FILE DESCRIPTION

BUREAU FILE

SUBJECT William Peel

FILE NO. 65-59312

SECTION NO. 7

SERIALS EBF 264

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Inventory Worksheet
FD-503 (2-16-77)

VOLUME 7

HEADQUARTERS FILES

REVIEWED BY [illegible]

File No: 65-59312

Re: William Perl

Date: [illegible] (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
EBF 264	3-13-51	court record	4	4	Best available copy

IN THE DISTRICT COURT OF THE UNITED STATES

FOR THE SOUTHERN DISTRICT OF NEW YORK

- x

UNITED STATES OF AMERICA,

-v- No. ________

WILLIAM PERL, a/k/a William Mutterperl,

Defendant.

- x

The Grand Jury charges:

1. That on or about the 18th day of August, 1950, in the Southern District of New York, and within the jurisdiction of this Court, WILLIAM PERL, also known as William Mutterperl, the defendant herein, having duly taken an oath before a competent tribunal, to wit, the Grand Jurors of the United States of America, duly impaneled and sworn in the United States District Court for the Southern District of New York, and inquiring for that District, in a case then and there pending before said Grand Jurors in which a law of the United States authorized an oath to be administered, that he would testify truthfully, did unlawfully, knowingly and wilfully, and contrary to said oath, state material matter which he did not believe to be true, that is to say:

2. That, at the time and place aforesaid, the aforesaid Grand Jurors, inquiring as aforesaid, were conducting an investigation entitled, United States v. John Doe, pertaining to possible violation of espionage laws of the United States and other Federal criminal statutes, and it was material to said inquiry to ascertain whether or not the defendant knew or was associated with or had knowledge of the activities of Julius Rosenberg, Morton Sobell, Helene Elitcher, Ann Sidorovich and Michael Sidorovich, among others, in connection with an investigation of Soviet espionage.

3. That at the time and place aforesaid, the defendant, WILLIAM PERL, also known as William Mutterperl, appearing as a witness before the said Grand Jurors, and then and there being under oath as aforesaid, testified falsely before the said Grand Jurors with respect to the aforesaid material matter as follows:

"Q. Do you know Morton Sobell?

A. Well, I do not, to the best of my recollection, although I realize he went through City College at the same time I did."

4. That the aforesaid testimony of the defendant, as he then and there well knew and believed, was not true, in that the defendant did know Morton Sobell. (Title 18, Section 1621, United States Code).

COUNT TWO

The Grand Jury further charges:

1. That at the time and place aforesaid, as is more fully set forth in paragraphs 1 and 2 of the first count herein, the allegations of which are hereby incorporated, the defendant WILLIAM PERL, also known as William Mutterperl, duly appearing as a witness before the said Grand Jurors, and being under oath as aforesaid, testified falsely before the said Grand Jurors with respect to the aforesaid material matter as follows:

"Q. Do you know Helene Elitcher?

A. No, I do not."

2. That the aforesaid testimony of the defendant, as he then and there well knew and believed, was not true, in that the defendant did know Helene Elitcher. (Title 18, Section 1621, United States Code).

COUNT THREE

The Grand Jury further charges:

1. That at the time and place aforesaid, as is more fully set forth in Paragraphs 1 and 2 of the first count herein, the allegations of which are hereby incorporated

the defendant, WILLIAM PERL, also known as William Mutterperl, duly appearing as a witness before the said Grand Jurors, and being under oath as aforesaid, testified falsely before the said Grand Jurors with respect to the aforesaid material matter as follows:

"Q. Do you know Julius Rosenberg?

A. No I do not, to the best of my recollection."

3. That the aforesaid testimony of the defendant, as he then and there well knew and believed, was not true, in that the defendant did know Julius Rosenberg. (Title 18, Section 1621, United States Code.)

COUNT FOUR

The Grand Jury further charges:

1. That on or about the 11th day of September, 1950, at the Southern District of New York, and within the jurisdiction of this Court, WILLIAM PERL, also known as William Mutterperl, the defendant herein, having duly taken an oath before a competent tribunal, to wit, the Grand Jurors for the United States of America, duly impaneled and sworn in the United States District Court for the Southern District of New York, and inquiring for that District, in a case then and there pending before said Grand Jurors in which a law of the United States authorizes an oath to be administered, that he would testify truthfully, did unlawfully, knowingly and wilfully, and contrary to said oath, state material matter which he did not believe to be true, that is to say:

2. That, at the time and place aforesaid, the said Grand Jurors, inquiring as aforesaid, were conducting an investigation entitled, United States v. John Doe, pertaining to possible violation of espionage laws of the United States and other Federal criminal statutes, and it was material to said inquiry to ascertain whether or not the defendant knew or was associated with or had knowledge

of the activities of Julius Rosenberg, Morton Sobell, Helene Elitcher, Ann Sidorovich and Michael Sidorovich, among others, in connection with an investigation of Soviet espionage.

3. That at the time and place aforesaid the defendant WILLIAM PERL, also known as William Mutterperl, duly appearing as a witness before the said Grand Jurors, and being under oath as aforesaid, testified falsely before the said Grand Jurors with respect to the aforesaid material matter as follows:

> "Q. You are positive that you don't know either Ann Sidorovich or Michael Sidorovich?
>
> A. Well, so far as my recollection can carry me, I am positive."

4. That the aforesaid testimony of the defendant, as he then and there well knew and believed was not true, in that the defendant did know Ann Sidorovich and Michael Sidorovich (Title 18, Section 1621, United States Code).

FILE DESCRIPTION

BUREAU FILE

SUBJECT William Peel

FILE NO. 65-59312

SECTION NO. 7

SERIALS EBF 203

Inventory Worksheet VOLUME 7 HEADQUARTERS FILES REVIEWED BY [illegible]
FD-503 (2-18-77)

File No: 65-59312 Re: William Perl

Date: (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
EBF 303	3/30/51	Court record	8	8	

JT:asb(c)

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

- - - - - - - - - - - - - - - - - x

UNITED STATES OF AMERICA

-v-

WILLIAM PERL, also known as
William Mutterperl

- - - - - - - - - - - - - - - - - x

MEMORANDUM IN OPPOSITION
TO THE DEFENDANT'S APPLICATION
FOR A BILL OF PARTICULARS

Statement

The defendant seeks by the instant application to ascertain from the files of the prosecution all dates, times and places upon which the Government relies to prove the charge that the defendant lied when he swore under oath before a Grand Jury sitting in this District that he did not know Morton Sobell, Helene Elitcher, Julius Rosenberg, Ann Sidorovich and Michael Sidorovich. The defendant also seeks the names of all of the Government witnesses who will appear at the trial. Lastly, the defendant requests the grand jury testimony of the defendant relating to the above-named individuals.

The defendant was indicted on March 13, 1951, in a four-count indictment for having lied when he testified before a Federal grand jury in this district

65-59312-303 EBF

on August 18, 1950 and on September 11, 1950. (Section 1621, Title 18, United States Code). Count 1 of the indictment charges that the defendant lied when he testified under oath that he did not know Morton Sobell. Count 2 charges that the defendant lied when he swore under oath that he did not know Helene Elitcher. Count 3 charges that the defendant lied when he swore under oath that he did not know Julius Rosenberg; and count 4 charges that the defendant lied when he swore under oath that he did not know either Ann Sidorovich or Michael Sidorovich.

In support of the instant application, the defendant in an affidavit annexed to the notice of motion states that unless the information called for in his notice of motion is granted it will be "absolutely impossible" for him to properly prepare his defense and prevent surprise. The defendant further states that because he has lived and worked in various places throughout the United States it is impossible for him to know when and where the incidents occurred which give rise to the charge that he knew the aforementioned individuals, as set forth in the indictment. He also claims that it is likewise essential for proper preparation that he know the names of the Government witnesses who will testify at the trial and be provided with the substance of all testimony relating to these individuals.

POINT I

THE MOTION FOR THE BILL OF PARTICULARS SHOULD BE DENIED IN ALL RESPECTS

Rule 7(f) of the Federal Rules of Criminal Procedure relating to bills of particulars permits the District Court in its discretion to grant a bill on a showing "of cause". Defendant's motion should be denied because there is absent here any showing of cause. The statements set forth in the defendant's affidavit in support of this application, when carefully analyzed, do not set forth facts but merely conclusions.

The conditions under which bills of particulars will be granted have been set by the courts within certain well defined limitations. Bills of particulars will be granted only where required to (1) acquaint the accused with what he is charged and thus against what he must defend, and (2) to enable him to be sufficiently informed of the charge to plead an acquittal or conviction in bar of another prosecution for the same offense, Wong Tai v. United States, 273, U.S. 77; United States v. MacLeod Bureau, 6 F.R.D. 590, 592 (Mass., 1947); United States v. Kessler, 43 F. Supp. 408 (E.D. N.Y., 1942); United States v. Rosenwasser Bros., 255 F. 233 (E.D.N.Y., 1919). This rule was formulated in Sawyer v. United States, 89 F. 2d 139, 140, as follows:

"Such a bill is referable to, and it must be construed in the light of the language of the indictment. Robinson v. United States (C.C.A.) 33 F. 2d 238. If the language of the indictment is so far definite and certain as to safeguard all of the rights of the defendant and to enable him properly to prepare his defense, a bill of particulars will not be required."

The indictment herein, a copy of which is hereto annexed, is detailed far beyond the legal requirements and amply informs the defendant of the charges against him sufficient to safeguard and protect all of his rights. The indictment apprises the defendant of the charge against him in sufficient detail to enable him to prepare a defense and plead the judgment as a bar to any subsequent prosecution for the same offense. The instant indictment sets forth with certainty all of the elements necessary to constitute the offense sought to be punished. United States v. Cook, 17 Wall. 168; United States v. Cruikshank, 92 U.S. 542.

POINT II

THE DEFENDANT IS PECULIARLY WITHIN THE CONDITIONS UNDER WHICH THE AUTHORITIES HOLD A BILL OF PARTICULARS SHOULD NOT BE GRANTED

The defendant, as demonstrated above, has failed completely to make an affirmative showing of need for the particulars requested.

1. No Fishing Expedition will be Permitted.

The particulars which are sought on this application suggest a fishing expedition rather than a reasonable request for information and should, therefore, be refused. An examination of the specific demands indicates that the defendant is inquiring not only into the charges contained in the indictment but rather he is attempting to ascertain what evidence the Government has in its possession. In United States v. Kushner, 135 F. 2d 668 (C.A. 2, 1943), cert. den. 320 U.S. 212, rehearing den. 320 U.S. 808, speaking through Judge Clark, in sustaining the denial of a motion for a bill, said at page 674:

> ". . . the bill partook more of the nature of a fishing expedition than of a reasonable request for information upon the part of one who denied all knowledge . . . or participation . . ."

See also United States v. Gouled, 253 F. 239, 241 (S.D. N.Y., 1918); Rubio v. United States, 22 F. 2d 766 (C.A. 9, 1927) cert. den. 276 U.S. 619; Sawyer v. United States, 89 F. 2d 139 (C.A. 8, 1933).

2. The Defendant is not Entitled to Obtain Particulars which are Peculiarly within his own Knowledge

It is well settled that where the facts sought are within the knowledge of the defendant the Government need not disclose them to him. In view of the specific demands made by the defendant on this application, it is important to note that where the offense charged is one predicated upon the acts and conversations of the defendant himself of which he must be in a position to have as much information as anyone could have as to whether such acts and conversations did in fact occur, it is never essential to set out with particularity the things which he is supposed to have said or done. It may be assumed that the defendant herein knew when and where he performed certain acts and is familiar with the attendant circumstances. In United States v. Gouled, supra, at page 241, this Court held:

> ". . . where the offense charged is one which is grounded upon the acts and the conversations of the party charged, and with and of which he must be in a position to have as much information as anybody else could have as to whether they did or did not occur, it is never essential to set out with particularity the things which he is supposed to have said or done."

No one is in a better position to know in detail what the defendant did than the defendant himself. See also Evans v. United States, supra; Rubio v. United States, supra; Sawyer v. United States, supra; United States v. Pierce, 245 Fed. 288 (N.D. N.Y. 1917).

3. The defendant is not Entitled to Particulars which are Evidentiary

It is evident from an examination of requests numbers 2, 3, 5, 6, 8, 9, 11 and 12, that the defendant is seeking to ascertain not what the charges are but how the charges will be substantiated at the trial and by whom. This Court held recently (United States v. Sarkady (S.D.N.Y.), decided Feb. 6, 1948):

> "All of the particulars sought are clearly evidentiary in character and the defendants are not entitled to any of them in advance of trial."

See also Landay v. United States, 108 F. 2d 698, 703 (C.A. 6, 1939), cert den. 309 U.S. 681; United States v. Oley, 21 F. Supp. 281 (E.D. N.Y. 1937); United States v. Lang, et al., (E.D.N.Y. 1941), 40 F. Supp. 414.

The Government cannot be forced to disclose the kind of testimony to be used. United States v. Brown, 36 F. 2d 659 (D.C.W.D. Wash.).

The Government cannot be forced to reveal information concerning its witnesses. Wayne v. United States, 138 F. 2d 1, cert. den. 320 U.S. 800; United States v. General Petroleum Corporation, United States v. Lang, et al., supra.

Where the facts sought by a motion for a bill of particulars are evidentiary in character, the demand therefor should be denied. It is not a function of a bill of particulars to require the Government to disclose its case to the defendants and prejudicially limit the presentation of its evidence at the trial.

Indeed, This Court has suggested that it would be an abuse of discretion to force the Government by a bill to furnish particulars such as those sought here. United States v. Wexler, 6 F. Supp. 259 (S.D.N.Y. 1933).

CONCLUSION

It is respectfully submitted that the instant application of the defendant for a bill of particulars should be denied.

Respectfully submitted,

IRVING H. SAYPOL,
United States Attorney for the
Southern District of New York,
Attorney for the United States
of America.

