 420 from 1939 funds. The purchase of these planes would fulfil the Baker Board objective by 30 June 1940.⁵ The total amount requested for the Air Corps during 1939 was \$89,583,366 of which \$16,126,594 was necessary to care for contract obligation for 1938, thus

APPROPRIATIONS FOR ARMY AIR CORPS FOR FISCAL YEARS 1926-1939*



*FIGURES FROM CHART OF APPROPRIATIONS FOR ARMY AIR CORPS FOR FISCAL YEARS 1926-1939, APPROVED BY CONGRESS AND APPROVED BY THE BUREAU OF THE BUDGET, AND APPROVED BY THE SECRETARY OF WAR.

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leaving a net availability of \$73,556,972.⁶

Of the total appropriation requested, \$33,150,346 was for the purchase of 394 new planes by the Regular Army while 32 were to be procured by the Organized Reserve and 48 by the National Guard. This was a total of 474 against an expected washout of 193, or a net increase of 281 toward achieving the goal.⁷ All of this sum was not sought as a direct appropriation, for contract authorizations of \$4,000,000 and \$5,126,894 were to supplement appropriations of \$19,150,646 and \$5,302,273 for airplanes and spares, respectively.⁸ Maj. Gen. Oscar Westover, Chief of the Air Corps, explained that part of the increase in the item for spares was caused by calculating an allowance of 75 per cent instead of 50 per cent spare engines which he considered inadequate.⁹ It was expected that the reduced unit costs resulting from mass purchase would enable the Air Corps to procure 502 planes rather than the number justified.

Despite the statements of General Westover, the House appropriations committee reduced the item for spares by approximately \$2,000,000--the difference between a 75 per cent and a 50 per cent allowance--and suggested that the major portion of that amount be used to meet current deficiencies in that item and that the remaining \$171,504 as well as \$600,000 of current unexpended funds be applied to research.*¹⁰ The Acting Secretary of War recommended the reinsertion of the amount necessary to procure 75 per cent spare engines, but the Senate committee refused the request.¹¹

As approved, the act provided an appropriation of \$70,556,972 (of which \$16,126,894 was for contractual obligations incurred during the fiscal year 1938) and a contract authorization of \$19,126,894. It was stipulated that of the above sums not less than \$33,150,646 should be

* For a discussion of research, see below, Chap. IV.

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applied to the procurement of new combat airplanes and their "equipment and accessories," including not more than \$1,691,044 for the procurement of spare engines and spare parts for airplanes procured by expenditure of fiscal year 1938 funds.¹²

In the fall of 1938 the Assistant Chief of Staff, War Plans Division, recommended that the Air Corps 10,000-plane program be approved by the Chief of Staff.¹³ Approval was given on 25 November 1938, and the new program was to be a two-year project. By this plan--which, of course, had not received congressional sanction--the combat strength of the air arm was to be increased to 5,620 planes, with 2,705 active and 2,915 in reserve.¹⁴ This program provided for the purchase of 8,030 planes within two years to supplement the 1,970 "on hand, undelivered, and scheduled to be procured from 1939 funds, less losses in [the] next two years." It was anticipated that 2,000 would be procured from government facilities and 6,030 from private industry.¹⁵ The cost of this then-ambitious project was estimated at \$1,288,000,000 in addition to the 1939 appropriation and the estimates submitted for 1940. To maintain this number of aircraft would involve annual materiel expenditures of \$141,218,097 for 1,500 planes with government-furnished equipment and spare parts and \$12,035,620 for experimental research and development.¹⁶ This program, prepared by the high officials of the air arm and approved by the War Department General Staff, was no doubt a reflection of the recognition of the powerful burgeoning influence of an air force in being.¹⁷ It never received congressional approval, but was replaced by the 5,500-plane program in early 1939.

The increased realization of the necessity of building America's military machine, especially the air force, for hemispheric defense became

100-1800, Chap. I

4

more articulate as the European situation degenerated. In his message to Congress on 12 January 1939, President Roosevelt pointed out that the Baker
16 Board report

of a few years ago is completely out of date. No responsible officer advocates building our air forces up to the total either of planes on hand or of productive capacity equal to the forces of certain other nations. We are thinking in the terms of necessary defenses, and the conclusion is inevitable that our existing forces are so utterly inadequate that they must be immediately strengthened.

To prepare the air arm for its role in defense, the President urged the appropriation of \$300,000,000 for the purchase of "several types of airplanes for the Army," noting that this should provide a minimum increase of 3,000, with the expressed hope that the placing of orders on such a large scale would materially reduce the unit cost and actually provide many more planes. President Roosevelt suggested that \$50,000,000 be made available immediately so that contracts could be placed to "correct the present lag in aircraft production due to idle plants."¹⁹

Newspaper reaction to the message was generally favorable, some papers implying surprise that the program had not been more extensive.²⁰ The Army-Navy Journal of 14 January 1939 emphasized that both services needed more planes and that the President had achieved balance in the program presented. The Journal felt that the President had "discarded the grandiose suggestions of diplomats and others, and . . . sought and took the advice of his experts, the responsible heads of the War and Navy Departments."

The expansion program had been under consideration by the Air Corps for some time, and on 13 January 1939 the Chief of the Air Corps submitted to the Chief of Staff a breakdown of the \$300,000,000 which the President requested. By this proposal \$170,000,000 would be used for materiel procurement--1,593 combat, 1,425 training, and 14 "miscellaneous"-type planes.²¹

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General Arnold stated that his program provided a nucleus as a "well-rounded air defense which would be wholly lacking if the whole \$300,-
000,000 were devoted to the procurement of airplanes." The purchase of
these 3,000 planes would bring the strength of the air arm to 5,500 ser-
viable planes, of which 2,163 were to be held in reserve.
²²

To carry out the aircraft provisions of the President's message,
Andrew J. May (D-Va.), chairman of the House Committee on Military Affairs,
introduced H.R. 2780 into the House on 18 January 1939. This bill author-
ized the Secretary of War to equip and maintain the Air Corps with "not
to exceed six thousand serviceable airplanes" and empowered him to main-
tain the number specified by replacing obsolete and unserviceable air-
craft from time to time. This bill was exactly as submitted by the Plans
Section, CGAC, except that originally it had been Section 3 of a more in-
clusive bill "to increase the efficiency of the Air Corps."
²³

The War Department stated that the passage of H.R. 2780 or its com-
panion bill, S. 842, "would be a major contribution to the cause of na-
tional defense," and recommended favorable consideration. It was pointed
out that a possible reduction in unit costs would permit the purchase of
a larger number of planes than authorized by the bill, even though the
amount of expenditure was fixed. It was therefore suggested that the
committee on military affairs give consideration to the removal of the
limit on airplane strength so that a greater number of planes could be
procured.
²⁴

Meanwhile, the House Committee on Military Affairs had been conduct-
ing hearings on various phases of the President's national defense message,
and on 31 January H.R. 2780 was incorporated with other national defense
²⁵

AM 8-22, Chap. I

C

measures into H. R. 351^c which was rejected on 7 February by H.R. 3791. The latter measure was identical with H.R. 3518 except that the authorized airplane strength was reduced from 6,000 to 5,500.²⁶ Testimony had already been taken on the various portions of H.R. 3791, and it was favorably reported on 3 February.²⁷ A minority report agreed with the intent of the bill but disagreed with Section 1 which authorized immediate purchase of the planes. The minority was of the conviction that procurement should be spread over three years so that the Air Corps would be in a better position to take advantage of the year-to-year developments. This view was expressed, during debate on the measure, in an amendment offered by Representative W. G. Andrews (N.Y.) on 15 February which sought to limit procurement to 1,000 planes per year except in case of a declaration of national emergency.²⁸ This was the occasion of considerable debate but was defeated by a vote of 133 to 136.²⁹

One of the strongest speeches calling for an adequate national defense was made by Representative Dowdell Carter (Ohio) on 14 February. He characterized the authorizations of H.R. 3791 as the "irreducible minimum of what should be done at the present time." Carter stressed the importance of immediately beginning a program that would assure the creation of an adequate air force, and he quoted from a speech by Maj. Gen. Frank P. Andrews, Commanding General of the G.M. Air Force, to emphasize his point. General Andrews had said that³⁰

air power is not a commodity that can be procured in the open market, no matter how much gold and silver may be available. Money will not buy it; desire will not create it. Timely foresight, based upon an intelligent conception of the potentialities

* For other material features of the Bill, see below, Chaps. II and III.

of air power and its effects upon the destiny of nations is the only formula that can assure its development. . . . adequate air power cannot be created after the necessity for its need has arisen. Like a navy it takes years to build an air force.

None of the amendments affected the Air Corps materiel program, and the measure passed the House by a vote of 307 to 15 on 15 February.³¹ In the Senate committee hearings, it was pointed out to General Arnold that he had been credited by newspapers with favoring the construction of 10,000 planes. General Arnold replied that the report was inaccurate and that he was for the 5,500-plane program "hook, line, and sinker, because I believe it is a program that is well planned, . . . balances the personnel with the airplanes, and . . . answers the problem of the aerial defense of the United States, and I cannot see any need at this time for anything more."³²

The Senate committee increased the authorized strength from 5,500 to 6,000,³³ and this increment was justified, during debate, by the extent of the territory to be defended--the Western Hemisphere. This increase did not involve any additional appropriation but simply allowed procurement of more aircraft if the stipulated funds would allow.³⁴ Senator Bennett C. Clark (Mo.), however, pointed out that all who had testified before the committee had considered 5,500 airplanes as adequate, and since the bill did not limit the amount to be spent on planes, 6,000 might cost much more than the estimated \$170,000,000.³⁵ Despite repeated assertions that the measure was for defense only, it was attacked by some individuals who insisted that the only reason for wanting 6,000 planes was to prepare for intended entry into a war abroad. Others repeated the old argument that the way to keep out of war was to show

that the country was sufficiently strong to defend its own interests and
shortly.³⁶

As passed by the Senate on 7 March, H.R. 3791 authorized a maximum of 6,000 serviceable planes and an appropriation not to exceed \$300,000,000 "together with such annual appropriations as may be necessary to maintain such air force." These changes were agreed to by the House in conference committee, and the measure became Public Law No. 18 on 3 April 1939. *³⁷

Public Law No. 18 thus authorized the most ambitious expansion program which the Air Corps had ever proposed to Congress. It was felt by the Chief of Staff that the passage of this act was an excellent example of the effects of publicity and public pressure. Until pictures showing the bombings of women and children in Spain and China had been circulated the public was indifferent to the pleas for the necessity of creating additional air power. These photographs, however, developed public pressure and Congress made provision for "long-overdue appropriations for airplanes and antiaircraft materiel."³⁸

During the course of debate on H.R. 3791 some doubt had been expressed as to the ability of the aviation industry to meet the requirements of the new program. The Aeronautical Chamber of Commerce of America felt, however, that the industry "would easily be able to take care of the proposed requirements." The production of approximately 1,000 additional planes for the next two years would require only a "very small portion of the actual capacity of the industry" which was estimated at 6,000 to 10,000 planes. The consensus was that the placing of additional orders would have the effect of "stimulating the industry and enabling

* See Chap. III.

REF ID: A6512

See Appendix, Chap. I

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to use as civil aircraft. This was recognized as a major factor
world wide.¹⁰

With the same intent as General Arnold, Macmillan, being
elected on the recommendation of the British Parliament on 26
January 1946, asked Sir Philip Wright and his committee to "examine
as soon as possible the use of 2,000 aircraft as 'flying ships,' but that
the use of such aircraft as 'flying ships' subject of scientific study in line
of the aims, plans and operational missions, as outlined and agreed . . .
and to submit a report on flying ships."¹¹

In this case it is interesting to note that the Chief of Staff contacted both the
Air Corps and the construction of the C-1 aircraft. The Air Corps pro-
posed to procure 1,000 C-1's at \$1,100 each on 21 July 1946
and 3,000 by 30 September 1947. The inter-service plan was corre-
spondingly established by General Arnold, Lieutenant General J. E. L. Snyder (USA).
The Air Corps' plan was rooted in, as we have seen, the basis of a total
authorization of 2,000.¹²

The original request for the Air Corps, dated 24, 1946, which
included a total authorization of 12,700,000 and 10,100,000 to meet
electro-magnetic needs of the program, a. m. G. C. in 1946, 20,-
10,700; to be followed by another 170 aircraft for the Army, and
the additional authorization to follow, for the additional land and
airfield services since it was expected that 270 planes would be rendered
unserviceable by end of 1946, also in order to not increase
the cost strength of the Army, were granted 23 spares for planes and
aircraft would require 11,800,000 for all purposes.¹³

General Arnold is quoted that the Air Corps was asking, for flying

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planes this time because it was approaching the 2,320 limitation of the Baker Board. Although that number would probably be exceeded by 30 June 1940, there would be only 1,096 modern combat planes on hand by 30 June 1939. The Chief of the Air Corps continued by saying that the planes out of commission because of maintenance difficulties would reduce this number to 962 aircraft actually fit for combat.⁴³

While hearings on the regular 1940 appropriations bill were still in progress, supplemental estimates for the use of \$6,000,000 were submitted in anticipation of the fulfillment of the President's request of 12 January 1939. These estimates involved the procurement of an additional 565 planes and were incorporated with the regular 1940 estimate.⁴⁴ Four hundred of these planes were to be pursuit, 125 attack bombers, 14 photographic, and the remainder what was then termed "miscellaneous combat." The total cost of these, plus 25 per cent spares, was estimated at \$16,448,370.⁴⁵

The House Committee on Appropriations recommended that \$10,505,988 of the supplemental estimates be made as contractual authorization and that the total direct appropriation for the Air Corps be \$4,737,291.⁴⁶ It was stressed that the supplemental portion of the bill sought to reach and go beyond the 2,320 goal which was not thought attainable when the 1940 estimates were first made. Immediate availability of the supplemental estimate was to spur industry to produce more rapidly for the larger program looked to in 1940-41. That confusion existed as to the exact program to which the 565 new planes belonged was indicated by the committee's statement that they "may fit into the 2,320 program as replacements, or be the entire expansion thereof for the present, or may

REF ID: A6482, Chap. I

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be the first increment of an expansion toward any objective ranging from 2,320 to 5,500 airplanes.⁴⁷ The committee was doubtful that delivery of these planes could be effected by 30 June 1940. It stated that on 31 December 1938 there were 583 planes on order, some under funds or contractual authority which had become available as far back as 1 July 1936. Also, 748 planes which had been authorized had not been ordered. When the 219 of the regular estimates and the 565 of the supplemental estimates were added, the total became 1,860 planes for delivery in the next 17 months. As the committee reported, "Past performance suggests that to be an exceedingly ambitious program."⁴⁸

On the floor of the House, Snyder again indicated that a maximum of 1,120 planes was already authorized and that without waiting for the enactment of legislation authorizing 5,500 planes, the President was free to submit estimates for an additional 1,235 planes.⁴⁹ In spite of some critical and assertions that the expansion program was instigated by "propagandists of the aviation industry" who sought profitable orders from the Army and Navy, the House passed the measure on 3 March 1939.⁵⁰

The Senate appropriations committee reduced by \$9,882,567 and \$9,030,625, respectively, the amounts of contractual obligation for new aircraft and their equipment and the amount required to be applied to combat airplanes. The figures that read \$57,484,932 and \$36,113,200, respectively.⁵¹ This action was a result of a letter of 6 March 1939 from the Secretary of War to the chairman of the Senate committee, pointing out that the above reductions were the amounts to be expended for spare parts.⁵² This change was agreed to by the House in conference committee, but the Senate receded from its \$1,000,000 increase in research funds. The measure became Public Law No. 41 on 23 April 1939.⁵³

The first step toward supplying funds for the new expansion had been taken. Combined with the regular 1939 funds the new appropriation amounted to \$94,737,231. Of this amount, \$2,000,000 was to be chargeable to the 1938 appropriations, and \$15,320,000 was to satisfy contractual obligations for material items procured during the fiscal year 1939. Contractual authorization of \$32,205,980 was provided, and it was stipulated that of the appropriations and contract authorizations, \$57,424,062 "shall be applied to the procurement of new airplanes and their equipment and accessories, of which amount . . . not less than \$56,113,200 shall be applied to the procurement of combat airplanes and their equipment and accessories."⁵⁴

Though there was considerable confusion in some places as to the program for which the \$60,000,000 supplementary estimate was intended, it became clear very soon that it was a definite part of the 5,500-plane program. Additional estimates were submitted soon after the passage of Public Law No. 18 for the fulfilment of the Air Corps portion of the general expansion program. General Craig stated before the House Committee on Appropriations that the need for an augmented and improved air force was the result, principally, of three conditions: (1) the state of political tension throughout the world and the vast increase of armament by all world powers; (2) the rapid development in aviation and the consequent emphasis on aerial warfare; and (3) the announced government policy of defending the Western Hemisphere against aggression.⁵⁵

The estimates involved \$250,000,000 of which the direct share of the Air Corps was \$7,700,155 in cash appropriation and \$44,000,000 in the contractual authority.⁵⁶ The major portion of these sums was to be used to procure 2,437 airplanes, exclusive of the aircraft provided for in the

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1940 budget was to be given \$10,000,000 supplemental money, to which had been incorporated in the regular 1940 military appropriation bill. General Arnold stated that this would bring the total to 5,300 planes within two years (by 30 June 1941), and he felt that the capacity of the aircraft industry was sufficient to build three d. units.⁵⁷ The Chief of the Air Corps wanted only that all the monies so far authorized had been obligated with one exception of the funds for 125 pursuit fighters.⁵⁸ He continued by indicating that the pursuit contract was the cause of reducing; the units could not promptly procure the remaining of the major portion of the previous supplemental appropriation for pursuit aircraft. The funds requested for additional planes (\$22,799,931) would be used primarily for other types, and the program would thus be brought back into balance.⁵⁹ General Arnold stated that this would require the procurement of 500 planes and an annual appropriation of \$10,000,000 to maintain the service at a peak of 5,800 planes.⁶⁰

The item for procurement and for war emergency for aircraft and aircraft equipment involved a total budget of \$6,224,101. It was explained to the committee that this provided for 70 per cent share (includes interest) of the 50 per cent limitation under which the Air Corps had entered during the previous year.⁶¹

It was reported on 12 June 1939, that no one involved an expenditure of approximately \$100,000,000 for planes--\$2,390 for the regular Air Force and 177 for the National Guard.⁶² The committee agreed with the "unconditional" procurement of 1,37 planes for a ration, but made the procurement of the remaining aircraft contingent upon the President's decision as to what portion of the would be given to national defense.⁶³ Representative D. Lane Rogers (D.) offered an amendment in the House on 21 June 1939 to

reduce the number of planes to be purchased by 1,283 and to authorize the procurement of those only when the President felt that a national emergency justified their purchase.⁶⁴ In opposing this amendment, Representative W. J. Miller (Conn.) warned of the possibility that the United States might be plunged into war sooner than was thought and that the entire program should be carried out in order to learn more of productive capacity and possible "tu -". The proposed restrictive amendment was rejected by a vote of 217 to 150 on 22 June; and Powers' attempt to recommit the bill was unsuccessful, as the measure was passed by the House on
the same day.⁶⁵

The Senate committee amendment did not concern Air Corps items, and the measure became Public Law No. 164 on 1 July 1939.⁶⁶ The Air Corps was given \$30,727,055 cash appropriation and \$1,000,000 contractual authority. The greater portion of these sums was for the procurement of aircraft and parts, and they brought to \$300,000,000 the appropriation for the Air Corps expansion program as outlined by the President on 12 January 1939.⁶⁷ Congress had acted quickly, efficiently, and without much quibbling on the Air Department's requests to meet what were considered the minimum needs for national defense. Within slightly less than three months Congress had made \$261,670,924 available to the Air Corps. This was one-half as much as the Army had received in the 14 preceding fiscal years and provided for the procurement of 3,251 planes--or approximately twice as many as were on hand at the beginning of 1939.

In March 1939, Nazi Germany had lengthened its long line of aggressions by occupying the Sudetenland, and on 1 September 1939 she moved into Poland, bringing open warfare to the Continent. Seven days later President Roosevelt proclaimed a state of limited national emergency,⁶⁸ and steps were taken to preserve the neutrality of the United States.⁶⁹

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The preliminary estimates for fiscal year 1941 had been submitted by 15 August 1939 and provided for 496 planes at a cost of \$39,450,000. This procurement was considered a "replacement program based on a prediction as to the number of planes that will occur as obsolete and as to the number of crashes."⁷⁰ The cost of several of the types of planes had increased rather than decreased; the result was a deficiency in previous appropriations for planes of approximately \$16,000,000.⁷¹ It was planned to care for this deficiency by transferring it ~~at~~ from the appropriation for spare engines and parts, leaving \$10,464,966 for the latter category.⁷² This, however, would leave a deficiency of \$25,894,013 in spare engines and spare parts. To make up part of this deficiency the Air Corps wanted a 1941 appropriation of \$10,250,000 and hoped to balance the remainder--at least to a considerable extent--by the "employment of airplanes in reserve." Since, however, all plane contracts--except \$16,000,000--had been awarded, the War Department Budget Advisory Committee felt that it would be impractical to unbalance the program by the above action. The 1941 estimates, therefore, called for \$39,450,000 for planes, \$12,872,792 for spare engines and parts, and \$3,104,937 for maintenance and operation. Included in the last item was \$10,250,000 for 1940 spares. An item of \$79,505,983 was included for the payment of contract authorization.⁷³ Conditions had changed drastically by the time these estimates reached Congress.

Shortly after the outbreak of the European conflict the Air Corps submitted to the General Staff estimates for 500 reserve airplanes, a number which would bring the total strength to 6,000 craft. The cost of this program was estimated at \$19,789,581.⁷⁴ The cost of the planes was refigured at the suggestion of the Assistant Chief of Staff, G-4 and

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resubmitted on 17 October 1938. This plan, it was provided by the 2nd of the 500 planes which would be needed to fight the Germans. If the heavy bombers were secured from Consolidated, the total cost would be 132,126,549, but if secured from Boeing, the total expenditure would be only 116,325,373. These estimates included heavy armament equipment, spare parts, and
parts, but not signal or ordnance items.
⁷⁵

The opportunity for the presentation of these estimates did not come immediately, but on 10 September General Arnold suggested that in all future discussions on Congress the number of planes to be procured be given to Congressmen in executive session only. He felt this procedure was justified by the realization that airplane manufacturers "note our cost estimates in our defense of our budgets and then cut the pattern of their costs to almost identical figures." If they did not receive this information, the Air Corps might be able to buy cheaper planes. The Chief of the Air Corps added that "there is also, of course, the added possibility that these counts and numbers of airplanes constitute information which should not be kept from foreign sources."⁷⁶

The Air Corps steadily proceeded with the fulfillment of its 5,000-plane objective in the latter part of 1938. Meanwhile, the American public was realizing more and more of a shortage of air power, especially bombardment aircraft. The first indication of congressional desire for the further expansion of the Air Corps came in the suggestion of Representative Butler, on 12 January, 1940, that the authorized strength of the Air Corps be raised to 8,000 planes.⁷⁷ The expansion program was drawing both official and adverse criticism from varied sources. On 6 February 1940 the Washington Evening Star reported Secretary of the Treasury Laney's opinion of a "frightful waste of aircraft in war."⁷⁸ In a tribute to American business methods,⁷⁹ Representative Thomas

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L. Martin (Lois), in commenting on this above article, attributed the activity of the aircraft industry to the lifting of the arms embargo, asserted that the domestic economy was not on an even keel, and maintained that America was plungan⁷⁸ toward war. He felt that "we are setting in motion factors which will prolong the war and which will cause a large industry in our land to desire the continuation of the war and which may even plunge us headlong into the war."⁷⁹ These, and similar comments in favor of or opposed to military expansion, were not uncommon prior to entry of the United States into the war.

Columnists also questioned the adequacy of the 5,500-plane program for hemispheric defense. Frazier Hunt pointed out the devastating possibilities of bombardment and suggested that Congress vote "hundreds of these peace guarantors [Tony-range bombers.]" He admitted that it might not be advisable to concentrate on fleets of this type of aircraft immediately, but urged the creation of manufacturing facilities to turn them out when needed.⁸⁰

The House Committee on Military Affairs had considered the possibility of retarding Air Corps procurement in order to obtain the very latest types of aircraft. General Marshall, on 20 January 1940, pointed out that this would be undesirable and would accomplish nothing; since "there is always a later type being manufactured." General Marshall also refuted the charge that the Air Corps was out of proportion to the rest of the Army.⁸¹

The 1941 military establishment appropriation bill provided for \$212,426,072, including a contract authorization of \$25,730,500. The net sum available for new obligations, however, would be only \$176,520,084.

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since \$79,305,888 was required to met 1940 contract obligations. This sum would provide for the procurement of only 496 planes as compared with the purchase of 3,016 in the fiscal year 1940.⁸²

When the Chief of the Air Corps gave his testimony on 7 March 1940, the entire 5,500-plane program was reviewed. General Arnold pointed out that the \$300,000,000 program had become \$302,027,000 because of an increase of \$2,000,000 for research and development and \$27,000 to cover the cost of preparing a comprehensive digest of data on Alaska. Of this amount the direct appropriation for the Air Corps was \$180,170,484. For planes and accessories and equipment \$163,175,440 of the allotted \$177,-
016,082 had already been obligated. All contracts provided for delivery by 30 June 1941.⁸³ Delivery by this date was reasonably assured by the penalty clause which provided for 1/15 of 1 per cent for each calendar day of delay, but was not to exceed 15 per cent of the unit price of any plane.⁸⁴

In explaining the estimates, General Arnold indicated that for new airplanes, spare engines, and spare parts, \$62,080,385 was requested. This was \$117,195,786 less than appropriated in 1940, and this request was only for replacement of predicted losses. The 1940 appropriation, however, had not covered the procurement of the necessary spare engines and spare parts because of the increased cost of planes. This increased price is attributed to several factors: (1) the liquidating damage clause, guaranteeing the delivery date of planes; (2) increased performance, necessitating the procurement of planes with performance superior to those available when funds were requested; (3) the guaranteed performance of the aircraft as specified; (4) "fear of labor difficulties and unsettled conditions of the world which

might affect the procurement of operating bases and depots to be operated and maintained⁸⁵; (5) the splitting of awards; (6) the limitation of profits.⁸⁶

When the 1941 estimates were originally drawn, the anticipated deficiency was only \$10,250,000. Since that time it had increased by \$20,000,000, and this was cared for in the supplemental estimates for that amount.⁸⁷ The total appropriations would procure 496 planes and provide for the deficiencies in spare engines and spare parts.⁸⁸ The House Committee on Appropriations questioned the advisability of purchasing the 496 planes for reserve and thought that only the types of planes not already provided for in the reserve should be procured. This was justified on the ground that the purchase of 2,200 planes for the reserve had been intended to accomplish an acceleration of the industry. Since many foreign orders had been secured and the rate of production had greatly increased, the fundamental reason for a large reserve had ceased to exist.⁸⁹

The committee reported H.R. 9209 on 3 April 1940, recommending a reduction of \$19,410,034 in the cash appropriation for new aircraft so that only 57 instead of the requested 496 would be procured.⁹⁰ The Bureau of the Budget estimates had provided for \$25,559,889 cash and \$25,780,500 contractual authority for the planes. If only 57 were procured--as recommended--\$6,143,855 in cash was provided and the contractual authority eliminated.⁹¹ The 1940 appropriations were short \$30,250,000 apart from the 186 planes which had not been ordered on 7 March 1940 and for which there was in reserve \$9,341,542, and the committee explained:⁹²

Rather than defer contracts until the shortage could be regularly made up, the [War] Department chose to tie up funds that had been made available for the procurement of spare engines and spare parts

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for airplanes and engines. To clear up the situation thus brought about the regular budget included \$10,250,000 in cash and a supplemental sum, i.e., . . . calling for further supplemental authority of \$2,000,000.

Until a full reserve, should be made, on account of effect of delayed deliveries and the relationship to foreign orders, the committee proposed a limit of only one-half of our supplemental request.³² The total Air Corps appropriation recommended was 105,702,102 cents and \$10,000,000 contractual authority as opposed to our requested 140,416,172 and \$15,700,000, respectively.³³

In presenting the measure to the Senate, Representative Parker explained that the Air Corps was not given to get 2,000 (the reserve component) of the 5,000 planes until certain foreign orders had been filled. This arrangement would not affect the regular force but would keep the American production facilities as far as possible and could help the Air Corps to get a later and improved program. If the 1,200 planes could be deferred for the present, the committee felt that all but 57 of the 123 planes could also be deferred. The total savings effected would be \$2,000,000 cash and \$2,700,000 in contractual encumbrances.³⁴ An attempt to recommit the bill with instructions to reduce the total by 10 per cent was defeated, and the measures passed the house on April 1, 1910.³⁵

The Fiscal Officer, in parallel the situation of the Budget Officer of the War Department to the fact that . . . ACW as it stood the lease included the amount for spare engines and spare parts in the sum which was recommended for new planes. The total appropriation could be the sum under this label, but he felt this sum for an additional 109 planes should be provided. This would increase the aircraft material item to \$3,500,000 for the Air Corps and 1,921,165 for ordnance and signal equipment.

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Just at this time the Blitzkrieg ended in Europe and the German offensive was unleashed on the Scandinavian countries. Hitler's tanks had concluded hearings on U.S. codes of the Low Countries and France had been struck with lightning rapidity. President Roosevelt, addressing Congress on 16 May 1940, took cognizance of those "new powers of destruction" and asserted that "no old disease is so strong that it requires no further strengthening, and no attack is so unlikely or impossible that it may be ignored."⁵⁷ The president continued by emphasizing that American planes were not inferior to those of other nations, but that "one belligerent power" not only had more planes than all its opponents combined but also, flying production capacity far greater than that of its opponents. American productive capacity, however, had risen from 6,000 planes to more than 12,000 planes per year, but in last 12 months. This was not considered enough. "I should like to see this action geared up to the ability to turn out at least 50,000 planes a year. Furthermore, I believe that this action should plan for this time a program that would provide us with 50,000 military and naval planes."⁵⁸ To step up production and provide for increments in the combat arms, the Executive asked for an immediate direct appropriation of \$50,000,000 and contract authorizations of \$286,000,000, in the Army, Navy, and Marine Corps.

Newspaper reaction was almost universally favorable, but as usual some comments were colored by partisanship. The Boston Advertiser of 16 May declared that "if the villain had asked for 100,000 planes and \$2,000,000,-000 the people of this section would not have cavilled." Some papers noted that the malaise for the nation was greatest when 50,000 planes were mentioned and that it was plain that "the first essential of national defense

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for the United States is an air force superior to any that can be brought against us."¹⁰⁰ The Det. Times Opinion was one of the critics of the President's proposal. It stated, in part: "Talking about an annual plane production of 50,000 is like showing a hen an ostrich egg with the suggestion that there is an example to emulate. . . . The President was a chaps doing a bit of vigorous blustering for the benefit of certain foreign listeners."

In spite of the remarkable advances made in the preceding 12 months, the air arm was still inadequate in size, type of aircraft. The Chief of the Air Corps stated on 17 May 1940--the day after the President's message--that the Air Corps had only 421 pursuit planes and 261 of these were in foreign possessions. The delivery of this type of craft would not even meet training requirements prior to December. The transfer of the French pursuit-plane orders to the Air Corps would not help much because necessary modifications in those P-36's would delay delivery, and even then the planes would be little better than those on hand.¹⁰¹

On the day after the President spoke, supplemental estimates were submitted to the Senate Committee on Appropriations which was still considering the regular 1941 estimates. These estimates provided for a total of \$364,000,000 of which \$30,424,576 cash and \$73,500,000 contract authorization were for the Air Corps.¹⁰² The 2,400 planes provided for in the supplemental appropriation request, with the 166 desired from the initial appropriation,¹⁰³ would bring the Air Corps strength to 8,066 craft.¹⁰⁴ The estimates had provided, and the committee approved, that these funds for new aircraft could be expended without reference to the provision of Public Law No. 13 of 3 April 1939, which limited the Air Corps strength to 6,000 planes.¹⁰⁵

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Senator John W. Warner (Conn.) proposed that the needs of America in plane strength be ascertained and later set at any cost. He was of the opinion that the appropriations in H.R. 8002 were inadequate if the goal of 10,000 planes a year was to be achieved and said it was "preposterous to hold out such an idea to the people in view of the total appropriations carried by the bill." He concluded with the assertion that he did not think such a goal was contemplated.¹⁰⁶ Considerable controversy ensued over the productive capacity of the aircraft industry, with estimates ranging from 7,000 to 17,000 per year.¹⁰⁷ Whatever the productive capacity, all of the senators felt that the provision should be made for delivery to the Army as soon before as possible of planes to foreign purchasers.

The annual bill was passed by the Senate on 22 Apr 1930,¹⁰⁸ referred to in conference committee, and became public law No. 611 on 15 June 1930.¹⁰⁹ The total Air Corps appropriation was \$265,663,413 cash and \$103,500,000 contract authorizations. Of these amounts, not less than \$123,741,694 was to be allotted for new airplanes and their equipment and accessories; \$2,001,791 of this sum to be applied to combat planes. The limitation to \$3,000 planes was now applicable to the expenditure of these funds which were to remain available until 30 June 1932.