ROY M. COHN
JAMES B. KILSHEIMER, III
JOHN M. FOLEY
ALBERT A. BLINDER

Assistant United States Attorneys,

Of Counsel

FILE DESCRIPTION

BUREAU FILE

SUBJECT WILLIAM PERL

FILE NO. 65-59312

SECTION NO. EBF

SERIALS 353

Inventory Worksheet
FD-503 (2-18-77)

VOLUME EBF 353 — HEADQUARTERS FILES

INVENTORIED BY SDS

File No: 65-59312 — Re: WILLIAM PERL

REVIEWED BY [illegible]

Date: 3/78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
353		ENVELOPE	1	-	referred to another Agency
	5/5/50	character reference LTR FROM RESEARCH LAB.-CV	2	-	" " " "
	4/24/50	character reference LTR FROM OHIO STATE U.	1	-	" " " "
	4/24/50	character reference LTR FROM LEWIS FLGT-PRO-LAB	2	-	" " " "
	4/24/50	" " "	1	-	" " " "
	4/24/50	" " "	1	-	" " " "
	4/24/50	" " "	1	-	" " " "
	4/22/50	Perl. let to NACA	3	-	" " " "
	4/22/50	LTR FROM CHARACTER REF.-CV	1	-	" " " "
	4/22/50	LTR FROM CHARACTER REF-NYC	2	-	" " " "
	4/22/50	LTR FROM CHARACTER REF.-CV	1	-	" " " "
	4/21/50	LTR FROM CHARACTER REF - CV	1	-	" " " "

Inventory Worksheet VOLUME EBF 353 HEADQUARTERS FILES INVENTORIED BY SDS
FD-503 (2-18-77)

File No: 65-59312 Re: WILLIAM PERL REVIEWED BY 144

Date: 3/78 (month year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
353	4/21/50	LTR FROM CHARACTER REF - CV	1	-	referred to another Agency
	4/20/50	" " "	1	-	" " " "
	4/20/50	" " "	1	-	" " " "
	4/20/50	" " "	1	-	" " " "
	4/19/50	LTR FROM CHARACTER REF - NYC	1	-	" " " "
	4/19/50	LTR FROM CHARACTER REF. - BEREA	1	-	" " " "
	4/18/50	LTR FROM CHARACTER REF.	2	-	" " " "
"		QUESTIONNAIRE	7	-	" " " "

FILE DESCRIPTION

BUREAU FILE

SUBJECT William Perl

FILE NO. 65-59312

SECTION NO. 10

SERIALS EBF 458

Inventory Worksheet
FD-503 (3-18-77)

VOLUME 10

HEADQUARTERS FILES

REVIEWED BY CW

File No. 65-59312 Re: WILLIAM PERL

Date: 4/78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
EBF 458	7-6-51	PAMPHLET FROM NACA DATED MARCH, 1948	43	43	

65-59312-458

NACA

WASHINGTON, D.C.
LANGLEY FIELD, VA.
MOFFETT FIELD, CALIF.
CLEVELAND, OHIO

65-59312-458

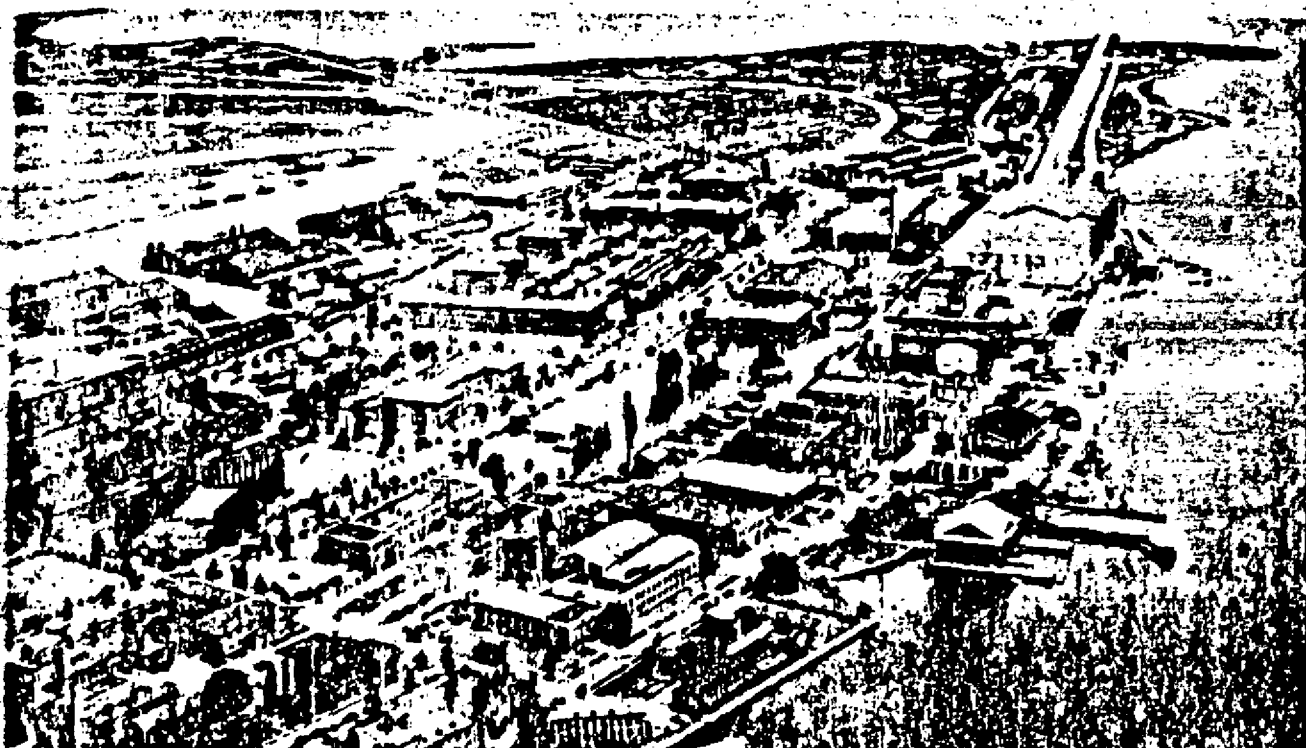
NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

THE ORGANIZATION - RESEARCH ACTIVITIES AND FACILITIES OF THE NACA.

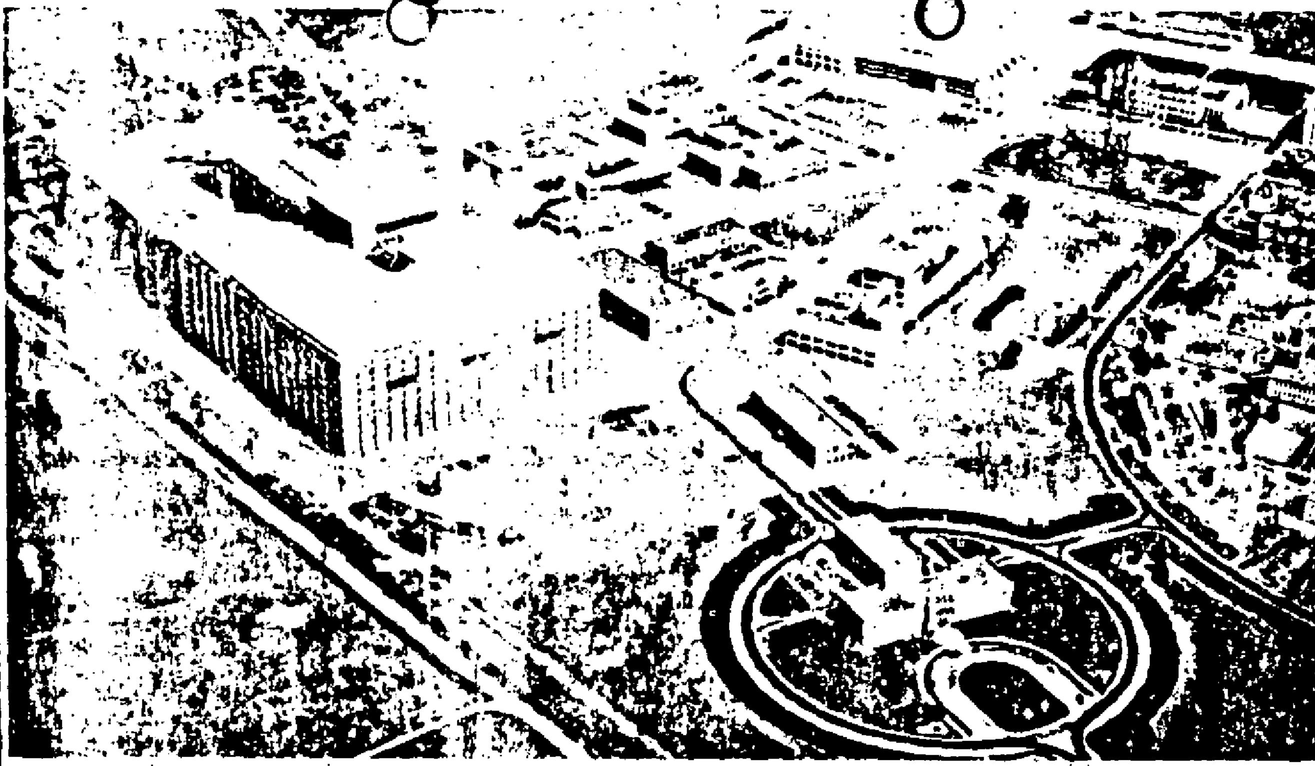
MARCH, 1948

CONTENTS

The Langley Memorial Aeronautical Laboratory of the NACA is located in two sections on the USAF's Langley Field, near Newport News, Va. The West section of the laboratory, above, is where most of the facilities built since 1940 are located.



In the East section of Langley Field, Va., the NACA's original laboratory facilities are grouped in with USAF buildings belonging to the Field. Administrative direction of the laboratory is centered here, with many important research facilities.



The Ames Aeronautical Laboratory of the NACA is located on the Navy's Moffett Field, near San Francisco, Calif. The laboratory is chiefly devoted to high speed aerodynamics, and has the largest and some of the fastest wind tunnels in the world.

ORGANIZATION AND FUNCTIONS OF THE NACA

The National Advisory Committee for Aeronautics was established by the Congress in 1915 as the government's aeronautical research agency. The enabling act specifically charges the NACA with "study of the problems of flight with a view to their practical solution." To this end the Committee operates its own research laboratories, coordinates the fundamental research programs of other agencies and encourages and supports research in scientific and educational institutions. Such a scope of activity is made possible by the structure of the NACA.

The main Committee of the NACA consists of 15 members appointed by the President. They include two representatives each of the offices in charge of military and naval aviation, two representatives of the Civil Aeronautics Authority, one representative each of the Smithsonian Institution, the U. S. Weather Bureau, the National Bureau of Standards, together with six additional persons who are "acquainted with the needs of aeronautical science, either civil or military, or skilled in aeronautical engineering or its allied sciences." These latter six serve for terms of five years. The representatives of government agencies serve while in office. All members serve as such without compensation.

The main Committee is supplemented by a system of technical committees and subcommittees to prepare and recommend to the main Committee the programs of research to be conducted in their respective special fields. In addition, these subcommittees assist in coordinating research programs and act as mediums of exchange of ideas and information among all groups concerned with aviation.

The strength of the subcommittee system lies in the fact that its members are selected from every branch of aviation and allied interests. Outstanding technical men from a variety of aviation manufacturing companies; from educational and scientific institutions; from the military establishments, the commercial operators, and other governmental aeronautical agencies, are recruited for subcommittee service.

Administration of Committee research activities is carried out by a Director of Research, who with his immediate staff in Washington controls the operations of the NACA's three principal research laboratories and awards research contracts outside the Committee's own facilities.

Original and largest laboratory is the Langley Memorial Aeronautical Laboratory at Langley Field, near Hampton, Virginia. Research conducted here involves virtually every phase of aerodynamics, hydrodynamics, aircraft structures and aircraft loads. A flight station for pilotless aircraft at Wallops Island on the Virginia Coast is operated in conjunction with the Langley Laboratory.

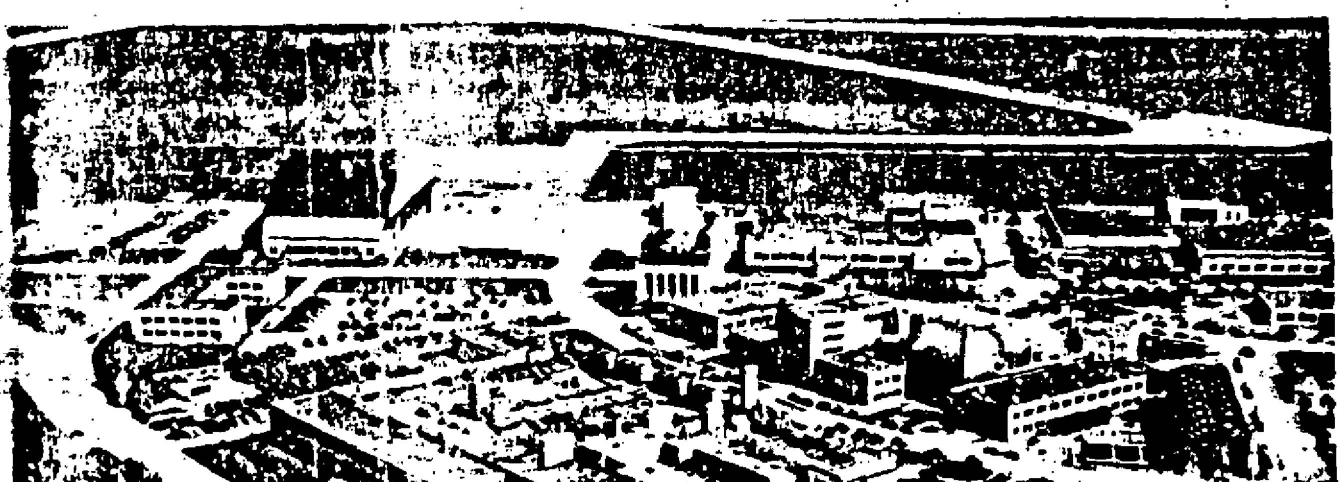
The Ames Aeronautical Laboratory on the Navy's Moffett Field, south of San Francisco, California, is concerned primarily with high-speed aerodynamics and has the largest and some of the fastest wind tunnels in the world.

The Flight Propulsion Research Laboratory is located at Cleveland Airport, Ohio. The work here covers all problems of aircraft propulsion, including the special supersonic aerodynamic problems connected with high-speed propulsion.

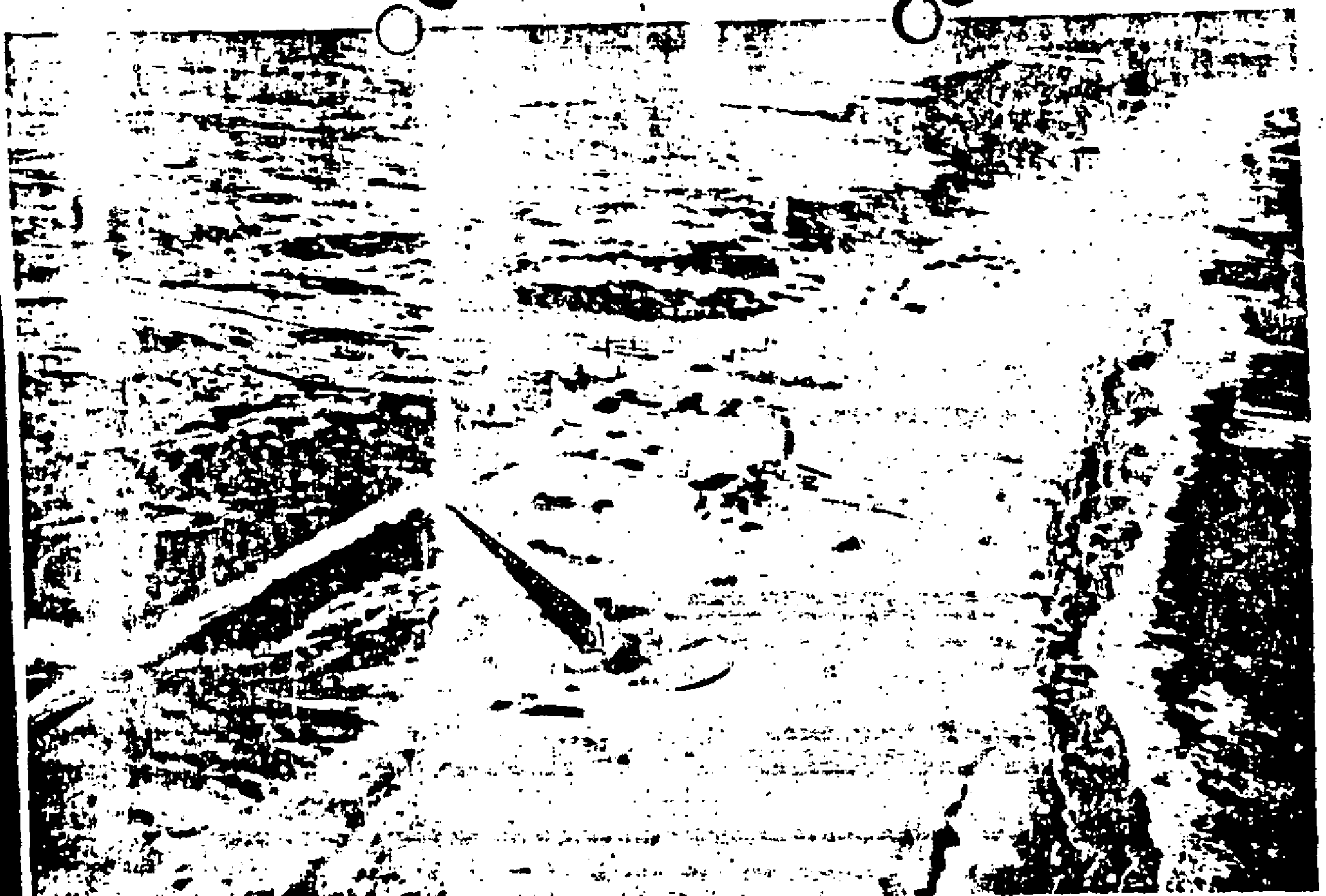
The NACA is constantly expanding its efforts to let research contracts with universities and other organizations having suitable equipment. By so doing, effective use of other research facilities is made, duplication of equipment is avoided, and better utilization of scientific manpower is achieved.

Moreover, by training men in outside groups in the special thinking and technique of advanced research work the depleted reserve of trained personnel is being replenished. This is one of the prime objectives of contract research, for the war did serious damage to advanced training programs. In executing research contracts, universities introduce graduate and undergraduate students to the challenging and exacting requirements of advanced research, giving them opportunity to develop their capabilities in that direction.

The product of research in all these laboratories is an NACA technical report containing detailed and accurate information on the laws and principles governing design, or the use of aircraft, or the behavior of gases and materials under a variety of conditions. They are distributed as a government service to designers, manufacturers and operators of



The Flight Propulsion Research Laboratory of the NACA is situated at the edge of Cleveland Airport, Ohio. Research here is devoted to the problems of all kinds of propulsion systems, and also operating problems such as aircraft and engine icing.



The NACA Pilotless Aircraft Research station is located on the Virginia seacoast. It was established to study problems of aerodynamics and control at very high speeds in free flight, and is operated in conjunction with the Langley Laboratory.

aircraft, and to technical and scientific libraries throughout the country.

In choosing an airfoil, for example, a designer can consult the compiled characteristics of airfoils and select the type best suited to his purpose. From the accumulated research reports on stability and control, he can design stability and good handling qualities into an airplane. The same is true of power plants, structures, propellers, and all aircraft components. Information provided extends to problems of operation, such as icing in flight, loads sustained in flight, and landing, and even to emergency ditching of landplanes at sea.

The NACA is an important integral part of the air-power structure of the United States. Closely allied with the manufacturing, civil operations, and military function, its contribution of fundamental research is practically unique. Such research is essentially a function of the Government, because of its relatively low cost when the results are available to all for application to design and operation of aircraft. Moreover, fundamental scientific research is dependent on an atmosphere of freedom from immediate specific goals and time tables, freedom to discuss and exchange ideas, and freedom from controls and restrictions. The laws of physics are discovered more readily by area exploration rather than by pursuit of specific objectives leading to immediate profit. The discovery of new knowledge, which is the prime objective of NACA research, flourishes only in an atmosphere of greatest freedom and signals each important advance in the aeronautical art.

As aeronautical science advances to new fields of higher speeds and higher altitudes, its problems become more and more interwoven with the other sciences, until propulsion involves nuclear physics and aerodynamics is concerned with the laws of thermodynamics. In this expanding and deeply probing field, opportunity is afforded for wide ranging studies that have become a challenge accepted by some of the best minds in the country.

The laboratories of the NACA provide the scientists who have chosen to work there with the finest equipment in the world for the solution of their problems. In many fields of study, individual equipment is planned and devised by the engineers themselves, and ample latitude is afforded for creative ingenuity. Even the larger items of equipment, such as the wind tunnels, have been evolved in this way through NACA experience with research needs. The laboratories are maintained to provide dependable knowledge unavailable from other sources.

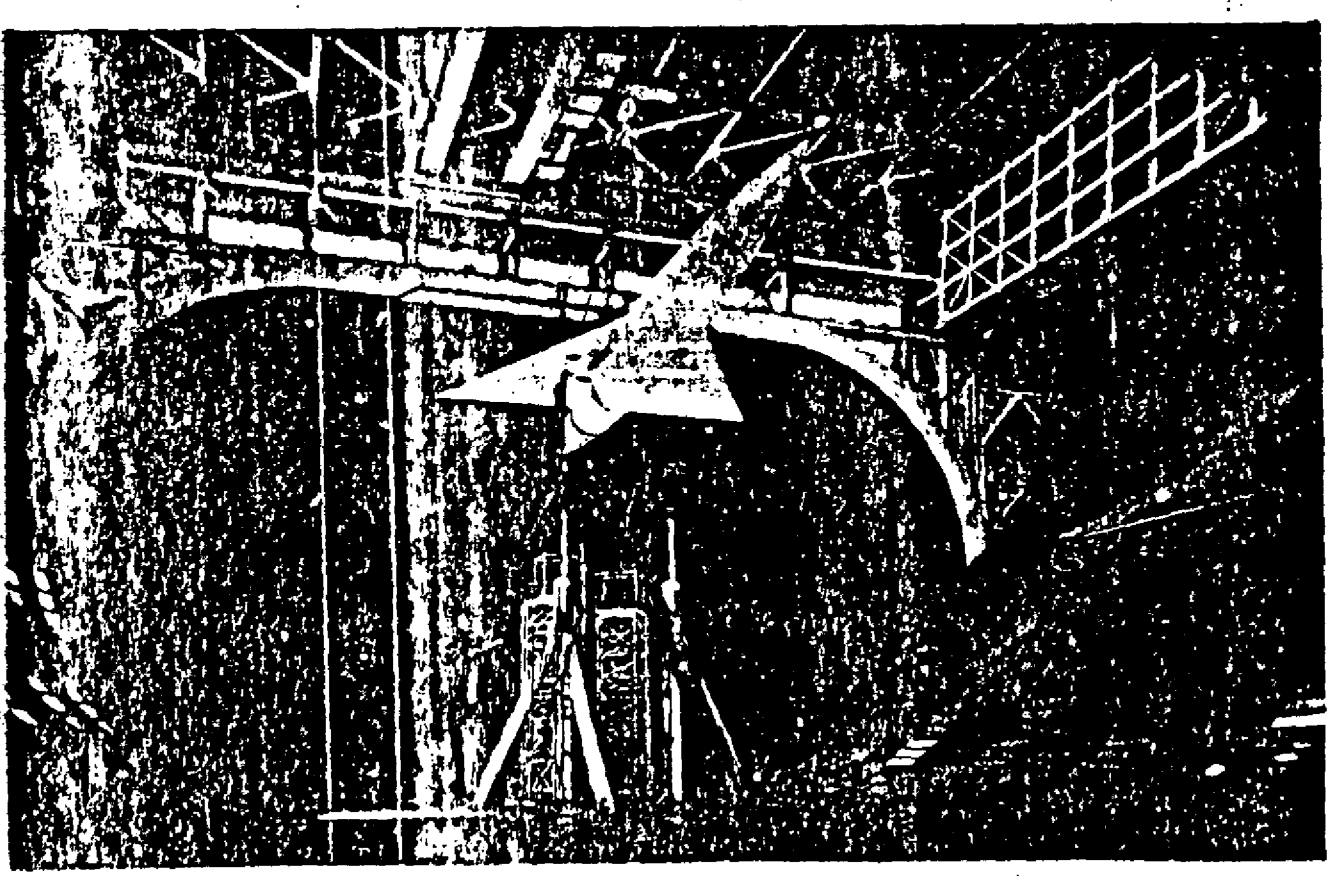
PROBLEMS AND TOOLS OF RESEARCH

Basic research in a broad dynamic field such as aeronautics is an ever-expanding activity. The function of the NACA is to probe areas of the unknown for new knowledge of the phenomena of flight. Upon establishment of each new bridgehead, the organization must exploit and develop knowledge to the point of practical application by the industry, the military, and civil operating groups. Frequently, the development of new knowledge resulting in new aviation performance exposes a new unknown area which must be explored.

Many research problems have been with us for a long time and require unrelenting effort for continued progress. Solution of some lead to new ones such as the difficulties involved in transonic and supersonic flight, which are as strange and meaningful as those attendant upon the first flight of man.

NACA research facilities have grown apace with the new and expanding areas of research. Because of the time differential between basic research and ultimate successful development, the newer research equipment reflects the shape of things to come. And yet, the older equipment rarely becomes obsolete because so long as aircraft must start from rest and return safely to rest; so long as the need exists for better small personal aircraft, for large transport aircraft and for supersonic machines, research equipment spanning the entire range of performance and size is required to operate at full capacity.

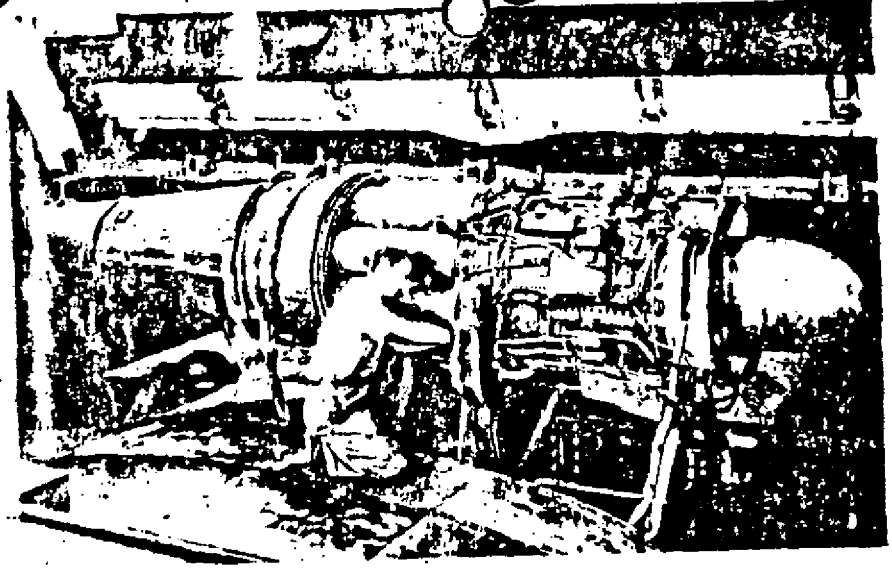
In the following pages are briefly described the areas of research engaged in by the NACA, and the



equipment of exploration. Impressive as the array of physical research equipment may be, the primary tool of any research organization is brain power. From the creative thinking of the curious mind evolves the incisive recognition of the research problem and the design of exploratory equipment. The NACA has succeeded in attracting to its employ many of the finest scientific and mechanical minds in the world. By virtue of the various committees there has been marshaled the outstanding talent of aeronautical America. The following pages describe the problems against which this talent is deployed and the tools for the task.

For convenience of description, the areas of NACA research are roughly divided as follows:

- Aerodynamics
- Hydrodynamics
- Propulsion
- Aircraft Loads
- Airframe Construction and Materials
- Operating Problems
- Physical Research
- Flight and Pilotless Aircraft



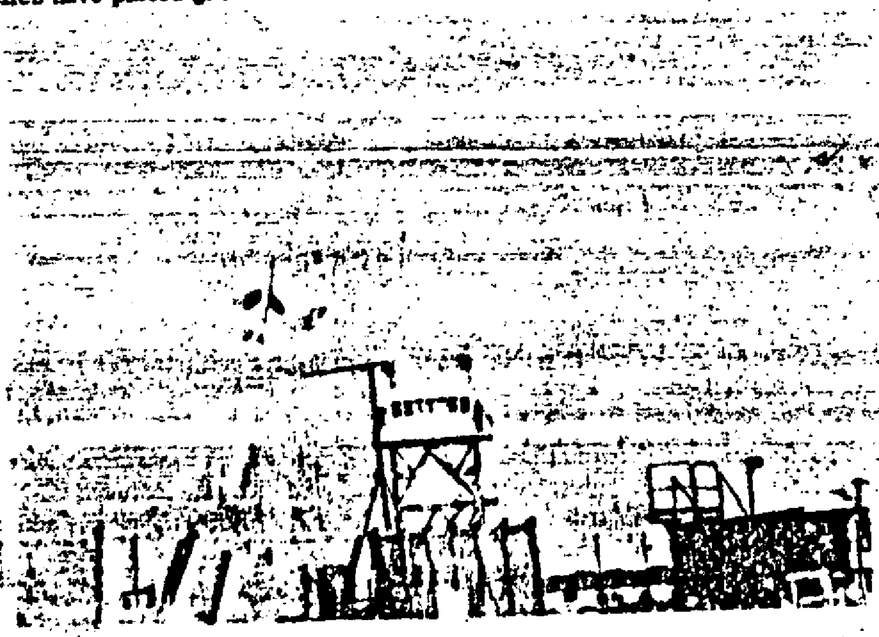
An axial-flow turbo-jet engine is prepared for investigation under accurately simulated operating conditions in the Altitude Wind Tunnel of the NACA at Cleveland.

Aerodynamics

The rapidly increasing speed of military aircraft and the prospective use of high-speed flying missiles have placed great emphasis on solution of the problems of high-speed flight. Wartime development resulted in military aircraft capable of level flight at speeds exceeding 550 mph. At such speeds, certain aerodynamic phenomena associated with compression shock and the attendant airflow separation appeared to impose serious limitations to any further performance improvement. New aerodynamic techniques for delaying the flight speed at which shock occurs, and for minimizing the adverse effects of shock when it does occur, together with new and more powerful types of propulsion systems now available, will permit substantial increases of speed. The high-speed airplanes of the near future will fly faster than the speed of sound.

Extensive investigations of wings and other airplane components are being conducted in wind tunnels and in flight to perfect known methods, such as planform variations and boundary-layer control, for alleviating shock losses. Better understanding of the mechanics of shock waves must be obtained through fundamental and theoretical studies. Inasmuch as flight at very high speed appears to demand radically different configurations from those used for slow speed flight, means of satisfactorily flying such configurations at the low speeds required for landing and take-off are being studied.

In the lower speed region of flight in which commercial transport and cargo airplanes now operate, further increases in speed and range and further reduction in operating costs may be expected through aerodynamic refinement. Systematic investigation of the complete range of airfoils permitting extensive laminar flow is being conducted in low-turbulence wind tunnels and in flight to correlate and evaluate the various airfoil characteristics.



A dynamically scaled airplane model being launched at the NACA's Pilotless Aircraft Research Station. Information is obtained through telemetering and tracking.

Keystone of research is men and their ideas. Through cooperative effort and exchange of ideas, they determine how to get the information desired on any problem.

The possibilities of large gains from the use of boundary-layer control for reducing drag and increasing maximum lift have been merely touched upon, and must be completely investigated theoretically and experimentally, in wind tunnels and in flight. Further fundamental theoretical and experimental studies of boundary layer are in process because the mechanics of transition from laminar to turbulent flow are not known, and the mechanics of separation of turbulent flows are not understood.

Propulsion

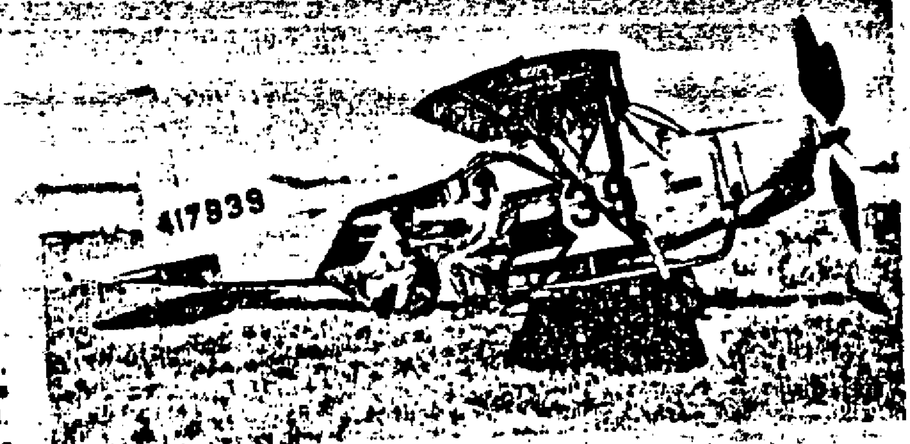
There has been a greater change in the character of propulsion research in recent years than in any branch of aeronautics. Successful new types of power plants have opened the way to new combinations of ideas. These new possibilities, while greatly advancing our abilities, bring with them new and difficult problems.