The Congress was quick to act in other ways to pave the way for the execution of the President's program. On 17 Apr 1930 "representative after introduced H.R. 8002 which, among other things, proposed the removal during the fiscal year 1931 of existing limitations on the number of serviceable airplanes which the Air Corps could acquire."¹¹⁰ Three days later "he introduced H.R. 8025 which provided the instant but place 10,000 number of planes at 10,000 for the fiscal year 1931."¹¹¹ The following day, L.L. DeLoach incorporated the provisions of H.R. 8002.¹¹²

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The Committee on Military Affairs reported H.R. 9850 on May 22, the same day that the Senate committee reported S.4025.¹¹² In support of the latter, the Secretary of War had pointed out that the existing authorization was inadequate and unless the limitation was suspended the number of combat planes would be reduced to a dangerous level because of the training program requirements.¹¹³ The House moved as quickly as had the committee and passed H.R. 9850 by a vote of 392 to 1 on 24 May.¹¹⁴ After changes by the Senate and some compromises in conference, the Air Corps was given a free hand in the acquisition of aircraft during the fiscal year 1941.¹¹⁵

The provision of this act, Public Law No. 703, was of potential value only until money was provided for the procurement of additional planes. Even before the regular military appropriation bill for 1941 had become law on 13 June, the Blitzkrieg had swept to the Atlantic, and the English had abandoned most of their equipment at Dunkerque on 3 June. Supplementary estimates for 1941 had, however, already been submitted to the House, but they did not contain provisions for 8,000 additional planes until 29 May. Until that time it was thought that engines could not be provided for them, but conferences with the aircraft industry in the weeks following the 16 May message of the President had resulted in "reasonable assurance" that these additional engines could be provided.¹¹⁶

On 31 May the President sent another message to Congress in which he emphasized that the events of the past two weeks made necessary the placing of additional orders with industry both to provide an early expansion of existing production facilities and to obtain increased quantities of special weapons. The achievement of this end involved large appropriations--over a billion dollars--but he felt that "for national safety the needs are urgent."¹¹⁷

Funds requested for the Air Corps were \$120,839,895 cash and \$109,-
250,897 contract authorization for 1941. The latter sum was entirely for
planes and their accessories and equipment while all but \$17,000,000 of the
larger amount was for the same purpose. The House committee recommended an
increase of \$33,910,867 in the cash appropriation,¹¹³ and the Senate added
\$6,500,000 which was later requested for purchase of aircraft engines.¹¹⁹
On 26 June slightly more than \$400,000,000 became available to the Air Corps
for the preparation of that arm as an effective fighting unit, and all but
\$17,000,000 was for the procurement of aircraft and accessories.¹²⁰

On 15 June, Senator Claude Pepper (Fla.) introduced S.J. Res. 278 to
authorize the President to place orders at once for 50,000 aircraft of the
"most effective type and design for modern warfare and all the necessary tra-
gments, and direct that such aircraft and carts be ready for delivery at a
date to be fixed by the President."¹²¹ The Secretary of War reflected the
opinion of the Air Corps when he wrote to the Chairman of the House mili-
tary affairs committee that the resolution was unnecessary since the Pres-
ident had all the authority "more than that given in the resolution."
This authority was contained in the National Defense Act of 1916 and was
to be used only in case of a real or threatened war.¹²²

Before the end of June, France had capitulated to Germany and the
threat of war loomed more and more apparent to the American people. On
10 July 1940 President Roosevelt submitted new estimates to Congress. He
emphasized that the principal lesson of the war so far was that "partial de-
fense is inadequate defense. If the United States is to have any defense,
it must be total defense." To carry forward this total defense, he re-
quested funds for 19,000 additional planes for the Army, 4,000 for the

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Army, and for which it was thought to total to \$1,111,111.7 cash
and \$2,030,000 contract authorization.¹²³

The Air Corps portion of the bill provided \$20,000,000 cash and \$1,000,-
000 contract authority. It was submitted during April with several
amendments indicating that full authority could be taken of the amount pre-
pared for from the Korean conflict.¹²⁴

The Air Corps was converted on 11 July. At that recommendation of the 1st, 1931
plan, including accessory equipment and spare engines and other parts, it
obtained for the Air Corps. The amount for the items was to be \$1,-
¹²⁵
207,182,110.

Before the start of combat, several requests were made by the Air Corps
regarding delivery of all the 14,000 planes ordered. Also it was
requested that the 1st, 1931, no Army or Navy aircraft be turned over
to foreign nations. U.S. foreign nations, especially France, had enjoyed
an advantage over the Army and Navy because they had been willing to pay
any price for aircraft. "It has been pulled into a hole, and the
country of the U.S. is "no place" in which to do anything or say anything without
being deferred to a foreign power. The new aircraft would be more expen-
sive because of the earlier delivery demand and the longer time; and to
¹²⁶
get that delivered, changes in Air Corps procurement plans were made by
the Senate committee,¹²⁷ and on 5 August 1950 by a resolution for
the Air Corps were granted in excess. The term is originally present in
¹²⁸

"If such an article is determined necessary, and it is not brought
over, forcibly to the concerned officials by necessity of acquiring more
planes as quickly as possible. In the original appropriations of \$0,000,-
000 cash and \$0,000,000 contract authorization were sought in amount.

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General Brett stated that in fiscal year 1940 and in 1941 (through the first supplemental appropriation) approximately \$600,000,000 had been appropriated for airplanes and accessories. No funds were provided for accelerated deliveries and the "costs incident to overtime, increased shifts, and the cost of accelerating deliveries of raw materials." The best possible estimate of the costs of this was 20 per cent of the airplane and accessories funds, so \$120,000,000 had been requested.¹²² Congress quickly granted this request.¹²³

In the first 10 months of 1940 such rapid changes had occurred that considerable confusion existed, and some doubts were entertained whether the goals could be achieved. On 7 September 1940 General Arnold suggested that in view of the magnitude of the problems further procurement planning be deferred. "It is not practical," he continued, "in the present chaotic state of the aircraft industry, to attempt to plan for production at levels which now seem almost impossible of attainment."¹²⁴ The public, having access to only partial information and hearing widely divergent figures on aircraft production and procurement, was quite confused. The Hartford (Conn.) Times of 19 September 1940 called attention to a statement of William C. Drude that the Army and Navy would have 11,000 combat planes within 39 months, at the same time that the Army was sending "hurry-up" letters to aircraft manufacturers for immediate start of a vast program to build 14,394 fighting aircraft. The Times felt that it was not surprising if the people were confused when they tried to understand what was being done. "It is too much to expect the average citizen to have any accurate knowledge of the actual aircraft program, or, indeed, of the whole defense picture."¹²⁵

For a discussion of "expedition, production, see below, Chap. II.

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By the end of 1940 Congress had initiated an enormous expansion of the Air Corps. The 6,500-plane program had not only been authorized (5 April 1939) but within a few months provisions for its fulfillment had been made. In the Military Establishment Appropriation Bill for 1941, Congress, refusing to limit the Air Corps program to 6,000 planes as proposed, provided for the purchase of 2,066 new aircraft. Not satisfied with the veiled limitation in this statute, Congress on 2 July 1940 removed all restrictions on the procurement of planes for the fiscal year of 1941. Meanwhile the President had called for 50,000 planes for the Army and Navy, 26,500 of which were to be allocated to the Army. Furthermore, he set the goal of America's annual production capacity at 50,000 for the United States and her friends.¹³³

As a result the second supplemental appropriation bill for 1941 instituted the 18,000-plane program which was to be fulfilled by 1 April 1942. In order to finance this program Congress, during the calendar year of 1940, appropriated or authorized the expenditure of a total of \$2,435,174,558 for 18,641 planes, 11,147 of which were to be tactical. By 30 October 1940, approximately six weeks after the last appropriation, contracts for these planes had been let. In addition, the statute of 10 November 1940 provided for 5,000 bombers per year. Furthermore, the so-called 12,000-plane program for 1943, exclusive of foreign shipments, was approved.¹³⁴

The rapid expansion of the Air Corps was as follows:¹³⁵

Number of project planes on hand on 30 June 1940	2,755
Number of project planes on order on 30 June 1940	5,829
Number of planes authorized under U.S. 2932 (2,000)	
and U.S. 10055 (2,181)	4,247
Number of planes included in War Department Unitions	
Program, 30 June 1940	14,794
The 12,000-plane program for 1943	<u>12,000</u>
TOTAL	36,225

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The plans for war emergency appropriation will be made by October 1, 1940
and to have been delivered by 30 June 1941. To avoid "deep valley" in
the delivery curve after "Feb 1940," it was thought necessary that the
government make a firm commitment to the aircraft industry by approving
the fiscal year 1941 appropriation, ¹³⁶ 1 March 1941.

Before the 1941 estimates were considered by Congress, steps were taken
to provide the \$300 million which the President had approved on 16 November
1940. The House committee reported on 21 March 1941 the fifth supplemental
appropriation bill for 1941 recommending direct appropriation of \$1,024,-
040,000 and contract authorization of \$2,056,123,234 for the War Department.
Of these amounts the Air Corps was to receive \$10,233,000 and \$534,025,770,
respectively. The purpose of these funds was as follows: \$1,000,000,000
for the 8,000-bomber program (including incidental equipment to be furnished
by the Signal Corps and Ordnance); \$3,000,000 to meet current deficiencies
caused by increasing costs; and \$40,238,140 for the 1,426 planes deferred
from the third supplemental appropriation because of lack of bomber-producing
facilities. The total sum to be spent for all aircraft and spares was \$1,825,-
111,200. ¹³⁷ This would increase the cash appropriation for the Air Corps by
\$4,000,000, ¹³⁸ but these funds were not for the material items mentioned
above. The \$2,052,130,000 sum was appropriated and was to remain available un-
til 30 June 1942, but the contract authorization expired on 30 June 1941.
A portion of these appropriations was originally contained in the fiscal year
1942 estimates, but was deleted at this time in order to hasten the fulfilment
of the 12,000-plane program, * which received considerable attention in the
hearings on the fiscal year 1942 estimates. ¹³⁹

* Large appropriations were given to the Secretary of War to expedite
production. (See below, Chap. II.)

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Meanwhile the 12,000-plane program has been under discussion. On 20 October 1940 the Under Secretary of War requested comments from the Chief of Staff on the British request, or a productive capacity of 12,000 bombers a year. The Chief of Staff indicated that this additional capacity was necessary, if a annual production of 36,000 military-type planes directed by the President was to be realized, this was considered to be justified as a "precautionary measure" in view of existing world conditions. Subsequently, a breakdown of the British share (12,000 planes) of the "36,000 annual production rate to be produced in FY 1943" was furnished to Madson, who requested on 5 February 1941 that cost be advanced to fiscal year 1941. Thus, estimates for 12,000 planes, in addition to 12,000 in the lend-lease bill, were considered by the Bureau of the Budget, and on 18 March 1941 Madson and the Under Secretary of War requested that they be forwarded. The Chief of Staff emphasized that a monthly production rate of 3,000 by July 1942.

cannot be sustained as a military requirement unless we are willing to scale up to the production for an offensive campaign in the air against a foreign power. As a precautionary measure against the possibility for such a campaign, financial means for their production could be requested. The program probably cannot be defended as essential to a defensive program sufficient to enable the British to combat with an estimated German production of 8000 planes a month.

The transfer of planes under the recently passed Lend-Lease Act (11 March 1941) is closely associated with this particular program. General Marshall pointed out to the Secretary of War that there was then pending before the Appropriations Committee of the House "approximately two billion dollars for equipment, other than or in 12,000 airplanes-- which is desired for transfer to the British. The addition of the 12,000 [British] airplanes proportionately brings the total to four billion dollars."

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Since this equipment could not be transferred under the lend-lease bill, special legislative authority would be necessary. Advice was sought as to (1) the inclusion of the second 12,000 planes in the appropriation requests, and (2) the granting of authority to transfer these planes as well as the \$2,000 provided for in the fifth supplemental appropriation.

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On March earlier, 13 March 1941, the chief of the Air Corps Materiel Division deemed it "absolutely necessary" that both the first \$2,000 and the British 12,000 programs be all issued concurrently. Congress should quickly process these funds so the balance would be available for immediate conclusion of contracts. As of the contract was negotiated by April, a "very serious lag" in production in 1942 was feared.¹⁴² Robert Lovett, Assistant Secretary of War for Air, . . . also of the opinion that funds for the 12,000-plane program should be immediately requested, for "the maintenance of productive capacity is a true measure of air power than the number of planes at no a given moment." He thought that the authority to make the various transfers to the British could be sought later, since the articles would not be available for some time.¹⁴³ The Secretary of War was in accord with the above sentiments and directed the War Department to take the necessary steps to effect plans for the procurement of 12,000 planes, estimates for which were included in the fifth supplemental appropriation for fiscal year 1941. As noted above, as of the 1942 fiscal year appropriations were advanced to the fifth supplemental for 1941, so that the remaining 1942 Air Corps estimates called for \$1,264,100,000 cash and \$104,256,995 contract authorization. The major items under new cash and contract authorization of \$733,413,017¹⁴⁴ included \$74,317,819 for a deficit in fiscal year 1941 procurement caused by higher costs, \$1,000,000

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for spare engines, and \$164,700,000 for spare parts for the 3,600 bombers and 1,425 other planes provided for in the fifth supplemental for 1941.¹⁴⁶ General Brett pointed out that in addition to \$104,258,995 cash required to liquidate the then-requested contract authorization, there would also be an unsatisfied obligation of \$598,025,000 of 1941 contract obligations which would have to be provided in a subsequent bill.

While hearings were being conducted on this measure, the Germans overran the Balkan Peninsula, and on 23 May an additional \$2,790,890,785 was requested for Air Corps expansion. Of this amount \$2,500,868,000 was for the Air Corps and the remainder for Signal Corps and Ordnance items.¹⁴⁷ These funds were to construct 12,856 planes which were to complete the present program for all construction.¹⁴⁸ In reporting the bill on 5 June 1941 Representative Snyder explained that the additional \$2,790,890,785 was for further airplane augmentation, looking toward the "ultimate provision of a force of around 50,000 airplanes, Army and Navy," and this appropriation would gear production facilities to the point where 50,000 planes could be maintained in operation.¹⁴⁹

General Brett stressed to the Senate Committee on Appropriations the necessity of these funds for the maintenance of production after the spring of 1942.¹⁵⁰ The Acting Chief of the Air Corps was proud of the fact that practically all of the 1941 funds had been obligated and that "we are getting the production."¹⁵¹ Knudsen testified that this 12,000-plane program would provide for the "residue" of the necessary four-motor bombers and would "round off" the program so that no more appropriations for planes would be needed and there would be "enough planes in process."¹⁵² With inconsequential changes, the bill became law on 30 June 1941.¹⁵³

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The amount of credit is, as usually is now 1, provided for over 1,000,000,000 lire by the Lipini-Borsig contract which is 1,207,044,000 lire. The 12,000 lire limit for each flight is 6,120,674,000 lire each for 10 flights, while 104,208,665 lire are contracted for authorization.¹⁰⁴ The total Air Force contribution is 1,211,700,43 lire 1,207,044 lire for previous debt savings. The Italian Air Force will also contribute 1,211,700,43 lire for compensation. This has been fully agreed to by agreement of 20,000,000 lire by the result of 16 July 1943.

The provisions of public Law No. 70 (Law 19/70) relating to limits of expenditure of aircraft procurements in Article 10¹⁰⁵ of the Law on the same date above are repeated in Article 10¹⁰⁶ of the Civilian Aviation Law of 1943, so that a communication between the two laws will be rendered without reference to the limitation of Section 1 of Public Law No. 10 of April 1933.¹⁰⁷

A bill (No. 117) to extend the provisions of public Law 704 (1943) to the Civilian Aviation Law of 1943 was introduced in the Senate on 23 April 1943, and it expressly refers to the Civilian Aviation Law of 1943 as "the law in question".¹⁰⁸ The Civilian Aviation Law of 1943 is intended to "cancel" existing authorizations, was "incurred in the interest of national security" and an intention to rescind such orders. The Civilian Aviation Law of 1943, which did not exist until 21 July 1943,¹⁰⁹ the application bill however does not provide for any change in the Civilian Aviation Law of 1943, so that it is not reported from the Senate committee until 21 April 1943.¹¹⁰ The date track out 11 provides for the right to cancel the Civilian Aviation Law, which provided for cancellation of contracts in force until six

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months after the war unless terminated earlier by concurrent resolution or presidential proclamation. If this intended form the bill became public Law No. 880¹⁶¹ on 5 June 1942. The Air Corps was, then, authorized to procure and operate all the aircraft which were deemed necessary to prosecute the war and for which funds could be secured--and there was no difficulty on that account.

The House Appropriations Committee had learned, when it reported the regular 1942 Bill, that the over \$1 billion dollars provided would not be sufficient for the year. Before the end of July 1941 another 7,000,000,000 measure had been presented to the House.¹⁶² Of this sum only \$204,007,000 was for the Air Corps and only \$728,000 was for the procurement of new aircraft. The remainder was for organizational equipment for the extension of the first to the second aviation objective. These sums were, ratified on 25 August.¹⁶³

This was the last appropriation act passed before the entry of the United States into the war. Congress had made available, in the first eight months of 1941, \$1,156,203,117, the major portion of which was to be used for the procurement of approximately 15,000 planes and the creation of additional productive capacity. Within the three years before Pearl Harbor, Congress had authorized the Air Corps to extend spending to \$1.8 billion dollars and to procure approximately 37,000 planes.

Increasing costs, expansion of military structures, and the modification of aircraft in light of lessons learned from the European conflict made additional appropriation necessary before Pearl Harbor. In the third supplemental national defense appropriation for 1942, the Air Corps received \$724,004,000 to be used as follows: \$31,763,030 to sail to
or other part of the A.O.S., see below, Chap. III.

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the 3,000-booster and the 12,000-plane programs; \$103,840,074 to increase the procurement of spare parts from 12-1/2 to 20 per cent; and the remainder for expenses incidental to the second (U.S.-gross) aviation objective.¹⁶⁴

The \$61,783,035 war rate necessary by the increased cost of labor and materials as well as the uncertainties of the costs of new items such as pressure-cabin boosters, supercharger equipment, centralized fire control, bombardiers, and automatic flight controls. The new purchase of aircraft should have allowed a decrease in costs, but this factor had been offset by 10 to 20 per cent increase in labor rates in the aircraft industry, the spiraling costs of materials, the increase in weight of the aircraft, and the necessary modifications.¹⁶⁵ The justification of the item for an increase in spare parts was based on "our own and British experience in operating large numbers of airplanes not in combat, but during an emergency."¹⁶⁶

Before the Senate committee held hearings and reported these estimates the effectiveness of the airplane had been again demonstrated at Pearl Harbor and in the sinking of the Arizona and the USS West Virginia. Supplemental estimates were submitted by the Army and Navy and were allowed by the Senate committee.¹⁶⁷ The committee felt that not enough funds were allocated to increase the Air Corps from the first to the second aviation objective, so an additional increase was voted for incident expenses.¹⁶⁸ This new sum was rejected by the conference committee, and the final measure provided \$770,000,000 to be expended as originally requested.¹⁶⁹

Within a very few days, in December 1941, the United States learned some very bitter lessons about aerial warfare. Not only was the powerful

* For lend-lease provisions of this act, see below, Chap. V.

destructive capacity of the airplane again revealed but the inability of the Army Air Corps to provide adequate defense--to say nothing of furnishing an air offense--was placed in bold relief. The importance of all that had been done to increase production and augment the military forces became quickly apparent.

But what had been done was not enough. On 6 January 1942 the President emphasized to Congress that production must be "raised far above its present levels," and he stated that he had just sent instructions to the various departments and agencies setting new goals. The new aircraft program called for an increase in production so that 60,000 planes would be constructed in 1942, and 45,000 of these were to be combat types. The 1943 goal called for 120,000 planes, 100,000 to be of the combat type.¹⁷⁰

On 16 January 1942 the President submitted estimates totaling \$12,-
525,572,474 for the new Air Corps program. This was the largest single amount ever provided for the equipment of the military forces, and it was entirely for one branch of the service. Of this, \$9,041,373,000 was requested directly for the Air Corps; \$932,000,000 for the Office of the Secretary of War for expedition, production; and \$60,242,180, \$1,847,948,-
529 and \$23,308,177 were requested for the Signal Corps, Ordnance Department, and Chemical Warfare Service, respectively. All of these funds were for Air Corps projects* and were to remain available until the end of the fiscal year 1943.¹⁷¹

General Arnold stressed to the House Committee on Appropriations that the invaders had "the jump on us by having selected their own time for war and their own objectives for attack." Maximum production under the existing

* For lend-lease aid, see below, Chap. V.

progress would not be attained until August, and further orders were necessary to maintain that peak. The entire amount requested for the Air Corps was to be expended as follows: 7,141,056,310 for complete planes, 160,-
421,240 for spare engines, and 1,500,395,510 for spare parts.¹⁷² With
the exception of the heavy bombers, however, these funds would not meet
the President's program; rather, they would only maintain the current rate
of production. Plans to meet the President's goal were in progress of
formulation, and the costs of aircraft were still advancing;¹⁷³ but it
was thought that 23,000 tactical and 10,000 training planes could be ob-
tained with these funds.¹⁷⁴ A bill was reported on 23 January 1942 ex-
actly as had been requested with the single exception of the addition of
\$80,000,000 for the construction of the Douglas Dam (in the Tennessee
Valley System) to provide additional power for aluminum production.¹⁷⁵

Practically no opposition was expressed in the House; the Senate
committee added \$300,000 for the State Department, and the bill received
final approval on 30 January 1942.¹⁷⁶ Within two months after the out-
break of war the Air Corps had been given a greater sum for airplanes
alone than it had received for all purposes during its entire previous ex-
istence.

Hearings were begun on 11 February on the estimates for another in-
crease of the President's new request. Approximately \$20,000,000,000 was
requested, but only \$167,460,000 was for the Air Corps. The House com-
mittee expressed surprise that there was even this additional request but
readily granted it.¹⁷⁷ Of the Air Corps request, \$160,051,392 was for
material: \$44,500,000 for gliders and the balance for "equipment procured
for other services and expenses incident to procurement."¹⁷⁸ No contention

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developed over the Air Corps item, and it was made available on 5 March 1942.¹⁷⁹ The attitude which Congress assumed toward the problems and requirements of the military establishment seems to have been well expressed by Senator K.D. Mockler (Conn.), acting chairman of the Senate appropriations committee, when he said:

We are willing to cut down on nondesign appropriations, and we expect to do so, but so far as the military, naval and Air Corps expenditures are concerned our committee feels that we must follow the recommendations of those in charge of our Army, Navy, and Air Forces.

It was indicated in the hearings on the fourth supplemental appropriation bill that the more than nine billion dollars would not accomplish any of the President's raw production objectives except in regard to heavy bombers. In order to get other phases of the aircraft production program under way, new Air Corps estimates for \$315,331,251 were submitted as a part of the \$17,579,371,250 requested for the military establishment in the sixth supplemental appropriation for 1942.¹⁸⁰ This sum was to provide for the purchase of 31,070 additional airplanes and related equipment and was to permit production of aircraft and parts at full manufacturing capacity of existing facilities.¹⁸¹

Gen. Gen. D.C. Shultz, chief of the material activities of Wright Field, noted that there had been some delay in aircraft production because of materials diverted to other uses, and although he had done everything possible, it was only natural that materials for combat planes received the A-1-A rating. Many other projects had the rating, and General Shultz expressed the desire that the Joint Chiefs of Staff "lay down priorities based on military necessity as they see it."¹⁸² General Shultz also pointed out that after 7 December 1941 aircraft and "certain other"

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manufacturers weaker bed production and gave little if any credit for the difficulties faced. In summary and view 1.12, however, material difficulties had developed.¹⁰⁴

The House committee recommended the granting of the Air Corps appropriation as requested; the Senate committee added almost one billion dollars, but none of the changes affected the Air Corps.¹⁰⁵ The Senate amended the bill in 80 places, and the largest conference committee in congressional history worked out an agreement. On 20 April 1942 the Air Corps was available for expansion purposes an additional \$16,231,251.¹⁰⁶ The act provided \$1,256,211,041 for the procurement of new aircraft and necessary equipment, \$77,163,271 for new engines, and \$1,017,867,501 for spare parts.¹⁰⁷ As noted above, there failure to provide an additional \$1,070 planes. The total Air Corps appropriations for fiscal year 1942 had reached the astounding sum of \$21,932,516,31.

Planning on the military establishment procurement bill for 1943 were not begun until 11 June 1942. At this time the Japanese advances had rendered almost by the very coast of Australia, the Soviets were making calamitous defeats, sinking of allied shipping and received at last unbearable proportions, and it was said by the African continent might be virtually sealed to allied activity. It was for these reasons that the War Department called to criticize the "not critical" the United States had been unprepared. The estimates submitted had called for \$1,-300,000,000, but the Bureau of the Budget had reduced these to \$9,972,000,-¹⁰⁸ \$0, of which some \$6,700,000 were for land-leases.

The Air Corps bill amounted to \$11,616,592,910, the major portion of which was to purchase 26,000 planes, spares, and related to complete

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the Army's portion (148,000) of the 185,000-plane production for 1942 and 189 1943. Experience had definitely indicated that expenditures for spare parts had been far too low, and a study by the Joint Aircraft Committee 190 resulted in the raising of the percentage of spare parts required for efficient operation. That item, including maintenance, called for \$7,282,- 513,284, while the new aircraft would be procured for \$2,945,596,712 and \$702,283,995 was necessary to meet previous contract obligations. Of the "new aircraft" funds, 191 \$126,440,000 was for the procurement of gliders. The Air Corps felt that the unit cost of aircraft would decrease in the next few months and pointed out that since 1 January 1942 renegotiation of contracts had resulted in a saving of \$243,000,000. This indicated either that the initial estimates had been too high or that savings had 192 become possible. The House committee added \$273,628,910 to the Air Corps estimates, which amendment was accepted by the Senate before the measure became law on 2 July 1942.¹⁹³ The Air Corps thus had more than 11 billion additional dollars, and once again Congress had acted expeditiously in providing for the fulfilment of the President's request for greatly increased production. In less than seven months after the formal entry of the United States into war, Congress had provided \$29,820,573,261 for the Air Corps and had sanctioned the procurement of 87,620 additional planes.

The Air Corps needed no additional funds for fiscal year 1943, but the production goal was pushed upward to 150,000 for fiscal year 1944 estimates. In the 1944 estimates the Budget and Fiscal Office of the DAF submitted \$10,617,912,200 as the required amount of "standard airplanes--complete." This was to procure 70,900 combat aircraft and 11,100 training planes.¹⁹⁴ Approximately 10,000 of the 12,500 monthly production of

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planes to be attained by the end of December 1943 were for the AF, and the 1944 funds were to maintain that production rate until the end of the calendar year 1944.

Before the above estimates were submitted to Congress, several changes were made. The total amount requested was \$20,655,431,000 and was to provide approximately 100,000 planes, including 36,000 bombers, 38,000 fighters, 12,000 transports, and 9,000 trainers.¹⁸⁵ For these planes, plus spare engines, spare parts, and incidental procurement expenses, the Air Corps expected to obligate during fiscal year 1944 the sum of \$20,573,128,831.¹⁸⁶ Since this covered the program through 30 June 1945, much of the appropriation was to spread over two years.¹⁸⁷ The number of planes alone was only one of the vital factors to be considered in thinking of unit prices; another, and more significant, was the size or poundage of the airframe. In the calendar year 1943 the expected production of airframe poundage was 911,000,000; for 1944 it was to be increased to 1,417,000,000, which was approximately five times the production of 1942.¹⁸⁸

This budget was termed the "decisive" one, and General Arnold emphasized the shift toward more combat aircraft. Until 1941 the Air Corps had procured approximately 60 per cent trainers and 40 per cent combat types. Then the ratio dropped to 50-50; the 1944 budget sought funds for only 9,000 trainers out of a total of 90,740 planes, or less than 10 per cent.¹⁸⁹ This important cut was to be a leveling off in training activities and that trainer school was fairly well stocked by the middle of 1942. Neither the Army nor the Corps made any changes in the Air Corps its size or organization, and the funds (\$20,655,431,000) became available on 1 July 1943.²⁰⁰ This brought to \$20,169,070,242 the Air

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Corps appropriations for the fiscal years 1940-44, inclusive, had raised the number of planes authorized for procurement to 224,000.

By June 1941, when the material requirements of the AAF again came under the consideration of Congress, the program of expansion had virtually been completed, and the peak of production had been reached.²⁰¹ The military established a appropriation bill for 1945²⁰² carried an appropriation for the AAF of only \$1,010,200,000 in new funds; to this was to be added a reappropriation of \$11,000,000,000 to meet the AAF requirement of \$12,010,200,000.²⁰³ The AAF had originally requested \$2,371,132,-000 of new funds; but the Bureau of the Budget reduced this amount by \$760,022,800, leaving \$1,010,200,000 as carried in the bill. The carry-over of approximately \$11,000,000,000 resulted partly from reductions in requirements, but mainly from savings resulting from reductions in the prices of airplanes.²⁰⁴ The fact that the rate of attrition of airplanes was nothing like as great as had been anticipated made possible a considerable reduction in the number of planes required; but the saving thus effected was partially offset by the cost of building more expensive aircraft more in demand. The average weight per airplane or airplane produced during the first half of fiscal year 1940 was 3,500 pounds, whereas the average weight of aircraft on the schedule 1 for production during the second half of fiscal year 1940 was found to be 14,800 pounds, an increase of three tons. Though there was to be a reduction in the number of airplanes produced, the weight was to be increased by 30 per cent.²⁰⁵

The most important factor in the \$11,000,000,000 saving was the reduction in prices of materials, mainly caused by increased production, with

r sultant increase of efficiency and a more exact knowledge of the actual cost of production. For example, the cost of the B-17 was reduced 34 per cent; that of the B-24, 32 per cent; that of the B-26, 26 per cent; that of the B-52, 17 per cent; and that of the B-17, about 10 per cent.²⁰⁶ A partial explanation of these reductions is to be found in the fact that the B-24, originally estimated on the basis of 50,000 man-hours per airplane, was later produced at approximately 20,000 man-hours.²⁰⁷

Of the \$12,610,774,500 required for the fiscal year 1945, \$8,949,-
535,025 was allotted for the procurement of aircraft, including spare
engines and spare parts.²⁰⁸ This amount would have been much larger but
for the fact that, in order to obtain maximum production of the very heavy
bombers, a sufficient number had already been ordered to provide production
until December 1945; hence the 1945 appropriation covered only the number
to be produced during the first six months of 1946.²⁰⁹

Like most appropriation bills, the military establishment appropriation bill for 1945 had a somewhat stormy history in the Congress, but the differences of opinion between the Senate and the House did not affect the AF appropriation; and the amount approved by the Bureau of the Budget amounting to \$1,610,200,000 in new money was included in H. R. 4937 when it became Public Law No. 374 on 23 June 1944. In addition to the approximate \$12,610,200,000 directly allocated to the AF for fiscal year 1945, something more than \$8,000,000,000 carried under other heads (Chemical
Service Corps, Ordnance Department, and Signal Corps, chiefly) was for
the AF; thus the AF was to benefit to the extent of more than \$20,000,-
000,000--more than 40 per cent of the \$49,550,000,000 total.²¹⁰

APPENDIX II

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A token appropriation of \$100 for the AAF was included in the military establishment appropriation bill for 1940,²¹¹ which became Public Law No. 120 on 2 July 1940. The original estimates for fiscal year 1940 had called for expenditures of 17.4 billions dollars; but as soon as the end of the war in Europe seemed imminent the estimates for 1940 were completely revised, and the requirements were lowered from 17.4 billions to 5.3 billions. The great part of this reduction was made possible by lowering the number of planes called for. Early in April the number to be procured was lowered by 27,118, and another cut of 16,674 brought the total reduction to 46,792.²¹² In some items, where it became necessary to reorganize old units to new types--such as B-17 or L-24 units to B-29--requirements were increased; but, in general, substantial reductions were made in all components of the air force. The AAF program for fiscal year 1941, as it was finally presented to Congress, called for expenditures of \$5,770,796,185.²¹³ Funds from previous appropriation were available to finance this program, and there would be an additional six and one-half million dollars to be applied to other 1941 War Department requirements.²¹⁴ The amount to be spent for airplanes, spare engines, and spare parts, in fiscal year 1940 was only \$2,228,802,500, of which amount \$10,500,000 was for gliders.²¹⁵ By the end of fiscal year 1940 these totals had increased to \$2,059,270,342 and 271,730 planes. (See table on following page.)

The oft-repeated immunity that Congress was responsible for the inadequacy of American air power because of its unwillingness to appropriate the necessary funds is about as far from the truth as any statement can be. From 1930--when the 1,800-plane program was authorized--up to 1939, Congress allowed slightly more than was requested in the estimates received

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Contractual Authority	Date	Total Contract	For direct purchases, and for hire contracts	Planes to be recruited	Area and Service, 1935
C.G.C.	11 June 1938	70,112,472	15,112,472	"	3,500,000
C.G.C.	20 Apr. 1939	50,187,251	6,205,000	721	5,000,000
C.G.C.	1 July 1939	10,727,750	1,025,000	2,517	1,000,000
C.G.C.	1 June 1940	265,682,116	103,300,520	368,000,000	1,725,000
C.G.C.	5 Jun. 1940	398,363,282	106,356,597	125,513,072	1,725,000
C.G.C.	9 June 1940	550,321,304	1,002,600,000	1,297,113,116	1,725,000
C.G.C.	6 Oct. 1940	109,036,917	20,000,000	120,000,000	1,725,000
C.G.C.	2 Oct. 1941	539,116,620	521,025,000	1,626,111,250	1,420,000
C.G.C.	20 Feb. 1941	6,231,755,585	10,577,585,665	3,957,812,675	6,000,000
C.G.C.	26 Apr. 1941	201,097,820	"	725,500	"
C.G.C.	17 Dec. 1941	779,000,000	757,169,195	"	"
C.G.C.	23 Apr. 1942	1,061,000	9,011,572,050	20,000,000	"
C.G.C.	5 Apr. 1942	107,40,000	107,40,000	"	"
C.G.C.	28 Apr. 1942	8,516,801,521	8,516,801,521	8,516,801,521	21,570
C.G.C.	2 July 1942	21,510,690,100	21,510,690,100	21,510,690,100	21,550
C.G.C.	1 July 1942	2,352,811,000	2,352,811,000	2,352,811,000	9,740
C.G.C.	23 Aug. 1942	1,101,260,000	1,101,260,000	37,174	70,000,000
C.G.C.	3 July 1943	2,415,125,500	2,415,125,500	10,500	173,225,471

- For creditable delivery, are included in total.
3,000,000 per program.
To these no funds, add a reappropriation of 11,000,000,000, making the total for FY 1945, \$12,610,600,-
plus 90,000 for sliders.
Amount proposed in my bill; however, it appears that 1,82,000,000 was actually spent (House, February
on the military establish't, at present' establisht, or carryover of more than \$12,600,000 made it possible for me to use \$12,600,000 for the program for 1945. (See text, p. 44.)
plus \$1,600,000 for procurement of sliders.

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The FBI Bureau at the project. To do this the Bureau established a contract to the Sandia Defense Co. (an armament), by the project unit, headed by the Bureau of the project, but that does not constitute a liaison relationship between the Bureau and project authorities.

In addition to the liaison officer, there is a full-time head of the project at Sandia whom the Bureau has named, the Bureau at the project, director of technical services of "B" were named, a man whose position is subject to change from time to time.

Under the project manager, the Bureau has a full-time liaison officer, who is responsible for liaison with the Bureau.

At the time of the first inspection on the project, it was noted that no foreign, foreign, or foreign equipment was accepted into the plant. However, in the letter, he responded to a question by the inspection chairman, said that he was in the majority in the permanent committee, that no foreign equipment was accepted into the plant. In addition, he stated that, restriction increased rapidly, in accordance to the following items:

- (1) A minimum range of 100 miles, the maximum distance traveled is about 100 miles, and the total fuel used is about 100 miles.
- (2) At all times, the maximum speed is 100 miles per hour.
- (3) The maximum load of the vehicle is 1,200 pounds, and the weight held is approximately 1,000 pounds.
- (4) In the required time, the vehicle is driven daily.
- (5) The vehicle is required to travel a minimum of 100 miles (the maximum distance is 100 miles).

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- (6) On 7 November 1943 the number of aircraft on hand in the AF was 40,000 and on 8 May 1944 amounted to 75,413.
- (7) On 1 April 1944 the AF had 10,102 first-line combat aircraft.
- (8) On 1 May 1944 the 10,000th B-24 was delivered.
- (9) Between 1 July 1940 and 6 December 1944 more than 175,000 airplanes were produced in the United States, of which 1,023 were very heavy bombers, 26,155 heavy bombers, 50,040 other bombers, 76,021 fighters, 3,262 other combat types, and 18,817 transports. Of this total 127,724 were for the Army.
- (10) The 200,000th airplane produced with U.S. finances after 1 July 1940 was delivered on 31 May 1944, a year and three days after the 100,000th had been delivered. Thus it took 30 months to produce the first 100,000; whereas the second 100,000 planes were turned out in but little more than a year.
- (11) Of the 75,413 airplanes on hand in May 1944, 33,066 were combat planes. In September 1944 the number of combat planes had risen to 40,132.
- (12) The 70,000th one-engine fighter produced in the United States after 1 July 1940 was delivered on 1 March 1944. Of this total, 49,783 were Army type.
- (13) Production of the B-29 began in September 1943; during the remainder of 1943, 77 B-29's were produced, the rate of production rising from 5 in September to 44 in December. In the first half of 1944 production went from 52 in January to a total of 83 in May; the total for the six months was 363. During the second half of the year approximately 820 B-29's were delivered, giving a total for 1944 about 1,200. In the first half of 1945 peak production was reached in June; the figure for the month is 362. The total for the six months is a little over 1,200. The figures for the totals in five months show graphically how dramatic is the climb from the last of '43 to '45. In July, 33 B-29's were produced; in August, 314; in September, 141; in October, 3; and in November, 6.

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Chapter II

METHODS FOR EDUCATIONAL ORDERS AND EXPEDITING DOWNSIZING

The American aircraft industry, as well as industrial concerns which manufactured items other than aircraft, and those who made parts, was not in a favorable position, in 1938, to meet the demands of the expansion programs. It was necessary, therefore, to adopt some means of familiarizing manufacturers with the new types of articles which they might be requested to produce in case of a national emergency. To acquaint manufacturers with the new problems, to start production among war firms, and to increase the total productive capacity, the War Department adopted three methods: (1) educational orders, (2) the increase of existing facilities by government financing, and (3) the building of government-owned plants to be operated by private industry. The effects of these measures were far-reaching in assisting industry toward attaining the goals of the War Department. Funds for these purposes were provided for "educational orders" and "expediting production," in war programs to prepare for production; and later to speed production.

Educational orders

Educational orders had been authorized by Public Law No. 189 of 1st June 1936.¹ This measure authorized the Secretary of War to issue orders for munitions or war material and/or technical designs (nuclear racial in character) "and essential accessories and parts thereof needed in the military service, with commercial concerns to familiarize commercial and manufacturing establishments with the manufacture of such munitions and

such accessories and parts." The Secretary of War was to solicit bid, only from those firms which he deemed competent to produce those items in time of war and was to have the approval of the President before contracts were entered into. First order placed with any concern should include gauges and other appliances which would be basic in the creation of new capacities. Each firm was limited to one order for the same article of munitions within a three-year period, and an appropriation of \$2,000,000 was authorized for each of the five fiscal years beginning with the fiscal year of enactment of the law.²

The editor of Army Ordnance described this law as "one of the most far-reaching enactments of the Congress of the United States,"³ and Congress appropriated \$2,000,000 for the use of the Secretary of War during fiscal year 1939.⁴ The executive program was in view on 3 January 1939 when Representative J.J. Smith (Conn.) introduced H.R. 1004 which proposed increasing the appropriation for educational orders to \$5,000,000 for Fiscal year 1939 and retaining at \$2,000,000 the funds available for this purpose during the succeeding four fiscal years.⁵ A similar bill (S. 343) was introduced by Senator Morris Sheppard (Texas) on 19 January. This measure allowed \$32,500,000 for the educational orders program which would also include the procurement of production studies, factory plans, and other production data.⁶

The Chief of the Materiel Division had "no objection" to increasing the fiscal year 1939 appropriation to \$5,000,000 and recommended that a favorable report be made on H.R. 1004.⁷ On 1 February 1939 the Plans Section of the CSCC recommended that the War Department support the House bill.⁸ The letter of the Secretary of War to the chairman of the Senate

military officials to issue "a full instruction on the expected use of the funds provided for in the act," which had been incorporated in section 1c of H.R. 3513 and later in H.R. 2701. The instruction, in the rest of section 1c, "Every such an order" the chairman of the Select Committee on the Conduct of the War to "issue orders" for \$2,000,000 to be authorized would enable the Accounting Secretary of War to place orders with the chairman of the Select Committee for the manufacture or to requisition it "of special munitions, all necessary and in earnest." It is recommended that the \$2,000,000 be authorized for fiscal years 1940 and 1941.⁹ The inclusion of the authority for procurement of protection facilities, factory or otherwise, and other protection facilities was apparently favored. This would be the only way that the government could have a creditable record of its result, obtained, on the two sides and on both sides, by "utilizing directives in the future manufacture of such items on a non-commission basis."¹⁰

In the final day of hearings before the committee, the chair introduced material passed to him by "one of the top officers" and which Senator William C. Johnson (Colo.) wished to present as an exhibit. In this communication, a officer pointed out that in non-war situations, one disadvantageous, and the attribute (or "kickback") of¹¹ had caused difficulty in administration of the program during the current year. The specific trouble is, in the problem of determining whether an additional order should be considered as a contract for a particular job. In such cases, several options are being made at the same time resulting in the result that the Attorney General had ruled that no projects or articles became public stock, since they will be passed to the government. If a project name were

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not made, the Walsh-Healey Act applied. Also, the educational order was not the same as a contract for quantity procurement of supplies. The idea was to place an order with some manufacturer who did not produce a certain article in quantity so that he became a potential supplier of that item during war. The proposed solution lay in the amendment of the bill to provide that educational orders would not be considered as contracts for public work or works.¹²

This amendment was accepted by the Senate committee, but otherwise it left the measure as passed by the House -- authorizing the procurement of production studies, factory plans, and other production data, as well as the storage and rationing of all articles produced and the equipment used in their manufacture. The committee emphasized that educational orders could never reduce the time lag in reaching mass production for war. The best estimate, it thought, was a saving of five years from the beginning of an emergency until our factories could reach mass production.¹³

The amendment was rejected by the Senate, but on 1 April 1930 the sum of \$34,000,000 was authorized for the fiscal year, 1930, and 1931 and \$2,000,000 for each of the succeeding four fiscal years.¹⁴ The educational orders program thus became a seven-year project instead of five, but was to be concentrated in the years 1930 and 1931. The regular war appropriation act for 1930 was approved on 20 April 1930 and provided \$2,000,000 for these fiscal orders.¹⁵ The War Department requested \$2,000,000 for 1930 and 1931 in the supplementary appropriation bill, but the Senate committee reduced this to \$1,200,000, and that was the amount appropriated for the single year of 1930.¹⁶

The remainder--16,200,000--of the authorization of 16,500,000 was requested for fiscal year 1941. Col. W. A. Rutherford, director of the Planning Branch, Office of the Assistant Secretary of War, in defending this request explained fully the importance of this program. He emphasized that with the single exception of armament material, "no munitions industry at such exists in the United States." The potential capacity was greater than that of any other nation, but about two years would be necessary to convert appropriations for munitions in quantity into the delivered munitions themselves. The reduction of this time factor by all practicable means he considered the main objective of industrial war planning, and he expressed the hope that in another national emergency there could be co-ordinated industrial and economic effort on the part of this country. "In happy contrast to our experience during the First World War,"¹⁷ the value of such orders was indicated by the fact that experience had proved that a saving of from four to 12 months could be achieved, depending on the complexity of the item.¹⁸ The funds were appropriated on 16 June 1940.¹⁹

Only a small portion of the earlier educational orders funds was expended for Air Corps items. This circumstance was caused by the relatively favorable condition of the industry producing materiel for that arm and by the fact that of the 50-odd critical items under consideration in early 1940, only one, propeller hubs, was for the Air Corps for fiscal year 1941.²⁰ In early 1939, however, the Air Corps' "proposed educational order program" for fiscal year 1940 called for a total expenditure of \$8,500,000 and included the following items: basic trainer; supercharger; bombsight, drift meter; automatic pilot; photo lens; outer wing panel, center wing section, and fuselage of four-engine bombers; navigation watches, flight indicator,

and turn inductor.²¹ The Office of the Assistant Secretary of War disapproved the proposed program, so the Materiel Division was requested to submit a list of three-star priority items which would bring the total back to \$6,500,000.²²

The Air Corps was obviously working on the assumption that the total authorized amount of \$6,500,000 would be granted for 1940 and 1941 by the appropriations committee. When only \$11,250,000 was made available, Colonel Rutherford requested the Air Corps to reduce its program to approximately \$3,750,000, its tentative quota.²³ In fact, As yet the Assistant Secretary of War was still holding in abeyance the approval of the expenditure of \$3,750,000 by the Air Corps. Some of the items had not been disapproved, but informal conversation had indicated that the items proposed would for the most part involve the increase of existing facilities rather than the creation of entirely new productive capacities, and further consideration was thought unwise.²⁴

Meanwhile, General Arnold expressed the conviction that the importance of educational orders in the development of maximum production of airplanes in an emergency could not be overemphasized. While the expansion program and foreign and domestic orders would necessitate a greater trend toward quantity production methods, the Chief of the Air Corps did not believe that the conclusion of the program would have "insured the development of the present industry to the extent necessary to meet our anticipated war-time requirements."²⁵ He believed it necessary to develop other facilities and to that end proposed the use of \$850,000 to educate a corporation (such as General Motors) to build a simple plane, preferably of the basic trainer type, on a mass production basis. If the training types could be built

outside the aircraft industry, the airplane factories would be free to devote all of their facilities to combat types after A-day.²⁶

The Chief of the Air Corps on 20 October 1939 again justified a program of 25 three-star military priority items, but the Assistant Secretary of War rejected it. The apparent cause for rejection was the fact that the aircraft industry had on hand or in prospect orders totaling 600,000,000 while the rest of the munitions industry had practically no current business. The Ordnance Department contended that the 3,750,000 would have very little effect over and above the 600,000,000 business of the aircraft factories, but if added to the 10,250,000 earmarked for Ordnance orders, the effect would be considerable. The position of the Ordnance Department was thought to be logical and not reasonably open to dispute by the Air Corps. However, it was urged that 1500,000 of the 3,750,000 be reserved for obligation by the air arm.²⁷

The only grant which the Air Corps had received (for fiscal year 1940) by December 1939 was \$100,000 for "hub, propeller, split." The Chief of the Air Corps felt that the failure to give grants to his arm had prevented the Air Corps from following to a satisfactory conclusion the planning effort then in progress as a joint project of the Army, Navy, and aircraft industry. The Air Corps was limited to the procurement of plans and production studies--and not the actual article--and thus was brought only to a contemplation of deficiencies of productive capacity and to a conversational consideration of the means ultimately available for their correction. Only in one instance had the Air Corps been able to take corrective action, and the planning effort of that service could not be considered complete until the larger subcontractors had secured training in their wartime tasks.

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either as a result of normal current orders from the aircraft industry or as a result of educational orders from the government. He recommended that \$750,000 be allowed for an educational order on the B-26 wing with selected non-aeronautical facilities. This would bring the program to only \$850,000 for fiscal year 1940.²⁸

Apparently the only order allowed the Air Corps for 1940--other than one for propeller hubs--was \$265,000 for bombsights.²⁹ During the calendar year 1940 no educational order were placed by the Air Corps. On 14 November 1940 the chief of the Materiel Planning Section pointed out that the program was being held "in a state of suspense" because of a lack of funds. The original allowance had been withdrawn because the government felt that foreign orders would result in sufficient education for American industry. The funds had been set aside as an addition to the ordnance program.³⁰

The continued demonstrations of the effectiveness of air power soon brought the realization that further steps must be taken to increase the productivity of the aircraft industry and to supply additional facilities. In January of 1941 a committee was established in Detroit to contact the automobile industry on behalf of the government. The proposal was to have the automobile industry build parts to be assembled by aircraft manufacturers in government plants, but a fear developed among some that the "haves"--General Motors, Chrysler, and Ford--were not planning to take full advantage of the existing idle facilities of the "have nots"--Willys-Overland, Hudson, Graham Paige, and other lesser manufacturers.³¹

A little more than two months later the Air Corps submitted a list of proposed educational orders which included the following items: Chrysler Corporation, \$5,336,835; Ford Motor Company, \$3,418,500; Goodyear Aircraft

Corporation, \$1,751,742.93; Delco Products Division of General Motors, \$992,359.81; and Hudson Motor Car Company, \$812,710.83. All orders were to be for parts of the B-24, B-25, and B-26 and totaled \$12,312,187.³² On 7 April 1941 the President approved the application of \$11,000,000 to this Air Corps program, and the Under Secretary of War requested that the utilization of \$1,312,187 from the funds for expediting production (contained in Public No. 800 of 8 October 1940) be allowed to complete the program.³³ Slightly more than the requested amount was allotted so that the Air Corps had \$12,885,664 for fiscal year 1941.³⁴ All but \$564,477 of this fund was obligated by 2 June, and it was requested that that sum be withdrawn from the Air Corps apportionment.³⁵

Expediting Production

None of the contracts with the automobile concerns had been completed by 31 December 1941,³⁶ at which time the Air Corps had utilized less than \$15,000,000. By that date the United States was at war, but the wisdom of the program was to be shown in the amount of production of aircraft materials. Funds for "expediting production" replaced allotments for educational orders. These funds were utilized for two purposes: the increase of existing facilities and the creation of new facilities for aircraft production, and the payment of additional sums to get earlier delivery.

These two phases of expediting production cannot be separated, as one encompasses the other. The educational orders program was primarily to prepare for production; this expediting program was to get out the production. The educational orders appropriations had been sufficient

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for fiscal year 1940, and the appropriation bill for 1941 carried a much larger sum for that particular project. The events in Europe in the spring of 1940 made it imperative that the delivery of aircraft be speeded up and that new facilities be created.

When the Germans were swooping toward the Atlantic, General Arnold emphasized the necessity of taking steps to assure increased aircraft production.³⁷ At that time the floor space of the aircraft industry was approximately 11,000,000 square feet and the production rate approximately 350 planes per month.³⁸ Some congressmen had become concerned at the "lackadaisical attitude of the Air Corps in not requesting much more money for a speed-up of the present program," and it was suggested that this could be accomplished by providing funds to pay the manufacturer for a temporary increase in his force or by holding out the incentive of additional contracts when the current ones were fulfilled.³⁹

On 16 May 1940 the President called for the production of 50,000 planes and the problem of facilities became acute. It was estimated that this program would require 24,000,000 additional square feet of floor space or a total of 35,000,000. About 4,000,000 could be gained by conversion; the other requirement would have to be met by new facilities.⁴⁰ The cost of these facilities and necessary funds for accelerating deliveries were estimated at \$120,000,000. Before the Air Corps had decided upon the most feasible means of accomplishing this program, the author John J. Flynn stressed the fact that "orders to the billions of dollars" were waiting for the airplane factories which did not have the space to handle them. He pointed out that private industry would be hesitant to undertake this expansion because of the possible disastrous effects at

the end of the war. The government would have to finance them and "take up its mind to face the losses if the loan is never made good." This plan would have the double advantage of making possible a limitation of profits and avoiding postwar catastrophe in the aviation industry.⁴¹

The Chief of the Air Corps indicated three possible methods of expanding facilities for the production of aircraft and engines: (1) government-owned, government-operated facilities, (2) privately owned and privately operated facilities, and (3) government-owned and privately operated facilities. Advantages and disadvantages could be found in each method, but the most logical seemed to be government ownership with private operation for the new facilities and government assistance to private industry in the increase of existing facilities.⁴² While this problem was being discussed, Congress had provided funds for the construction of 4,247 additional planes and had granted \$525,000,000 for expediting production for military defense. Of this sum approximately \$184,500,000 was for the Air Corps.⁴³

The third supplemental appropriation for 1941 contained the funds for the first large increment for the achievement of the President's goal of 16 May 1940. The aircraft industry had estimated that slightly more than \$175,000,000 was required to create 15,447,891 additional square feet of floor space, so \$180,000,000 was sought for that project. Also requested was \$120,000,000 to expedite the delivery of the \$608,000,000 worth of orders then outstanding. This sum would care for the increase to two and three shifts and for the necessary overtime. Some controversy developed in Congress over this latter item on the ground that it could constitute a bonus, and rather than adopt that policy, the Department should exercise

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its priority on deliveries; otherwise foreign powers would continue to pay larger bonuses for delivery to them. Congress granted the \$120,000,-
000 and \$178,000,000 of the requested \$180,000,000.⁴⁴ The Air Corps
anticipated using \$60,000,000 of these funds for the creation of three
government-owned factories--one for engines, one for heavy bombers, and
the other for pursuit planes.⁴⁵ Within a month it had been decided to
construct one B-17 plant and one B-25 plant of 1,250,000 and 1,000,000
square feet, respectively. The construction costs were set at \$11,250,-
000 (B-17) and \$9,000,000 (B-25).⁴⁶ A board of officers made site sur-
veys, and Knudsen favored Omaha, Nebr., and Tulsa, Okla. On 9 November 1940
the Chief of the Air Corps instructed the chief of the Materiel Division
to begin construction at the two sites.⁴⁷

Almost immediately the Acting Secretary of War emphasized that ad-
ditional bomber capacity was needed⁴⁸ and suggested the construction
of two more factories--essentially assembly plants--which would assemble
parts manufactured by the automobile industry.^{* 49} Consequently, approval
was granted for the construction of two more factories, one at Ft. Worth,
Texas, the other near Kansas City, Mo. All plants were capable of quick
conversion to four-motor bomber production.⁵⁰

The Acting Secretary of War outlined the cost of new bomber plants
and the projects necessary to prepare the automobile and other industries
for assisting in the aircraft program. This program entailed \$75,000,000
which would be financed by \$39,000,000 from "expediting production" funds,
\$11,000,000 from "educational orders" funds, and the remainder to be re-
quested by Congress. The total cost of the bomber project for the first

* For educational orders to some of these concerns, see above p. 53a.

year would be over one billion dollars and would be apportioned among (1) cash appropriations, (2) contract authorization, and (3) "expediting production" funds.⁵¹

General Brett stated in the hearings on the fifth supplemental appropriation for 1941 that the four plants had been approved, and the estimated costs were as follows: Omaha, \$13,750,000; Kansas City, \$8,910,000; Tulsa, \$15,000,000; and Ft. Worth, \$15,000,000. The sum of \$36,000,000 had already been allotted, leaving an additional \$16,660,000 necessary to bring the projects to completion.⁵² This supplemental appropriation requested \$363,280,000 for construction of new productive capacity, and that amount was allowed the Office of the Secretary of War for "expediting production." Of this amount the Air Corps received \$75,000,- 000 for increased facilities and \$137,361,000 to care for increasing costs.⁵³ The Assistant Secretary of War stated that there were 39 projects in the Air Corps program and that these would cost \$342,000,000. Approximately one-half of these items was for the expansion of existing facilities; the others were for the construction of new plants.⁵⁴

The program of government-owned and privately operated plants continued to be expanded until the end of 1942 when there were the eight following plants: (1) Omaha, Nebr. (Glenn L. Martin Co.); (2) Kansas City, Kans. (North American Aviation, Inc.); (3) Tulsa, Okla. (Douglas Aircraft Co., Inc.); (4) Ft. Worth, Texas (Consolidated Aircraft Corp.); (5) Oklahoma City, Okla. (Douglas Aircraft Co., Inc.); (6) Marietta, Ga. (Bell Aircraft Corp.); (7) Cleveland, Ohio (Fisher Body Division of General Motors Corp.); and (8) Chicago, Ill. (Douglas Aircraft Co., Inc.).⁵⁵ In the intervening appropriation bills, funds were provided for these

additional plants and for other items necessary to hasten aircraft production. This money, as usual, was given to the Secretary of War, who allotted it to the various arms, and the program was carried out after approval by the National Defense Commission and the President. The exact amount given to the Air Corps is not always clear, but sufficient sums were allotted to accomplish the task. In the military establishment appropriation for 1942--which included the very heavy bombers B-29 and B-32--Congress allowed 1,271,800,000 for expediting production. Only approximately 500,000,000 was available for re-expansion because the remainder was necessary to liquidate previous contract obligations.⁵⁶ It should be recalled here that the Air Corps was permitted to shift funds from one item of expenditure to another and that the Defense Plants Corporation (a subsidiary of the Reconstruction Finance Corporation) also aided in the financing of additional production facilities.

In the hearings on the third supplemental appropriation bill for 1942 the Under Secretary of War noted that of the approximately 1,900,000,000 granted for this purpose about 1,600,000,000 had been obligated. The Air Corps had expended approximately 200,000,000 of this, and 51,000,000 of the remainder was earmarked for that arm. The new request for 438,000,-000 was granted, but no Air Corps items were involved.⁵⁷ This act allowed the expenditure of these funds until 30 June 1943 / presidential approval.

The largest single request for increasing Air Corps facilities came in early 1942 in the so-called "12.5 billion" war airplane program. The sum of 283,000,000 was sought to hasten the achievement of the new objective set by the President in his message of 6 January. Of this amount, 635,000,000 was for facilities (plants, machines, and tools) for the

assembly of airplanes and the production of component parts while \$118,-
000,000 was to be spent for the production of engines and engine parts.
The remaining \$130,000,000 was to be expended on Air Corps items by the
Ordnance Department and the Chemical Warfare Service. The sums were
⁵⁸
quickly granted.

The fifth supplemental appropriation for 1942 granted the Office of
the Secretary of War the sum of \$3,011,512,000 for expediting production.⁵⁹
None of this sum was for the Air Corps, though the appropriation of \$107,-
440,000 for that purpose might be considered in that light since it was to
facilitate production by caring for certain cost increments.*

No funds for expediting Air Corps production were provided by the
appropriation for fiscal year 1943, but some of the previously granted sums
were available for that purpose. The amount of \$749,087,424 was obligated
for that purpose in 1942, and an estimated \$53,573,180 was to be obligated
in 1943.⁶⁰

Of the approximately six and one-quarter billions appropriated between
20 June 1940 and 15 May 1943 for expediting production for the Army there
remained as of 1 July 1943 only \$655,147,000 unalocalled. To continue
this work during the fiscal year of 1944, a reappropriation of this surplus
was requested and \$749,000,000 in new money. Of this sum \$190,000,000 was
to be allocated to the Army Air Corps (H.R. 2996). This amount was needed
largely for "subcontractors and manufacturers of aircraft accessories,"
expenditures due to "changes in models, specifications, manufacturing pro-
cesses, and techniques." The committee expressed surprise at the large

* see above, pp. 57-58.

request for the Office of Secretary of War and reduced the total appropriation for this project by deleting the \$81,989,000 "contingencies" item, holding that each individual project contained amounts for contingency funds. The \$657,011,000 of new funds added to the surplus gave the Army \$1,222,-158,000 for expediting production. The amount allocated to the Army Air Corps remained unchanged. After approval by the House and Senate this bill, on 1 July 1943, became Public Law No. 103.⁶¹

The effect of this program, as well as other means of facilitating production, was revealed in the number of planes being delivered at the end of 1943. Enormous over-all appropriations were still necessary, however, and the conversion of factories to production of heavier aircraft was still in process. It was originally estimated that 198,000,000 would be necessary for expediting production of aircraft during the fiscal year of 1945.⁶²

Upon investigation it was ascertained that a surplus of approximately \$1,100,000,000 remained from the 1943 and 1944 appropriations for Army expediting needs, which amount would be "more than sufficient to meet our anticipated requirements" for the fiscal year of 1945. It was recommended (L.L. 4867) that \$18,400,000 of this amount be reappropriated for the Army for expediting purposes in 1945. The estimate for the Army Air Corps was reduced from the original \$8,000,000 to \$2,500,000, which was to be used "primarily in the enlargement of existing facilities, in order to produce different types of planes and larger planes," and for subcontractors (mostly automobile establishments, where these parts, mainly for large-type planes, were produced). Fifty millions of the fund for the Army Air Corps were to be earmarked for capital expenditures made necessary by

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technical improvements and engineering changes in airplane models and engines; to care for alterations in aircraft built and equipped with expediting production money; and to be used for replacement of obsolete and worn-out machine tools. Seven millions were to be allotted for conversion of plants to care for an excess of production, and a small remainder for miscellaneous contingent expenses. However, it was tacitly agreed that the total of this amount could be considerably increased, even to the extent of 100,000,000, by additional savings elsewhere. After being approved by the House and sent to this bill, containing 100 in new money and 963,393,900 in unallocated funds, became Public Law No. 374 on 28 June 1941.⁶³

For the fiscal year 1943 the Army (H.R. 3530) only asked for 100 plus a reservation of 123,701,000 (the total carry-over) for Army expediting requirements. Of this amount 80,922,000 had been allocated to the "Finance Service, Army." After deleting the amount asked for the Finance Service, Army, the final report of the committee requested 100 in new money and 83,779,900 reappropriation. No part of this amount, however, was specifically allocated to the Army Air Corps. Approximately 70,000,000 of the amount would be needed for incomplete projects, leaving the remainder for new projects and scientific and technical work, a sizable portion of which doubtless would be used by the Army Air Corps. After approval by the House and Senate this bill became Public Law No. 126 on 5 July 1943.⁶⁴

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Chapter III

CONTRACTS AND PURCHASE LIMITATIONS

As long as the United States was at peace and the number of aircraft procured by the Air Corps was small, the method of procurement was not of major significance and the profit allowed producers could be controlled through the awarding of contracts. When the number of planes to be purchased increased rapidly and as the United States moved toward a wartime economy, the speed and rapidity of procurement and the amount of profit became problems of major importance.

At the beginning of the expansion program in 1939 the Air Corps procured all planes--except experimental and research types--through the competitive system. The Secretary of War felt that this method had a "very salutary effect" upon progress in the aviation industry. Competition "brought the inventive genius to a high pitch, and the result was the submission of a better product. In subsequent competitions, each competitor felt that he must surpass the military efficiency of the airplane previously purchased in order to be considered for award. This constant striving demonstrated the soundness of a competitive bidding, and the Secretary forecast, in the very near future, the Army Air Corps "fully armed with the most modern and efficient fighting aircraft."¹

As steps were taken to attain the authorized recommendation by the Father Board and as the European development of aircraft proceeded at an unprecedented rate, the feeling developed that changes were needed

in the contractual authority of the War Department. W. J. Fleet, president of Consolidated Aircraft Corporation, pointed out in early 1938 that legislation was before Congress to encourage domestic and foreign operators of aircraft, and that similar encouragement was needed in the fields of aircraft design and construction if America was to maintain the pace set by foreign powers. Since modern aircraft development was becoming so costly, the manufacturers could not well proceed with the creation of new models under the existing system. He suggested, therefore, that the government obtain the assistance of industry at "actual cost plus a reasonable fixed-in-advance fee, not increasing in the form of a percentage as the cost continues through to completion, as was the practice in wartime 'cost plus percentage' contracts." This method would give incentive to buyer or seller to accomplish the desired result at the "lowest possible cost since he gains on quarter of the swing while the Government saves the other three quarters." Fleet thought that the War Department should be enabled to deal "fearlessly, intelligently and economically" in the interest of the government and not be "forced to deal longer under an inadequate law that invites charges of scandal."³

Nine months later, in November 1938, the Chief of the Air Corps recommended that legislation be submitted authorizing the secretary of war to procure aircraft upon a negotiated basis, without competition, when in his opinion the government requirements could not be fulfilled under the existing procedure.⁴ In connection with the numerous measures introduced to carry out the President's aviation expansion program of 12 January 1939, a bill (H.R. 600) was introduced into the house on 7 February. This bill contained many provisions relative to methods of procurement of aircraft,

among them the statement that "contracts, with or without such competition in the discretion of the Secretary . . . may be on either a fixed price or a fixed fee plus actual cost basis and may provide for periodical progress payments." Also, the profit limitations of 10 per cent as provided in previous legislation (15 Stat. 500 and 19 Stat. 1823) would be removed.⁵

That measure, quite elaborate in its terms, was not approved by the chief of the War Materiel Division because all the desired procurement legislation was provided for by H.R. 3518, which had been introduced on 31 January.⁶ The only procurement legislation in H.R. 3518 however, concerned authorization of purchases and said nothing of methods. The proposed procurement legislation, prepared in the Office of the Assistant Secretary of War, was being held until the President returned and the military affairs committee was in a "receptive mood."⁷

The various Air Corps measures were consolidated into H.R. 3791,* but this act contained nothing that would change procurement procedures or limit profit. In the hearings which preceded the introduction of this bill, General Arnold emphasized that he was not opposed to the competitive bidding system, but the problem was to get the planes in the time allotted. The only way to do this was to cut the entire industry--much of which was then idle--to zero. Under the existing system this was not possible since authorities could declare only one winner and award only one contract in any competition.⁸ General Arnold emphasized that, through its auditing system, the Air Corps knew very well the costs of production of various types of planes and could negotiate contracts that would not allow an

* See above, p. 6.

unconscionable profit. In discussing competitions requiring the submission of single aircraft, the Air Corps chief stressed the fact that models had increased enormously in cost, and the Air Corps was allowed to purchase only one winning entry. The unsuccessful competitor could be reimbursed in two ways: (1) sale abroad, or (2) sale to the government. General Arnold felt that since many of the losers' bids present articles with valuable features, sale abroad was not desirable. The Air Corps proposed, therefore, to buy "only the design and one airplane each from the next two unsuccessful bidders." Only 80 per cent of the manufacturer's cost would be paid.⁹

H.R. 3731 as it passed the House contained no provisions relative to rates of procurement or profit limitations. The Senate committee added no provisions on this, but on 6 March Senator C.W. Lobe (. .) offered an amendment which provided that all profit limitations applicable to the procurement of naval aircraft should be applied to Army aircraft. This means that all profits over 10 per cent would be returned to the Treasury, except that a loss for one year might be allowed as a "credit in determining the excess profit, if any, for the next succeeding income taxable year."¹⁰ In the Senate hearings General Arnold did mention 10 per cent in connection with profit limitation but emphasized that he thought the industry should have a "fair" profit. While the exact meaning was not clear from the immediate statement, it appears that he did not intend for his statement to be used in addition of a 10 per cent profit limitation provision such as Senator Lobe proposed.¹¹ Considerable discussion ensued in the Senate, but the amendment became section 14 of the bill as passed on 7 March 1939.¹²

The following day the Finance Division pointed out to the Plans Division that the amendment did not guarantee a 10 per cent profit but did prevent a larger return. The 1935 audits revealed that on Air Corps contracts the average profit had been 12.55 per cent; on air-lane contracts, 10.66 per cent; on engine contracts, 1.17 per cent; on accessory and miscellaneous contracts, 24.21 per cent. The so-called excessive profits were, therefore, limited to the last category which was not affected by the provisions of A.R. 3731. Also, it was felt that this provision would result in higher prices and that the funds should revert to the Air Corps rather than to the Treasury. The results of the act could be "disadvantageous both to the Air Corps and to the contractors."¹³

The chief of the Plans Division recommended nonsupport of this amendment and in the communication to the Assistant Secretary of War pointed out that the 10 per cent profit limitation might be "entirely satisfactory" for negotiated contracts but "certainly unsatisfactory" for contracts resulting from competitive bidding.¹⁴ The Secretary of War's letter supported this opinion. He emphasized that one year was too short a period to recoup possible losses and that since all competitions for quantity procurement for the Army must be accompanied by physical airplanes constructed at the expense of the bidders, the burden would be more onerous than previously. He maintained that enactment of the amendment would "seriously interfere" with the placing of orders for Army aircraft.¹⁵

The War Department's opposition to this portion of the bill had a definite effect. The conference committee modified the original amendment so that a 12 per cent profit was allowed on all contracts for aircraft or portions thereof, and the time limit for making up losses or deficiency

of profits was increased from one to four years. A significant addition provided that when aircraft were procured as a result of competitive bids requiring the submission of sample aircraft the Secretary of War was authorized to purchase one sample aircraft from not more than three unsuccessful competitors. These planes were to be purchased in order of their merit, and not more than 75, 60, and 50 per cent, respectively, of the actual cost was to be paid.¹⁶ The measure became law in this form,¹⁷ thus allowing a percentage of profit on airplane contracts that was almost identical with the percentage of credit on all Air Corps contracts in 1938, greatly increasing the period in which losses could be recovered, and granting the Secretary of War certain freedom of action in the compensation of builders who had submitted aircraft in competitive bidding procurement.