Combustion in the continuous, open cycle of jet engines presents new phenomena to be investigated. The combustion process is complicated by the presence of high-speed airstreams capable of hindering combustion and reducing efficiency unless means are found to speed up the burning process. *Corollary* to combustion research is the study of new fuels to meet the new requirements. High speeds demand fuels of greater energy content. With both jet engines and rockets, range is limited because of high fuel consumption in relation to thrust received. Thermodynamic study is necessary to provide the values required to evaluate the heat processes in new propulsion systems and for calculation of performance.

The greatly-increased demands on compressors to furnish air at higher pressures and larger volumes entails energetic research to achieve best performance in the most compact units. Turbines to drive large compressors and propellers involve stringent requirements of blade efficiency, strength and resistance to high temperature. Search for new materials with increased resistance to high temperatures and stresses is demanded for nearly every component of new propulsion systems.

The presence of large compressors and turbines revolving at high speeds emphasizes the need for better understanding of friction, and for knowledge that will lead to more efficient bearing surfaces and materials.

The value and importance of theoretical research in aeronautics cannot be over-emphasized. Healthy growth of any science depends on experiment and theory keeping pace with each other. The science of aeronautics is becoming increasingly complex and theory must be encouraged to keep pace with and to guide experiment. Every branch of theoretical physics may be involved to some degree in any program of theoretical research in aeronautics. As a general rule, every fundamental experimental project is associated with a theoretical project. In view of the considerable extension of experimental facilities, an expansion of theoretical work is in prospect.



NACA scientists devised an efficient, five-blade geared propeller and an engine muffler for this L-5 to demonstrate the possibilities of effective noise reduction.

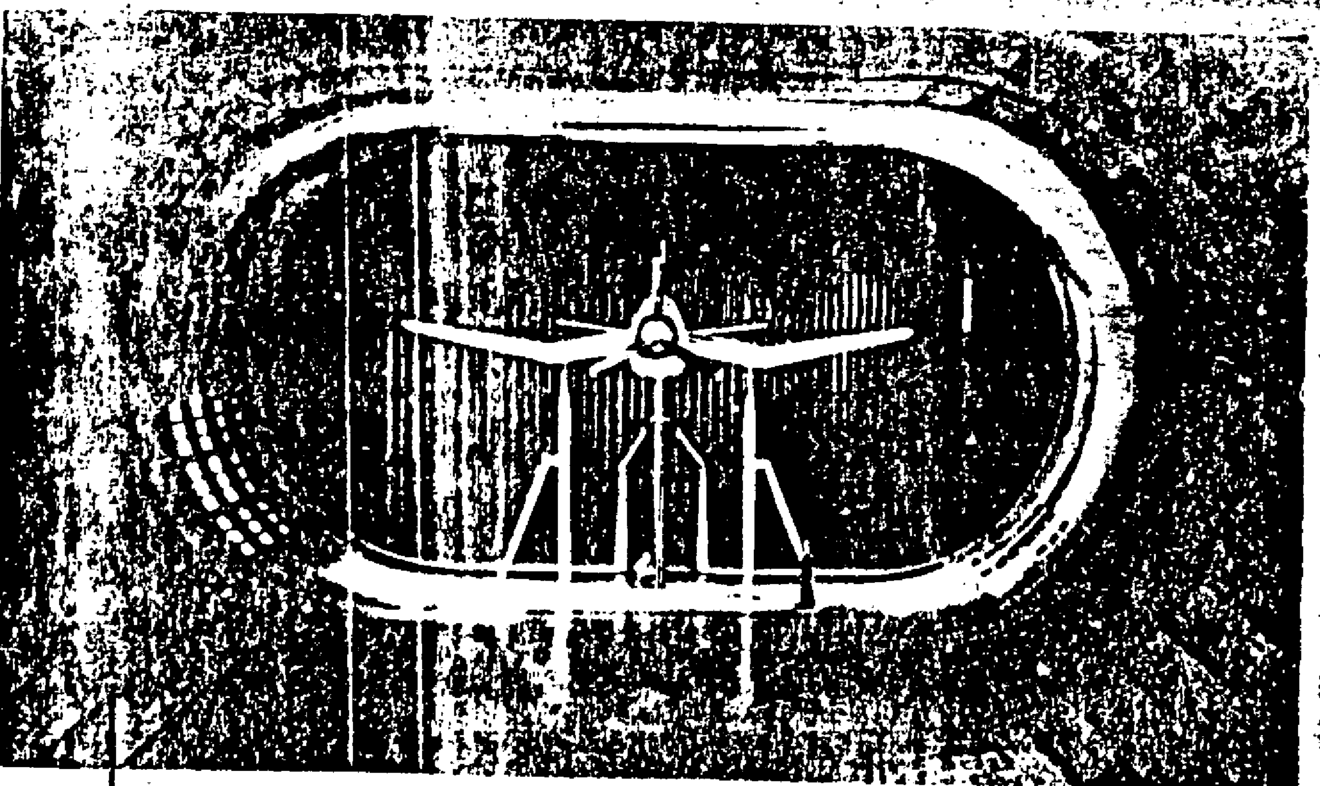
AERODYNAMICS

SUBSONIC AERODYNAMICS

Subsonic aerodynamics is basic and is an essential field of research for man-carrying aircraft throughout the entire speed range. Such study includes investigation of all kinds of airfoils and aerodynamic shapes. In a systematic program, the work involves development of theory, progresses to experimental verification and development in specialized wind tunnels and is then extended to larger scale in full-scale and pressure tunnels. Also included in this work is study pertaining to drag, boundary-layer control and interference of airplane components in combination.

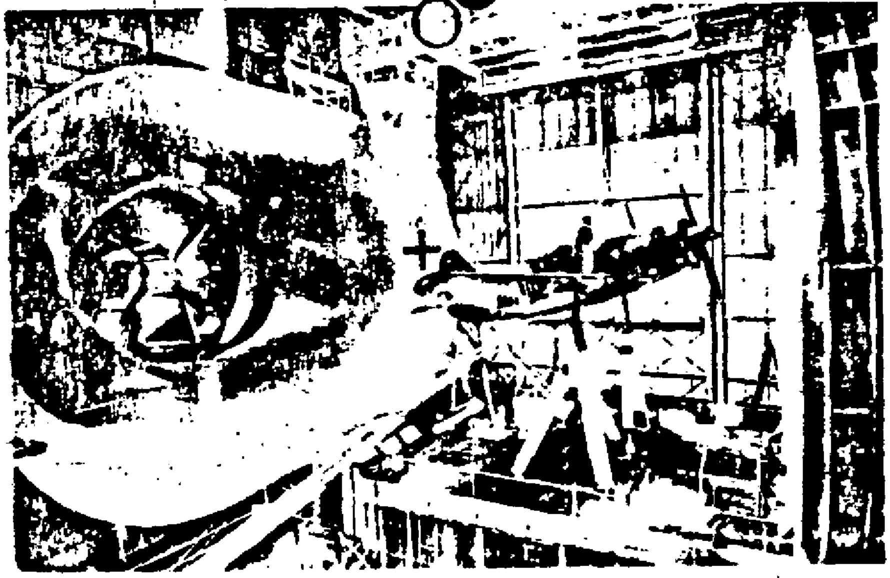
In presenting aerodynamic research methods, it should be stated that flight research is one of the most important. This applies to every branch of the subject, but especially to high-speed study of complete aircraft combinations. For this reason, flight research and its special branches are treated in a separate section entitled "Flight and Pilotless Aircraft" (p. 34), rather than repeated everywhere it applies.

The NACA has pioneered the design and use of full-scale tunnels. The 30- by 60-Foot Tunnel was the largest ever planned when it was completed in 1931. It has been exceeded in size only by the 40- by 80-Foot Tunnel at the Ames Laboratory. The two tunnels are used for large-scale drag investigations, boundary-layer control studies, and are particularly valuable for investigating stability and control, in the landing speed range, of large-scale wings and shapes designed for high-speed and supersonic flight. In these tunnels full-sized airplanes can be studied with engines operating, whether powered by reciprocating engine and propeller or gas turbine installations.



The 40- by 80-Foot Tunnel at Ames is the largest wind tunnel in the world. It provides speeds up to 250 mph and is powered by six 6,000 hp motors. It will accommodate aircraft and models of 70 foot span, for research at large scale and low speed.

The 40- by 80-Foot Tunnel is the largest in the world and has been used to study airplanes and wing panels up to 70 feet in span. The entire structure covers an area of eight acres. The largest part of the air passage, ahead of the test section, measures 132 feet high by 172 feet wide. In completing a circuit of the tunnel, the air -- 24,000,000 cubic feet, weighing about 900 tons -- travels nearly half a mile. All the tunnel controls, as well as those for the airplane engines, are installed in the balance house directly under the test section.



Second largest wind tunnel is this 30- by 60-Foot Tunnel at the Langley Laboratory. It permits study of large-scale wing forms and aircraft at speeds up to 120 mph.

Two-Dimensional Low-Turbulence Pressure Tunnel

The NACA has developed many specialized wind tunnels for particular purposes. Some of these are pressure tunnels, in which the effective scale of models can be increased by the amount that the air density is increased above normal pressure. Others are two-dimensional tunnels of very low turbulence, close to that of free air, and a combination of the two in a pressurized, two-dimensional, low-turbulence tunnel.

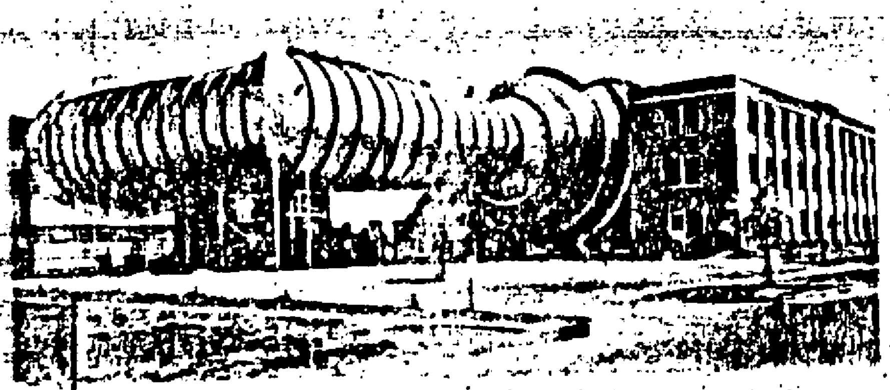
Full-Scale Tunnels

The 40- by 80-Foot Tunnel - Ames

Test Section	40 x 80 ft., oval, closed
Speed	250 mph
Power	36,000 hp
Pressure	Atmospheric

The 30- by 60-Foot Tunnel - Langley

Test Section	30 x 60 ft., oval, open
Speed	120 mph
Power	8,000 hp
Pressure	Atmospheric



The 19-Foot Pressure Tunnel at Langley provides speeds up to 260 mph and pressures up to 2-1/3 atmospheres. It is used for study of airfoils and complete models.

The two-dimensional low-turbulence tunnels of the NACA at Langley Field are of particular importance, since they made possible the experimental and practical development of the NACA series of laminar flow, low-drag airfoils. Practical application of such airfoils to aircraft was the result of continued work in these tunnels to evaluate conditions such as surface roughness and deformation that would be present in any manufactured wing.

The unpressurized low-turbulence tunnel was completed in 1938, and the Low-Turbulence Pressure Tunnel in 1941. They are used primainly for airfoil research and study of high lift devices and control surfaces under finely-controlled conditions.

The 19-Foot Pressure Tunnel and the 12-Foot Low-Turbulence Pressure Tunnel are used to extend research on airfoils to the study of complete wings at high Reynolds numbers. They are well adapted for study and improvement of complete wing characteristics, the development of high lift and lateral control devices, and evaluation of improvement of stability, control, and performance characteristics of airplanes in the design stage.

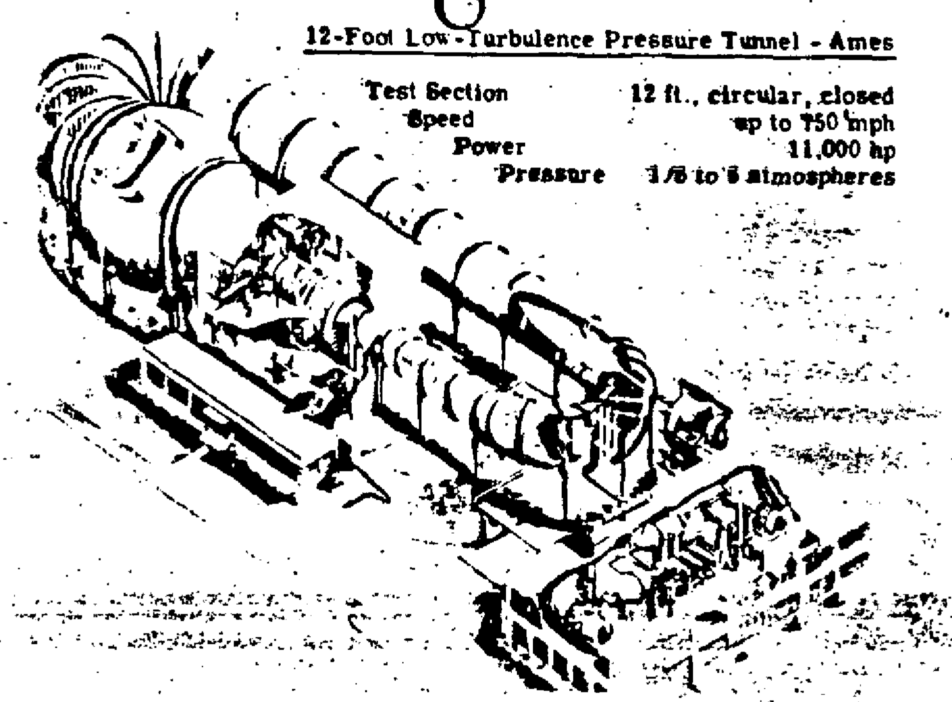
A unique feature of the 12-Foot Tunnel at Ames is that by partially evacuating the tunnel, investigations can be taken up to high subsonic Mach numbers.

7- by 10-Foot Tunnels

The size and speed of these tunnels makes them well suited to a wide variety of general aerodynamic and control studies. The corrections for data from these tunnels have been so well established that excellent agreement is obtained between tunnel and flight results. Accurate predictions of handling qualities of a design can be made. In addition, they are well suited for fundamental research on such problems as high-lift devices, control surface hinge moments, and the boundary layer.

12-Foot Low-Turbulence Pressure Tunnel - Ames

Test Section	12 ft., circular, closed
Speed	up to 750 mph
Power	11,000 hp
Pressure	1/6 to 6 atmospheres



The 19-Foot Pressure Tunnel - Langley

Test Section	19 ft., circular, closed
Speed	50 to 260 mph
Power	8,000 hp
Pressure	1 to 2 1/3 atmospheres

Two-Dimensional Low-Turbulence Pressure Tunnel

Test Section	3 x 7 1/2 ft., rectangular, closed
Speed	0 to 350 mph
Power	2,000 hp
Pressure	1 to 10 atmospheres

Two-Dimensional Low-Turbulence Tunnel

Test Section	3 x 7 1/2 ft., rectangular, closed
Speed	0 to 159 mph
Power	195 hp

Model of XS-1 ready for control investigation in Langley 7- by 10-Foot Tunnel.

7- by 10-Foot Tunnels

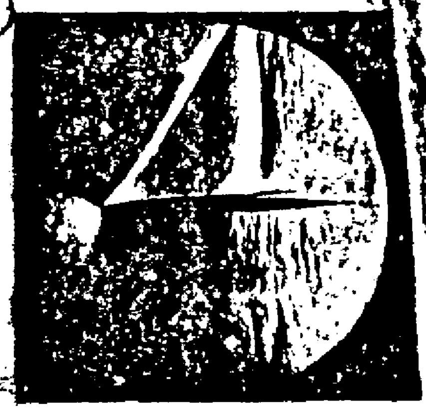
Langley No. 1 and Ames Nos. 1 and 2

Test Section	7 x 10 ft., rectangular, closed
Speed	300 mph
Power	1,000 hp

Langley No. 2

Test Section	Nominal 7 x 10 ft., rectangular, closed
Speed	300 to 700 mph
Power	10,000 hp

TRANSONIC AERODYNAMICS



Some of the NACA's outstanding work has been in attacking the special problems of aerodynamics near the speed of sound. Transonic problems arose many years ago in connection with the high tip speeds of propellers. Later, aircraft speeds entered the transonic speed region, and the NACA concentrated on the attendant problems. Now, with supersonic flight in the offing, exploration of the transonic aerodynamics field ranks high among the NACA's research projects.

Unique research methods have been developed by the NACA in the transonic field. The wing-flow investigations and use of rocket powered and freely-falling bodies with telemetering are outstanding examples, and are described more fully under the Flight and Pilotless Aircraft sections of this book.

Wind tunnels of unparalleled accuracy and efficiency have been designed by the NACA for its high-speed research. At this time, it is possible to span the transonic speed region by the wind-tunnel method, and the data have proved to be reliable. Following are the NACA tunnels used in high-speed research.

A wide variety of research is conducted in these tunnels on the high-speed characteristics of airfoils, propellers, air inlets, internal flow arrangements for jet-propulsion systems and other airplane components.

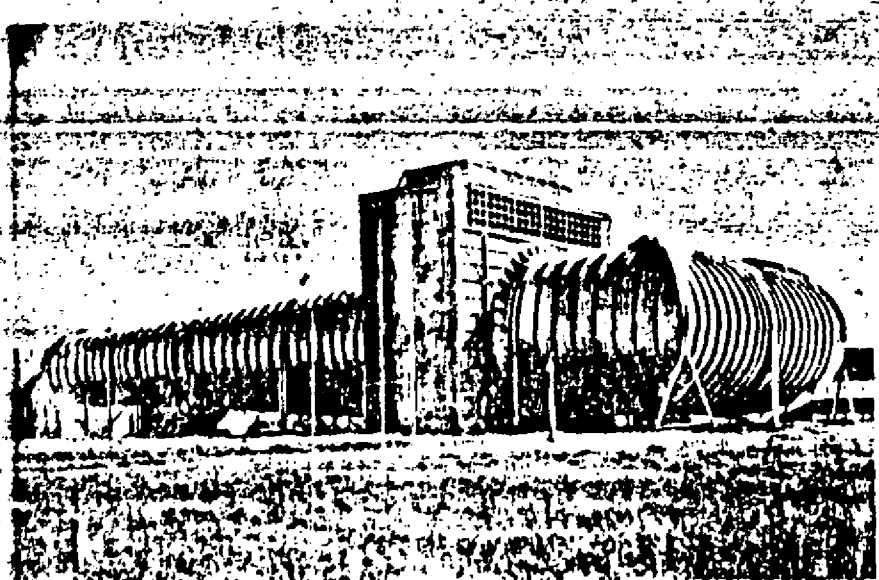
Plans are under way to increase the power of the Langley 16-Foot Tunnel from 16,000 to 40,000 horsepower and provide for speeds greater than the speed of sound.

In the smaller tunnels investigations are conducted on the fundamental nature of compressible flows.

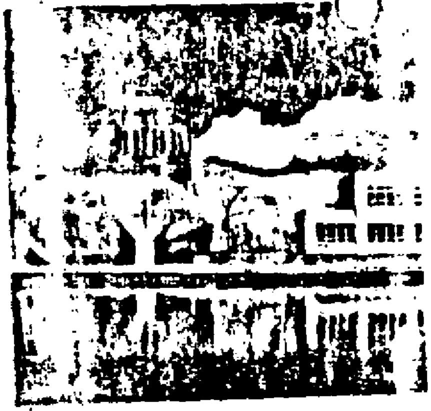
The 8-Foot Tunnel at Langley was the first large tunnel to enter the transonic range. It has provided reliable data up to nearly the speed of sound and is responsible for much of the design information used in the transonic research airplanes now flying.

Transonic aerodynamics is a complex field and the need for theory is great. Most of our knowledge at present is purely the result of experiment. We do not yet know all that happens nor why. There is challenging opportunity in this field for developing the mathematics and theory necessary to explain the phenomena encountered and to guide future experiment.

A new piece of equipment used in this field is a Bell electric computer to provide fast, accurate answers in the numerical solution of complex problems.



Typical of the larger high-speed tunnels is this 16-Foot Tunnel at the Ames Laboratory. It is powered by a 27,000 hp motor and provides speeds up to 680 mph.



One of the most valuable transonic tunnels is the 8-Foot Tunnel at Langley.

8-Foot High-Speed Tunnel - Langley

Test Section	8 ft., circular, closed
Speed	760 mph (to M 0.97 and 1.0)
Power	16,000 hp
Pressure	Atmospheric

12-Foot Low-Turbulence Pressure Tunnel - Ames

(Described in Subsonic Aerodynamics section, p. 11)

16-Foot High Speed Tunnels

Langley

Test Section	16 ft., circular, closed
Speed	525 mph (M 0.7)
Power	16,000 hp
Pressure	Atmospheric

Ames

Test Section	16 ft., circular, closed
Speed	680 mph (M 0.9)
Power	27,000 hp
Pressure	Atmospheric

1- by 3 1/2-Foot Tunnel - Ames

Test Section	1 x 3 1/2 ft., rectangular, closed
Speed	780 mph and up (M 1.2)
Power	2,000 hp
Pressure	Atmospheric

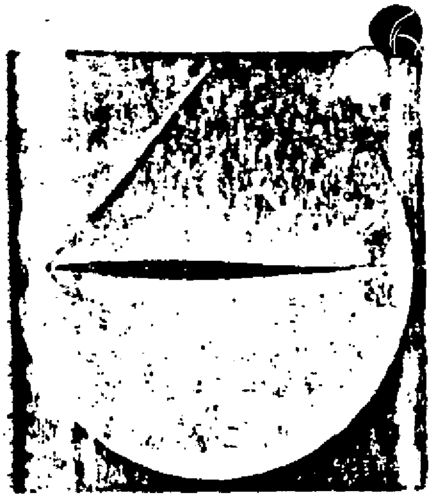
Rectangular High-Speed Tunnel - Langley

Test Section	4 x 16 in., Variable
Speed	135 to 915 mph (M 0.2 to 1.4)
Power	Induction air jet
Pressure	Atmospheric

24-Inch High-Speed Tunnel - Langley

Test Section	24 in., Variable
Speed	135 to 695 mph and up (M 0.2 to 1.4)
Power	Induction air jet
Pressure	Atmospheric

The 24-inch Tunnel at Langley provides high subsonic and supersonic speeds.



SUPERSONIC AERODYNAMICS

Analyses based on information now available indicate that man-carrying supersonic flight is possible with propulsion units of the gas turbine and ram-jet types at their present stage of development. This possibility has opened up a great new field of aerodynamics. Rather than simplifying or eliminating old problems, it has added a host of new ones. To the old problems of low-speed stability and control there are added the transonic and supersonic problems, entailing whole new areas of research on airfoils, wing and body forms and propulsion.

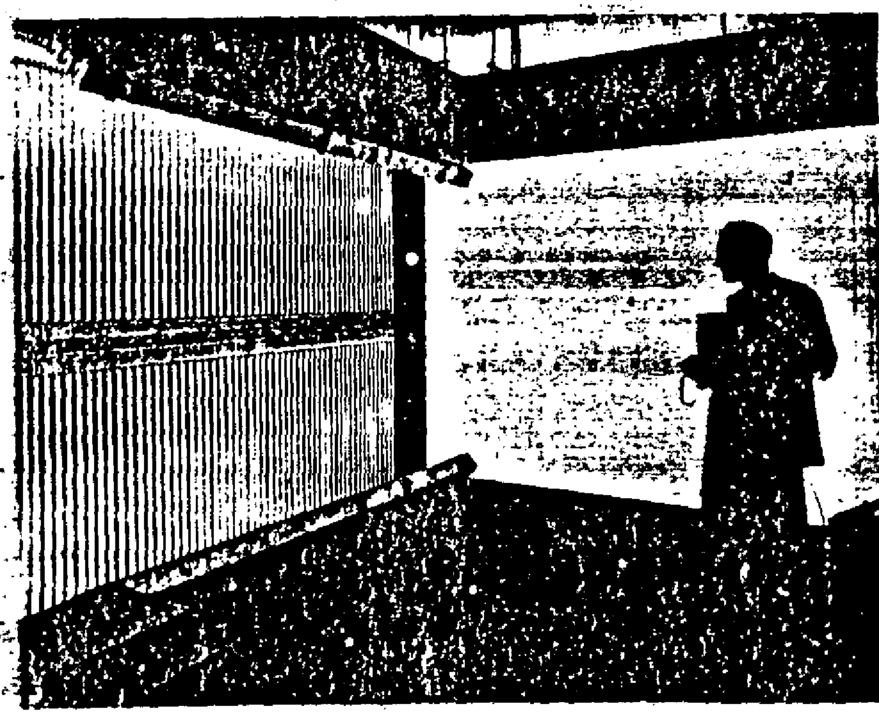
Although present theories of supersonic flows are fairly well established, a great deal of experiment remains to be done to confirm the theory. Added knowledge is necessary on conditions of large disturbances, where present theory does not apply. Extension and confirmation of the theory is needed for the design of any type of supersonic aircraft.

Other problems not susceptible to theoretical treatment are boundary layers and their interaction with shock wave formation in supersonic flows; effects of scale or Reynolds number; flow of rarefied gases in relation to aerodynamics at extremely high altitudes, dealing with particle mechanics as contrasted with more normal fluid flows.

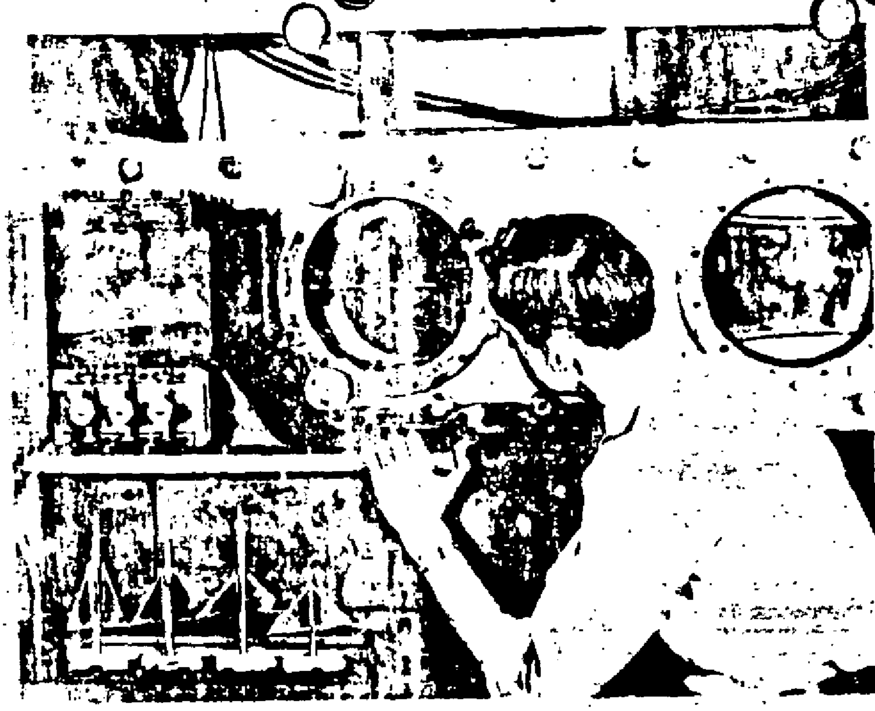
The problem of aerodynamic heating, in relation to the pilot and the airplane structure is important, but this can be treated theoretically to some extent.

To aid in the quest for knowledge about supersonic flight, the NACA has designed and built a number of supersonic wind tunnels -- about 14 -- ranging in size from a few inches to the 6- by 8-foot giant at the Cleveland Laboratory. In conjunction with the rocket, free-falling body and wing-flow techniques for spanning the transonic zone, NACA facilities now cover the entire speed range from low subsonic speeds up to 4.5 times the speed of sound.

In view of the importance of scale effects at supersonic speeds, supersonic tunnels even larger than the 6- by 8-Foot will be needed to accommodate sufficiently large models without tunnel choking and shock wave reflection. More complete knowledge of the basic nature of supersonic flows is required for adequate detail design of a very large supersonic wind tunnel. More basic research will be needed for the continued improvement of supersonic wind tunnel design.



This battery of manometers registers the pressures over airfoil and model surfaces in one of the supersonic tunnels at the Flight Propulsion Research Laboratory.



A supersonic wing model ready for study in the Langley 9-Inch Supersonic Tunnel with other wing and body forms below. The tunnel provides Mach numbers up to 2.5.

1- by 3 1/2-Foot High-Speed - Ames

(Described in Transonic section, p. 13).
Speed - M 1.2

8- by 8-Inch - Ames

Test Section - - - 8 x 8 in., closed
Speed - - - - - - - - - - M 2.3

9-Inch - Langley

Test Section - - 9 x 7 1/2, closed
Speed - - - - - - - M 1.3 and 2.5
Power - - - - - - - - 1,000 hp

Intermittent Supersonic Tunnels

1- by 3-Foot No. 2 - Ames

Test Section - - - 1 x 3 ft., closed
Speed - - - - - - - - - M 3.4
Pressure - - - - - - - Variable

24-Inch High-Speed - Langley

(Described in Transonic section, p. 13)

Rectangular High-Speed - Langley

(Described in Transonic section, p. 13).

Continuous Supersonic Tunnels

6- by 8-Foot - Cleveland

Test Section - - - 6 x 8 ft., closed
Speed - - - - - - - - - - M 1.8

6- by 6-Foot - Ames

Test Section - - - 6 x 6 ft., closed
Speed - - - - - - - - - - M 1.6

4- by 4-Foot - Langley

Test Section - - - 4 x 4 ft., closed
Speed - - - - - - - - - - M 2.2

2- by 2-Foot - Cleveland

Test Section - - - 2 x 2 ft., closed
Speed - - - - - - - - - - M 4.5

1- by 3-Foot No. 1 - Ames

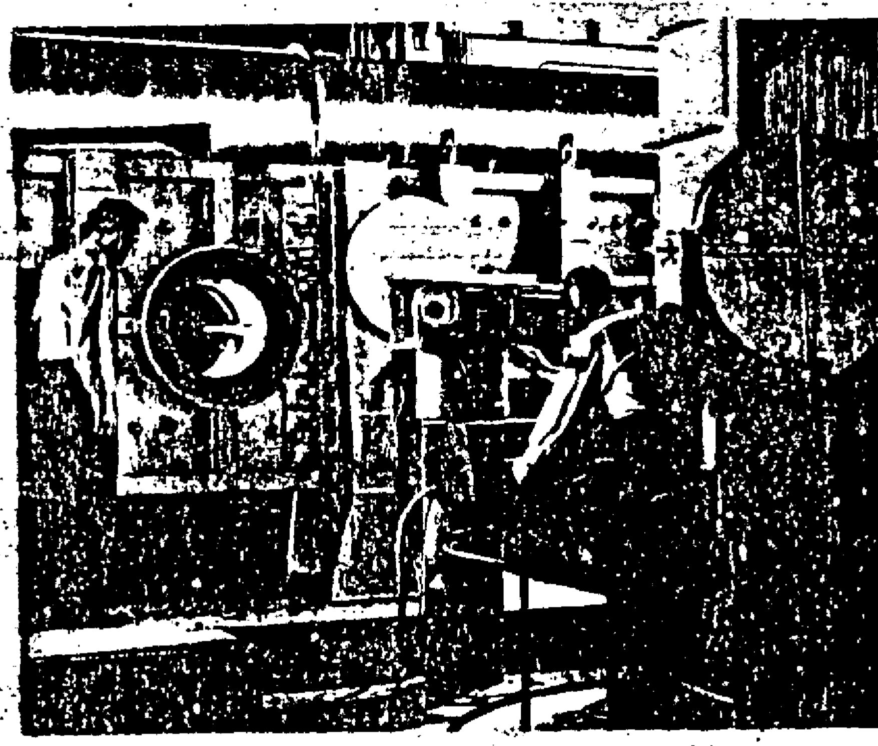
Test Section - - - 1 x 3 ft., closed
Speed - - - - - - - - - - M 2.2
Power - - - - - - - - - 10,000 hp
Pressure - - - - - - - - Variable

20-Inch - Cleveland

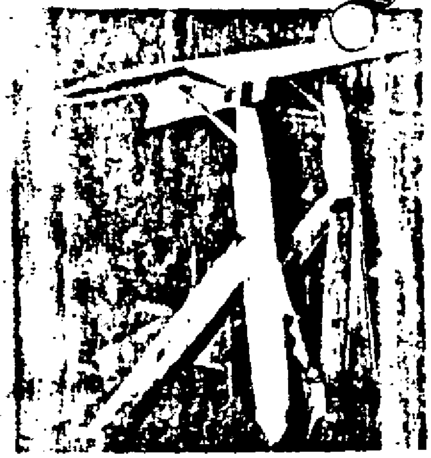
Test Section - - - 20 in., circular
Speed - - - - - - - - - - M 2.0

18- by 18-Inch - Cleveland

Test Section - - 18 x 18 in., closed
Speed - - - - - - - - - - M 2.3



The 1- by 3-Foot Supersonic Tunnels at Ames Laboratory provide Mach numbers up to 3.4. Schlieren photos of the flow field are made through the glass side plates.