In addition, on 18 January 1939, the Secretary of War had sent to the Secretary of the Senate and the Vice President a draft of a proposed bill authorizing the Chief of the Air Corps to procure, without advertising, certain aircraft parts or instruments or aeronautical accessories the character of which or the ingredients thereof "of such a nature that the interests of the public service would be injured by publicly divulging them."¹⁸ The chief of the Material Division emphasized that attempts to place contracts for the new Air Corps program had shown that it was mandatory to have the above authority apply to aircraft if the 5,600-plane program was to be met.¹⁹ This bill was introduced as H.R. 3135 by the chairman of the Committee on Military Affairs on 24 January, and the following day an identical bill, S. 1013, was introduced by Sheppard into the Senate.²⁰ S. 1013 passed the Senate without amendment, but the House Committee on Military Affairs provided that no purchase could be made under this act until the Secretary of War certified to the necessity of a secret

order and only after submitting the proposal to three responsible bidders.²¹ The Senate agreed to the House amendment,²² and the measure became law on 13 July 1939.²³

This law did not prohibit quantity procurement of aircraft without advertising,²⁴ but it did allow the protection of some of the detailed plans and specifications of the aircraft industry.²⁵

In early 1940 the Materiel Division pointed out that this measure did not authorize open-market purchase of airplanes for "purposes other than those provided in the act."²⁶ Furthermore, it was restrictive, and it was felt that the intent of the restrictions was to "prevent any interference with the current methods of purchasing aircraft." The reason for this probably was based on just investigations of aircraft procurement.²⁷ The Materiel Division pointed out that Congress had added the "only objectionable part" of the bill, requiring submission to three responsible concerns. In attempting to change the law, no recommendations were made because it was thought it would be futile. The history of the measure was said to fit this best "not to raise this issue now."²⁸

The Air Corps, in collaboration with the Assistant Director of Current Procurement, drew up rather radical changes in the aircraft procurement authority in early 1940, but the lengthy proposal was never introduced into Congress.²⁹ On 10 July 1940 the Assistant Secretary of War wrote to the President recalling their conversation of 24 May and transmitting a bill for the negotiation of contracts for the purchase of aircraft until 30 June 1941. The bill included a clause limiting profits to the 12 per cent provided by Public Law No. 13 (3 April 1940), and the Assistant Secretary pointed out that he and the Chief of the Air Corps had already discussed the measure.

with the concurrence of the House military affairs committee.²⁷ On that very day, . . . introduced H. R. 7111 into the House. This bill authorized the Secretaries of War and Navy to procure aircraft, parts, and accessories "in such manner and from such sources" as they determined to be necessary in the interest of the national defense.²⁸

H. R. 7111 appears not to have been acceptable to the House committee, and on 13 Jul., a new measure was introduced.²⁹ This bill, H. R. 7207, prepared in the Plans Division, G.C.C., and submitted by the Secretary of War on 10 Jul. 1908, provided for split or multiple awards. Until 30 June 1911 the Secretary of War was authorized to award contracts (for aircraft, parts, and accessories) to the lowest responsible bidder who could satisfactorily perform the work or service required to the best advantage of the government or, if in the interest of the national defense, to award not more than three contracts. No contract was to be in excess of the price offered by two bidders, and the Secretary of War was to report to Congress on all contracts awarded under this act. This measure did not repeal any acts or prohibit any contracts then authorized but was additional legislation.

In support of H. R. 7207 the Secretary of War pointed out that it was not his desire to abandon competitive bidding or to resort to the proposed authority except "under circumstances where the public interest clearly requires such action." Unless other legislation were passed, there was a danger that the greater part of the contemplated measure might fall into the hands of a limited number of concerns which could not make timely delivery of the contemplated aircraft. A similar situation existed in regard to government-furnished equipment, so it was considered of "primary

"intended" that the proposed legislation be enacted.³⁰ The House Committee awarded the bill to extend the authority to the Secretary of the Navy and reported it on 26 July 1939.³¹ Meanwhile, an identical measure (H. 2803) had been introduced into the Senate on 24 July 1939 and was favorably reported two days later.³² The Senate passed its bill on 1 August,³³ but on 31 July the House had passed over H. R. 7267 "vitia out prejudice."³⁴ It was not until 19 February 1940 that the House substituted the Senate bill for its own and acted favorably. The bill became law on 5 March 1940.³⁴

As finally passed the law allowed the Secretary of War (or Navy), when contracts were awarded as a result of competitive bidding, to choose the bidder whom he thought could best meet the requirements, or he could split the award among as many as three bidders. These renegotiated contracts had to be reported to Congress, were subject to review by the President and the federal courts, could not exceed more than 12 percent over it, and were to be awarded only when such action was necessary in the public interest. Also, the law stated that no existing statute was repealed, abrogated, or suspended but that this was additional legislation. While this act did not grant full authority for negotiation of contracts, it did modify slightly the existing stringent regulations and made possible some sharing of contracts among the smaller producers who could not have received orders under the single-award system. This act helped to bring about an earlier delivery of aircraft and the creation of a greater productive capacity. As has been noted, it is not the intention of the Office of the Secretary of War to make extensive use of this authority, but it was considered essential in an emergency measure.

On 25 June 1940 Representative J. J. Cochran (D.) introduced H.R.

3152 to authorize procurement without advertising in all cases when the aggregate amount did not exceed \$100. Otherwise, any procurement made without regard to Section 3709 of the revised Statutes must have the written authorization of the head of the Department if the amount was in excess of \$500.³⁵ The bill definitely placed restrictions upon open-market emergency purchases. The Committee on Expenditures in the Executive Departments reported the bill, it was recommitted, reported again, and on 3 June was struck from the calendar.³⁶ Meanwhile, the Air Corps thought that the provisions would not be too restrictive and offered no particular objections to the bill. The Secretary of War, however, opposed its enactment unless it was made inapplicable to the War Department.³⁷

The Air Corps, in April, spoke against any change in the profit limitation on Air Corps contracts unless they were technical changes for administrative purposes. If any were made, it was suggested that scientific instruments be exempted and that contracts for Army and Navy aircraft be combined in determining profit.³⁸ In President's speech of 16 May 1940 called for enormous increases in aircraft production, and the problems of profits and negotiated contracts became more acute. The Air Corps pointed out that negotiated contracts were essential to accomplish the program. The competitive bidding system was the occasion of unusual expenditure of time: 30 to 90 days for advertising; 30 to 60 days for evaluation of bids; and 60 days for approval of the evaluation board proceedings and execution of the contracts. Thus the minimum time was 120 days, and the process sometimes required as much as 210 days.³⁹

On 20 May 1940 Representative Carl Vinson (Ga.) introduced H.R. 6622 to extend negotiated contractual authority to the Secretary of the

navy. In the course of consideration of this bill, amendments provided that all profits on army and/or navy aircraft should be limited to 7 per cent. This was modified by the conference committee, and as approved on 23 June 1940 and passed as Public Law No. 671, the act allowed 8 per cent profit. It also prohibited the use of cost-plus-a-percentage-of-cost negotiated contracts, limited to 7 per cent (of the actual estimated cost of the contract). The fixed fee to be paid in cost-plus-a-fixed-fee contracts, and made the above provisions applicable only to all contracts of \$20,000 or more.
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On 21 July 1940, which provided for extension of negotiated contractual authority to the Secretary of War, was introduced in the House and was favorably reported the following day. * 41 As the provisions of the bill, the authority of the Secretary of War was broad, and he was enabled to enter into contracts as such places as under such conditions as he deemed best. 42 Though the contractual authority was considered essential, the bill went through several changes which were acceptable to the War Department, and it became Public Law No. 703, on 2 July 1940. 43 The Secretary of War was given the same authority as the Secretary of the Navy, and the same restrictions were imposed regarding types of contracts and profits that could be made. That the War Department did not intend to throw overboard the competitive system was shown by a memo from the Director of Current Procurement. On the same day that H.R. 9350 became law, he stated that (1) negotiated contracts would be used only when essential to expediting the accomplishment of the defense program; (2) care would be taken to obtain a degree of competition by informal inquiry; (3) in any case where the contract was for \$500,000 or more, the approval

* For other provisions of this act, see above, Chap. I.

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of the Secretary of War was required; and (4) the cost-plus-a-fixed-fee contract was to be used only when necessary to the interests of the United States.⁴⁴

Three days later, 5 July 1940, an address of 19 June by the Acting Secretary of War was made public. In this he disclaimed all responsibility for the profit limitation contained in H.R. 9322 (Public Law No. 671), saying that he knew of it only a few hours before the committee took action. He expressed strong disapproval of the provision and thought that excess profits could be taken by taxes. The present state of "expansion," he said, would not have been reached had not the aircraft manufacturers been allowed "a livable profit to justify their experimentation under the capitalistic system." Congress should consider carefully what this might do toward prohibiting the expansion of private industry and toward retarding the armament program.⁴⁵

These measures had caused considerable delay in placing contracts for aircraft. On 26 July General Brett, chief of the Materiel Division, stated that on 15 June he had been ready to negotiate contracts for 4,000 planes. The law was not signed until 2 July, and in the meantime the modification of the Vinson-Trammell Act of 1936 by Public Law No. 671--limiting profits to 8 per cent--had caused a scrapping of all contracts. Industry was still unwilling to sign the negotiated contracts because of the possible repeal of the Vinson-Trammell Act, the effects of which action could not be clearly foretold.⁴⁶

Congress moved to rectify this condition by amending the second supplemental appropriation bill for 1941 (H.R. 10263) to allow 12 per cent profit on aircraft but retained the 8 per cent profit on naval vessels. General Arnold emphasized to the Senate committee that unless the 12 per cent profit

allowances were granted, the Air Corps would be forced to negotiate contracts on a cost-plus-sentimented-for basis. This is not desirable because it increases in the cost to future buyers the average profit of plane manufacturers for the past few years had been only 3 or 4 per cent.⁴⁷ This act was approved on 9 September 1940 without carrying any profit limitation provisions.⁴⁸

Slightly less than one month later Section 101 of the Tax and Revenue Act of 1940 removed all profit limitation provisions on aircraft contracts.⁴⁹

The authority to split awards contained by Public Law No. 423 (17 July 1940) in the privilege of negotiating contracts granted by Public Law No. 700 (3 July 1940) extended only to 30 June 1941. As early as 22 April 1941 a bill (H.R. 4476) to extend this authority (including the privilege of executing an unlimited number of aircraft) was introduced into the House.⁵⁰

At first the writer anticipated the necessity of the legislation for the extension of the privilege,⁵¹ but the measure was not passed until the following year. The necessary extension of the acts for fiscal year 1942 was, however, provided by the regular military establishment appropriation bill for 1942.⁵²

When H.R. 4476 again came up for consideration in 1942, the Senate added a amendment which extended the split awards authority, the negotiation of contract privilege, and the right of profit limitation until six months after the war, unless terminated earlier by a concurrent resolution of Congress or a presidential proclamation. In this form the measure became Public Law No. 550, on 3 June 1942.⁵³

Meanwhile, several other measures were introduced for the purpose of "providing more effectively for the national defense" and of prescribing the method of supplying aircraft requirements. On 1 July 1940 Senator Joe T. Daniels (Ind.) introduced S. Res. 23 which stated that all defense contracts

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entered into by the United States should provide for the fullest practicable utilization of productive facilities, including the deployment of personnel "in as many areas as possible during each period of 24 hours."⁵⁴ The Air Corps pointed out that all consolidated contracts for aircraft, equipment, and accessories were being negotiated on this basis, and it favored the passage of the resolution.⁵⁵ The Secretary of War, however, pointed out that while he was in sympathy with the idea of summing the program forward, there was a difference in the time required to produce various articles, and therefore the degree of urgency varied. Unless the resolution were changed to allow the exercise of discretion by the contracting authorities, he was opposed to it as an unnecessary burden on the contractors, a needless expense to the government, and a creator of additional storage problems.⁵⁶ The resolution died in the Senate military affairs committee.⁵⁷

The entry of the United States into the war soon brought the revival of the Overman Act of World War I in the form of the First War Powers Act. On 15 December 1941 Representative Lester L. Muncy (Texas) introduced H.R. 6200. The second portion of this bill gave to the President, and those acting for him, the power to enter into contracts, or amendments or modification of contracts, without regard to the provisions of law wherever he believed such action would facilitate the prosecution of the war. No cost-plus-a-percentage-of-cost contracts were to be used. The measure was speedily enacted, becoming law on 18 December 1941.⁵⁸

By the early part of 1942 it had become evident that changes in methods of production and the decrease in costs resulting from mass production made possible certain savings on negotiated and competitive contracts. Consequently, a provision was added to the sixth supplemental appropriation act for 1942 authorizing and directing the secretary of each department to insert

a new position clause in all contracts of \$100,000 or more. Renegotiation was to be accomplished at 3-year or periods when the Secretary decided that profits could be determined with reasonable certainty. If no profits were considered excessive, the Secretary was authorized to withhold further payments in the amount of the excessive profits, or if less, he was already entitled, to recover an excess amount. All savings resulting from contract changes or cancellations were to revert to the Treasury.⁵⁹ This last was to remain in force for three years after the law. With the exception made later in 1862 and in 1863 in the middle of 1863, but they did not alter any fundamental provisions of the above enactment.⁶⁰

Responsibility for the fulfillment of contractual provisions was directed as follows: in 1869: the Secretary of War in his direction; the Assistant Secretary of War in his revision; on the orders of the Supply and Services branch "Administrative and Executive functions in connection therewith under the supervision of and subject to the approval of the Secretary, or of the Adjutant."⁶¹ The chief of the Air Corps was thereafter responsible for the procurement of supplies peculiar to the Air Corps, and he exercised this authority with approval of the Adjutant and Secretary of War through the chief of the Air Corps' division.

With the intent and to do of procurement in late 1869 and early 1870, a division of purchase and supply in the Bureau of Ordnance was created to coordinate all "execution of all major financial orders and contracts." All major purchases (\$100,000 or more) first were submitted to the Director of Purchases and Contracts, Office of the Assistant Secretary of War, before being presented to the Army Ordnance Division.⁶²

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The selection of subordinates used in the staff of the Air Corps in, no indication was, until now, to be made of the arrival division, after the first part of 1912 until orders were issued no other authority than the general. Contractors for \$10,000 or less needed to be provided with a copy of the contract, a trial division, till about \$100,000,000 required only the approval of the chief of the arrival division. The chief of the arrival had to receive written contracts. It was not a matter of execution in which the new contractors, the all - lit - air corps under the law of 5 March 1, 19 required the approval of the chairman of the board and amounts of \$5,000,000 or less required his approval.

With the organization of the Army from 1912 and the establishment of the Bureau of Supply (later Army Service Forces),³⁴ said to be permanent and unalterable. The Bureau of Supply was charged with transportation of all - tonnage except that relating to the air, which was to be transported by the air. Operation of the Bureau of Supply is a case of regulations required, for a short time, in carrying the continental mail, and air forces for the time of occurrence at command.³⁵ This is only a temporary which will be corresponded, and be next majority of Air Corps personnel with the highest continental mail - physical in their removal. The chairman of the Bureau of Supply, General Board, and the Adjutant General, as well as the Air, as the chief - officer of the, as far as to remove and transport the continental mail between 25th and 31st of August - Service Forces.

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Chapter IV

RESEARCH AND DEVELOPMENT

One of the most important phases of materiel activities in the period 1939-44 was research and development. Unless sufficient and effective utilization were made of the fundamental work of the aerodynamics experts, it was entirely possible--and likely--that much of the effect of the huge expenditures would be nullified by the production of planes inferior in performance to those of potential enemies. The basic research for both the Army and Navy was conducted by the National Advisory Committee for Aeronautics (NACA), while the Army agency for applying these findings was the Materiel Division (later Command) located at Wright Field. Legislation for this activity falls into two categories: (1) the authorization for new facilities and (2) the granting of appropriations for the NACA and the Air Corps.

In the few years prior to 1939 other nations of the world had expended much larger sums for aviation development than had the United States. The inevitable result was that those nations had research facilities far superior to those of the United States at the time the expansion program was inaugurated in 1939. The unprecedented augmentation authorized in that year called for a strengthening of research facilities if the full benefit was to be reaped from the expenditure of money appropriated. There were, then, several bills in 1939 which sought to encourage, increase, or strengthen aeronautical and general research and invention.

On 3 January 1939 Representative Melvin J. Maas (Minn.) introduced H.R. 93 which provided for the setting up of a national defense commission

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on inventions to be composed of a civilian appointed by the President, two Army officers, two Navy officers, the Chief of the Air Corps, the Chief of the Bureau of Aeronautics, and four others of Congress, from the Senate and House military and naval affairs committees. This group was to receive, review, and pass upon the merits of all inventions, discoveries, and other devices submitted to the government for use in national defense and was authorized to build and test models of devices believed to warrant such treatment and expense.¹

The Air Corps Material Division thought that the bill needed clarification, but felt it should be supported if only on the selfish grounds of ridding the Air Corps of the burden respecting aeronautical inventions and to insure means of developing inventions by those individuals who were unable to incur such expense. The Plans Section admitted that the bill would have the above and other advantages, but there were also several disadvantages. Among these were: (1) the membership was too large and "too high-placed" and (2) the proposed commission would duplicate the work of the NACA and the Patents and Design Board. The disadvantages, it was held, far outweighed the advantages, so it was recommended that the bill not be supported and the aims be accomplished by introducing, if necessary, the authority of the NACA and the Patents and Design Board. The Plans Section of the Air Corps found nothing in the bill which should "elicit favorable recommendation."² The bill died in committee.

Two months later, March 1939, Senator Carter Glass (Va.) introduced S. 1708 which provided for the establishment of a government-owned, government-operated engineering aviation center. This center was to manufacture airplanes primarily as a yardstick for production costs and was to function

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as a backmarker in research developments. A sum of \$25,000,000 was authorized for the center.⁴ The Air Corps prepared a letter for transmittal to the chairman of the Senate military affairs committee in which it was pointed out that (1) a good justification for a Surin manufacturing costs and profits already existed in the War Department's existing system; (2) the government was obliged to enter in this manufacturing field in competition with private industry; (3) only about two general types of airplanes could be built in one plant, and since the Air Corps needed about 12 types the contribution of this plant would not be very great; and (4) the War Department opposed the passage of the bill.⁵ The Senate committee held hearings on the measure, but it was never reported.⁶

A similar bill, H.R. 5197, was introduced into the House on 21 March 1939, but no action was taken on it. Nearly two years later, 17 February 1941, Senator Hill reintroduced his bill as S. 823. The opposition of the War Department was more pronounced than previously, and it was stated that the creation of the center would be "unsound" and "unnecessary." Again,⁷ no action was taken.

Meanwhile the whole issue of the inadequacy of research facilities had been aired in committee hearings, and money had been sought for a new laboratory. General Arnold stressed the significance of research as a means of most efficient utilization of funds and noted that Germany had five research centers comparable to the one at Langley Field. One of the most vital needs was a 400-mile-an-hour wind tunnel for research on higher speed planes. The Air Corps' estimates for research and development had been cut \$1,000,000 by the Bureau of the Budget, and General Arnold thought \$6,000,000 instead of \$6,000,000 additional (to the regular 1940 appropriation).

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ation of \$5,000,000) should be appropriated for this purpose. He also emphasized the necessity for another AIC laboratory, and for aircraft requirements of the Air Corps to be fully met for a period of years. In his regular appropriation for fiscal year 1940 the AIC had received \$1,700,000, of which \$240,000 was to be used for beginning the construction of a wind tunnel.⁹ The 1940 appropriation request of \$8,100,000 was readily granted. In the first, provided for an increase in a research and an addition of \$10,000 for continuous wind-tunnel construction.¹⁰

With introduction into Congress of legislation for the Air Force Commission, additional funds were sought by the AIC for research and for an laboratory at Sunnyvale, Calif. The sum of \$20,000 was requested for research, to clinical investigation, and special reports; \$2,110,000 for the extension of laboratory facilities, and \$4,000,000 for land to use at Sunnyvale. Dr. Maurice Bush, vice-chairman of AIC, and Dr. George Luis, director of aeronautical research for AIC, testified to the back-bone of the unit in its basic research and to the importance of these appropriations in over-riding this position.¹¹ John L. Victory, secretary of AIC, pointed out that recent events at which basic aircraft battles could be won factors in laboratories, without bloodshed. It was, therefore, a common-sense business proposition to base expenditures upon the best research results. "To have superior aircraft will be worth all its costs; to have inferior aircraft is but to invite disaster."¹²

Although it had been planned that there would be no duplication of effort between the Langley and proposed Sunnyvale laboratories, the Board felt that the additional facilities are not warranted until covered the appropriations for the .¹³ The Chief of the Air Corps and the Chief of

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The Navy Bureau of Aeronautics recommended that the Senate committee reinsert this item and maintained that this was an emergency project.¹⁴ The committee did not respond favorably to these urges, but on 17 April 1930 Senator Miran Johnson (Calif.) offered an amendment providing for \$4,000,-
000 appropriation and \$10,000,000 contractual authority for the Sunnyvale project. Senator Alva P. Adams (Colo.) offered an amendment striking out the contractual authority. The Senate agreed to the cash appropriation only.¹⁵ The conference committee struck out the Sunnyvale appropriation, and the only allowance for facilities was \$2,140,000 for Langley Field.¹⁶

After the Senate committee had refused to allow the Sunnyvale appropriation, some newspapers declared it a "pity" that the House should have been followed in this respect. The New York Times of 18 April thought that the rotted defense of the bill should have been sufficient to convince Congress of the project, but certainly the arguments of its emergency character should have been convincing. It said that "to refuse the research appropriation asked is, in hardly fairce, to hold in as the project and let out at the bung. No other sectional considerations to enter into such a decision would be something less than untrustie."¹⁷ The Washington Evening Star of 18 April thought it was still not too late to rectify an error that might be the difference between victory and defeat in case the United States became involved in a major conflict. It emphasized that defense could not be static, and in case the laboratories at Langley should be destroyed, the enemy would be a "long way toward aerial supremacy." At the security standpoint, if for no other reason, there should be at least 3 laboratories. This later became evidence of sectional conflict.

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in the defeat of the proposal, and said:

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It would be little short of criminal if our national security in this matter were to be sacrificed to a matter of sectional pride or mere political expediency. And it appears that some of this feeling may be behind rejection by the House and Senate committees. . . . the cost is irrelevant. It is less than that of providing a squadron of four-engine bombers; 1 percent of the cost of the air defense program will do the job.

The Evening Star concluded that the crisis of rejection should not end the fight and that further efforts would be made.

While this requested appropriation was being rejected by Congress, the supplemental military appropriation for 1940 was under consideration. In the estimate an additional \$100,000 was sought for Air Corps research and development during the fiscal year 1940.¹⁹ General Arnold said it since his January appearance he had studied the research and development program and concluded that engine and pursuit-plane development must be emphasized to a far greater degree than in the past. In these categories the United States was far behind foreign nations, only the heavy bombers of the United States being definitely superior to foreign types. The \$3,000,000, together with the regular appropriation of \$4,000,000, he maintained, would meet only the minimum requirements; \$6,000,000 would be required annually for the next five years if the United States were to outstrip other nations in research.²⁰

The Chief of the Air Corps also brought out the necessity for another AC-1 laboratory but stated that this additional research facility should not be tied to the immediate procurement objective. Any new facilities, he said, would be for the future and not the present. This would be true because of the time element. General Arnold stood against the expansion

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of the Langley laboratory, saying it would be a waste of money, and he indicated once there would be need for three or four or five laboratories in the future. Queried on research in universities, he answered that these institutions did not do fundamental research but studied means of adapting a certain design to production. If the universities were allowed to expand their activities too much in this respect, the Air Corps would lose control.

The House committee added \$2,000,000 for research and development, adding a total of \$4,000,000, which was granted to the Air Corps on 1 July 1939.

As the Washington Evening Star predicted on 16 April, additional attempts were made to provide for another NACA research laboratory. For more than a long time coming. On 6 July 1939, Representative John T. Costello (Calif.) introduced H.R. 6200 which authorized an appropriation of \$10,-
000,000 for the U.S. to construct and equip aeronautical research facilities at Sunnyvale, Calif.²¹ The Air Corps strongly recommended Air Department support for this bill. It was emphasized that practically all of the fundamental and basic research in aeronautics was being done at Langley Field by the NACA, and those facilities—which could not be expanded there because of space limitations—were inadequate to meet the demands of the Army, Navy, and manufacturers.²² The military aircraft of the United States had not kept pace in performance with the craft of the major foreign nations because²³

basic and applied research facilities . . . have not been expanded so extensively as they were in these foreign countries. If we are to regain a position of equality in the manufacture of aircraft with foreign countries, research facilities must be made available, and a planned research program instituted. Considering the geographical distribution of the aeronautical industry in the United States, another basic research center, with improved facilities, should be established on the East Coast.

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Sunnyvale was recommended as a suitable location because of the available land, the favorable climate, and the near-by labor supply.

Three days later Representative John Z. Anderson (Calif.) introduced H.R. 6216 which was identical to H.R. 6200, and on 18 May Representative John M. Houston (Kans.) introduced H.R. 6399 authorizing \$10,000,000 for an aeronautical research center at Wichita, Kans.²⁶ The Air Corps pointed out that these bills were identical except for the proposed location. First priority should be given, it was thought, to a West Coast location because of the industrial concentration there. H.R. 6200 would be favored only if approval for two laboratories could be secured.²⁷ The Secretary of War thought that H.R. 6399 would benefit the central portion of the aviation industry and would therefore be in the interests of national defense.²⁸

Other bills were introduced by representatives seeking NACA laboratories for their states. On 23 May, Representative Joinings Randolph (W. Va.) presented H.R. 6476 which authorized spending \$5,000,000 for facilities at Morgantown, W. Va.²⁹ The War Department felt that Morgantown was the least desirable of the three proposed locations; it was too close to, and no more readily accessible than, Langley Field, and therefore first consideration should be given Sunnyvale and Wichita.³⁰ The last bill for an NACA research laboratory--this time for \$10,000,000 at Denver--was introduced by Representative Lawrence Lewis (Colo.) on 14 July 1939.³¹ In approving the Sunnyvale project the Secretary of War on 28 July emphasized that the passage of H.R. 6200 or H.R. 6216 would best serve the interests of the air arm. He did feel, however, that a stipulation should provide that the site be designated by the War Department. In that way the War Department's interests would be fully protected.³² None of these bills emerged from committee.

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The legislation provided time to submit the . . . 7122, the third Jew
Bill, a separate bill for 1,10,000 before the House. The estimates
provided for an appropriation of 4,000,000 and contract authorization of
3,000,000 for the construction and equipment of another 100 laboratories,
the location of which was to be determined by the ³³ Senate. In the hearings,
Mr. J. J. Abbott, of DC, reiterated his arguments that had been
advocated previously: (1) the project as necessary to the national de-
fense; (2) the Navy should not be denied because (a) it is more wise to
concentrate all facilities in one place, (b) the space was limited and ad-
ditional space was not available, and (c) over 50 per cent of military air-
craft production is located on the Pacific coast between Seattle and San
Francisco; (2) Germany's submarine fleet is being developed by experts;
(+) there would be no duplication between the U.S. and Germany; and (3)
there would be inefficiency resulting from geographical separation be-
cause some work could not be given the power of the ³⁴ Air Corps. Charles E.
Mackay suggested that there is no need for the U.S. and Great Britain to catch
up in aeronautical development unless new research facilities were created.
While he thought that his country should be a part of the Corps, he felt
that there should be an aeronautic research station "somewhere in the eastern
section of our country."³⁵

The Senate voted recommended that the 10,000,000 be divided to
1,100,000 cash and 8,900,000 contract authorization instead of 4,000,-
000 and 3,000,000, respectively. This was acceptable to the House and
Senate, and so a week later the ³⁶ 7122 became law. That is,
after less than a half year, the production of many bills, and the
introduction of a single bill after considerable measures, Congress

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authorized no research facilities which were vital to the production of
an efficient military aircraft.

The independent offices appropriation bill for 1941 carried "C. es-
timates of \$6,000,000. Of this \$1,100,000 is for additional con-
struction at Langley, and \$2,000 is to care for part of the contract
authorization for the new test laboratory at Forest Field near Langley.
Dr. J. Robert Oppenheimer pointed out that the growth of U. S. laboratories and
experimental places had to be kept in expansion and taken place in
the use of aircraft for military purposes. While soon pursuit and bomber
aircraft are probably too slow, the P-38 is helped by (1) the type
of engine it carries which can handle fuel and oil for research could be
increased and (2) it has sufficient armament to conduct an experiment.
However, even authorized, how the "C" been called upon to provide so much
information to help improve performance, but funds for our research pro-
grams are limited "to a large extent by the financial needs of our military
services."³⁷

The request to be quickly granted by the House and Senate, which is
not likely to be done before Christmas. In addition to working toward the com-
plete laboratory, the Radio Research facilities at Langley were
to be increased to about \$1,500,000. At Langley, Hanover, sea-
port, and at the Naval Air Station, the first in speed cap-
abilities, the construction was also begun. The fee for research
independent, experimental activities was increased from \$5,000
(in 1940) to \$10,000.

By the time the above measure had been enacted the Germans had swept over parts of northwestern Europe, and soon France's fall became inevitable. In the first supplemental appropriation bill for 1941 funds were requested for the establishment of an NC engine research laboratory. Some opposition developed on the floor of the House to the granting of the \$2,000,000 cash and \$6,400,000 contractual obligation. The proponents of additional funds for research came to the support of the bill, citing letters from the Special Survey Committee on Aeronomical Research Facilities,³⁹ which indicated a drastic need for engine research and urged immediate action. This plant was to be for engines, what Langley was for planes.⁴⁰ The attempted restrictions were defeated, and the new labor code was authorized on 26 June 1940. In addition to the \$2,000,000 cash and contractual authorization of \$6,400,000 for the engine laboratory, 1,200,000 was voted to construct a new electric power plant at Langley. This last item was made necessary by the increased facilities there in the preceding year.⁴¹

The increased personnel required for the new laboratories and the funds to fulfil the contractual obligations for the two laboratories,⁴² in California, and the engine laboratory, located near Cleveland, brought the fiscal year 1941 requests for NCAR to \$13,301,810. Of this amount, \$5,600,000 was to be applied to the engine laboratory and \$8,400,000 to NCAR. Bush stated that in fiscal year 1942 NCAR would conduct research exclusively on aerodynamic problems while the \$11 amount of work for aircraft that was being done at Langley would be transferred to the Cleveland plant. The House committee, reporting favorably on the appropriations, emphasized that the scientific research for the NCAR was the "most fundamental activity of the government in connection with the development of America's potential

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strength in the air. No matter how many aircraft are produced, nor how many pilots are trained, unless the aircraft are at least equal in performance to the best produced by any other nation the whole expenditure may be largely wasted."⁴³ The committee made no mention of L.C.A. funds, and the cuts were approved on 5 April 1941.⁴⁴

As the situation grew worse for the Allies, plans for aeronautical research facilities expanded. In June of 1941 the LCC sought L.C.A. efficiency funds for 1941 and additional funds for 1942. Mr. Bush explained that there were three reasons for the necessity of increased allowances: (1) in so treated work load made it necessary to utilize the Langley facilities in every possible way; (2) changed plans called for a larger engine-testing wind tunnel; and (3) the increased cost of production made it impossible to equal cost facilities at the original estimate.⁴⁵ The House committee approved the requested 4,500,000 general appropriation, \$75,000 for command and additional construction at Langley, and the additional contract authorization of 4,900,000 for the Cleveland plant. The authorization for the latter item was raised from 10,000,000 to 14,600,000. The appropriations received final approval on 3 July, 1941.⁴⁶

Very soon it was evident that more funds would be required for L.C.A. Jerome Wunderer, the new controller of L.C.A.,⁴⁷ said that L.C.A. was not living up to its responsibility and could fall further behind unless more were done in the way of expanding facilities. An increase of 3,207,500 was sought for the L.C.S. laboratory, which 2,407,500 was for an additional and "different" type of wind tunnel. The sum of \$31,425 was needed for construction at Langley, and 1,102,575 for a general appropriation. These sums were made available on 23 October 1941.⁴⁸

REF ID: A6422

Between this time and the end of 1943 no new projects for NACA were approved, but the Cleveland, Langley, and Ames laboratories were constantly expanded and equipped to meet the new demands. Of the total appropriations of \$19,032,736 for 1943, \$7,071,000 was for Cleveland and \$6,000,000 for N.A.C. Shortly before this, however, an additional 1943 appropriation had provided \$3,500,000 for Cleveland, and had raised the amount that could be expended on the facilities from \$3,000,000 to \$8,171,000.⁴⁹ This limit was again raised on 16 March 1943 when another \$2,100,000 was appropriated for Cleveland and \$111,000 for Langley. The general appropriation was \$8,250,000.⁵⁰ By the time these sums were granted, the construction of the engine research plant was practically completed, and the amounts to be used primarily for equipment. At the hearings on the bill NACA officials pointed out a very important research development--the low-drag wing, which was one important factor in the efficiency of the -451.⁵¹

In the hearings on the regular appropriation for 1944 Hunsaker summarized the picture since the last few years. Since the research expansion of 1937 the NACA had received construction appropriations amounting to \$8,507,426, and the staff had expanded from 446 in 1937 to a proposed 4,410 for fiscal year 1-44. Several units of the engine research laboratory were already in operation, and some 88 special research projects had been started at 80 universities. The 64 per cent grossed increase in personnel brought the general appropriation to \$15,672,000; \$8,707,500 for NACA; \$60,000 for construction; and \$14,000 for printing and binding, a total of \$19,433,500. These sums were approved on 26 June 1944.⁵²

AM C-68, Circa. 17

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Report on 7-1 of 1916 one. Committed that the United States had placed the lead in aeronautical research, and more funds were required to maintain such lead and to act up, through the creation of new types of aircraft, to aircraft as Mr. R. L. G. However, a survey revealed that Vought proposed only to use or only would be content of their proposals. An F. W. Conner resolution July 29, 1916, of 1,700 employees at Langley, but the P. O. maintained it could use only 725 at Langley and 700 at Cleveland. Some progress would have to be made in the report of \$3,000,000 in aeronautics program at Langley to use the 1,700 employees could be effectively utilized. The request for \$210,-100 for Langley, \$4,764,863 for Cleveland, as well as \$750,517 for general expenses at Langley.

General Arnold and Vice Adm. A. S. Cunningham strongly supported these recommendations, which were approved with little change. The new committee provided \$30,000 the funds for personnel salaries, by the end of one year, see note 1x, funds would be needed for only five instead of six months. An aeronautics bill to committee was emphasized the value of research to the program as noted with some faint initials. The C. to the Air Service Agency and the Air Service the problem last year to percent. Ab. 17,627,710 is not without further change.⁵¹

The independent office's appropriation bill for 1917 is shown in form of \$20,200,100 for the Air Service.⁵² The amount that actually went to public Law No. 621, approved on 27 Jy. 1917, is \$20,200,200, which included \$10,000 for printing and mailing.

The first supplemental appropriation bill for 1917, which became public

202-2-52, Class. IV

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law No. 629 on 22 April 1944, allotted to the "7,000,000 for salaries and expenses, \$25,000 for construction and equipment at Langley Field, and \$100,000 for construction and equipment at the Aeroplane Engineering Laboratory at Cleveland, and \$1 of \$7,101,000.²⁷ Thus in the second session of the Seventy-eighth Congress there was appropriated for the year a total of \$7,004,600.

On 7 March 1945, President Roosevelt sent to the President of the Senate a request from the Director of the Budget for an appropriation for the sum of 10,300,000-- \$7,000 for salaries and expenses, \$4,100,000 for construction and equipment at Langley Field, \$100,000 for construction and equipment at the Aeroplane Engineering Laboratory at Cleveland. The First Readiness Appropriation Bill, which had already passed the House, had made no provision for the D.B.,²⁸ but the request of the Director of the Budget was granted, and the appropriation of 10,307,000 was added to the bill, which became public law No. 10, on 25 April 1945.

The independent version of the Appropriation Bill for 1946 was introduced in the House on 15 March 1945; it authorized, for the year, for fiscal year 1946, the sum of \$6,850,000, and \$10,000 for printing and binding.²⁹ The House committee observed that this was an increase of about \$1,000,000 over the 1945 appropriation and that it could provide full-time work for all employees including those on furlough. New York, 1946 and those necessary to start up the new construction installations.³⁰ There was no mention of the existing surplus of buildings or fittings or in the conference report,³¹ and it was allowed by the House committee--

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36,011,000-- which is public Law No. 19, 1940, is a proved on
July 18, 1940.

The responsibility of the Government in connection with
the amount of 1,700,000, which is also contained in 36,011,000,
which is a proved sum, is due to the U.S. Air Force, at 107,000,000.

Summarizing, the situation which arose in 1940, the Air
Corps received from military funds, which were required for
the utilization of the aircraft of the U.S. Air Force in 1940 in combat, Air
Corps expended the 1,700,000 for research and develop-
ment, but by agreement with the War Department, it was paid
107,000,000. It was agreed that the Air Corps would be held
responsible for the amount of 1,700,000, so as to coordinate with War Department
the adjustment of costs, 1,700,000 plus 107,000,000 or 108,700,000 or 1,700,000
as the amount of receiving a portion of the heavy bombing.¹² In the de-
sence of any difference for 1941 for the Air Corps, the 1,700,000 would
be deducted, and the remaining amount, after deducting the 1,700,000
from the amount of 1,700,000, would be deducted from the amount of 107,000,000
in the same manner. This is the method of accounting for the
amount of 1,700,000, which is a proved sum, and is a complete con-
cordance of the amount of 1,700,000, which is a proved sum, and is a
difference. As to the deduction of the amount of 1,700,000, it
shall be the Air Corps' responsibility to prove the amount of 1,700,000
in order that the amount, which is deducted, may be correct.¹³
This has been done, and the amount of 1,700,000, which is a proved sum,
is deducted before the amount of 107,000,000, which is a proved sum, and is a
difference, there being no limitation of transferring funds from one
to the other. The amount of 1,700,000 is reduced to 107,000,000.¹⁴

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The greatly increased interest resulting from the President's message of 16 May 1940 soon brought requests for more funds, among other such larger sums for research. In the first supplemental appropriation for 1941, \$17,000,000 was set aside for research.⁶⁵ A controversy over research funds, in general developed in the House, but all restrictive acts were defeated and the bill became law on 26 June 1940.⁶⁶ No further research funds were sought until March 1941 when the fifth supplemental appropriation bill was under consideration and \$1,400,000 was requested. Of this amount, \$2,000,000 was for the development of a special type of airplane, apparently a jet-propulsion craft. This sum was granted on 5 April 1941.⁶⁷

During this period important research and advances in the development of the diesel engine prompted the introduction of H. R. 145 on 17 June 1940. This bill provided for the establishment in the Department of a Diesel engine aircraft division for the purpose of studying the possibilities of the Diesel engine in connection with aviation. The War Department pointed out that by nature of its ability to use low-grade fuel the Diesel engine was far more important to certain European countries than to the United States. However, the existing Diesel engine did not give promise of military adaptability, and although development in the United States should be pushed, it was thought that this could be accomplished by the Navy in accordance with an agreement reached in 1939. The War Department could best cooperate, it was maintained, in the final refinement and adaptation of this engine to military use. The bill died in committee.⁶⁸

In the military establishment appropriation bill for 1942

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\$12,576,000 was requested for the Air Corps for the "procurement and development of new aircraft, armament, and power plants for aircraft and accessory equipment."⁷⁰ Some of this sum seems to have been for use by other arms, and the Air Corps was to utilize \$9,310,000.⁷⁰ This sum was a small but very important part of the large authorization which was approved on 30 June 1941.⁷¹

Just before the entry of the United States into the war, an additional \$4,103,700 was requested for experimental development. This was intended to make adaptations in aircraft in light of the lessons that had been learned from the European conflict as to develop new aircraft. Some of the projects concerned troop-carrying, gliders and airborne tank-force transport equipment, power plants, superchargers, dual-rotating propellers, and the use of new steels and alloys.⁷² No changes were made in any of the Air Corps requests, which were granted on 17 December 1941.⁷³

As noted in Chapter I, the Air Corps appropriations, as well as those for other arms, soon proved to be inadequate amounts. The fiscal year 1943 bill carried \$112,276,000 for Air Corps research and development. This was to allow for the continued development of high-altitude aircraft, engines of increased power, armament, and associated equipment. The acceleration of the war in 1942 had advanced the service-test stage of much equipment, and therefore much more money was required than during fiscal year 1942.⁷⁴ On the floor of the House, Representative Charles A. Clinton (Mass.) expressed pleasure in seeing this large sum for research and rather chided the House for its refusal to agree to the Summerville research projects in early 1940. On 2 July 1942 the bill,⁷⁵ without changes in the Air Corps requests, became law.

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As General Arnold had indicated, this sum was sufficient for 1943; later \$9,361,065 was sought for 1944. Before the 1944 estimates were defended, a new important research center had been created. This was the AF School of Applied Tactics (later the Tactical Center) which operationally tested the material which had been developed at Wright Field and field-tested at Eglin Field.⁷⁶ As usual there was little discussion on the research items, and the funds became available at the beginning of fiscal year 1944.⁷⁷

In allocating funds for fiscal year 1945, the AF allotted the sum of \$8,365,183 to research and development; of this amount, \$8,040,600 was for aeronomical research, the remainder being divided between medical and meteorological and climatological research and development.⁷⁸

The military establishment appropriation bill for 1946 contained only a token appropriation of \$100 for the AF;⁷⁹ but the AF program for fiscal year 1946 called for an expenditure, from funds previously appropriated but not then obligated, of \$10,220,171 for aeronomical research and development.⁸⁰ This represents an increase of \$0,171,571 over the amount set aside for that purpose in fiscal year 1945,⁸¹ but is less, apparently, than the amount actually spent in that year.⁸²

In addition to the support given to the aeronomical research program by congressional approval of the appropriations, there were various efforts during 1944, and 1945 to enact legislation intended to give even further support to such research. There was a bill proposing to create an office of "military research and development" in the War Department. Another was introduced "to establish a research board for national security to insure the continual preparedness of the Nation along Purified and sound lines by providing for the application of

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ALL -02, Chap 1a

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Scientific research on aircraft structures." A third bill would have established a "National Research Commission,"⁶³ under which would have authorized an appropriation of up to \$10,000,000 per annum for grants, to be made on account of the Secretary of War, the Secretary of Commerce, and the Director of Civil Aviation, "for the purpose of aiding any individual or company in developing or experimental work in connection with the development of a new type of aircraft or the improvement of existing types of aircraft, or in connection with other aircraft, as in the opinion of the Director."⁶⁴ Still another bill authorized an appropriation of "such sums as may be necessary, not to exceed \$1,000,000,"⁶⁵ to enable the "National Academy of Sciences, through a research board, to do all that may be necessary in the field of civil aviation, "to provide for scientific research and advancement." No bills authorized the expenditure of funds for the development or advancement of Civilian aircraft.⁶⁶

The War Department objected to such proposed legislation on the ground that the national interest would be best served by "depriving direct appropriations to the Department" as well as civilian agencies "long been used or no comparable effective research and development in the field specified."⁶⁷ By the end of 1916 none of these bills had been enacted into law.

The story of congressional action on research and development activities in aircraft development is not so sordid, in the early phases of the aviation program, to merit rather a full page for this work as it is to make available much larger amounts for the procurement of aircraft. Work was begun in a subconscious but ini-

ially

222-222, Gasp. T.Y.

33

vated by the fact that the results of our basic investigations were more physically apparent than those of the research programs. However, once Congress became thoroughly aware of the vital significance of the accomplishments of our basic agencies, the funds requested by the Senate were quickly made available.

LSDS-22

SECRET

Chairman V

Chairman of the House

The War Dept., like the Army Board, has favored the
development of a machine gunner to serve as a controller as a
device for keeping the target in view. This, however, presents
several difficulties which must be overcome. More easily is it
to manufacture them. With the onset of the civil war a relative
calmness in Europe, a certain neutrality maintained by a large
protection, but the War Dept. has tried to familiarize the Department
with the various security controls and to relieve on all occasions
that it could be manufactured in England or France. The reason
was that our forces might be taken into this, and one of the
best uses would be for increased production.¹

In addition to increased productive capacity, there would also
be need to have a better way out of developing control over and use
of similar weapons; notably in Africa, a main consideration being
secured in "forbidden" stations to a country; and on United States
territory, especially in Alaska, with control of such an area much more
trivial.² An example is Eric, for whom there is little to do there
but where it might lead to some difficulty. It is possible that could be
overcome by long and careful planning. The problem can be summarized in
such a statement as follows: the security of the communications of a number
of countries or institutions of a certain nature is a problem of vital
importance to the government of the United States. In regard to
security, this is a, in general, small and difficult problem.

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THE SONG OF SOLOMON

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or by the author or his agent, and been used in the interests of promotion
of the author or the material contained therein.³ This stipulation,
which was "not then required to prevail as a condition to the publication
of any article," was subsequently withdrawn upon release.
In September 1935 an issue of a copy of the *International Journal of
Psychiatry*, published by the Royal Society of Medicine, was sent to the
American Bureau of Propaganda, which forwarded it to the
Committee of Foreign Correspondents, who distributed it among
the American press.⁴ In view of the circumstances, and the
fact that many, if not most, of the individuals mentioned in the article
were dead, the Bureau of Propaganda did not consider it
desirable to publish the article.⁵

In 1927 the U.S. and Japan entered into a mutual defense pact, which went to the League, and the selection of a permanent commission of arbitration was made by an important diplomatic committee, as well as the creation of such a permanent commission. In addition, the U.S. aircraft carrier Lexington was delivered to Japan, which came into effect on April 1, 1928.

December 5

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2025 RELEASE UNDER E.O. 14176

17

In an attempt to prevent a bill from being introduced in the Senate or House before the prior to publication of a speech, an amendment was submitted by Senator Joseph L. (Joe) Hutchinson on 14-2-60 preventing a provider or representative of a speech from introducing a speech before it is made or deposited with such a UI entity or reproduced or forwarded to another. This measure would require that any speech delivered or made available to the public or a close circle of interlocutors must be filed with the UI entity as to the bill could be prevented from being introduced in either the Senate or the House. It was voted that a speech as to the bill could be filed with the UI entity prior to filing the bill in either the Senate or the House.

... that any article or 19, salt etc., during the year is on
Nov. 3, 1791 in case it is to be made to be manufactured
and sold at a price less than the value of the
articles which the said persons sent to the market
at the same time, and for the future.
The Chief Justice said that it was evident that manufacturers could not
make their articles at a lower price than the authority of the State Department,

ANSWER KEYS

ABIS-22, Class V

RECORDED

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2. The C.L.C.P.C. is authorized to take such action as it deems fit in the case of
any action or attempt to obstruct, injure or interfere with any investigation
in connection therewith. It may, after giving due notice, require
any person to give any information or statement which it deems
necessary for the purpose of carrying out the functions of the
Commission. Any person who fails to do so, or who gives any false
information or statement, shall be liable to a fine not exceeding
one thousand rupees and to imprisonment for a term not exceeding
six months or to both. If the Commission is satisfied that the
information given by any person is false or misleading, it may
order that he be examined before the Commission and shall
have power to administer oaths to any witness before the Commission.

resulting from the reiteration of the same word or phrase.

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AUHS-22, 03447, V

一

الآن نحن في مرحلة التعلم والتجربة، حيث نعمل على تطوير وتحسين المنهج التعليمي، وذلك من خلال إدخال معايير جديدة وتحديث المحتوى التعليمي، مما ينعكس 积极地 على تحسين جودة التعليم.

$\text{CH}_3\text{COO}^- + \text{H}_3\text{O}^+ \rightleftharpoons \text{CH}_3\text{COOH}$ (1) (acid-base equilibrium)

part 2 of clause 2A (letter to PMA) - if it is not to be
and (2) is clause 1(b) as inserted in a letter to the CEO to be sent
within 10 days of the PMA letter, except for one additional day for
delay.¹⁶

After the acquisition of the business, the new management has been able to increase its sales volume by 20%.

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AMF(S-22, "ha.), V

3

الآن نحن في مرحلة التعلم حيث يتم تطبيق المفاهيم والقوانين التي تم دراستها في الفصل الدراسي الأول، وذلك من خلال حل المسائل المقدمة في المنهج الدراسي. في هذه المرحلة، يتعين على الطالب أن يستخدم المعرفة التي تم الحصول عليها في الفصل الدراسي الأول لحل المسائل الجديدة، مما يتطلب من الطالب تطبيق المفاهيم والقوانين التي تم دراستها في الفصل الدراسي الأول، وذلك من خلال حل المسائل المقدمة في المنهج الدراسي.

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the suspension of the surveillance activities for four to six weeks, and then at least one final survey before the reactor is again put into operation. The survey should be made by competent personnel in the field of nuclear energy.

In addition (Item) 11.26.7, cc the same regulation, paragraph 11.26.7, the surveillance department should make arrangements to supply enough technical staff to meet the requirements of the inspection, and to have the authority to inspect the facilities in the establishment to ensure they are being conducted in accordance. It is stressed here that all the required personnel must be qualified and balanced so as to avoid any suspicion. It is also advised that it is virtually impossible to determine whether a ship is radioactive because a ship can be loaded, for example, with highly radioactive materials, or it is radioactive because the crew of the vessel did something wrong, but it is much easier to inspect the ship for radiation than to inspect the crew only.¹¹³

The clear limit of release of the ship is determined by the regulations for the protection of the public, such as the IAEA, and also for the safety of the ship, which determines the use of the ship. A significant factor is that, in addition to fuel oil, there can be ice and it can be transported productive of cargo ships carrying in the process of carrying oil or sulfur from one country to another. Therefore, notwithstanding the nature of the national defense, the ship's departure point would not be free from deliveries. If unauthorised persons would be allowed to board the ship, they would be able to access to the reactor or control room to conduct unauthorized surveys,

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I am, at this moment, fully satisfied that the circumstances
surrounding the recent, if somewhat belated, disclosure of the
intelligence information, to the public, were entirely
proper, and that the information was given to the public in
such a manner as to insure the maximum, if minimum, disclosure of pertinent
intelligence information to the public.²⁴

While it would be difficult to determine exactly what "intelligence" is to
the public, but it is clear that the public has a right to know
what the intelligence is and how it relates to which he is most concerned
and accurate. General Shultz also said that "prior to my concurrence in
any plan, as Chairman and as Vice Chairman, I have sent and after very
careful study of the effects I had and for a long time I've felt I will
recommend to the White House that it come to the attention of the Army
and Air Force already developed and known, to the Office of the Vice
Chairman of which we committed our creation of a nuclear capacity which
is unique, unique, unique, and, if necessary, unique, unique, unique.²⁵ In the Office, it is also
known that we committed our creation of a nuclear capacity which
is unique, unique, unique, and, if necessary, unique, unique, unique.²⁶

The release of intelligence information should be limited to delivery
of the information to the public through official channels so
as to insure that no individual or group may misinterpret the information
in the channels. It is clear that there is a limit to the channels delivery
and that there is a limit to the scope of the information. General
Shultz, however, has stated that the Office of the Vice Chairman of
the Defense Intelligence Agency should be the primary source of information
to the public and that the O.D.I.A. should be the primary source of information to the

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卷之三十二，中華書局影印

16

In the 1970's, the club or building "Merk" ("Merke") was built at d/ the same address,
occupying approximately 100 square meters. In 1977, the
club became illegal. After that, it was used as a meeting place for
members of the "Soviet Union" group, which had been registered in 1976,
and which at that time had about 100 members. It provided a no-smoking
smoking room, and a library with books on various subjects, a library room, a
transfer room, and a "cultural education" room. The club, however,
was the chief or main cultural center of the city. Cultural performances
were held there, and a cultural workshop, a cultural school, were organized
in the building. In 1985, the club was closed by the decision
of the local authorities. And in 1986, it was taken over by the
U.S. 671 on 22 June 1941.

and the following day he was buried.

AM-32, CH20. V

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2. In addition to the above, there are two other conferences
which I would like to bring to your notice. The first is the
Annual Conference of the Society of the Friends of Nature which
is held every year at the Royal Horticultural Hall in London.
The second is the Conference of the Royal Geographical Society
which is held annually at the Royal Geographical Society in London.

LAF-22, Chao, V

三一

I would like to express my thanks to the Board of Directors of

447713-22, Chap. V

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三

curriculum, & no foreigner has been allowed to enter our school of culture on
any stage, except Prof. T. In our school we have been compelled to consider, however,
that if the foreigner is to be admitted, he must be educated. Consequently
it is necessary to have a teacher who can teach him the language of
the place, & should be a good teacher. In view of the
existing crisis in Europe, it would be better to have a teacher
of English, & not German, so that we may divide the new school into
two parts, one part for Germany, and another for England.
Moreover, to keep the school in session, the teacher should be responsible
for all the expenses, & the teacher should be allowed to increase all the
expenses of the school, so that the teacher may be induced to
make the school a profitable concern, & when he will be trans-
ferred, the teacher will be given a present. The teacher
will be obliged to leave the school, & return to his former place of
residence, & a sum of money will be given to him.

It would be sufficient to manufacture a "clean air"

LTHS-22, C.20. 7

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RECORDED BY

LAW-32, Ch 5

1

نامه میخواستم این را در ۱۷۰۰ تاریخ ۲۰ دی ۱۳۹۶ در
سازمان اسناد و کتابخانه ملی ایران ثبت نمایم.

وَالْمُؤْمِنُونَ الْمُؤْمِنُونَ الْمُؤْمِنُونَ الْمُؤْمِنُونَ الْمُؤْمِنُونَ

I am fully aware of the great and effective
utilization of a written plan by our forces in
the Korean Conflict, and I would like to make
certain that we do likewise in this instance -
I know the difficulties of formulating a plan and
keeping it up to date, but I believe that if we do this
we can have a better chance of success than if we do not. I
would like to have the United States and our allies to agree
to this which is, I believe, an excellent idea. If we
have a written plan, it will be more easily followed
and it will be easier to see what has been done and what proce-
dure must be followed in future. It is also recom-
mended that the written plan be kept up to date
as often as possible, so that it will be of use in
any emergency. The plan should be simple and
flexible enough to be used in any situation,
and it should be flexible enough to be used in any situation.

NY 13-28, Chap. V

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that, though it would be a bit of a stretch, our point were
in the previous memorandum (memo-to you), b. which was their con-
tract, and we're going to have to make a decision to go ahead.
This sacrifice will not be made, unless in the interest of forces, i.e.
Lemay's or a general except to review the contract, as item 50.

I think our first bid is approximately \$1,000,000,000
of funds to the Air Force. All bids can be made with 1% of value.
For the Air Force: \$1,000,000,000 for a very small amount, i.e., 100
C-130, 440000000 ft-lb carrying capacity, which is about 10% more than
the delivery plan of the original bid which has come a little short
in the delivery of some of the types of the United States. There
is no specific time discussion of this because rear醍e marine has
communicated the date of the available of April 1942. "Last"
which is now 10 days from now. ⁵¹

A lot of care must be taken in this concern and telephone & funds
and funds of course with a propagation bill Mr. E.L. allowed the
use of the funds for research or for any rehire and if the
Army wants to cover the cost of the original unit before us, we
would never be able to do so. In the long run, and in
order for flexibility, it is needed to such a point certain turbines
item 52, to cover the cost of the original unit, is \$12,760,000.00,
and let us say probably in and of themselves for a certain fund. For the
use of the various units, until item 53.

As to NY 13-28, we have a memorandum, item 54, for
Lemay's, dated 12-27-37, 00160, concerning the Air
Force. It is the same as item 2, b. total cost of the unit to be
used in combat and the amount of the bid is \$17,324,001, 41

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MAPG-32, Sheet V

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2000-1950s 11.1% increase in GDP per capita over 30 years 34

the effects of the proposed legislation on existing and future business in
concluded that the Air Corps, like others in countries like ours, has
in the future right to rule.⁵⁶ The President's budget memorandum
order, did mention, however, that ultimate victory would help
the war effort and the administration. This was important since an acre
and two dollars a day were to be paid, but the order, which is placed
in a large pocketbook of documents, has not been learned in the
sense of a ruling and its source of power; it is rather a form than to
be so definitive as our statutes. It is, however, a good example
of what is done in the name of the nation's welfare. The order
is the result of long and laborious discussion and it shows a clear
line of action. The president has the power of the purse and
can do whatever he wants to do.

AMMO-22

SECRET

It was evident from the time of the first raid upon Berlin
that the outcome of the war would depend, not on the size and
the personnel of the opposing forces, but on the efficiency of each side's
air defense system. If the war were to come, air power
would be the chief factor. In 1943, Germany, under command of a
of outstanding, if somewhat eccentric, General, had a fleet
of aircraft carriers, providing a formidable force in the
Atlantic. Although the war was still on, the British had
convinced him of his foolishness and actually stopped him.
At that time the continued advances of the aggressor nations had brought
the German forces to a standstill in the Balkans and Russia, and to a
halt in the West and France. The capture of Yugoslavia by the
Axis powers was to be the decisive moment which anticipated
an air corps victory over the Allies. The bombing of Paris
by Luftwaffe planes proved to be a disaster, the same lack of irony
and accuracy which had plagued the British, Americans, and
French during their attacks on Germany, was to be repeated
here. The British, Americans, and French had been unable to
penetrate the German defenses, but the British had succeeded
in getting through to the heart of the country, and had
thus succeeded in bringing down the morale of the people.

The British, Americans, and French had been unable to
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The British, Americans, and French had been unable to
penetrate the German defenses, but the British had succeeded
in getting through to the heart of the country, and had
thus succeeded in bringing down the morale of the people.

SECRET

AIRHS-22, Summary

1

the following day, he was able to get his first job as a waiter at a local restaurant. He worked there for several months, saving up money to buy a boat. In 1985, he bought a small sailboat and began sailing around the coast of California. He eventually sold the boat and moved to San Francisco, where he found work as a bartender at a popular bar.

Fractional, like the one you have suggested above is to be filled
down to the mark, so that there will be 1000 units or 1000 drops.
The last drop will be obtained by filling it half way --- 500.
If you continue this till you reach the reservoirs, then you will be
able to get 1000 drops of different sizes of 1000 each and for
each unit of 1000 you will be able to get 1000 drops of
middle fractional, which is 100. Just rest, until you have 1000 drops
of 1000 each and then you will be able to get 1000 drops of 1000 each for the

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Final value theorem: If $\lim_{t \rightarrow \infty} f(t) = 0$, then $\lim_{s \rightarrow 0^+} F(s)$ exists.

Concerning a program for a sales which would cover
approximately 1000 units of the type 16 model. The promptness with which
I could get a response in favorable conditions is a sign of the
good will of our salesmen. The first reason for this is to receive early
information from the market as to what is wanted and what
is wanted in quantity and when it is wanted. This kind of information
contribution of the program was a great reduction of the time lag
between the introduction of a mass production program and the attain-

To conclude on a word on a second program for a review by
appropriate authorities, the following figures for the year 1958, 1,612,400,000
pounds of cement 100.

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Concerning the war of Feb 21, we received no word of re-
quest sent and expect for us to file before the Commission on Concili-
ation and Arbitration. The Chinese Air Corps, in a fl. No. 39,
ought returning from the starting point, according to, the 1st was
refused to allow their passage. On 13 July 1937, however, they had
reached their destination. We were then informed by the Chinese Air
Force that a Japanese aircraft had caused serious damage and
injuries to our "Liberator" plane, which damaged it so much that
we could not fly it more at all. So the Chinese
concluded.

The success of P. C. on issues, for example, in P.E.I., to
which you are invited to draw your attention. We can hardly
overlook the fact that P.C. has been more successful than
any other party in getting contracts, and in making them
more effective. While P.C. did not win the election by
a large majority, it did win a majority of members, with the fol-
lowing, in the following order of seniority, with the first

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of France and the amount of the sum paid in deduction of \$5,000
to him, Comptre, on 2 JULY 1940, retained subject to the secret re of
war to negotiate a settlement which he did so him secret re to a position
the secret agreement on deduction re.

The authority for applying such a deduction of contract re fixed
on 1 JULY 1941, and was intended to give a general military
government a restriction by law to war. On 5 JUNE 1942 these
were suspended until the end of the war, unless otherwise ordered
by a concurrent resolution or, respectively, resolution. On 10 JUNE earlier,
1942 L/12, however, had provided for the termination of contracts.

A, releases effected, were now with contractual authority, as
follows. On 3 JULY 1942 the resolution provided that all or 50 per
cent could be realized on contracts for aircraft. When in the AFM
Jorge concerned in a broad round is now necessary to have characterized
resolution of the executive department which provides that no, the
amount is also. A relief is reduced but for only 10 days 1-40.
such a resolution provides further and the circumstances, as can be taken P 40
permitted him to suspend the same indefinitely to the AFM when not for
aircraft. A similar resolution provides for the resolution
authorizing the cancellation. The resolution Comptre can be con-
cluded and (relief) released to AFM in 60 days as will be possi-
ble in accordance with, as if it is said to release a release over
the cancellation of the release.

On 10 JULY 1942, was signed by the AFM and Comptre a resolution of the
AFM and Comptre to release re. In this resolution it is agreed to use
a letter from Comptre, dated 10 JUNE, as a basis for the release
and cancellation of the release.

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On 10 January 1944, Soviet Russia issued an order defining its
objection to the use of gas warfare, in accordance with
obligations it assumed by the Geneva Protocol to ban the use of
chemical weapons. It called for total禁制 of the use of
gas and smoke bombs.

On 10 January 1944, the Soviet Union issued a decree prohibiting
the use of gas warfare. This decree was issued in accordance with the Geneva Protocol
of 1925, which prohibited the use of chemical weapons. The decree
stated that the use of gas warfare was prohibited and that any use of such weapons
would be considered a violation of international law. The decree also stated
that the use of gas warfare would be considered a violation of the Geneva Protocol.
The decree further stated that the use of gas warfare would be considered a violation of
international law and that any use of such weapons would be considered a violation of
international law. The decree also stated that the use of gas warfare would be considered a violation of
international law and that any use of such weapons would be considered a violation of
international law.

The decree also stated that the use of gas warfare would be considered a violation of
international law and that any use of such weapons would be considered a violation of
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international law.

The decree also stated that the use of gas warfare would be considered a violation of
international law and that any use of such weapons would be considered a violation of
international law.