STABILITY AND CONTROL

In the field of airplane stability and control, the rapid increase in airplane size, speed and power has necessitated an increasingly delicate adjustment of all the factors affecting the flying qualities of aircraft in order that the work of controlling the airplane does not exceed the pilot's capabilities. Control forces, for example, increase approximately as the square of the speed and as the cube of the size. For geometrically similar airplanes, doubling both the size and speed would increase the control forces by a factor of about 32. A greater proportion of the forces must consequently be balanced either aerodynamically or by means of auxiliary power systems. With very large or very fast aircraft, such a large proportion of the forces must be balanced that relatively small changes in the air forces, resulting from little-understood effects of Mach number, Reynolds number, and surface covering deflection and roughness may change the net force the pilot must handle by several hundred per cent. As a result, independent and systematic fundamental investigations are being conducted, utilizing the most suitable wind tunnels and covering necessary ranges of Mach number, Reynolds number, and airfoil, control, and balance shape. These data are being coordinated and verified by flight tests.

A large part of the laboratory investigations of stability and control is conducted in facilities also used in general aerodynamics. In addition there are several facilities particularly designed for this work.

Special new branches of stability and control study are included in transonic and supersonic aerodynamics. In addition to these, conducted in the high-speed and supersonic tunnels, there is the new field of automatic stability and control, investigated by means of rocket test vehicles. This work is described under Pilotless Aircraft, p. 24.

7- by 10-Foot Tunnels

(Described in Subsonic Aerodynamics section, p. 11)

Full-Scale Tunnels

(Described in Subsonic Aerodynamics section, p. 10)

20-Foot Spin Tunnel - Langley

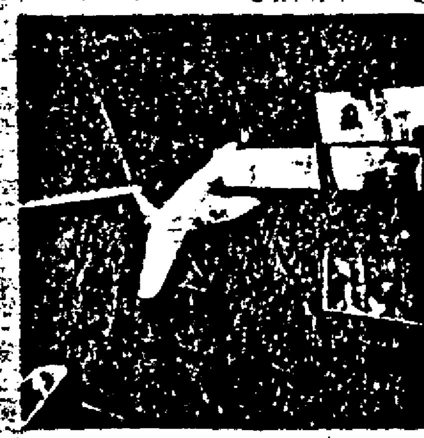
Test Section	12-sided polygon, 20 ft. across
Speed	0 to 60 mph, vertical
Power	400 hp
Purpose	Spin studies on dynamic models

Free-Flight Tunnel - Langley

Test Section	12-sided polygon, 12 ft., across
Speed	0 to 60 mph
Power	280 hp
Purpose	Studies on remotely-controlled dynamic models in free flight

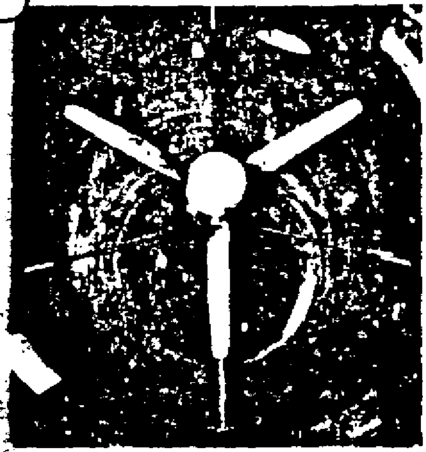
Stability Tunnel - Langley

Test Section	Approximately 6 ft. square, circular and rectangular. Sides adjustable for curving flow; vanes in circular section for rotating flow
Speed	0 to 220 to 360 mph, according to section size
Power	600 hp
Purpose	Study of stability and control of two- and three-dimensional models in curved and rotating flow simulating maneuvers



The Langley Free-Flight Tunnel permits safe study of new designs in flight.

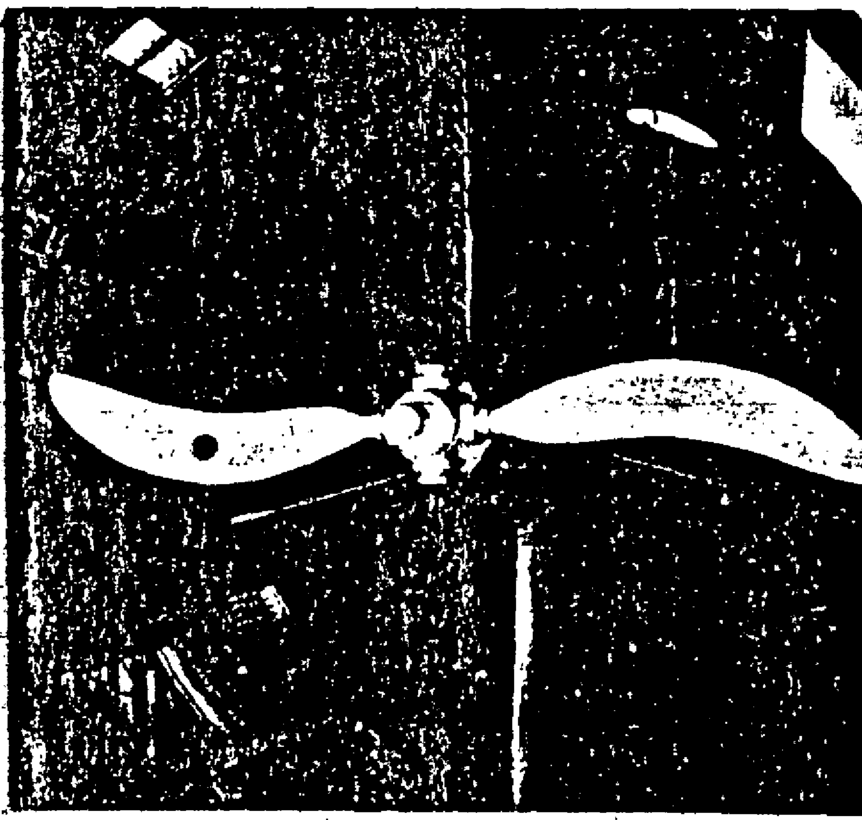
PROPELLERS



At speeds up to at least 500 mph, the screw propeller is the most efficient known propulsive device for aircraft. High efficiencies can be maintained for all the important airplane operating conditions, including take-off, climb, cruising, and high-speed flight. In the laboratory, propellers have been designed, built, and operated that have yielded efficiencies scarcely less than the theoretical maximum attainable. Subsonic propeller theory is regarded as adequate and means exist for applying the theory in practice. The only barriers to realization of the high theoretical propeller efficiencies in commercial applications are the difficult mechanical problems involved in obtaining a completely clean juncture between a wide airfoil propeller shank and the spinner. This problem lies in the realm of commercial development rather than in the field of research. A number of special propeller research projects related to vibration, icing, trailing edge extensions, tip shape, and so forth, remain to be worked on, and other similar problems will arise. The most important basic propeller research at present is that which will extend the efficient operating range of propellers into the supercritical high-speed region. Propeller research in this direction is proceeding along three lines; one is an attempt to increase the critical tip Mach number by sweeping back the propeller blade; the second is to apply the principle of low aspect ratio; the third is research on propellers for completely supersonic operation.

Propeller research properly begins with airfoil research in facilities already described, such as the two-dimensional and small high-speed tunnels. Blades and complete propellers are studied in the larger high-speed tunnels, such as the 8-Foot High-Speed Tunnel at Langley and the 16-Foot Tunnels. Complete engine installations are investigated in the 16-Foot and Full-Scale Tunnels. These studies cover the combined effects of the whole engine installation, including interference effects on the propeller.

In addition, there are some special facilities that permit propellers and blade sections to reach tip speeds above the speed of sound.



A swept-blade propeller on a dynamometer mounting in the Langley 16-Foot Tunnel. The wake-survey rake to the rear provides information on blade efficiency.

ROTATING WING AIRCRAFT

The helicopter, still in an early stage of development, has proved of great value because of its unique ability to fly slowly or to hover in the air and to take off and land in a limited space. These characteristics have made it the ideal aircraft for many commercial applications and its usefulness may be expected to increase steadily as its present limitations are removed. However, development of the helicopter has been handicapped by the lack of fundamental understanding of the aerodynamic and structural problems peculiar to rotating-wing aircraft. Development of the helicopter into a practical machine with desirable features of performance, reliability, and utility critically depends upon the success in solution of the many technical problems.

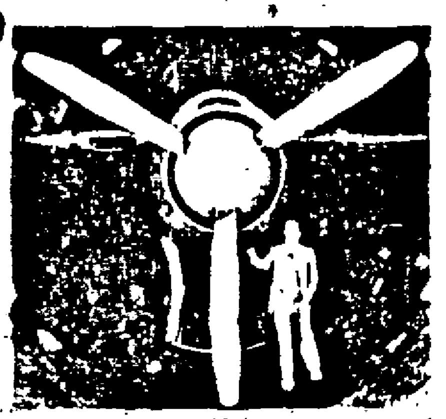
Results of wartime specific research have been used, as far as possible, to provide basic information applicable to all types of helicopters. However, the need for a systematic survey of all phases of helicopter flight is being attacked so that rational design criteria can be established for improvement of future designs.

An analytic and experimental investigation is required to determine the effects of rotor blade planforms, twist, airfoil section, and surface condition on hovering, cruising, high speed, and auto-rotative performance. The factors underlying rotor vibration and flutter need to be thoroughly understood. As usefulness of the helicopter increases, means should be found to reduce the degree of skill required to fly it. Increasing importance will therefore be attached to fundamental knowledge of stability and to the methods of improving and simplifying helicopter control systems. In order to insure smooth and efficient operation and to decrease maintenance costs, development of rotor blades of improved surface design and uniformity of mass and aerodynamic characteristics must be carried out. Paralleling development of fixed wing aircraft, the ability to fly at greater speeds will be demanded of the helicopter as soon as satisfactory performance and handling qualities are achieved in the low speed range. With this in mind, the blade stalling, vibration, and compressibility problems of high-speed helicopter flight are undergoing thorough study both in flight and in the laboratory.

The helicopter test tower is a special piece of equipment for investigating rotors. It is a steel cone 40 feet high, with a rotor mounting head and provision for all controls. A 1,500 horsepower motor furnishes power for rotors of up to 40,000 pounds of thrust through a speed range of 80 to 400 rpm of the rotor. Anemometer installations to either side give accurate records of wind conditions. The tower is sufficiently high to elevate the rotor above the level of ground effect, and duplicates conditions of hovering.

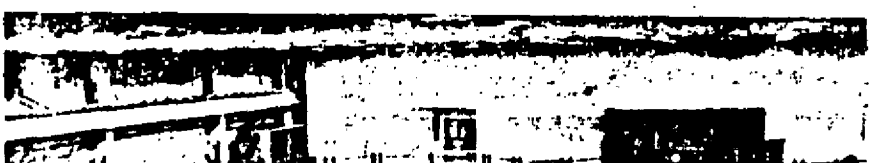
In addition to research in full-scale tunnels and with the Helicopter Tower, helicopters are studied in flight to provide data on control, performance and vibration.

AERODYNAMICS OF ENGINE INSTALLATION



The greatly-increased diversity of aircraft power plants and the immediate importance of flight at transonic and supersonic speeds have multiplied the related aerodynamic problems in urgent need of solution. Internal flow velocities in aircraft ducting underwent a large upward revision with the advent of turbine propeller and turbo-jet engines. As sonic flight speeds are approached and exceeded, the familiar patterns of external and internal flow are drastically altered. Ram-jets have shown great potentialities as a propulsive means for flight at supersonic speeds, and the development of this type of power plant has created a need for aerodynamic knowledge in previously unexplored fields.

These developments have greatly emphasized the urgent need for immediate extensions of fundamental internal and external flow research in order to make adequate progress in the design of aircraft power plant installations. In addition, aerodynamic refinement of air intakes, ducts, outlets, turbines, combustion chambers, compressors, and nozzles must be accomplished if the goals of high-speed and supersonic flight are to be realized. The need for fundamental research in the field of external flow about bodies suitable for housing power plants for high-speed and supersonic aircraft is as critical as the need for extensive internal-flow research.

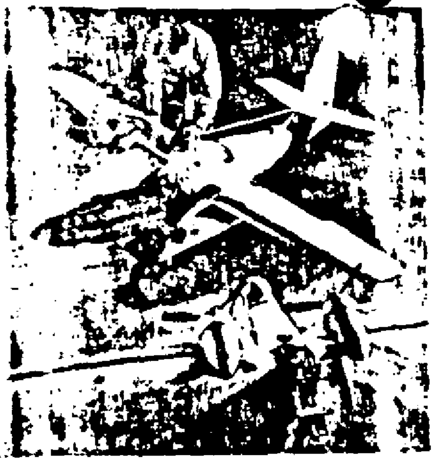


Duct and inlet test setups in the Induction Aerodynamics Laboratory at Langley. Progress to higher flight speeds involves major problems of internal air handling.

Research in the field of internal air handling is so much involved with propulsion that the research in the two fields is almost inseparable. This is particularly true at supersonic speeds, where such propulsion systems as the ram-jet are basically flying ducts. Consequently this subject is attacked both in aerodynamics and propulsion research. Supersonic tunnels are extensively used in the study of ducted body shapes. The laws governing efficient combination of duct entries and airplane body shape need to be well established to make supersonic flight a useful reality.

Early research in internal aerodynamics led to the development of the radial engine cowling. That work has progressed through the years from the simple ring cowl, sufficient for low speeds, to the series of refined, high-speed cowlings that provide for speeds in excess of those presently attained by propellered aircraft. It now extends to supersonic airflows and the study of inlets and diffusers in supersonic wind tunnels.

In addition to supersonic tunnels at all its laboratories, the NACA maintains a complete induction aerodynamics laboratory, with facilities that provide large volume airflows over a range of pressures and velocities, at its Langley Laboratory. In conjunction with propulsion research facilities at the Cleveland Laboratory, increasing opportunity presents itself in this vital and expanding field.