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and the first part of the sentence
which starts with "the" is the subject
of the sentence. The verb is the action
verb which is usually a linking verb or
an auxiliary verb. The object is the noun
or pronoun that receives the action
of the verb. The complement is the
word or phrase that completes the
meaning of the verb. The predicate
is the part of the sentence that
contains the verb and its complements.
The subject is the part of the sentence
that contains the noun or pronoun
that is the subject of the sentence.
The verb is the part of the sentence
that contains the action verb.
The object is the part of the sentence
that contains the noun or pronoun
that receives the action of the verb.
The complement is the part of the sentence
that contains the word or phrase
that completes the meaning of the verb.
The predicate is the part of the sentence
that contains the verb and its complements.

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GLOSSARY

AAF	Army Air Forces
AG	Air Adjutant General
AC/As	Assistant Chief of Air Staff
AS/As	Assistant Chief of Staff
AMC	Management Control
ADL	Historical Division, AC/As, Intelligence
ADMH	Historical Division, Administrative History Branch
ADM	Adjutant General
AS/As	Assistant Director of War
AC	Adjunct Advisor, Territories
ACD	Adjunct Officer, Air Transport
CAC	Civil Aeronautics Administration (or authority)
C/AC	Chief of the Air Corps
C/AS	Chief of Air Staff
C/S	Chief of Staff
CC/As	Deputy Chief of Staff
CG	General Headquarters
CD	Control, Maintenance, and Distribution
ACSI	External Advisor; Committee for Economic
CPB	Civilian Production Allocation Committee
OAS	Office, Assistant Secretary of War
OAS	Office, Chief of the Air Corps
OAS	Office, Deputy Chief of Staff
OAS	Office of Production Management
OSSD	Office of Scientific Research and Development
OSA	Office, Under Secretary of War
OT	Observation and Reconnaissance
OS	Services of Supply
O/S	Secretary of War
USAFMA	U.S. Code Annotated
USAFM	Under Secretary of War
WD	War Plans Division

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AAFNS-22

N O T E S

Chapter I

1. House, Hearings on Military Establishment Appropriation Bill for 1937, 239-301.
2. Final Report of War Department Special Committee on Army Air Corps July 13, 1932, p. 31; 49 Stat. 1907. The 2,320-plane objective is sometimes referred to as the Wodring program.
3. Those figures were given by Maj. Gen. Oscar Westover, Chief of the Air Corps, on 3 February 1938. (House, Hearings on Military Establishment Appropriation Bill for 1939 [H.R. 9991], 75 Cong., 3 Sess., 413.)
4. \$10,669,736 of this sum was for previous contractual obligations and \$19,126,894 was contractual authorization. (Ibid., 9-10, 23.)
5. The National Guard was allotted 171 of the 2,320 planes. (Ibid., 9-10.) General Craig stated that the number 2,320 should be regarded as "fixed," not
6. Ibid., 9-10, 22, 23. The Air Corps had originally requested \$118,269,053, but the Budget Advisory Committee had reduced this by approximately \$26,000,000.
7. Ibid., 23.
8. Ibid., 436.
9. He emphasized that until 1937 the Air Corps had been allowed 100 per cent spare engines and that the Navy still was getting that equivalent. (Ibid., 420-21, 448-50.)
10. H. Rept. No. 1990, 75 Cong., 3 Sess., 14. Appropriations for Air Corps equipment procurements by other arms brought the Air Corps total to about \$124,000,000, or 23 per cent of the budget. (Ibid., 13.)
11. Ltr. Louis Johnson to Royal S. Copeland, 31 Mar 33, in Senate, Hearings on H.R. 9995, 75 Cong., 3 Sess., 3; S. Rept. No. 1565, 75 Cong., 3 Sess.
12. Public No. 590, 11 Jun 33; 52 Stat. 655.
13. Memo for C/S by AC/S, WPD, 18 Nov 33, in Lyon Project Records, Bk 1, 10,000 Airplane Program. These records were kept by Col. A.J. Lyon, Technical Executive of the Material Division, and are now on file in AC/AS, WPS.

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14. Attachment to memo cited in n. 13. All but 665 of the 3,720 training planes were to be in active service, while 220 of the 650 miscellaneous aircraft were to be held in reserve.
 15. Incl to memo for Chief, Materiel Div by C/AC, 29 Nov 58, in file cited in n. 13.
 16. Memo for C/S by C/AC, 23 Nov 58, in same file.
 17. Such influence was shown by the outcome of the Munich conference in September 1938.
 18. Cong. Rec., 76 Cong., 1 Sess., 213; H. Doc. No. 105, 76 Cong., 1 Sess.
 19. Ibid. The President stated: "Leaving off all hysteria, this program is but the minimum of requirements." (Cong. Rec., 76 Cong., 1 Sess., 219.)
 20. See Portland Oregonian, New Orleans Times-Picayune, New York Times, Cleveland Plain Dealer, and Atlanta Constitution, all of 13 Jan 59.
 21. Memo for C/S by C/AC, 13 Jan 59, in AG 321.9 Bulk, General Arnold's Book. The sum of \$3,000,000 would be applied to research and \$3,000,000 to bomb procurement and bomb storage. The term "miscellaneous" included principally liaison and photographic aircraft. It was, however, soon discontinued and the planes were specifically enumerated.
 22. App. 1 to General Arnold's Book. The remaining 2,043 planes necessary to make 5,500 were on hand or provided for by 1959 and 1960 funds.
 23. R&R, Plans Sec to C/AC, 21 Jan 59, in Plans Div files, AFHQ. The following day an identical bill, S. 342, was introduced into the Senate.
 24. S/7 to chairman of House and Senate military affairs committees, 3 Feb 59, in AG 032 K, Legislation. The communication noted that time had not permitted submission of the letter to the Bureau of the Budget, so it "does not involve any commitment as to the exact relationship of the legislation to the program of the President."
 25. House, Hearings on an Adequate National Defense, 76 Cong., 1 Sess.
 26. For a discussion of the training and personnel features, see AAF Historical Studies: No. 7 (Revised), Legislation Relating to the Army Air Forces Training Program, 1939 to 1945, and AAF Historical Studies: No. 16 (Revised), Legislation Relating to the AAF Personnel Program, 1939-1945.
 27. H. Rept. No. 32, 76 Cong., 1 Sess.

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—³₂₄ + ³₂₄, 19th, 1900, Lugo, I.

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28. U.S.A., 70 Con., 1 Sec., 142.

29. Ibid., 141-2, 142-3, 143-4.

30. Ibid., 143, 143-4.

31. Ibid., 144.

32. Conc., 70 Con., 1 Sec., 1 Sec., 14. "And we
10,000-12,000 program will be set up by the Chief of the Air Corps in just stud
by the 1st of December 1938 for the Chief of the Air Corps to the
Chief of the Material Division, Bureau; our plans for the
use of 200,000,000 and so on and the dates for the execution of
the 10,000-12 program and the Capital to be used for it.
(See project records, 142, 3,000 airplane records.)

33. S. Com., 70 Con., 1 Sec., 144.

34. Conc. Sec., 70 Con., 1 Sec., 1417-1C, 1437-27, 23 S. It was
emphasized that the organization was to be purely defensive.

35. To u., 520-13. It should be recalled that the original order
contained still coverage for 4,000 planes.

36. I.I.D., 2272-13.

37. A. Com., 70 Con., 1 Sec.; 33 Sec. 520-20. Another
2nd part b. B. General planning, a profit limitation on aircraft
procurement, except as to 1.1.1. Oct. (See Fig. 311, this study.)

38. Gen. Service C. Marshall, "Chairman of," in U.S. Senate,14,
no. 11 (Jan. 16 '38), 146. "And we will deliver at an address
before the Committee Association of the 11th of Nov. (as in 311,
1st.) on 1st Decemr 1938.

39. Loc., Architectural Chamber of Com. of the Air Force to Senator
Warren G. Cheever (D.), 1 Mr 3d, in Long. Sec., 70 Con., 1 Sec.,
2379.

40. Loco., Architectural Chamber of Com. of the Air Force to Senator
Warren G. Cheever (D.), 70 Con., 1 Sec., 10.

41. Ibid., 11, 284.

42. Ibid., 285.

43. Ibid., 286.

44. Ibid., 287.

15. The remainder of the \$50,000,000 was to be used for Signal Corps and Ordnance items. (Ibid.; Joint Res. No. 112, 76 Cong., 1 sess., 7.)
16. Ibid., 7-3.
17. Ibid., *
18. Ibid..
19. Joint Res., 76 Cong., 1 sess., 21-5-53.
20. Ibid., 2224, 25/3.
21. S. Exec. Res. 51d, 76 Cong., 1 sess.
22. Senate, Reprint on the War Department Appropriation Bill for 1940 [L. 73731, 76 Cong., 1 sess., 2.]
23. Ibid., 20.
24. Ibid., 25.
25. Joint Contracts were increased three & one-half per cent, 20 May 1939. (Ibid., 20.)
26. Ibid., 40, 50, 54.
27. Ibid., 51, 53.
28. Ibid., 52.
29. Joint Res., 76 Cong., 1 sess., 7046; S. Exec. Res. 523, 76 Cong., 1 sess., 10, 1.
30. Ibid., 7.
31. Cong. Rec., 76 Cong., 1 sess., 76-9-70.
32. Ibid., 7-1, 77-2-2.
33. Ibid., 512; S. Exec. Res. 50, 76 Cong., 1 sess.; Joint Res. 932.
34. Obviously, the Air Corps itself did not receive \$500,000,000. Large sums went to other arms, such as Signal, Ordnance, and Engineers, for the fulfillment of their portion of this program. An emergency supplemental appropriation for 1940 contained no funds for the material considered herein.

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66. Proclamation 2662, 3 Sep 38, in Federal Register, 9 Sep 39.
68. For discussion on neutrality as such, see Chap. V, this study.
70. Memo for Col. L... Lowmyer by Lt. Col. G.C. Warren, Fiscal Officer, CGC, 16 Aug 39, in AFM 3-22, notes.
71. Ibid.; memo for J. Donald Arnold by Brig. Gen. D.H. Brett, 12 Sep 38, in AFM 3-22, notes. FY 1941, AFM 3-22. Part of this increase in cost and resulting deficiency was caused by the purchase of faster pursuit models than had originally been anticipated.
72. AFM 3-22, incl to memo for Col. L... Lowmyer or Lt. Col. G.C. Warren, 16 Aug 39, in same file.
73. Ibid.
74. Memo for C/S, G-4, by C/C, 6 Sep 39, in AFM 3-22, notes. FY 1940.
76. 1st ind (to above note), G/S, G-4 to C/S, 11 Sep 39; memo for C/C, by C/C, 17 Oct 39, in same file.
78. Memo for C/S by C/C, 18 Sep 39, in same file.
77. Conj. Rec., 70 Cong., 2 Sess., 317.
78. Farquhar was head of the commission to coordinate foreign and domestic airplane purchasing.
79. Conj. Rec., 70 Cong., 2 Sess., App. 600.
80. "Can Our Plan Protect America?" in This Week, 18 Feb 40, quoted by Sen. Walter Morris (D-Cal.) in Conj. Rec., 70 Cong., 2 Sess., App. 600-66. Burns also stressed the importance of additional funds for research.
81. W. L. Lewis, CGC to C/C, 31 Jan 40, in AFM 3-22, notes. Testimony was read for the Air Corps. This testimony was given in executive session and does not appear in the hearings.
82. Recd., Hearings on Military Establishments Appropriation Bill for 1941 [] 820-3/76 Conj., 2 Sess., 71. For the Air Corps there were also carried under other appropriations \$1,537,062 for Ordnance equipment, \$2,745,179 for radio and related signal equipment, and \$333,244 for transportation of supplies. A mistake of \$3,000,-000 exists in the record of total.
83. Ibid., 174-75.

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84. General Arnold affirmed that it would be possible for a foreign purchaser to pay the delivery in an effort to get prior delivery, but he thought it was too early to tell the effect of foreign purchases on domestic deliveries because quantity deliveries were not scheduled until the latter part of spring. Earlier deliveries to foreign powers were theoretically precluded, however, by the No. 1 priority given to the Army and Navy. (Ibid., 476-77.)
85. Ibid., 103.
86. Ibid., 437.
87. Ibid., 616.
88. Ibid., 517-51.
89. L. Act. No. 1912, 76 Cong., 3 Sess., 3.
90. Ibid., 19.
91. Ibid., 20.
92. Ibid..
93. Ibid., 40.
94. Com. Rec., 70 Cong., 3 Sess., 3883.
95. Ibid., 4055.
96. Memo for L.D. by A.D.C. Iller, 8 Apr 40, in Plans Div file 121.2, Initiatives in 1941.
97. Message from L. D. to C. of Secy. No. 751, 76 Cong., 3 Sess.; Com. Rec., 7 - 3 Sess., 6240.
98. Ibid., 6244.
99. Ibid.. A few days prior to this speech President Roosevelt had called on the Secretary of War to obtain a "substantial increase in heavy bomber production." The communication stated that the effective defense of the United States required this. "To this end will you take whatever action is needed, including the procurement of aircraft, to obtain substantially the production rate which I am indicating to you in a private memorandum." (Washington Post, 6 May 1940.) The report stated that this would mean a large expansion of plant facilities and utilization of existing factories not then engaged in wartime manufacture. One "informed source" declared the most important element in the President's request lay in the fact that it was not "merely a call for a light addition to the present program, but rather that it is a cut lifting the aim to an entirely new objective."

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100. Portland Oregonian and Denver Post, 10 May 40. See also, St. Louis Post-Dispatch, Des Moines Register, and Philadelphia Record, 16 May 40; Chicago Daily Tribune and Atlanta Constitution, 17 May 40.
101. Memo for C/S by C/AS, 17 May 40, in AG 452.1-325, sale . . . Abroad.
102. Senate, Hearings on H.R. 9209, 76 Cong., 3 Sess., 373.
103. Only 200 of the 2,400 planes were of the combat type. (Ibid., 5.)
104. Ibid., 373; S. Rept. No. 1630, 76 Cong., 3 Sess., 3.
105. Cong. Rec., 76 Cong., 3 Sess., 6503.
106. Ibid., 6503-05. General Arnold had testified that the expected peak by December 1940 was 1,248 planes per month. (Senate, Hearings on H.R. 9209, 76 Cong., 3 Sess., 93.)
107. Cong. Rec., 76 Cong., 3 Sess., 6617.
108. 54 Stat. 350.
109. Cong. Rec., 76 Cong., 3 Sess., 6356. This measure and its Senate companion, S. 4025, were prepared by the War Department.
110. Cong. Rec., 76 Cong., 3 Sess., 6468.
111. Ibid., 6579. So that this shifting will not appear insane, it should be noted that changes were made in some of the other provisions of these bills.
112. H. Rept. No. 2261 and S. Rept. No. 1649, 76 Cong., 3 Sess.
113. Ltr, S/W H.H. Woodring to Sen. Morris Sheppard, 20 May 40, in S. Rept. No. 1649, 76 Cong., 3 Sess.
114. Cong. Rec., 76 Cong., 3 Sess., 6862. Though the bill differed somewhat from previous recommendations the changes were acceptable to, and favored by, the War Department. This bill was similar to H.R. 9822, which was originally applicable to the Navy only but was amended to apply to the Army. (Ltr, Acting S/I Louis Johnson to Director of Bureau of Budget, 27 Jun 40, in AG 381, National Defense (6-26-40). For provisions of H.R. 9822 (Public No. 671), see Chap. III, this study.)
115. Public No. 703, 2 Jul 40; 54 Stat. 712. For other provisions, see below.
116. Testimony of General Marshall on 4 Jun 40, in House, Hearings on Supplemental National Defense Appropriation for 1941 (H.R. 10022), 76 Cong., 3 Sess., 3.

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117. Cong. Rec., 76 Cong., 3 sess., 7282; S. Doc. No. 75, 76 Cong., 3 Sess.
118. H. Rept. No. 2497, 76 Cong., 3 sess., 2.
119. Cong. Rec., 76 Cong., 3 Sess., 8079; S. Doc. No. 245, 76 Cong., 3 Sess.; S. Rept. No. 1880, 76 Cong., 3 sess., 3.
120. Public No. 667, 26 Jun 40; 54 Stat. 602. It was expected that 3,000 planes would be procured with this sum but higher costs and the substitution of some combat for training planes reduced this number to 2,181. (House, Hearings on the Second Supplemental National Defense Appropriation Bill for 1941 /H.R. 10263/, 130-31.) Practically the only congressional controversy on this bill concerned the appropriation for research facilities. (See Chap. IV, this study.)
121. Cong. Rec., 76 Cong., 3 sess., 8350; S.J. Res. 278, 76 Cong., 3 sess. This authority was to be granted under 50 U.S. Code Annotated 80, which dealt with procurement by the Executive during war or the imminence of war.
122. Ltr, Henry L. Stimson to A.J. May, 7 Oct 40, in Al. 032 H, Legislation. The President's authority also extended to the Navy until 15 May 1941 by Public No. 783, 76 Cong., 3 Sess.
123. Cong. Rec., 76 Cong., 3 sess., 9433-34; H. Doc. No. 674, 76 Cong., 3 sess.
124. House, Hearings on H.R. 10263, 154-55.
125. H. Rept. No. 2510, 76 Cong., 3 Sess.; Cong. Rec., 76 Cong., 3 sess., 9745. During the hearings General Brett pointed out that the awarding of contracts had been delayed by certain congressional action. He said he was ready to buy 4,000 planes but that industry would not sign contracts until it knew the effects of the possible repeal of the Vinson-Trammell Act. (House, Hearings on H.R. 10263, 76 Cong., 3 sess., 252. See Chap. III, this study.)
126. Ibid., 89-91. William S. Knudsen, of the National Defense Commission, had indicated that the aircraft industry could meet the demands of the new procurement, and that the expanded British procurement would not interfere with deliveries to the U.S. Army and Navy. (Cong. Rec., 76 Cong., 3 sess., 9752.)
127. S. Rept. No. 2014, 76 Cong., 3 Sess.
128. Cong. Rec., 76 Cong., 3 sess., 12115; Public No. 781, 9 Sep 40; 54 Stat. 872.
129. House, Hearings on Third Supplemental National Defense Appropriation Bill for 1941 /H.R. 10572/, 76 Cong., 3 Sess., 94. The \$608,000,000 did not include the second supplemental appropriation for 1941. Of the total appropriation of \$1,293,000,000 for aircraft procurement, \$393,000,000 had been obligated. (Ibid., 97.)

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130. Public Ac. 60, 6 Oct 40; C/SAC, DDC.
131. Ac. for 134, by C/AC, in SAC 480.1-17C, manufacture of Airplanes.
132. Noted in Conc. Rec., 76 Cong., 3 sess., Ajs. No. 29. Somewhat indicative of the confusion and fluctuation which followed, excerpts from a material division document: "The 1600 program is really 2000. . . . the 3000 program is really 2181. . . . The 1,000 program which formerly did not include the 2181 program, now includes the 2181 but the 1800 has been reduced to 1187. The 1812 figure obtained by subtracting 51.1 from 1,000 is now 1184. . . . Therefore the grand total of 20,000 has become 18,000. Check it!" (Summary of Air Corps Programs, n.d., in Lyon Project Records, no. 29, 66,000 program.) The note had as its stated purpose: by avoidance of confusion within the numbers of the various Air Corps programs.
133. Authorized procure as reserves, aerial planning sec., Materiel Div, 11 Jul 40, in Lyon Project Records, no. 33, amount of procurement requirement, and all Air Corps programs. Actually, the procurement of 20,000 was authorized, but because of lack of facilities, the purchase of 1,120 of them was deferred.
134. Ac. for statistician sec., ODCS [over] Ajs. 13. 1940, Technical Sec, Materiel Div, n.d., in Lyon Project Records, no. 42-a, 1st for man, Chief of C/SACP.
135. Ac. for 34, b/c/s, 20 Dec 40; and a for 1/1, by Adj. Gen. C/SAC, 21 Jan 41, both in SAC 480.1-17C, manufacture of Airplanes. It is only noted that the 20,500-ton program was over and above the 5,000-ton program and the 2,000 planes provided for under the 1st Materiel Division program of 30 June 1940.
136. Ac. for C/AC by Brig Gen Carl Staatz, Chief, Materiel Div, 25 Oct 40, in SAC 480.1-17C, allotment.
137. Public Ac. 160, 77 Cong., 1 sess., 161; h. foot. no. 201, 77 Cong., 1 sess., 1, 15. The Air Corps sums were exactly as required by law. Part of this fund, on a \$,000-plus per program, were for plant construction. (See Chap. II, this study.)
138. Ac. acpt. no. 160, 77 Cong., 1 sess.; Conc. Rec., 77 Cong., 1 sess., 2710.
139. Public Ac. 24, 2 Apr 41; C/SAC, DDC.
140. Ac. for 3/ by C/SAC, 20 Apr 41, in Lyon Project Records, no. 32, the Ac. for 12,000 Airplane Program.
141. Ibid. The cost of the 12,000 planes was cost \$,000,000,000. They could not and be transferred without special authority because one hundred less than 11,000 to \$1,000,000,000 in transfer of articles previously provided for.

142. Memo for Actg DS/S for Air General Arnold by Brig. Gen. O.P. Echols, 13 Mar 41, in same file.
143. Memo for C/S, 21 Mar 41, ibid.
144. Memo for C/S by S/I, 28 Mar 41, ibid.
145. \$1,201,951,973 of the cash was to pay prior contract obligations.
146. The remaining cash was for general operation and maintenance. Also provided was \$45,035,000 for barrage balloons and accessory equipment. House, Hearings on Military Establishment Appropriation Bill for 1942 H.R. 4965, 77 Cong., 1 Sess., 17, 466.
147. Ibid., 752; H. Doc. No. 225, 77 Cong., 1 Sess.
148. House, Hearings on H.R. 4965, 758.
149. Cong. Rec., 77 Cong., 1 Sess., 4801; H. Rept. No. 741, 77 Cong., 1 Sess. Representative Francis Case (S.D.) believed the measure would provide the United States with a "big stick" so that she could "speak to the nations at war and ask them to stop this madness." (Cong. Rec., 77 Cong., 1 Sess., 4820.)
150. Senate, Hearings on H.R. 4965, 77 Cong., 1 Sess., 6-7.
151. Ibid., 44.
152. Ibid., 13-19.
153. Cong. Rec., 77 Cong., 1 Sess., 5815; Public No. 139, 30 Jun 41; 55 Stat. 366.
154. It should be pointed out that the Air Corps had the privilege of shifting funds from one item to another in case it discovered that estimates had been excessive for one project and too low for another.
155. See above, p. 28.
156. This law placed the Air Corps plane strength at 6,000 and is still the "permanent" congressionally authorized number of aircraft. (or contract provisions of the act, see below, Chap. III.)
157. Cong. Rec., 77 Cong., 1 Sess., 3251; H. Rept. No. 559, 77 Cong., 1 Sess.
158. Memo for US/W by Col. W.F. Volandt, 28 May 41, in 400.12 H, Procurement Methods and Programs.
159. 1st ind (to above memo), Maj. F.W. Bullock to C/S; Cong. Rec., 77 Cong., 1 Sess., 6190.
160. Cong. Rec., 77 Cong., 2 Sess., 3741; S. Rept. No. 1285, 77 Cong., 2 Sess.

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161. Cong. Rec., 77 Cong., 2 Sess., 5217.
162. Ibid., 6293.
163. H. Rept. No. 983, 77 Cong., 1 Sess., 15; charts in Budget and Fiscal, Part; House, Hearings on H.R. 5412, 77 Cong., 1 Sess., 3; Cong. Rec., 77 Cong., 1 Sess., 15 Sep 41; Public No. 247, 25 Aug 41; 55 Stat. 670.
164. House, Hearings on H.R. 6159, Pt 2, 77 Cong., 1 sess., 122-23.
165. Ibid., 123. The Air Corps had originally estimated the costs of current procurement programs at \$5,080,000,000 instead of the required \$5,412,004,421. (Ibid., 125.)
166. Ibid., 127; H. Rept. No. 1470, 77 Cong., 1 Sess.
167. S. Rept. No. 394, 77 Cong., 1 Sess. The increase of \$390,000,000 for Air Corps construction was chargeable to the Quartermaster Corps and not to the air arm.
168. Cong. Rec., 77 Cong., 1 Sess., 9721, 9724.
169. Ibid., 9811, 10100; Public No. 353, 17 Dec 41.
170. Cong. Rec., 77 Cong., 2 Sess., 33-34; H. Doc. No. 501, 77 Cong., 1 Sess. The President also called for the production of 45,000 tanks in 1942 and 75,000 in 1943 as well as 8,000,000 and 10,000,000 dead-weight tons of shipping in 1942 and 1943, respectively. This program would require \$56,000,000,000 for the coming fiscal year.
171. House, Hearings on Fourth Supplemental National Defense Appropriation for 1942 /H.R. 5421, 77 Cong., 2 Sess., 2-3. The transfer of lend-lease materials to the value of \$4,000,000,000 was included.
172. Ibid., 3-5.
173. Ibid., 12. The report of the Truman committee was criticized because virtually no information had been requested directly from the Air Corps.
174. Ibid., 5.
175. H. Rept. No. 1059, 77 Cong., 2 Sess.
176. Cong. Rec., 77 Cong., 2 Sess., 590-612, 693, 767, 911; S. Rept. No. 994, 77 Cong., 2 Sess.; Public No. 422, 30 Jan 42.
177. House, Hearings on Fifth Supplemental National Defense Appropriation for 1942 /H.R. 5411, 77 Cong., 2 Sess., 72; H. Rept. No. 1750, 77 Cong., 2 Sess., 5. No aircraft materiel was included in the more than five-billion lend-lease appropriation.

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178. Chart. in Budget and Fiscal, AF; Senate, Hearings on H.R. Bill, 77 Cong., 2 Sess., 7.
179. Cong. Rec., 77 Cong., 2 Sess., 2031; Public No. 474, 5 Mar 42. The House agreed to Senate amendments making the total appropriation \$30,412,737,900.
180. Cong. Rec., 77 Cong., 2 Sess., 1679-80.
181. House, Hearings on H.R. 6863, Pt 2, 77 Cong., 2 Sess., 4, 40.
182. Ibid., 40-41. Funds for 23,550 additional airplanes required to meet the President's program were to be requested in the regular 1943 estimates.
183. Ibid., 104-05.
184. Ibid., 106.
185. H. Rept. No. 1956, 77 Cong., 2 Sess.; S. Rept. No. 1257, 77 Cong., 2 Sess.
186. Public No. 525, 25 Apr 42.
187. Charts in Budget and Fiscal, AF.
188. House, Hearings on Military Establishment Appropriation Bill for 1943 /H.R. 7280/, 77 Cong., 2 Sess., 21.
189. Ibid., 136; H. Rept. No. 2266, 77 Cong., 2 Sess., 4-5.
190. This was composed of members of the Army Air Forces, the U.S. Navy, the Royal Air Force, the British Air Ministry, and the War Production Board.
191. House, Hearings on H.R. 7280, 199.
192. Ibid., 195, 205.
193. H. Rept. No. 2266, 77 Cong., 2 Sess., 14; S. Rept. No. 1527, 77 Cong., 2 Sess.; Cong. Rec., 77 Cong., 2 Sess., 5990; Public No. 649, 2 Jul 42; 56 Stat. 611.
194. Estimates for Fiscal Year 1944, 19 Feb 43, in AF 111.3, Estimates, Bulk. The cost of the trainers was \$307,259,250.
195. House, Hearings on Military Establishment Appropriation Bill for 1944 /H.R. 2996/, 78 Cong., 1 Sess., 2. The exact number of planes was 99,740. (Senate, Hearings on H.R. 2996, 78 Cong., 1 Sess., 7.)

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Chapter II

1. 52 Stat. 707.
2. Ibid.
3. Army Ordnance, XX, No. 117 (Nov-Dec 38) 171.
4. Public No. 723, 25 Jun 38; 52 Stat. 1153.
5. Cong. Rec., 76 Cong., 1 Sess., 35.
6. Ibid., 471.
7. 1st ind (memo for Chief, Materiel Div by Col H.W. Harms, Supply Div), Brig. Gen. A.W. Robins to C/AC, 25 Jan 39, in AAG 032 K, Legislation.
8. R&R, Plans Sec to C/AC, 1 Feb 39, in Plans Div files, AFSHO.
9. This amount, with the previously appropriated \$2,000,000, would accomplish the enlarged program. The President in his message to Congress on 12 January 1939 had suggested "approximately \$32,000,000" for educational orders. (Cong. Rec., 76 Cong., 1 Sess., 248.)
10. Ltr, Harry H. Woodring to Morris Sheppard, 24 Jan 39, in Senate, Hearings on H.R. 3791, 76 Cong., 1 Sess., 255-56.
11. 46 Stat. 1494 (amended by 49 Stat. 1011); 49 Stat. 2036; 48 Stat. 948. In reply to a letter of 10 February 1939 from the Assistant Secretary of War the Acting Secretary of the Interior stated that his office had reached the conclusion that an educational order was not a "public work" as contemplated by the Bacon-Davis Act, and therefore neither the act nor the joint regulations by the Secretary of the Interior and the Secretary of the Treasury were applicable to such orders. (Ltr, E.K. Burlew to S/W, 15 Feb 39, in AAG 400.13 Special, Educational Orders.)
12. Senate, Hearings on H.R. 3791, 76 Cong., 1 Sess., 322-23.
13. S. Rept. No. 86, 76 Cong., 1 Sess., 13.
14. Public No. 18, 3 Apr 39; 53 Stat. 560. The \$34,500,000 included the \$2,000,000 previously appropriated for 1939.
15. Public No. 44, 26 Apr 39; 53 Stat. 595. This sum, as well as the earlier \$2,000,000, was to be diverted from other funds.
16. H. Rept. No. 823, 76 Cong., 1 Sess.; Public No. 161, 1 Jul 39; 53 Stat. 995.

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196. The planes were to cost \$13,865,725,361, while the spares would increase this by \$335,117,009. (House, Hearings on H.R. 2996, 143.)

197. Ibid., 120.

198. Ibid.

199. Ibid., 60.

200. H. Rept. No. 566, 73 Cong., 1 Sess.; S. Rept. 1.0. 307, 73 Cong., 1 Sess.; Daily Cong. Rec., 73 Cong., 1 Sess., 6875; Public No. 103, 1 Jul 43. Appropriations for Air Corps items chargeable to other branches from 1940 to 1944, inclusive, were: \$117,707,389; \$1,293,-522,915; \$7,295,480,393; \$5,343,913,155; and \$12,686,054,562--a total of \$26,741,673,419. (House, Hearings on H.R. 2996, 73 Cong., 1 Sess., 123.)

201. The original estimate for fiscal year 1944 called for 99,740 airplanes to be accepted up to June 1945; this figure was later lowered to 76,456, not, as might have been the case in earlier years, because it was impossible to procure the larger number, but because the smaller number could suffice. (Memo for Maj. Gen. O.P. Echols and others by Maj. Oliver May, 23 Feb 44, in AAC 111.B, Estimates for Appropriations.)

202. H.R. 4967, 73 Cong., 2 Sess., 23.

203. The total appropriation for the military establishment was \$49,349,023,700, of which amount \$15,676,652,700 represented new funds and \$33,672,871,000 a reappropriation of funds expected to remain unobligated as of 30 Jun 1944. In fiscal year 1944, \$74,211,249,961 had been made available, and in the fiscal year 1943, \$74,930,515,793. (House, Hearings on Military Establishment Appropriation Bill for 1945 [H.R. 4967], 73 Cong., 2 Sess., 3.)

204. The following table gives a breakdown of these savings:

Reduction in requirements	\$1,000,000,000
Reduction in prices from original estimates..	3,000,000,000
Reduction in fixed-price contracts	800,000,000
Reduction in cost-plus-fixed-fee contracts....	1,500,000,000
Reduction in obligations due to terminations and cancellations	<u>2,700,000,000</u>
Total estimated surplus to 30 June 1944	9,000,000,000
Estimated recovery of former years' funds in fiscal year 1945	2,000,000,000
TOTAL estimated surplus	11,000,000,000

205. The original estimate for fiscal year 1945 called for 60,345 aircraft; this figure was later reduced to 37,174 airplanes and 5,000 gliders. (Memo for General Echols and others from Major May, 23 Feb 44, and unsigned memo of 20 Jan 45, both in AAG 111, Estimates for Appropriations. House, Hearings on H.R. 4967, 78 Cong., 2 Sess., 296.)

206. Ibid., 297.
207. Ibid., 319.
208. Ibid., 295, 321. Ninety million of the \$8,949,565,925 was for gliders.
209. Ibid., 296.
210. Public No. 374, 78 Cong., 12; House, Hearings on Military Establishment Appropriation Bill for 1945 [H.R. 4967], 78 Cong., 2 Sess., 3, 279, 386, 446-9; Senate, Hearings on Military Establishment Appropriation Bill for 1945 [H.R. 4967], 78 Cong., 2 Sess., 12.
211. Public No. 126, 79 Cong., 1 Sess., 12.
212. House, Hearings on Military Establishment Appropriation Bill for 1946 [H.R. 3550], 79 Cong., 1 Sess., 176.
213. Senate, Hearings on Military Establishment Appropriation Bill for 1946 [H.R. 3550], 67-68. This sum included \$300,000,000 for new functions and activities transferred to the AAF from the Signal Corps, the Corps of Engineers, and the Transportation Corps. (Ibid., 67); House, Hearings on Military Establishment Appropriation Bill for 1946 [H.R. 3550], 176.
214. House, Hearings on Military Establishment Appropriation Bill for 1946 [H.R. 3550], 176. The following table gives a breakdown of AAF requirements for fiscal year 1946:

Equipment.....	\$3,700,000,000
Supplies	1,100,000,000
Personnel.....	645,000,000
Contractual services	400,000,000
Travel and transportation	<u>67,000,000</u>

TOTAL \$5,912,000,000

(Ibid., 177.)

215. Ibid., 190. This figure is to be compared with something over eight billions in 1945 and fourteen and one-half billions in 1944. The number of airplanes to be procured is not given here because production schedules were changed so frequently that it would be almost impossible to determine which figure should be used.
216. Tab A to weekly activity reports of AFDIC for 4 Nov and 9 Dec 43, 8 Apr and 6 May 44; Tab A to memos for C/AS by AFDIC, 6 and 13 Nov 43, in AFHQ files. Items 9 to 12 inclusive are from daily activity reports of AFDIC for 1, 3, 13 May, 10 Jun, 17 Jul, 16 Sep, 6 Dec 44, and 9 Mar 45. Item 13 was taken from Statistical Control Aircraft Inventory.

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32. Memo for OBW by Col. W.F. Volandt, 29 Mar 41, ibid.
33. Memo for Donald Nelson, Advisory Commission to the Council of National Defence by Robert P. Patterson, 9 Apr 41, ibid.
34. Memo for C/IC by Maj. G.K. Heiss, Fiscal Off, Ordnance Dept, 23 May 41, ibid.
35. Memo for AS/I by Lt. Col. L.W. Miller, Chief, Fiscal Div, 2 June 41, ibid.
36. Memo for US/I by Lt. Col. A.W. Martenstein, Fiscal Off, OMC, 8 Jan 42, ibid.
37. Memo for AS/I by C/AC, 27 Apr 40, in AAG 452.1-3295 H, Sale . . . Abroad.
38. Notes on Productive Capacity of Aircraft Industry by Maj. A.J. Lyon, 29 Apr 40, in Lyon Project Records, No. 22, Capacity of the Aircraft Industry.
39. Memo for Asst C/AC by Chief, Plans Div, 9 May 40, in Plans Div files.
40. Notes for Asst C/AC by Maj. A.J. Lyon, 18 May 40, in Lyon Project Records, No. 34, Productive Capacity and Delivery Schedules.
41. Washington Daily News, 28 May 40, quoted in Cong. Rec., 76 Cong., 3 Sess., App. 3301.
42. Memo for George C. Head, Chief, Aeronautical Sec, Advisory Commission to the Council of National Defense by General Arnold, 26 Jun 40, in Lyon Project Records, No. 48, Government-Owned Factories.
43. 54 Stat. 603, 874; Senate, Hearings on H.R. 10055, 76 Cong., 3 Sess., 4, 86-89; House, Hearings on H.R. 10263, 76 Cong., 3 Sess., 156. Of the \$93,400,000 allotted to the Air Corps from H.R. 10055, none had been released by the President on 19 September 1940. (Ltr, Gen. Brett to Asst Chief, Materiel Div, 19 Sep 40, in AAG 112.41, Allotments.)
44. House, Hearings on H.R. 10572, 76 Cong., 3 Sess., 94, 100-01; H. Rept. No. 2983, 76 Cong., 3 Sess., 5; Cong. Rec., 76 Cong., 3 Sess., 12700-12701; 54 Stat. 965.
45. Memo for Dir of the Budget by AS/W, 12 Sep 40, in Lyon Project Records, No. 48, Government-Owned Factories.
46. Notes on conference between Knudsen and Gen. Arnold, 19 Oct 40, in same file.
47. Ltr, William S. Knudsen to Gen. Arnold, 8 Nov 40; and memo for Gen. Brett by Gen. Arnold, 9 Nov 40, both ibid.

48. The British wanted more bomber production also but were unwilling to put more money into an increase of facilities. If both British and American demands were to be met, the only possibility lay in the creation of new facilities. (Memo for S/W by C/AC, 28 Oct 40, in AAG 452.1-17G, Manufacture of Airplanes.)
49. Memo for the President by Robert P. Patterson, 16 Nov 40, in Lyon Project Records, No. 48, Government-Owned Factories. On 15 October 1940 the Automobile and Truck Manufacturers had adopted a resolution "offering automotive industry facilities for mass production of standardized airplane body parts." (Copy in same file.) The utilization of these facilities--with subsequent complete conversion of many--was a vital factor in attaining the Air Corps goal.
50. Lyon Project Records, No. 48. This book contains a clear story on the government-owned factories.
51. Memo for Dir. of Bureau of the Budget by Robert P. Patterson, 6 Dec 40, in Lyon Project Records, No. 42-B, Miscellaneous Memoranda for the Assistant Secretary of War.
52. House, Hearings on H.R. 4124, 77 Cong., 1 Sess., 172.
53. H. Rept. No 301, 77 Cong., 1 Sess., 4, 6.
54. House, Hearings on H.R. 4124, 77 Cong., 1 Sess., 24, By the beginning of 1941 the Air Department had allowed the Air Corps \$257,480,000 of the \$916,275,000 appropriated for expediting production. (Memo for C/S by Maj Gen J.H. Burns, 6 Jan 41, in AAG 112.4A, Allotments.)
55. Memo for Maj B.E. Vaughan, Price Administration Br, SOS by Lt Col C.H. Dyson, Budget Off, Materiel Comd, 23 Dec 42, in AAG 004, Commercial Enterprises . . . Projects. There were also 12 modification centers which were government-owned and privately operated. There were no government-owned and government-operated plants, nor privately owned and government-operated plants.
56. Public No. 139, 30 Jun 41; 55 Stat. 366.
57. House, Hearings on H.R. 6159, 77 Cong., 1 Sess., 83, 87; Public No. 353, 17 Dec 41; 55 Stat. 810.
58. House, Hearings on H.R. 6448, 77 Cong., 2 Sess., 35, 53; Public No. 422, 30 Jan 42.
59. Public No. 474, 5 Mar 42.
60. House, Hearings on H.R. 2996, 78 Cong., 1 Sess., 9, 552. The total requested for the OS/W was \$1,314,147,000, but \$565,147,000 was carried over from the previous year.

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61. W. Post, p. 500, 70 Oct., 1 Sec., S, E.
62. ~~Refile 10.108, 1 Jul 13; 57 std, 547.~~
63. ~~Re file subject and file 1, 117 b orig. Sec. . Hopkins, Calif, Resources Div, 9/13, 11D, 11 sec 11, in 1 S 112.4, Defense Aid Funds.~~

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CHAPTER III

1. Ltr, Dr. . . covering to Mr. T. R. Mill, Chairman, Board of Inquiry on
B-52 Crash, 11 Jul 57, in file 4221-15, "Incase of Airplanes".
2. Ltr, Dr. . . to C/ G, 3 Aug 57, in same file.
3. Report to Dr. C/IC, 6 Nov 57, in Board project records, no. 1,
10,000 Airplane program.
4. Confidential, 7 Dec 57, 1 Dec 58.
5. Confidential, in file 421, 7 Dec 58.
6. Ltr and (one for Dr. T. R. Mill Div by Dr. T. R. Mill, Supply Div),
Chairman, Board Div to C/IC, 1 Dec 58, in 4221.0 Bulk, General
Arnold's Box.
7. Ltr, Supply Div to C/IC, 17 Feb 59, in Board Div 4221.0, "C. O."
8. Dr. . . Review of Inadequate Technical Estimate, Re Conf.,
1 Dec 58, etc.
9. Ltr, Review on Basis of 1, 70 Dec 58, 1 Dec 58, 30-15.
10. M. Stat. '57; M. Stat. 1957. Scientific equivalent used for communications, broadcast station, navigation, and fire control (the
last describes light aircraft) were excluded from this limit time.
The last cited is shown in the 1957 "General Arnold's Bulk", public
no. 221, 25 Jun 1958.
11. Ltr, Review on Basis of 1, 70 Dec 58, 1 Dec 58, 30-15, Plans
Div to C/IC, 6 Mar 59, in 4221.0 Bulk, General Arnold's Box.
12. Confidential, 70 Dec 58, 1 Dec 58, 4227-15, 4227-15, 4227-24, 4227-
25. In the course of this discussion, it was brought out that the
communications and navigation gear can profit, but will not be a
definite factor in the limit time problem.
13. Ltr, Review on Basis of 1, 70 Dec 58, 1 Dec 58, 4221.0
Bulk, "General Arnold's Box".
14. Ltr, Review on Basis of 1, 70 Dec 58, and memo for C/IC, 4227-15,
30-15, 1 Dec 58, 1 Dec 58 cited above.

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15. Ltr, H.H. Woodring to chairmen of House and Senate military affairs committees, 10 Mar 39, ibid.
16. H. Rept. No. 256, 76 Cong., 1 Sess.
17. Public No. 15, 3 Apr 39, 53 Stat. 560. The profit limitation provision of this bill delayed the placing of contracts for several types of aircraft. (TMA, Chief, Materiel Div to C/AC, 29 Mar 39, in AAG 032 K, Legislation.)
18. Draft in Plans Div files, AFHQO. This was not to be construed as in "any way amending" the Act of 2 July 1926 or as authorizing the open market purchases of airplanes for purposes other than as provided in that act. The bill had been drafted in collaboration with the Chief of the Air Corps and called attention to the fact that the chiefs of Ordnance, Chemical Warfare Service, and Signal Corps already had this authority by 35 Stat. 125 and 49 Stat. 1277.
19. Memo for C/AC by Gen. Brett, 22 Mar 39, in AAG 452.1-13E, Purchase of Airplanes.
20. Cong. Rec., 76 Cong., 1 Sess., 737, 741. This measure did not provide for negotiated contracts for quantity procurement.
21. S. Rept. No. 245, 76 Cong., 1 Sess.; Cong. Rec., 76 Cong., 1 Sess., 4535; H. Rept. No. 841, 76 Cong., 1 Sess.
22. Public No. 168; 53 Stat. 1000.
23. The Air Corps was allowed, by the Act of 2 July 1926, to procure experimental craft on a secret basis, but when it came to quantity procurement of an acceptable plane, competitive bidding was compulsory, thus divulging Air Corps developments.
24. F&R, Col. W.F. Volandt to Plans Div, 13 Feb 40, in AAG 032 L, Legislation.
25. Comment 2, R.R., Plans Div to Exec, 16 Feb 40; and Comment 3, Exec to Materiel Div, 16 Feb 40, both in file cited above.
26. See tab on emergency procurement authority in AAG 321.9, Bulk, General Arnold's Book.
27. Ltr, Louis Johnson to Franklin D. Roosevelt, 10 Jul 39, in AAG 452.1-13F, Purchase of Airplanes.
28. Cong. Rec., 76 Cong., 1 Sess., 8799. The profit limitation clause was included.
29. Ibid., 9460.
30. Ltr, H.H. Woodring to A.J. May, 21 Jul 39, in AAG 032 L, Legislation.

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31. H. Rept. No. 1322, 76 Cong., 1 Sess.
32. Cong. Rec., 76 Cong., 1 Sess., 9787; S. Rept. No. 979, 76 Cong., 1 Sess. Amendments to this bill were the same as those to the House proposal.
33. Cong. Rec., 76 Cong., 1 Sess., 10668, 10538.
34. Ibid., 1019-1320; Public No. 426, 5 Mar 40; 54 Stat. 45.
35. Cong. Rec., 76 Cong., 3 Sess., 714, 4523; 41 U.S.C. 5. Section 3709 set no monetary limit for purchase in the open market when an emergency existed.
36. Cong. Rec., 76 Cong., 3 Sess., 765, 1251, 4060, 7396; H. Rept. No. 1535 and No. 1922, 76 Cong., 3 Sess.
37. Memo for AS/W by Asst C/AC, 10 Apr 40, and memo for Gen. Arnold, unsigd., 4 Mar 40, both in AG 032, Legislation. The latter document cites the memo of the Secretary of War to Representative Coonran.
38. Memo for AS/W by Gen. Arnold, 15 Apr 40, in AG 032, Legislation.
39. Memo for AS/W by C/AC, 18 May 40, in Plans Div file 032, Legislation General.
40. Cong. Rec., 76 Cong., 3 Sess., 6468, 8822-31; H. Rept. No. 2706, 76 Cong., 3 Sess.; 54 Stat. 676. The authority for negotiation of contracts was not extended to the Secretary of War, and the above provisions were to expire on 30 June 1942.
41. Cong. Rec., 76 Cong., 3 Sess., 6579, 6667. S. 4025, a similar bill, was introduced in the Senate on 22 May and was reported the same day. (Ibid., 532; S. Rept. No. 1649, 76 Cong., 3 Sess.)
42. Ibid.
43. Ltr, Louis Johnson, Acting S/W, to Dir of the Bureau of the Budget, 27 Jun 40, in AG 381, National Defense (6-26-40); 54 Stat. 712. The Acting S/W said he was not inimical to the provisions of H.R. 9822.
44. Contracts for less than \$500,000, and not of the cost-plus-a-fixed-fee type, needed only the approval of the chief of the supply arm or service concerned. (Memo for C/AC et al. by Col. J.W. Schulz, 2 Jul 40, in AG 032, Legislation.)
45. American Aviation Daily, X, No. 4 (5 Jul 40), 17.
46. House, Hearings on Second Supplemental National Defense Appropriation for 1941 (H.R. 10263), 76 Cong., 3 Sess., 251-52.

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47. Senate, Kearin's on H.R. 10263, 76 Cong., 3 Sess., 74.
48. Cong. Rec., 76 Cong., 3 Sess., 12115; Public No. 781, 9 Sep 40; 54 Stat. 872.
49. Public 301, 8 Oct 40; 54 Stat. 1003.
50. See above, Chap. I, p. 33, for congressional history of H.R. 4476.
51. Memo for US/1 by Col. W.F. Volandt, Asst to Chief, Materiel Div, 28 May 41, in AG 400.12H, Procurement Methods and Programs.
52. Public No. 139, 30 Jun 41; 55 Stat. 366. S. 1605, introduced on 5 June 1941, provided for the extension to 30 June 1943 of Public No. 426 of 5 March 1940. This measure passed the Senate but died in the House Committee on Military Affairs. (Cong. Rec., 77 Cong., 1 Sess., 4734, 5732.)
53. Ibid., 77 Cong., 2 Sess., 5042. One other item, not directly concerning War Department authority, should be mentioned here. The provision (Section 4) of Public No. 671, 28 June 1940, was not very clear regarding the amortization of facilities furnished by the aircraft industry between the declaration of an emergency on 8 September 1939 and 10 June 1940. This vagueness was a cause of contention (regarding taxation) on the part of Army and Navy aircraft contractors. At the urging of the War and Navy departments certain modifications were made, although 10 June 1940 was retained as the determining date for "emergency facilities." (Public No. 301, 8 Oct 40; 54 Stat. 974. See also AG 032, Legislation.)
54. Cong. Rec., 76 Cong., 3 Sess., 9098.
55. Memo for Plans Div by Col. W.F. Volandt, n.d., and draft ltr to Sen. Morris Sheppard by Plans Div, 8 Aug 40, both in Plans Div file 032, Legislation General.
56. Ltr, Henry L. Stimson to Morris Sheppard, 30 Sep 40, ⁱⁿ AG 032, Legislation.
57. Other measures in 1941 that did not pass beyond the committee stage were: H.R. 1615 (8 Jan) dealing with design procurement and opposed by the Air Corps; H.R. 1775 (10 Jan); H.R. 4945 (3 Jun); and H.R. 6209 (12 Dec.).
58. Cong. Rec., 77 Cong., 1 Sess., 9828, 9856, 9861, 9863, 9895, 10072, 10100; Public No. 354, 18 Dec 41; 55 Stat. 838. In the Senate H.R. 6233 was substituted for S. 2129 which was also introduced on 15 December 1941. The Second War Powers Act, Public No. 507 of 27 March 1942, contained no provision relative to Army contracts but extended the authority of the Secretary of Navy to negotiate contracts for aircraft and other materiel. (56 Stat. 176.)

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59. Public No. 528, 28 Apr 42; 56 Stat. 226, 244-45. These provisions were also applicable to all subcontracts of \$100,000 or more.
60. Public No. 753, 21 Oct 42; 56 Stat. 798, 982 ff.; Public No. 149, 14 Jul 43.
61. Memo for Gen. Arnold by Capt. E.H. Snodgrass, Patents Sec., 22 Jun 39, in AAG 400.12, Procurement Methods and Programs.
62. Memo for C/AC et al. by Brig. Gen. J.W.N. Schulz, Dir of Purchases and Controls, OASW, 17 Feb 41, in same file.
63. Memo for Asst Chief, Materiel Div by Col. W.F. Volandt, 3 Jan 42, in AAG 400.12, Procurement Methods and Programs.
64. WD Circular No. 59, 2 Mar 42.
65. Robert P. Patterson, US/W to CG Materiel Command CG SOS, 9 Apr 42, in AAG 300.8, Procurement Regulations. See also AAG 400.12, Procurement Methods and Programs.

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N O T E S

Chapter IV

1. Cong. Rec., 76 Cong., 1 Sess., 25; H.R. 93, in the House, 3 Jan 39.
2. 1st ind (basic unknown), Brig. Gen. A.V. Robins to C/AC, 18 Jan 39, in Plans Div file 032, Legislation General, AFSHO.
3. Comment 7, R&R, Col. R.B. Lincoln to C/AC, 26 Jan 39; and Comment 9, Capt. E.H. Snodgrass to C/AC, 7 Feb 39, both in file cited above. The Patents Section, it should be noted, was the antecedent of the office of the Air Judge Advocate.
4. Cong. Rec., 76 Cong., 1 Sess., 2440; S. 1738, in the Senate, 8 Mar 39. The bill also provided for the establishment of a Bureau of Mines research station and a Military Aeronautical School in the same locale as the engineering center.
5. Copy of ltr, S/W to Morris Sheppard, 24 Mar 39, in Plans Div file 032, Legislation AC Proposed, 76 Cong., 1 Sess.
6. Senate, Hearings on S. 1738, 76 Cong., 1 Sess. Only one witness, Willis G. Waldo, a consulting engineer, was heard.
7. Cong. Rec., 76 Cong., 1 Sess., 3078; ibid., 77 Cong., 1 Sess., 1032; ltr, S/W to Morris Sheppard, 7 Mar 41, in Plans Div file 032, Legislation Proposed for AC. H.J. Res. 177 of 20 February 1939 also would have provided for an engineering center. (Cong. Rec., 76 Cong., 1 Sess., 1646.) It, too, was opposed by the War Department.
8. House, Hearings on an Adequate National Defense, 76 Cong., 1 Sess., 6, 19, 24-25, 28, 72; Senate, Hearings on H.R. 3791, 76 Cong., 1 Sess., 19, 39, 51, 78, 80-81. The sum of \$5,000,000 was given to the Air Corps for research and development during fiscal year 1940. General Arnold stated that this amount would be spent primarily toward the development of high-speed combat planes and their equipment, but he held that this was not enough. In discussing the \$1,000,000 reduction by the Bureau of the Budget, Representative Ross A. Collins (Miss.) noted that once an extra \$1,000,000 had been given and the B-17 had been developed. (House, Hearings on H.R. 4630, 76 Cong., 1 Sess., 284, 314, 317-18; H. Rept. No. 112, 76 Cong., 1 Sess.; S. Rept. No. 213, 76 Cong., 1 Sess.; Public No. 44, 26 Apr 39; 53 Stat. 592.)

9. Public No. 534, 23 May 38; 52 Stat. 420. The total cost of the tunnel was not to exceed \$540,000.
10. H. Rept. No. 23, 76 Cong., 1 Sess.; Public No. 8, 16 Mar 39; 53 Stat. 535.
11. House, Hearings on Second Deficiency Appropriation for 1939 [H.R. 4219], 76 Cong., 1 Sess., 29-30, 34, 46. Also requested was \$6,000,000 contractual authority.
12. Ibid., 78.
13. H. Rept. No. 260, 76 Cong., 1 Sess.; Cong. Rec., 76 Cong., 1 Sess., 3131.
14. Ltrs., Gen. Arnold to Joseph S. Ames, Chairman, W.C.I., 23 Mar 39, and Rear Adm. A.B. Cook to J.S. Ames, 23 Mar 39, both in Senate, Hearings on H.R. 5219, 76 Cong., 1 Sess., 30. In a memo to The Adjutant General on 14 April the Air Corps pointed out that rapid strides in aviation made aircraft obsolete more quickly and stressed that "the rate of depreciation must parallel the intensity and progress of research and development." (Memo for AG by C/AC, 14 Apr 39, in Plans Div file 121.2, Estimates FY 1941.)
15. S. Rept. No. 257, 76 Cong., 1 Sess.; Cong. Rec., 76 Cong., 1 Sess., 4296-99.
16. H. Rept. No. 510, 76 Cong., 1 Sess.; Cong. Rec., 76 Cong., 1 Sess., 6357; Public No. 61, 2 May 39; 53 Stat. 628. The Air Corps had requested \$1,125,000 of which \$600,000 was to be used for experimental and research work on rotary-wing and other aircraft as authorized by Public No. 787 of 30 June 1938. The "other" aircraft referred primarily to "slow flying" planes. Only \$300,000 of the requested \$600,000 was allowed, and this could be expended only on rotary-wing craft. (House, Hearings on H.R. 5219, 76 Cong., 1 Sess., 485-87; 53 Stat. 641.)
17. Quoted in Cong. Rec., 76 Cong., 1 Sess., App. 1455.
18. Ibid., App. 1517.
19. House, Hearings on H.R. 6791, 76 Cong., 1 Sess., 5.
20. Ibid., 25-27.
21. Ibid., 31-32.
22. H. Rept. No. 822, 76 Cong., 1 Sess.; S. Rept. No. 696, 76 Cong., 1 Sess.; Public No. 164, 1 Jul 39; 53 Stat. 992.
23. Cong. Rec., 76 Cong., 1 Sess., 5195.

REF ID: A6477

24. The Air Corps laboratory at Wright Field engaged in applied military research, while the minor facilities at educational institutions were for applied production research. It should be noted that the NACA was composed of 15 members--civilians and Army and Navy officials--and had since its establishment in 1915 engaged in research for the Army, Navy, and aircraft industry.
25. Draft 2d ind (basic unknown), OCAC to AG, 22 May 39, in AAF 032, Legislation. The bill remained in committee.
26. Cong. Rec., 76 Cong., 1 Sess., 5269, 5768; H.R. 6399, in the House, 18 May 39.
27. Memo for AC/S, G-4 by C/AC, 1 June 39, in Plans Div files.
28. Ltr, S/W to A.J. May, 28 Jul 39, in Plans Div file 032, Legislation Construction.
29. Cong. Rec., 76 Cong., 1 Sess., 6038.
30. Ltr, S/W to A.J. May, n.d., in Plans Div file 032, Legislation Air Corps. The Bureau of the Budget had advised that this project would not be in accord with the program of the President.
31. H.R. 7232, in the House, 14 Jul 39; Cong. Rec., 76 Cong., 1 Sess., 9207.
32. Ltr, S/W to A.J. May, as cited in n. 28.
33. Cong. Rec., 76 Cong., 1 Sess., 10830; H. Rept. No. 1439, 76 Cong., 1 Sess., 23. Also requested and granted was an additional \$109,020 for personnel services.
34. House, Hearings on H.R. 7462, 76 Cong., 1 Sess., 138-39.
35. Ibid., 144-45. Representative Jennings Randolph appeared before the committee and strongly supported the increase of research facilities. (See ibid., 721-23.)
36. H. Rept. No. 1439, 76 Cong., 1 Sess.; S. Rept. No. 1138, 76 Cong., 1 Sess.; Public No. 361, 9 Aug 39; 53 Stat. 1306.
37. House, Hearings on H.R. 7922, 76 Cong., 3 Sess., 331-35.
38. H. Rept. No. 1515, 76 Cong., 3 Sess.; Cong. Rec., 76 Cong., 3 Sess., 516, 1217, 4889; Public No. 459, 18 Apr 39; 54 Stat. 134. On 18 February 1940 Frazier Hunt stressed the importance of more money for air research. (This Week, 18 Feb 40, quoted in Cong. Rec., 76 Cong., 3 Sess., App. 833-35.)

39. This committee was composed of Charles A. Lindbergh (chairman), Maj. Gen. H.H. Arnold, Rear Adm. John H. Towers, and Robert H. Hinckley (Chair).
40. Cong. Rec., 76 Cong., 3 Sess., 8094, 8100, 8104-05, 8111-12.
41. Public No. 667, 20 Jun 40; 54 Stat. 599-600.
42. This was the name given to the California laboratory in honor of the former chairman of NACA, Dr. Joseph Ames.
43. House, Hearings on H.R. 2783, Part 1, 76 Cong., 3 Sess., 342, 347-48; H. Rept. No. 15, 77 Cong., 1 Sess., 16.
44. Senate, Hearings on H.R. 2788, 77 Cong., 1 Sess.; Public No. 28, 4 Apr 41; 55 Stat. 114-15.
45. House, Hearings on H.R. 5166, 77 Cong., 1 Sess., 93.
46. H. Rept. No. 849, 77 Cong., 1 Sess., 19, 25; Public No. 150, 3 Jul 41; 55 Stat. 546-47.
47. Dr. Vannevar Bush had been designated head of the Office of Scientific Research and Development which was to mobilize the scientific talents of the country on non-aeronautical matters. The OSRD confined itself to aeronautical research. The OSRD, however, did do some research on Air Corps problems. Among Air Corps projects being worked on by the National Defense Research Committee (a subsidiary of the OSRD) were oxygen generators, train-bomb calculators, "heat responsive, target seeking bomb/s," testing machines for fire-control devices and systems, and hydroombs. (See Research and Development Projects of the Engineering Division Material Comd., 1 Jan 44, pp. 73-87, in File 0.)
48. House, Hearings on H.R. 2783, Pt 2, 77 Cong., 1 Sess., 338-42; H. Rept. No. 1230, 77 Cong., 1 Sess.; Public No. 282, 23 Oct 41; 55 Stat. 748.
49. Public No. 630, 27 Jun 42; Public No. 523, 28 Apr 42; 56 Stat. 236, 392.
50. Public No. 11, 16 Mar 43; 57 Stat. 24-25.
51. House, Hearings on H.R. 1975, 78 Cong., 1 Sess., 202.
52. House, Hearings on H.R. 1762, 78 Cong., 1 Sess., 124-20; Public No. 90, 26 Jun 43; 57 Stat. 183.
53. House, Hearings on H.R. 3598, 78 Cong., 1 Sess., 1534-37.
54. Ibid., 1540-41; H. Rept. No. 822, 78 Cong., 1 Sess., 29-30, 58; Public No. 216, 23 Dec 43; 57 Stat. 611.

55. H.R. 4070, 75 Cong., 2 Sess., 3c. This was the amount recommended by the Bureau of the Budget and the House Committee on Appropriations. In the Senate an item of \$1,300 for the purchase of two automobiles was struck out, bringing the total down to \$23,218,530. (H. Rept. No. 1023, 75 Cong., 2 Sess., 24; S. Rept. No. 730, 75 Cong., 2 Sess., 9.)
56. Public Law No. 529, 75 Cong., 2 Sess., 7.
57. H.R. 2374, 75 Cong., 1 Sess.
58. H.R. 1984, 75 Cong., 1 Sess.
59. Ibid., 40. The Bureau of the Budget had recommended an appropriation of \$26,000,000; but the House Committee on Appropriations deducted \$607 from the item for penalty mail. (H. Rept. No. 54, 75 Cong., 1 Sess., 10.)
60. Ibid..
61. S. Rept. No. 88, 79 Cong., 1 Sess.; Conference Rept. No. 430, 79 Cong., 1 Sess.
62. Memo for C/AC by AG AG 311 (3-30-39) Misc D, 10 Aug 39, in AG 121.2, Estimates, FY 1941; memo for Col. H.K. Loughry by Lt. Col. G.S. Warren, 15 Aug 39, in AG 111.3 N, Estimates.
63. House, Hearings on H.R. 9209, 76 Cong., 3 Sess., 491-92, 494. The Air Corps had received \$4,342,069 in 1938, \$3,549,602 in 1939, and \$10,000,000 in 1940 for experimental and research activities. (Ibid., 512.)
64. H. Rept. No. 1912, 76 Cong., 3 Sess., Public No. 611, 13 Jun 40; 54 Stat. 564-66.
65. House, Hearings on H.R. 10055, 76 Cong., 3 Sess., 79. This amount was over and above that for the NACA engine laboratory. (Ibid., 43.)
66. Cong. Rec., 76 Cong., 3 Sess., 8100, 8104-05, 8111-12, 9127; Public No. 667, 20 Jun 40; 54 Stat. 599.
67. House, Hearings on H.R. 4124, 77 Cong., 1 Sess., 160, 173; Cong. Rec., 77 Cong., 1 sess., 3093; Public No. 29, 5 Apr 41; 55 Stat. 123.
68. Cong. Rec., 76 Cong., 3 Sess., 8357; ltr., H.H. Woodring to Morris Sheppard, 25 Jun 40, in Plans Div files. The Secretary's letter reflected the attitude of the Air Corps Materiel Division. (ltr., Materiel Div to Plans, 6 Jun 40, in Ltr. 0321, Legislation.)
69. House, Hearings on H.R. 4965, 77 Cong., 1 sess., 21, 159, 406.
70. Ibid., 476.

71. Public No. 139, 30 Jun 41; 55 Stat. 378-79.
72. House, Hearings on H.R. 6159, 77 Cong., 1 Sess., 122-24.
73. Public No. 353, 17 Dec 41; 55 Stat. 812.
74. House, Hearings on H.R. 7280, 77 Cong., 2 Sess., 35, 197, 199.
75. Cong. Rec., 77 Cong., 2 Sess., 5513; Public No. 649, 2 Jul 42; 56 Stat. 620.
76. House, Hearings on H.R. 2996, 78 Cong., 1 Sess., 121, 144.
77. Public No. 108, 1 Jul 43; 57 Stat. 356.
78. House, Hearings on the Military Establishment Appropriation Bill for 1945 [H.R. 4967], 78 Cong., 2 Sess., 321.
79. H.R. 3550, 79 Cong., 1 Sess., 28.
80. House, Hearings on the Military Establishment Appropriation Bill for 1946 [H.R. 3550], 79 Cong., 1 Sess., 190.
81. House, Hearings on H.R. 4967, 78 Cong., 2 Sess., 321.
82. House, Hearing on H.R. 3550, 79 Cong., 1 Sess., 214.
83. H.R. 5182, 78 Cong., 2 Sess.; S. 825, 79 Cong., 1 Sess.; S. 1285, 79 Cong., 1 Sess.
84. H.R. 2012, 79 Cong., 1 Sess., 1.
85. H.R. 3440, 79 Cong., 1 Sess., 2.
86. H.R. 5407, 78 Cong., 2 Sess.; H.R. 165, 79 Cong., 1 Sess.
87. Ltr, S/W to Chairman, House Committee on Interstate and Foreign Commerce, 15 Nov 44, in AAG 032, Legislation.

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NOTE S

Chapter V

1. See AG 452.1, Sale . . . Abroad. Much information can be obtained from two items in the Lyon Project Records: No. 10-F, Curodological Summary on Foreign Release . . . ; Green Book, Foreign Sale Procedure, Air Department Authorizations.
2. Memo for DC/S by C/AC, 31 Oct 36, in AG 452.1, Sale . . . abroad.
3. Agreements between State Dept and War and Navy Depts, 19 and 30 Nov 34 and 6 Dec 34, mentioned in ltr from Sec of State to Sec of Navy, 13 Sep 35, in AG 452.1, Sale . . . Abroad.
4. AG No. 510.1 (Case No. 67), 3 Sep 35, in same file. If a plane had no "strikingly novel feature," it could be released for export "at an early date" before the lapse of 12 months.
5. Memo for Lt. Col. J.L. Lynd by Brig. Gen. A.W. Robins, Chief, Materiel Div, 28 Oct 36, ibid.
6. Summary of export licences . . . , Materiel Planning Sec, Materiel Div, 19 Mar 40, in Lyon Project Records, No. 10A, Foreign Sales.
7. Cong. Rec., 76 Con., 1 Sess., 804; H.R. 3221, in the House, 25 Jan 39. The bill was introduced "by request."
8. Draft ltr, S./: to Harold Smith, 25 May 39, in AG 033, Legislation; Cong. Rec., 76 Con., 1 Sess., 3728, 3763, 4903, 5776, 6589; 53 Stat. 795. The Senate substituted H.R. 3221 for its own S. 1082 which had been introduced on 27 January 1939.
9. Cong. Rec., 76 Cong., 1 Sess., 1574; R.R., Plans Div to C/A.C., 15 Mar 39, and C/AC to AG, 20 Mar 39, in Plans Div files.
10. Senate, Hearings on H.R. 3791, 76 Cong., 1 Sess., 31.
11. Cong. Rec., 76 Cong., 1 Sess., 2143. There was not enough difference in the replies of various areas to draw any conclusion as to the more decided opposition of any one section of the country.
12. Proc. No. 2348, 5 Sep 39, 4 Fed. Reg. 3809; Proc. No. 2352, 8 Sep 39, 4 Fed. Reg. 3851; 54 Stat. 2629-30, 2643; 50 U.S.C. L., App. 4439-41, 4442.