HYDRODYNAMICS

Use of the seaplane in the war demonstrated that its speed and range must be increased, not only by reduction of aerodynamic drag of the hulls or floats, but also by development of improved over-all configurations, and by incorporation of all the technological advancements available. In addition, the flying boat should be able to operate in the roughest seas likely to be encountered in service without being unduly penalized by excess weight of structure. Provision of fundamental data from the wind tunnel and towing tank, the associated theoretical studies used as a guide for the experimental work, and the necessary correlations with actual seaplane operation to attain these objectives form the basis of the hydrodynamic research program.

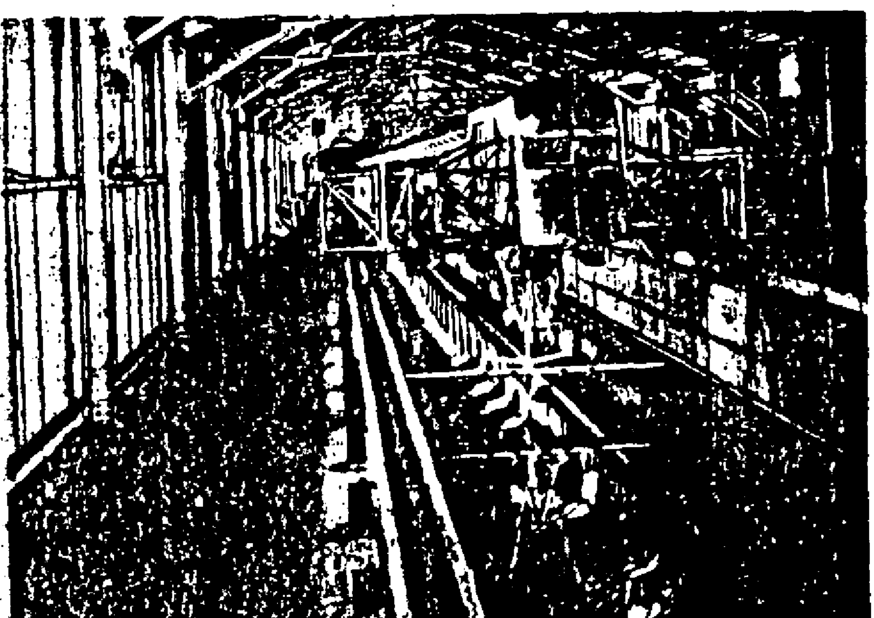
In order to achieve the best compromises in design aerodynamic and hydrodynamic research must go hand in hand on such items as the rounding of chines, fairing of steps, changes in proportions and variations in shape. Novel forms of hulls and floats as well as airplane configurations are being evaluated in terms of spray, stability, controllability and water resistance. In the tank the influence of design parameters on the dynamic behavior and accelerations in waves are determined in order that the requirements of operation in rough water may be taken into account by development engineers.

Development of new forms of propulsion will have a profound influence on the commercial and military seaplane of the future. The intensive effort toward very high-speed airplanes in the subsonic and supersonic ranges opens up vast possibilities for the use of water as a medium for take-offs and landings. Such possibilities make further hydrodynamic research on a large scale imperative if the best solutions are to be found. The hydrodynamic characteristics of configurations incorporating the new prime movers must be observed and methods for investigating them at high take-off and landing speeds need to be evolved. Fundamental research on the properties of planing surfaces at high Froude numbers and hydrofoils at low cavitation numbers is included in the program to provide data for estimation of the forces acting at speeds well above those for which data are available. The effect of sweep and dihedral on the performance of hydrofoils is being investigated as well as use of planing surfaces or hydrofoils to localize the heavy water loads incident to high landing speeds. Configurations of these lifting elements that will be dynamically stable, controllable, and free from mutual interference should be developed by systematic testing at and beyond the highest speeds available in the tanks.

The NACA has evolved unique facilities for hydrodynamic research. There are two towing tanks of a design pioneered by the NACA, providing towing speeds of 80 and 60 mph. In addition there is an impact basin that accurately reproduces rough water landings under known and controlled conditions.

Another overlapping branch of study is investigation of ditching characteristics of landplanes, which combines hydrodynamic study with aircraft structural loads and operating problems.

All hydrodynamic facilities of the NACA are located at Langley Field, Virginia.



Towing Tank No. 1 at Langley, shown here, is 2,900 feet long and provides towing speeds up to 80 mph. Tank No. 2 is 1,800 feet long, with speeds up to 60 mph.

AIRCRAFT LOADS

Applied loads are the forces imposed on aircraft structures in flight operations including landing and take-off. These forces have to be known quantitatively to a high degree of accuracy to insure against structural failure under normal demands and at the same time avoid excess weight. Structural failures of fighter airplanes that occurred during the war as a result of high flight speeds and failures of larger types of airplanes as a result of dynamic loads either in the air or during landing have emphasized the need for more intensive research on applied loads. New airplane configurations designed for supersonic flight have introduced new problems in evaluation of the magnitude and distribution of applied loads, both in gusty air and in maneuvers, that must be solved if these new designs are to be capable of actual flight without disastrous consequences. In the commercial field, the trend toward very large sized airplanes has resulted in heavy investments per airplane and a consequent need for high utilization. This trend, in combination with use of high strength alloys of relatively poor fatigue properties as a weight-saving measure, has pointed up the need for investigation of repeated loads and other factors that govern the fatigue life.

Facilities for research on aircraft loads are also located at the Langley Laboratory. Implementing the mathematical and theoretical approach, there are three important experimental facilities:

Gust Tunnel

The Gust Tunnel is a unique wind tunnel operating in a vertical plane, designed to reproduce controlled and measured up and down drafts. Dynamically weighted and scaled models up to 6 feet in span are catapulted through these gusts at speeds up to 100 mph. The gusts can be "shaped", as they are in the atmosphere, by controlled variation of the velocity gradient.

The Impact Basin at Langley is designed to simulate conditions of rough water landings for investigation of stresses and pressures on seaplane floats and hulls.

Aircraft Loads Calibration Laboratory

The Aircraft Loads Calibration Section is equipped to apply loads to complete airplanes, including the largest bombers, to determine characteristics of actual aircraft structures under applied loads. This work is closely connected with flight loads research. Aircraft instrumented for flight loads research are subjected to measured loads in the laboratory. These are then correlated with the readings given by the instruments. In this way the loads measured in flight can be known exactly. Information brought back from flight tests is interpreted in the loads laboratory in relation to the known characteristics.

Impact Basin

Water landing impact loads can be reproduced with accuracy and control in the Impact Basin. It is equipped with a wavemaker that can produce waves of any size up to over 3 feet in height and 80 feet from crest to crest. Landing of a model or float from the catapult can be timed so that the landing will take place at any point in relation to the wave. The basin is 360 feet long, 24 feet wide, and models or floats up to 2,400 pounds can be landed at speeds up to 70 mph with controlled vertical speeds and simulated wing lift. It is used for accurate measurement of landing forces and pressures, on float and hull bottoms, and has greatly aided in hull stress analysis.

CONSTRUCTION AND MATERIALS

The ultimate aim of aircraft structural research is twofold; to decrease the weight and to increase reliability of the structure. Decrease in weight must be carried much farther than in other branches of engineering, because the cost of air transportation is critically dependent on a high ratio of payload to dead weight of structure. Reliability is imperative because even minor structural failures may be fatal to the airplane and all its passengers.

The first step in strength analysis of any structure is calculation of the internal stresses caused by applied loads. Existing methods for calculating the stress distribution apply only to simple types of structures. The shell type of structure used for aircraft consists of an intricate assembly of skin, longitudinal stringers and transverse ribs. The external shape of the structure is dictated by aerodynamic considerations and does not follow simple mathematical laws. Although considerable progress has been made in the last five years in developing methods for finding the stress distribution in shells, much additional work remains to be done to achieve the degree of accuracy necessary for aircraft work.

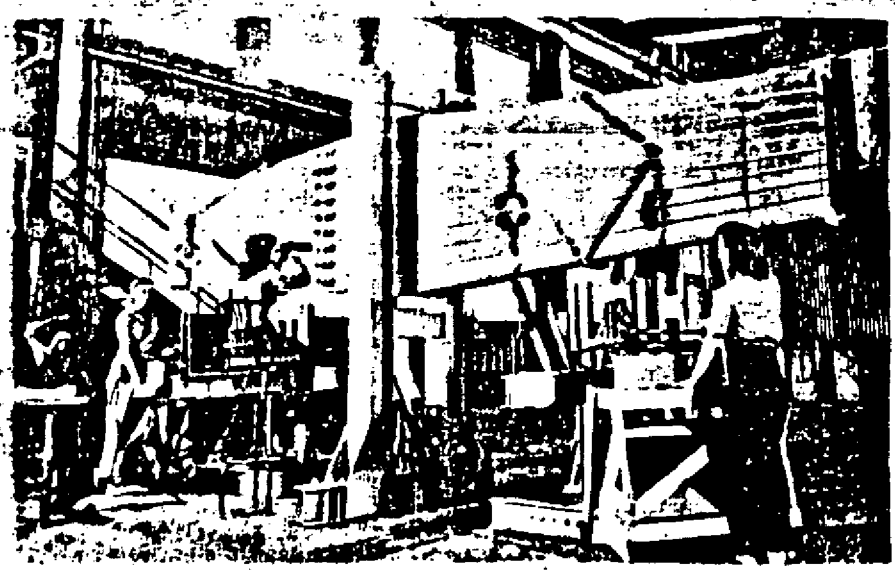
Experimental and theoretical work on structures is carried on at the Langley Laboratory. Testing equipment includes four machines capable of exerting the great stretching or compressive forces required for structural testing at large scale. The largest machine has a capacity of more than 800 tons. There are also wide varieties of special jigs and instruments developed by men of the NACA to adapt standard machines to special research needs.

One specialized NACA apparatus is a combined load testing machine capable of applying a twisting force with either tension or compression.

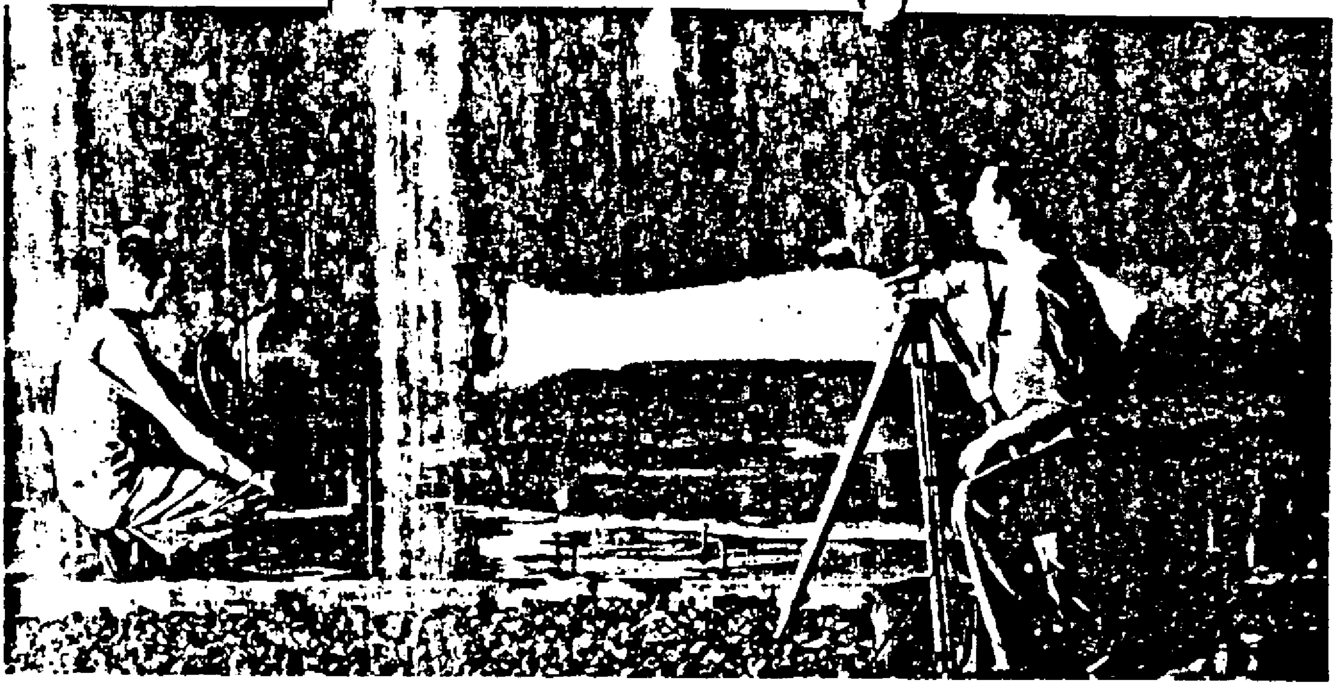
In order to conduct experimental research on structures in an efficient and scientific manner, a considerable amount of supporting work is in progress on the properties of materials actually used in these investigations. The immediate purpose of this work is to furnish detailed data for the proper evaluation of experimental data on assembled structures; the general purpose is to improve understanding of the fundamental relations between properties of materials and behavior of structures, so that the behavior of a structure may ultimately be predicted from a general theory of structures and a knowledge of the material properties.

Research on structures materials is a specialized adjunct of aeronautical research and one for which many organizations in the country are already well equipped. For this reason most of this work is accomplished through research contracts with properly qualified groups. Much university research falls in this class.

The most urgent problems in materials are met in the propulsion field, particularly in relation to high temperature. The research conducted by the NACA on this subject is treated under Propulsion, Materials and Stresses, which will be found on page 30.



The Structures Research Laboratory at Langley is equipped for study and analysis of structural stresses to provide more complete design knowledge for aircraft.



PROPULSION

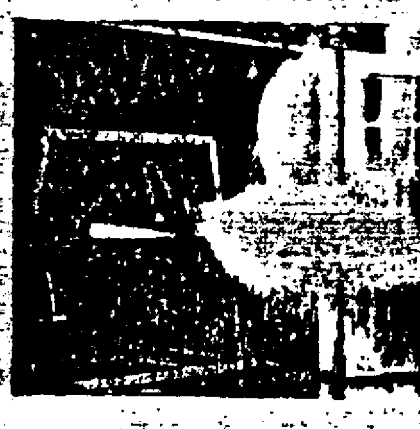
Intensive research activity in the past few years has resulted in a more rapid advancement of propulsion systems that at any previous period in aeronautical history. A transition from investigations for peak development of the reciprocating engine to fundamental research work on new high-speed propulsion methods has been in progress. The period has been marked by the development of reciprocating engines of high power and efficiency and by the birth and development of gas turbines, ram-jets, and rocket engines. Many of these achievements can be traced directly to the expansion of research effort in this country in the field of propulsion.

The NACA operates a complete propulsion research laboratory in Cleveland, Ohio. With exception of fundamental investigation of combustion and detonation, propulsion research is now entirely devoted to new types of jet-propulsion systems, including rockets and turbine systems. Facilities are provided to reproduce every kind of operating condition of temperature and altitude.

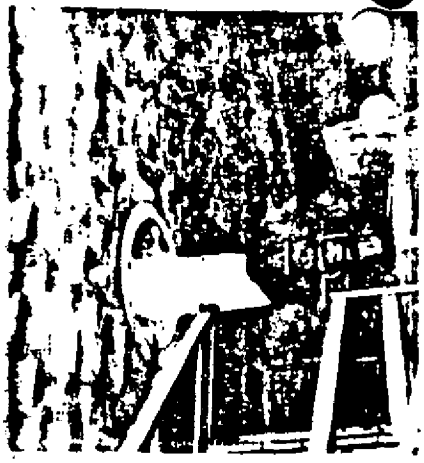
A majority of the propulsion research at Cleveland is conducted in the huge Engine Research Building, which contains nearly a hundred different research laboratories devoted to the study of all elements of aircraft power plants. To mention a few, there are numerous engine, compressor and gas turbine dynamometer laboratories, jet propulsion burner laboratories and altitude chambers for investigating engine accessories at low temperatures or air pressures. There are laboratories for research on gear and piston mechanisms, fuel and ignition systems, engine controls, and bearings of all kinds. Still other laboratories are devoted to fundamental and objective research on problems of heat transfer, metallurgy, lubrication, combustion, waste heat recovery, vibration and stress of engine parts and ice formation in engine-induction systems.