13. Cong. Rec., 76 Cong., 2 Sess., 46, 794-800; 54 Stat. 4-12.
14. Proc. No. 2237, 1 May 1937; 54 Stat. 1834; International Traffic in Arms, Dept. of State Publication No. 1407, 7th ed.
15. Memo for AS/W by C/AC, 7 Aug 39, in AAG 453.1-3295G, Sale . . . Abroad.
16. House, Hearings on Emergency Supplemental Appropriation Bill for 1940, 76 Cong., 3 Sess., 88.
17. House, Hearings on H.R. 9209, 76 Cong., 3 Sess., 475-78, 483.
18. Senate, Hearings on H.R. 9209, 76 Cong., 3 Sess., 38.
19. Cong. Rec., 76 Cong., 3 Sess., 6593-95. On 18 March 1940 Representative Carl Vinson (Ga.) submitted to the House a letter from the Secretary of the Navy in which the benefits of foreign sale of aircraft were noted. The Secretary pointed out that this sale had not interfered with the Navy's procurement program; in at least one instance, earlier Navy deliveries had resulted, and there was evidence that the cost of aircraft had been reduced. (Ibid., 3003.)
20. Ibid., App. 355-56.
21. Ibid., 2765.
22. Ltr, S/W to A.J. May, 4 Apr 40, in AAG 452.1B, Sale . . . Abroad.
23. Quoted in Cong. Rec., 76 Cong., 3 Sess., App. 1699.
24. AG 452 (3-27-40) M-CCS-M, 29 Mar 40.
25. See Washington Times-Herald, 4 Apr 40; memo for A.J. May by C/AC, 4 Apr 40; and WD Press Release, 5 Apr 40, in AAG 452.1-3295 H, Sale . . . Abroad.
26. Washington Daily News, quoted in Cong. Rec., 76 Cong., 3 Sess., App. 1893-94.
27. Cong. Rec., 76 Cong., 3 Sess., 4643. The P-40's which were deferred in favor of the Allies had been ordered by the British in the summer of 1939. (Memo for Merrill C. Meigs, Chief, Aircraft Br, OPM by Gen. Arnold, 19 Mar 41, in AAG 452.1-3295 #1, Sale . . . Abroad.)
28. Cong. Rec., 76 Cong., 3 Sess., 8823-31; 54 Stat. 681.
29. Quoted in Cong. Rec., 76 Cong., 3 Sess., App. 2991-92.

30. Cong. Rec., 76 Cong., 3 Sess., 6244; H. Doc. No. 751, 76 Cong., 3 Sess.
31. Cong. Rec., 76 Cong., 3 Sess., 6471, 6473-74.
32. Ibid., 7609, 7771, 7807, App. 3781-82; House, Hearings on H.R. 4050, 77 Cong., 1 Sess., 18; Washington Daily News, 11 Jun 40.
33. Quoted in Cong. Rec., 76 Cong., 3 Sess., App. 4573.
34. Ibid., 1757.
35. Ibid.
36. Proportion of Accepted Deliveries of Airplane Engines by Customer . . . Jan.-July 1940, Materiel Planning Sec, Materiel Div, 26 Aug 40, in Lyon Project Records, No. 104, Foreign Sale; Summary of Exports . . . , 10 Oct 40, in AG 452.1-3295, Sale . . . Abroad.
37. Senate, Hearings on H.R. 10263, 76 Cong., 3 Sess., 39-50. Public No. 671 of 23 June 1940 doubtless had something to do with this stoppage.
38. Memo for C/o Ltr. G/A/C, 17 Sep 40, in AG 452.1B, sale . . . Abroad.
39. Cong. Rec., 76 Cong., 3 Sess., 12589-90, 12701.
40. Comment 2, etc., Chief, Materiel Div to Act G/A/C, 15 Jan 41, in AG 452.1-3295, Sale . . . Abroad.
41. Memo for Us/I by Brig. Gen. Davenport Johnson, Act C/A/C, 22 Jan 1941, in Lyon Project Records, No. 56, Procurement Data.
42. See New Plants Ltr 417, in Lyon Project Records, No. 64, Appropriations.
43. Cong. Rec., 77 Cong., 1 Sess., 46.
44. Ibid., 121.
45. Ibid., 459-519, 522-68, 573-678, 710-49, 753-81, 785-815, 822, 947, 1032, 2097-98, 2173, 2193, 2297; Public No. 11, 11 Mar 41; 55 Stat. 31-33.
46. House, Hearings on H.R. 4050, 77 Cong., 1 Sess.; H. Rept. No. 276, 77 Cong., 1 Sess.; Cong. Rec., 77 Cong., 1 Sess., 3079; Public No. 23, 27 Mar 41; 55 Stat. 53; memo for AG/S, G-4 by Lt. Col. E.L. Myers, n.d., in Lyon Project Records, No. 63, Lend-Lease Administration; memo for DG/S by C/A/C, 1 Jul 41, in AG 381.342, Materials for War, Lend-Lease. The largest single item was for air materiel; the total appropriation was \$7,000,000,000.
47. House, Hearings on H.R. 6159, 77 Cong., 1 Sess., 244-56; Public No. 353, 17 Dec 41; 55 Stat. 813.

48. House, Hearings on H.R. 6448, 77 Cong., 2 Sess., 3, 14; H. Rept. No. 1659, 77 Cong., 2 Sess., 4-5; Public No. 422, 30 Jan 1942. The fifth supplemental appropriation for 1942 carried over five billion dollars for lend-lease, but none of it was for aircraft items.
49. House and Senate, Hearings on H.R. 5788, Pt. 1, 77 Cong., 1 Sess.; H. Rept. No. 1230, 77 Cong., 1 Sess.; S. Rept. No. 721, 77 Cong., 1 Sess.; Public No. 282, 28 Oct 41; 55 Stat. 746.
50. Ltr, Gen. Arnold to Gen. Royce, 22 Oct 41, in AAG 452.1 C, Sale . . . Abroad. General Royce at that time was military attaché in London.
51. House, Hearings on H.R. 6868, Pt. 2, 77 Cong., 2 Sess., 11, 42-43; H. Rept. No. 1956, 77 Cong., 1 Sess.; S. Rept. No. 1257, 77 Cong., 2 Sess.; Public No. 528, 28 Apr 42.
52. House, Hearings on H.R. 7280, 77 Cong., 2 Sess., 21-22, 25, 28.
53. Public No. 649, 2 Jul 42; 56 Stat. 611. It should be pointed out that the supplemental defense aid appropriation for 1943 carried no funds for air materiel. (See House, Hearings on H.R. 2753, 78 Cong., 1 Sess.; H. Rept. No. 464, 78 Cong., 1 Sess.)
54. House, Hearings on H.R. 2996, 78 Cong., 1 Sess., 521-24; H. Rept. No. 566, 78 Cong., 1 Sess., 13.
55. Memo for Brig. Gen. L.W. Miller by Lt. Col. F.L. Kohlrieser, Materiel Comd, 15 Oct 43, in AAG 400.12, Procurement; 1st ind (basic unknown), Col. R.S. Macrum to BGWD, 31 Jan 44, in AAG 112.4, Defense Aid Funds.
56. For a full discussion of lend-lease, see Edward R. Stettinius, Jr., Lend-Lease, Weapon for Victory. See also the quarterly reports to Congress by the President on the progress of lend-lease.

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United States Code. 1940 edition, and Supplements 1 (1941),
2 (1942), and 3 (1943).

United States Statutes at Large.

The above materials constitute the principal published sources for this study. Most significant among these are the House hearings on the military establishment appropriation bills. The hearings and reports frequently shed much light on the cause and effect of events and legislation that are not to be found in any other place. The debates and proceedings are relatively unimportant from the standpoint of understanding the measures but, of course, are significant for expressions of opinions, for newly raised issues, and for material on bills on which no committee hearings were held.

Central Files

Army Air Forces (cited as AAG):
004 Commercial Enterprises . . . Projects
032 Legislation

111.3	Estimates, Bulk
111.3V	Estimates
111.B	Estimates for Appropriations
112.4	Defense Aid Funds
112.4A	Allotments
121.2	Estimates, FY 1941
300.8	Procurement Regulations
321.9	General Arnold's Book, Bulk
381.3A2	Materials for War, Lend Lease
400.12	Procurement
400.12H	Procurement Methods and Programs
400.13 Special	Educational Orders
452.1	Sale . . . Abroad
452.1-13	Purchase of Airplanes
452.1-17C	Manufacture of Airplanes
452.1-3295	Sale . . . Abroad

These files contain vital as well as much trivial material on the legislative history of materiel legislation, including background, effects, and administration.

War Department (Adjutant General):

AG 311 (3-30-39) Misc. D
AG 381 National Defense (6-26-40)
AG 452 (3-27-40) M-OCS-M, 29 March 1940

Incidental information for this monograph.

Office Files

Air Historical Office:

Files of the Plans Division, OCAC

These contain the background of, and Air Corps reaction to, much of the legislation up to 1941.

Army Air Forces Historical Studies:

No. 7, Legislation Relating to the Army Air Forces Training Program, 1939-1943.

No. 16, Legislation Relating to the AAF Personnel Program, 1939-May 1944.

These two studies treat other portions of some of the acts discussed in this monograph and are helpful in relating the training, personnel, and materiel programs to one another.

Weekly Activity Reports of Management Control, 4 Nov. 1943-6 May 1944.

The statistical portion of these reports indicates the progress and degree of completion of the various materiel programs authorized by Congress.

Daily Activity Reports of AFDMC, September 1943 through June 1945.

AC/AS, Materiel and Services:

Lyon Project Records

This set of records kept by the Technical Executive of the Materiel Division covers many phases of the materiel program up to 1941. The most helpful numbers for this study were:

1	10,000 Airplane Program
10-A	Foreign Sale
10-F	Chronological Summary on Foreign Release
11	Industrial Planning and Educational Orders
22	Capacity of the Aircraft Industry
29	36,000 Program
34	Productive Capacity and Delivery Schedules
42-A	Memoranda, Chief of Staff
42-B	Miscellaneous Memoranda for the Assistant Secretary of War
48	Government-Owned Factories
56 Procure	Procurement Data
58	Summary of Procurement Requirements and all Air Corps Programs
62	The Army 12,000 Airplane Program
63	Lend-Lease Administration
64	Appropriations
Green Book	Foreign Sale Procedure, War Department Authorizations

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Boston Herald, 16 May 1940

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Important in ascertaining public reaction to governmental activities.

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Final Report of War Department Special Committee on Army Air Corps
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International Traffic in Arms (Dept. of State Publication No. 1407).
7th edition, 1933.

Sets forth the policies governing sale of munitions abroad.

Stettinius, Edward R., Jr., Lend-Lease, Weapon for Victory. New York, 1944.

A good analysis of the background and workings of the lend-lease system.

Appendix I

APPROPRIATIONS FOR ARMY AIR CORPS FOR FISCAL YEARS 1926-1939*

<u>Fiscal year</u>	<u>Requested by Air Corps</u>	<u>Approved by Secretary of War</u>	<u>Approved by Bureau of the Budget</u>	<u>Appropriated by Congress</u>
1926	\$25,000,000	\$16,113,043	\$16,850,000	\$16,850,000
1927	23,644,000a	18,380,000a	16,900,000a	16,900,000a
1928	25,588,066b	26,789,050b	21,396,300b	22,191,300b
1929	36,536,028	31,604,383	25,822,268	26,435,157
1930	71,990,965c	33,250,000c, d	31,197,429e	32,440,785e
1931	54,007,902	42,692,260	35,823,473	38,043,877
1932	54,433,599	38,390,529	31,522,295	31,479,635
1933	34,406,032	30,822,717	25,482,903	25,439,131
1934	32,068,932f	29,509,810f	26,818,560f	26,324,185f
1935	36,309,420f	34,037,409f	24,450,253f	30,708,797f
1936	77,333,242g	52,702,900g	45,383,400g	50,070,153g
1937	76,207,988h	100,649,892h	62,313,247h	62,380,747h
1938	89,144,936i	60,442,202i	60,292,214i	67,075,514i
1939	99,142,144j	73,556,972j	73,556,972j	73,556,972j
Total	\$735,813,254	\$588,741,167	\$497,809,314	\$519,896,253

- a. Plus \$2,150,000 to care for 1926 contract authorization.
 - b. The Air Corps requested \$17,772,363 supplemental; the Secretary of War approved \$2,111,992, but no further action was taken.
 - c. Plus \$5,500,000 to care for 1929 contract authorization.
 - d. Secretary of War approved a supplemental request of \$5,992,536, but no further action was taken.
 - e. Plus \$2,250,000 for 1929 contract authorization.
 - f. Includes \$3,000,000 contract authorization for aircraft, spare engines, and spare parts.
 - g. Includes \$7,686,753 contract authorization.
 - h. Includes \$10,669,786 contract authorization.
 - i. Includes \$19,126,894 contract authorization.
 - j. Includes \$19,126,894 contract authorization.
- * Figures from chart in Budget and Fiscal Office, AAF. These figures do not include funds to pay previous contract authorization.

Appendix 2

APPROPRIATIONS FOR THE NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS, FISCAL YEARS 1939 - 1946

<u>Public No.</u>	<u>Date</u>	<u>Total Cash</u>	<u>Contract Authorizations</u>
534	23 May 1938	\$1,700,000	
8	16 Mar. 1939	2,180,000	
61	2 May 1939	2,363,980	
361	9 Aug. 1939	2,000,000	
459	18 Apr. 1940	8,000,000	\$8,109,020
667	26 June 1940	3,200,000	6,400,000
28	5 Apr. 1941	13,601,910	
150	3 July 1941	1,340,000	4,900,000
282	28 Oct. 1941	1,424,000	6,207,500
528	28 Apr. 1942	3,500,000	
630	27 June 1942	19,082,736	
11	18 Mar. 1943	5,494,000	
90	26 June 1943	19,453,500	
216	23 Dec. 1943	17,287,715	
358	27 June 1944	23,233,830	
529	22 Dec. 1944	7,401,000	
40	25 Apr. 1945	10,307,500	
49	3 May 1945	26,014,393	
	TOTAL	\$167,584,564	\$25,616,520

Appendix 3

EXCERPTS FROM U.S. STATUTES CONCERNING
AIR MATERIEL LEGISLATION, 1939-1944

Section 1 of Public Law Number 18, 3 April 1939 (53 Stat. 555-56).

Be it enacted. . . That the Act approved June 24, 1936 (49 Stat. 1907), is hereby repealed. Section 8 of the Act of July 2, 1926 (44 Stat. 780), is hereby stricken out and the following is substituted in lieu thereof:

"SEC. 8. The Secretary of War is hereby authorized to equip and maintain the Air Corps with not to exceed six thousand serviceable airplanes, and such number of airships and free and captive balloons as he may determine to be necessary for training purposes together with spare parts, equipment, supplies, hangars, and installations necessary for the operation and maintenance thereof; and there is hereby authorized to be appropriated for such purposes an amount not exceeding \$300,000,000 together with such annual appropriations as may be necessary to maintain such air force. In order to maintain the number specified above, the Secretary of War is hereby authorized to replace obsolete or unserviceable aircraft from time to time: Provided, That the total number of airplanes and airships herein authorized shall be exclusive of those awaiting salvage or undergoing experiment or service tests, those authorized by the Secretary of War to be placed in museums, and those classified by the Secretary of War as obsolete: And provided further, That the total number of airplanes authorized in this section shall include the number necessary for the training and equipment of the National Guard and the training of the Organized Reserves as may be determined by the Secretary of War."

Section 1 of Public Law Number 611, 13 June 1940. An Act Making Appropriations for the Military Establishment for the fiscal year ending June 30, 1941, and for other purposes. (54 Stat. 366).

Provided further, That this appropriation may be expended without reference to the limitation contained in section 1 of the Act approved April 3, 1939 (Public, Numbered 18, Seventy-sixth Congress), as to the number of airplanes to be procured and maintained. . . .

Section of Public Law Number 703, 2 July 1940. An Act to expedite the strengthening of the national defense. (54 Stat. 713).

SEC. 3. All existing limitations with respect to the number of serviceable airplanes, airships, and free and captive balloons that may be equipped and maintained shall be suspended during the fiscal year 1941.

Section of Public Law Number 139, An Act Making appropriations for the Military Establishment for the fiscal year ending June 30, 1942, and for other purposes. (55 Stat. 379).

Provided further, That this appropriation may be expended without reference to the limitation contained in section 1 of the Act approved April 3, 1939 (Public, Numbered 18, Seventy-sixth Congress), as to the number of airplanes to be procured and maintained. . . .

Sections of Public Law No. 580, 5 June 1942, Providing for sundry matters affecting the Military Establishment. (56 Stat. 317).

SEC. 13. That the provisions of section 1 (a) and 1 (b) of the Act entitled "An Act to expedite the strengthening of the national defense", approved July 2, 1940 (Public, Numbered 703, Seventy-sixth Congress), are hereby continued in effect and made applicable to moneys appropriated for the War Department for national defense purposes during the period prescribed in section 16 of this Act. . . .

SEC. 14. All existing limitations with respect to the number of serviceable airplanes, airships, and free and captive balloons that may be equipped and maintained are suspended. . . .

SEC. 16. The provisions of this Act shall remain in force during the continuance of the present war and for six months after the termination of the war, or until such earlier time as the Congress by concurrent resolution or the President by proclamation may designate.

Public Law Number 639, 16 June 1938, An Act to provide for placing educational orders to familiarize private manufacturing establishments with the production of munitions of war of special or technical design, noncommercial in character. (52 Stat. 707-708).

Be it enacted. . . That the Secretary of War is hereby authorized to place educational orders for munitions of war of special or technical design, or both, noncommercial in character (hereinafter called "special munitions"), and essential accessories and parts thereof needed in the military service, with commercial concerns to familiarize commercial and manufacturing establishments with the manufacture of such munitions and such accessories and parts. In arranging for placing such educational orders, bids shall be solicited only from such establishments as, in the Secretary's judgment, will be competent in time of war to manufacture the particular class of special munitions with respect to which the bid is solicited. In the determination of which classes of special munitions are to be manufactured under this Act, and in the determination of which of the solicited bidders is to be awarded any contract, the Secretary shall have regard solely to the selection of such classes of special munitions and of such bidders as will, in his judgment, under all the circumstances, best serve the interest of the United States and best promote the cause of national defense. The Secretary of War shall enter into no contract under this section without the approval of the President.

SEC. 2. That the first of any such educational orders placed with any person, firm, or corporation for supplying any such munitions, accessories, or parts, may include a complete set of such gages, dies, jigs, tools, fixtures, and other special aids and appliances, including drawings thereof, as may be required for the production of such munitions, accessories and parts in quantity in the event of an emergency. The title to all such facilities shall remain in the Government of the United States.

SEC. 3. That not more than one such educational order for the manufacture of the same, or substantially the same, article of special munitions shall be given to the same person, firm, or corporation within any period of three successive years. This section shall not prohibit the awarding of any contract during any war in which the United States is engaged.

SEC. 4. That, to carry out the provisions of this Act, there is authorized to be appropriated the sum of \$2,000,000 during each of the five fiscal years beginning with the fiscal year during which this Act is enacted.

Section 13 of Public Law Number 18, 3 April 1939. (53 Stat. 560).

SEC. 13. That section 4 of the Act approved June 16, 1938, entitled "An Act to provide for placing educational orders to familiarize private manufacturing establishments with the production of munitions of war of special or technical design, noncommercial in character", be amended to read as follows:

"SEC. 4. That funds appropriated to accomplish the purposes of this Act shall be available for expenditures incidental to the accomplishment of the procurements made thereunder, including production studies, factory planes, and other production data and the storage and maintenance of gages, dies, jigs, tools, fixtures, and other special aids and appliances procured thereunder. To carry out the provisions of this Act there is authorized to be appropriated the sum of \$34,500,000, which amount shall be available during the fiscal years 1939, 1940, and 1941, and there is further authorized to be appropriated the sum of \$2,000,000 during each of the four fiscal years succeeding the fiscal year 1941."

Public Law Number 168, 13 July 1939, An Act to authorize the procurement, without advertising, of certain aircraft parts and instruments or aeronautical accessories, and for other purposes. (53 Stat. 1000).

Be it enacted. . . That whenever proposals are invited for the furnishing of aircraft parts or instruments or aeronautical accessories for the War Department, the character of which or the ingredients thereof are of such a nature that the interests of the public service would be injured by publicly divulging them, the Chief of the Air Corps is authorized to purchase, without advertising, such

aircraft parts or instruments or aeronautical accessories in such manner as he may deem most economical and efficient: Provided, That this Act will not be construed as in any way amending the Act of July 2, 1926 (44 Stat. 780), or as authorizing the open market purchase of airplanes for purposes other than as provided in that Act: and provided further, That no purchase shall be made under this Act until the Secretary of War shall have certified that a secret order is necessary, and only then after submitting the proposal to three reputable concerns for their respective bids. All laws and parts of laws which are inconsistent herewith or in conflict with the provisions hereof are hereby repealed.

Public Law Number 426, 5 March 1940, An Act to facilitate the procurement of aircraft for the national defense. (54 Stat. 45-46).

Be it enacted. . . That, until June 30, 1941, whenever contracts are to be awarded as a result of competitive bids for furnishing the War Department or the Navy Department with aircraft, aircraft parts, and accessories therefor, the Secretary of War or the Secretary of Navy is authorized to award a contract for the aircraft, aircraft parts, and accessories to be purchased as a result of any such competition to the bidder that the said Secretary shall find to be the lowest responsible bidder that can satisfactorily perform the work or service required to the best advantage of the Government, or, in his discretion and when such action is considered necessary by the said Secretary in the interest of the national defense, to award contract for such aircraft, aircraft parts, and accessories to such bidders, not exceeding three in number, as said Secretary shall find to be the lowest responsible bidders that can satisfactorily perform the work or the service required to the best advantage of the Government. The determinations as to such multiple awards and the necessity for making the same shall be based upon quality, times and rate of delivery, price and the prevention of the overloading of a plant or plants and such division of awards shall be made only when found by the said Secretary to be in the interest of the national defense: Provided, That no awards shall be made at prices in excess of those offered by the bidders in any such competition and that the decision of the Secretary of the Department concerned as to the award of any such contract, or contracts, the interpretation of the provisions thereof, and the application and administration of the same shall not be reviewable, otherwise than as may be therein provided for by any officer or tribunal of the United States except the President and the Federal courts: Provided further, That a report shall be made to the Congress by the Secretary of the Department concerned in the case of any competition as a result of which quantity contracts are entered into under authority of this Act with more than one bidder, immediately upon the execution of such contracts, setting forth the articles purchased, the prices paid therefor, the name or names of each bidder,

and of each contractor receiving a contract, and the particular reasons for awarding each of such contracts: Provided further, That any contract entered into under the authority hereby granted, for the construction of any complete aircraft or any portion thereof, shall be subject to the applicable profit-limitation provisions of the Act of March 27, 1934 (48 Stat. 505), as amended by the Act of June 25, 1936 (49 Stat. 1926), and as further amended by the Act of April 3, 1939 (Public, Numbered 18, Seventy-sixth Congress): Provided further, That procurement of aircraft, aircraft parts, and accessories therefor shall be made under authority of this Act only when in the opinion of the Secretary of the Department concerned such action is necessary in the public interest: Provided further, That the authority herein granted shall not be construed to abrogate, repeal, or suspend any of the provisions of Revised Statutes (3709, U.S.C. 41:5), the Act of March 2, 1901 (31 Stat. 905), the Act of July 2, 1926 (44 Stat. 787), section 14 of the Act of April 3, 1939 (Public, Numbered 18, Seventy-sixth Congress), or the Act of July 13, 1939 (Public, Numbered 168, Seventy-sixth Congress), or to prohibit the award of any contracts in any manner now authorized by law, but shall be construed as additional legislation to be utilized under the conditions herein set forth, during the effective period of this Act: And provided further, That this Act shall be applicable under the conditions herein set forth to awards of contracts upon which competitive bids have been heretofore requested or received but as a result of which contracts have not been awarded.

Section of Public Law Number 354, 18 December 1941, An Act to expedite the prosecution of the war effort. (55 Stat. 839).

SEC. 201. The President may authorize any department or agency of the Government exercising functions in connection with the prosecution of the war effort, in accordance with regulations prescribed by the President for the protection of the interests of the Government, to enter into contracts and into amendments or modifications of contracts heretofore or hereafter made and to make advance, progress and other payments thereon, without regard to the provisions of law relating to the making, performance, amendment, or modification of contracts whenever he deems such action would facilitate the prosecution of the war: Provided, That nothing herein shall be construed to authorize the use of the cost-plus-a-percentage-of-cost system of contracting: Provided further, That nothing herein shall be construed to authorize any contracts in violation of existing law relating to limitation of profits: Provided further, That all acts under the authority of this section shall be made a matter of public record under regulations prescribed by the President and when deemed by him not to be incompatible with the public interest.

Section of Public Law No. 528, 28 April 1942, An Act making additional appropriations for the national defense for the fiscal year ending June 30, 1942, and for other purposes. (56 Stat. 245-46).

SEC. 403.

(b) The Secretary of each Department is authorized and directed to insert in any contract for an amount in excess of \$100,000 hereafter made by such Department (1) a provision for the renegotiation of the contract price at a period or periods when, in the judgment of the Secretary, the profits can be determined with reasonable certainty; (2) a provision for the retention by the United States or the repayment to the United States of (A) any amount of the contract price which is found as a result of such renegotiation to represent excessive profits and (B) an amount of the contract price equal to the amount of the reduction in the contract price of any subcontract under such contract pursuant to the renegotiation of such subcontract as provided in clause (3) of this subsection; and (3) a provision requiring the contractor to insert in each subcontract for an amount in excess of \$100,000 made by him under such contract (A) a provision for the renegotiation by such Secretary and the subcontractor of the contract price of the subcontract at a period or periods when, in the judgment of the Secretary, the profits can be determined with reasonable certainty, (B) a provision for the retention by the United States or the repayment to the United States of any amount of the contract price of the subcontract which is found as a result of such renegotiation, to represent excessive profits, and (C) a provision for relieving the contractor from any liability to the subcontractor on account of any amount so retained by or repaid to the United States.

(c) The Secretary of each Department is authorized and directed, whenever in his opinion excessive profits have been realized, or are likely to be realized, from any contract with such Department or from any subcontract thereunder, (1) to require the contractor or subcontractor to renegotiate the contract price, (2) to withhold from the contractor or subcontractor any amount of the contract price which is found as a result of such renegotiation to represent excessive profits, and (3) in case any amount of the contract price found as a result of such renegotiation to represent excessive profits shall have been paid to the contractor or subcontractor, to recover such amount from such contractor or subcontractor. Such contractor or subcontractor shall be deemed to be indebted to the United States for any amount which such Secretary is authorized to recover from such contractor or subcontractor under this subsection, and such Secretary may bring actions in the appropriate courts of the United States to recover such amount on behalf of the United States. All amounts recovered under this subsection shall be covered into the Treasury as miscellaneous receipts. This subsection shall be applicable to all contracts and subcontracts hereafter made and to all contracts or subcontracts heretofore made, whether or not such contracts or subcontracts contain a renegotiation or recapture clause, provided that final payment pursuant to such contract or subcontract has not been made prior to the date of enactment of this Act.

Sections of Public Law No. 580, 5 June 1942, An Act providing for sundry matters affecting the Military Establishment. (56 Stat. 316-17).

SEC. 9. That the provisions of the Act to facilitate the procurement of aircraft for the national defense, approved March 5, 1940 (Public, Numbered 426, Seventy-sixth Congress), as amended by section

401 of the Second Revenue Act of 1940, approved October 8, 1940 (Public Numbered 801, Seventy-sixth Congress), shall be effective during the period prescribed in section 16 of this Act.

SEC. 16. The provisions of this Act shall remain in force during the continuance of the present war and for six months after the termination of the war, or until such earlier time as the Congress by concurrent resolution or the President by proclamation may designate.

Section 14 of Public Law Number 18, 3 April 1939. (53 Stat. 560).

SEC. 14. All the provisions of section 3 of the Act of March 27, 1934, as amended (48 Stat. 505; 49 Stat. 1926), and as amended by this section shall be applicable with respect to contracts for aircraft or any portion thereof for the Army to the same extent and in the same manner that such provisions are applicable with respect to contracts for aircraft, or any portion thereof for the Navy: Provided, That the Secretary of War shall exercise all functions under such section with respect to aircraft for the Army which are exercised by the Secretary of the Navy with respect to aircraft for the Navy: Provided further, That section 3b of the Act of March 27, 1934 (48 Stat. 505), as amended (49 Stat. 1926; 34 U.S.C. Supp. IV 496), is hereby further amended by inserting in the first sentence after the words "in excess of 10 per centum of the total contract prices" the words "for the construction and or manufacture of any complete naval vessel or portion thereof, and in excess of 12 per centum of the total contract prices for the construction and or manufacture of any complete aircraft or portion thereof"; by inserting in the first proviso after the words "That if there is a net loss on all such contracts or subcontracts" the words "for the construction and or manufacture of any complete naval vessel or portion thereof"; and by inserting at the end of the first proviso after the words "income taxable year" a comma and the words "and if there is a net loss, or a net profit less than 12 per centum, as aforesaid on all such contracts or subcontracts for the construction and or manufacture of any complete aircraft or portion thereof completed by the particular contractor within any income taxable year, such net loss or deficiency in profit shall be allowed as a credit in determining the excess profit, if any, during the next succeeding four income taxable years, and that the method of ascertaining the amount of excess profit initially fixed upon shall be determined on or before June 30, 1939": Provided further, That when aircraft are procured by the Secretary of War as a result of competitive bids requiring the submission of sample aircraft with bid, the Secretary is authorized, in his discretion, to purchase sample aircraft of competitors to whom an award is not made, not more than one each from not more than three such competitors, in order of merit, at prices not exceeding 75, 60, and 50 per centum, respectively, of the cost applicable in the opinion of the Secretary to the development and manufacture of such sample aircraft.

Section of Public Law Number 671, 28 June 1940, An Act to expedite the national defense, and for other purposes. (54 Stat. 677).

SEC. 2.

(b) After the date of approval of this Act no contract shall be made for the construction or manufacture of any complete naval vessel or any Army or Navy aircraft, or any portion thereof, under the provisions of this section or otherwise, unless the contractor agrees, for the purposes of section 3 of the Act of March 27, 1934 (48 Stat. 505; 34 U.S.C. 496), as amended-

(1) to pay into the Treasury profit in excess of 8 per centum (in lieu of the 10 per centum and 12 per centum specified in such section 3) of the total contract prices of such contracts within the scope of this subsection as are completed by the particular contracting party within the income taxable year; . . .

Section of Public Law Number 801, 8 October 1940, An Act to provide revenue, and for other purposes. (54 Stat. 1003).

SEC. 401. Suspension of Profit-Limiting Provisions of the Vinson Act . . .

The provisions of section 3 of the Act of March 27, 1934 (48 Stat. 505; 34 U.S.C., sec. 496), as amended, beginning with the first proviso thereof, and section 2 (b) of the Act of June 28, 1940 (Public, Numbered 671, Seventy-sixth Congress, third session), shall not apply to contracts or subcontracts for the construction or manufacture of any complete naval vessel or any Army or Navy aircraft, or any portion thereof, which are entered into in any taxable year to which the excess profits tax provided in subchapter E of Chapter 2 of the Internal Revenue Code is applicable or would be applicable if the contractor or subcontractor, as the case may be, were a corporation, and any agreement to pay into the Treasury profit in excess of 10 per centum, 12 per centum, or 8 per centum, as the case may be, of the contract prices of any such contracts or subcontracts shall be without effect. This section shall also apply to such contracts or subcontracts which were entered into before the date of the beginning of the contractor's or subcontractor's first taxable year which begins in 1940 and which are not completed before such date.

Section of Public Law Number 671, 28 June 1940, An Act to expedite national defense, and for other purposes. (54 Stat. 681).

SEC. 14 (a) Notwithstanding the provision of any other law, no military or naval weapon, ship, boat, aircraft, munitions, supplies, or equipment, to which the United States has title, in whole or in part, or which have been contracted for, shall hereafter be transferred, exchanged, sold, or otherwise disposed of in any manner whatsoever unless the Chief of Naval Operations in the case of naval material, and the Chief of Staff of the Army in the case of military material, shall first certify that such material is not essential to the defense of the United States.

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