The nerve center of this vast operation is a main control room in the mezzanine basement of the building. From this small room, one man can dispatch power, cooling air, cooling water, and provide reduced air pressures and temperatures which makes it possible to run tests on engines and components under simulated altitude conditions.

Other facilities include the Fuels and Lubricants Building, Altitude and Icing Tunnel group, Jet Propulsion Static Test Stands and the High Pressure Combustion Laboratory for rocket study.



A research rocket being tested at the Flight Propulsion Research Laboratory.



COMBUSTION

The combustion research program at the Cleveland Laboratory is directed mainly toward fundamental combustion problems of jet-propulsion engines. The research program is based on two broad over-all objectives: One, to obtain generalized results and conclusions about combustion that will be applicable to design, operation, and related problems currently encountered in aircraft engines. Work of this sort might be considered short range, although it will continue with constant modification as it keeps pace with the continually developing status of aircraft engines; two, to secure step-by-step information on the eventual physical-chemical explanation of combustion, irrespective of any immediate practical application of the information to engine design. This research is long range. The intent is to find the new knowledge and the new theories that permit application to new developments. It is recognized that these two objectives are not mutually exclusive; a project aimed at one will generally contribute something to the other.

Much of the combustion research pertinent to specific applications is conducted with specific burner units. This work is of fundamental value because there are problems pertinent to the aircraft engine that can only be solved in the actual combustion chamber. Also, the work with these chambers provides a valuable background of information from which to proceed with more basic studies.

Facilities for combustion research are located in the Engine Research Building at the Cleveland Laboratory. This building is equipped with a wide variety of test cells. An extensive air supply system provides large volumes of air over a range of pressures and temperatures. These conditions of altitude can be separately controlled and varied, permitting isolation of different factors that influence combustion. Investigations made possible by these facilities have provided the first definition of the limitations imposed by altitude on combustion. From this it is now possible to explain the behavior of turbo-jet engines at altitude and to improve their capabilities.

Another important tool of combustion research is the NACA high-speed camera. This instrument can record combustion processes at the rate of 400,000 frames per second. It has been used in study of detonation, and is being applied to study of continuous cycle combustion.

A new high-pressure combustion laboratory devoted to rocket combustion problems is well established, and is being expanded to help encompass the pressing new problems of rocket propulsion.

Study of combustion in turbo-jet engine combustion chambers provides basic data on combustion characteristics of fuels and burner units under varied conditions.

FUELS

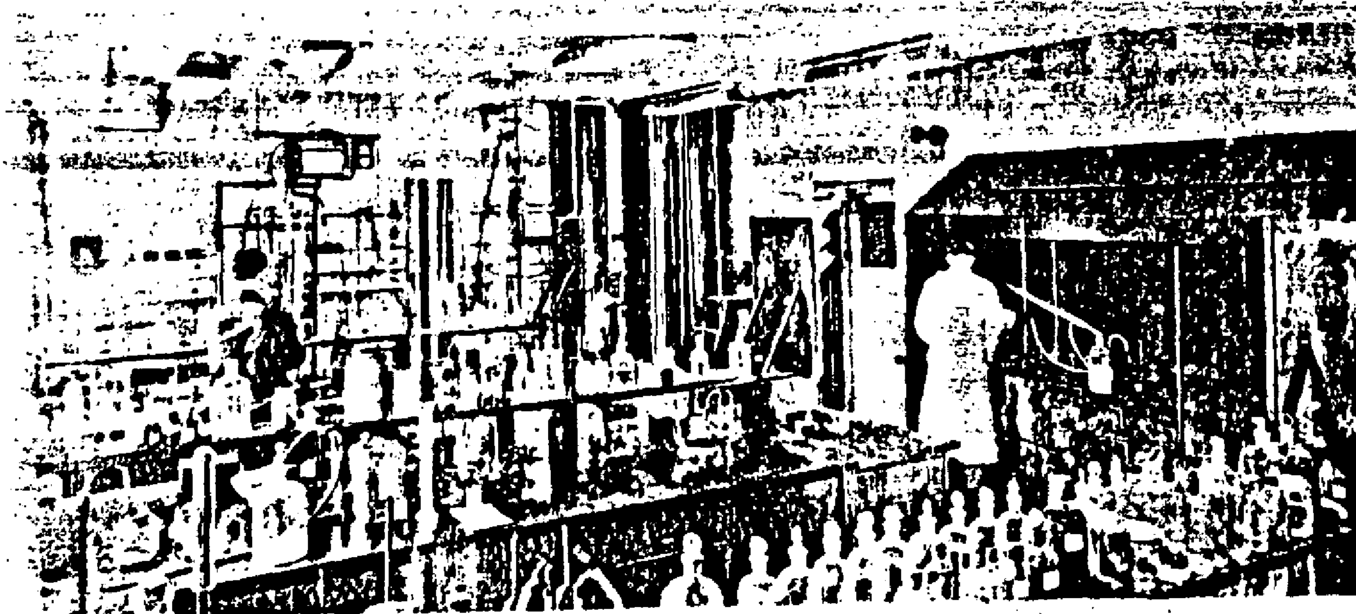
Turbo-jet, turbo-propeller, and ram-jet engines have similar fuel requirements, for in each type of engine the fuel is sprayed into a rapidly moving air stream and the combustion takes place continuously at a relatively low pressure. During the early stages of development of these engines, little attempt was made to improve the characteristics of the fuel. Now, however, the special requirements are fully recognized.

Most jet engines are installed in high-speed aircraft which have very small fuselages and thin wings, greatly restricting the space available for fuel tanks. An investigation is under way to find liquid fuels which will occupy less space for a given energy content than do conventional fuels. Such fuels would result in greater range for existing jet-engined aircraft, or greater speed for new designs. In the case of ram-jet engines designed to propel aircraft at supersonic speeds, attainment of long-range flight will depend on development of fuels giving energy releases in excess of those possible with fuels derived from petroleum. Here investigations must be conducted on metallic and other non-hydrocarbon fuels.

With increasing prospects for the use of rocket power, intensive research is in progress on rocket fuels that will provide greater thrust and greater endurance for increased range. Rocket fuel research facilities are being constantly expanded and have already made possible advances in this new field.

Research on other engine fuels is conducted in the Fuels and Lubricants Building, where chemical analysis and synthesis of new fuels is performed in correlation with combustion research. The objective is to gain basic knowledge of fuel structure and characteristics.

Research on fuels makes extensive use of the sciences of chemistry and physics. The Fuels and Lubricants Building contains well equipped chemistry and physics laboratories where fundamental research is conducted on aircraft fuels and lubricants. Rare fuels, unobtainable commercially, are synthetically produced in glass-lined reactors and purified in three-story-high distillation columns. The laboratories are equipped with the latest in spectographic apparatus, an electron microscope capable of 30,000 diameter magnification, special equipment for studying combustion and other advanced research tools.



Chemical synthesis and analysis of special research fuels is conducted in well equipped chemistry laboratories. Other equipment includes spectroscopes and electron microscopes, used in correlation of fuel composition with performance.

THERMODYNAMICS

The thermodynamic research conducted by the NACA in relation to propulsion systems may be classified under three headings:

Properties of Gases, concerned with basic study of thermodynamic properties of the working fluids in aircraft engines.

Heat Transfer, concerned with all cooling and heating problems.

Cycle Analyses, concerned with evaluation of performance and capabilities of engine types and components.

Properties of Gases

The design of efficient aircraft engines that involve the use of a gas turbine as the principal source of power or as an auxiliary, and analysis of the performance of such engines, depend on a knowledge of the thermodynamic properties of the working fluids. Much of the work concerns calculation of the thermodynamic quantities involved in the steady flow processes of jet engines.

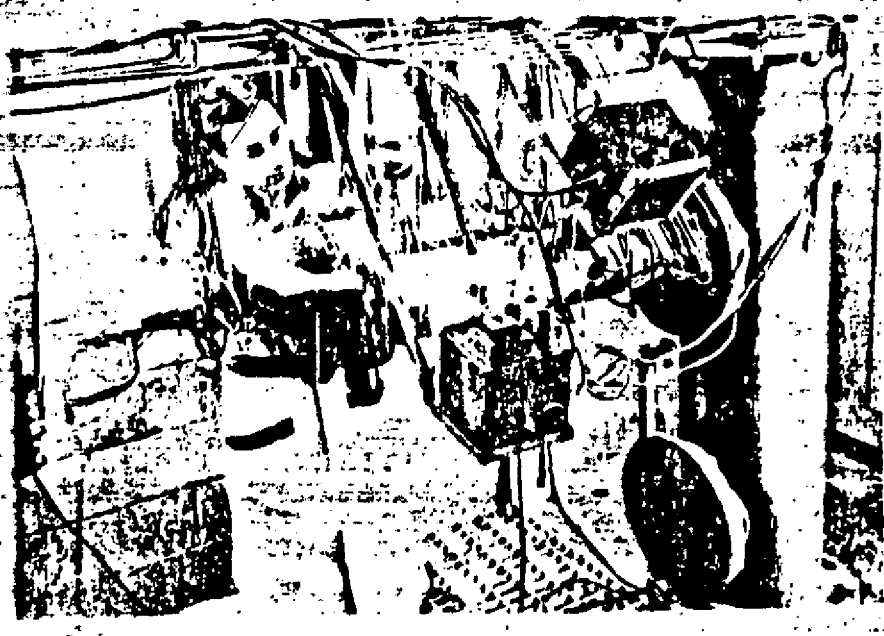
Heat Transfer

All problems of exchange of heat between gases and materials come under the heading of heat transfer. Some of the most important research conducted by the NACA has been in the field of engine cooling. Basic information has been established on the heat transfer rates of various fluids. Important new branches of cooling research are turbine cooling and rocket cooling. The immediate gains possible through increasing operating temperatures in these engines are so large that this phase of cooling research, combined with research on materials, is of great importance.

Thermal ice protection of all aircraft engine and components depends on knowledge of heat transfer rates and efficient heat exchangers. Design knowledge of compact, large capacity heat exchangers was a necessary prerequisite to the development of thermal ice prevention systems now coming into use. Continued thermal ice prevention research is being carried on in relation to jet engine induction icing.

Cycle Analyses

Profitable expenditure of research effort on new engine types and engine components must be planned in relation to probable immediate and long-range gains. Analyses of various engine cycles aid in defining necessary fields of research. Cycle analyses also map the probable range of application of engine types on the basis of performance, weight, size, and operating characteristics. Careful evaluation of all engine processes is needed to determine the compromises necessary in engine components in relation to weight, size, speed, and efficiency. Promise of advances in performance and fuel economy lie in new combinations of heat regeneration and reheat between turbine stages.



Thermodynamic research involves accurate measurements of heat processes in engines and components. Here an engineer adjusts combustion chamber thermocouples.

COMPRESSORS

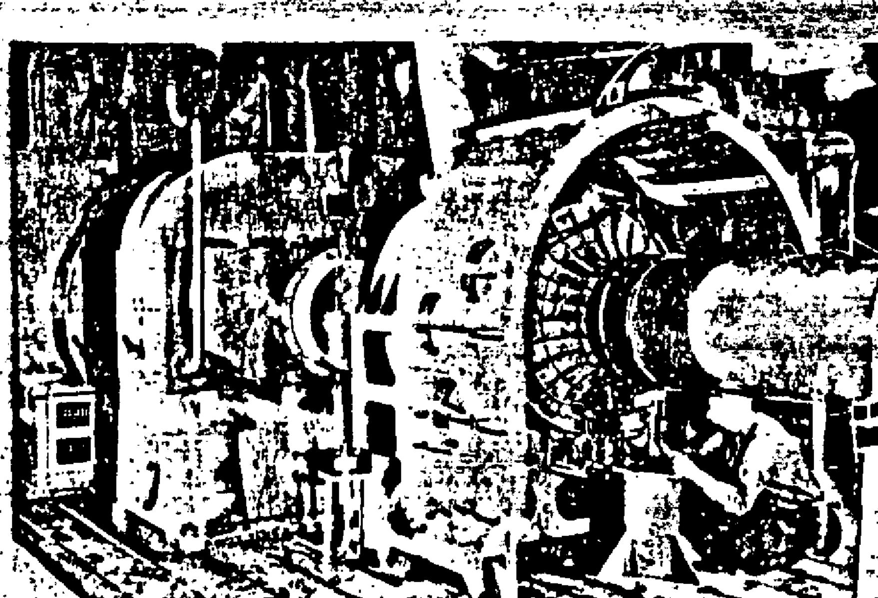
Because of the increased importance of compressor-turbine engines in the field of aircraft propulsion systems, an urgent need exists for fundamental research on all phases of compressor development. While maintaining its conventional role with regard to reciprocating engines, the compressor stands not as an accessory but as a major integral part of either the turbo-jet or turbo-propeller engine. In such installations the compressor serves the vital function of taking in a very large quantity of air, compressing it efficiently, and delivering it at high pressure to the combustion chamber and so to the turbine. A compressor-turbine has therefore greatly increased the demands made upon the compressor. Increases must be effected in capacity, pressure ratio, efficiency and reliability. The developments of the past several years alone have led from the reciprocating engine compressor, which was of the order of 500 horsepower, to present compressors for turbo-jet or turbo-propeller engines which absorb up to 10,000 horsepower. Very recent developments have resulted in compressors of nearly 15,000 horsepower, with future expectations far surpassing this value. Each of the three types of commonly-used compressors (axial flow, mixed flow, and centrifugal flow) have certain inherent advantages that may be exploited in specific installations. The NACA is conducting research along all three lines, as well as on some radically new ideas.

The fundamental problems of compressor design are primarily aerodynamic in character and are quite complicated because of the involved nature of the flow paths, the effect of non-steady flow, viscosity, and compressibility. Because of these inherent difficulties, present theory is inadequate, and it becomes necessary to look for new data and new theories that will be capable of application to compressor design.

Intensive research on all the interrelated phases of compressor design and performance promises notable improvements in the performance of future propulsion units and the airplanes in which they will be used.

Compressor research is also conducted in the Engine Research Building, where study is aided by exceptionally well-equipped test cells, and the large air supply that also serves combustion research units.

Facilities for compressor research are located in the Engine Research Building at the Cleveland Laboratory. The central air supply and refrigeration systems that serve the combustion and altitude research facilities are also available for compressor research. Test cells are provided with dynamometers up to 10,000 horsepower in capacity for driving research compressors. Inlet air temperatures and pressures can be controlled and varied to duplicate the desired conditions of operation. Specially built research compressors have been devised to permit isolation and study of design variables, such as blade angles.



Compressor research facilities at Cleveland include dynamometers up to 10,000 hp in capacity. A centrifugal compressor is shown here set up for investigation.

TURBINES

In its position as one of the major elements of the compressor-turbine engine, the gas turbine represents an unusually great research challenge and involves problems the solution of which are vitally important to further development.

The demands made upon the gas turbine are greatest in its role as a component of the turbo-propeller engine. In the turbo-jet engine, the turbine need extract only enough energy from the gas to drive the compressor. The turbine installed in the turbo-propeller engine, however, is called on to drive not only the compressor but the propeller as well. The magnitude of these requirements may be illustrated by considering the turbine that would be needed in a 5,000 horsepower turbo-propeller engine. In addition to the 5,000 horsepower delivered to the propeller, about 15,000 horsepower would be needed to drive the compressor and account for losses. The turbine would therefore have to develop about 20,000 horsepower. Such installations represent great strides from the 500 horsepower turbine of the typical turbosupercharger on the reciprocating engine.

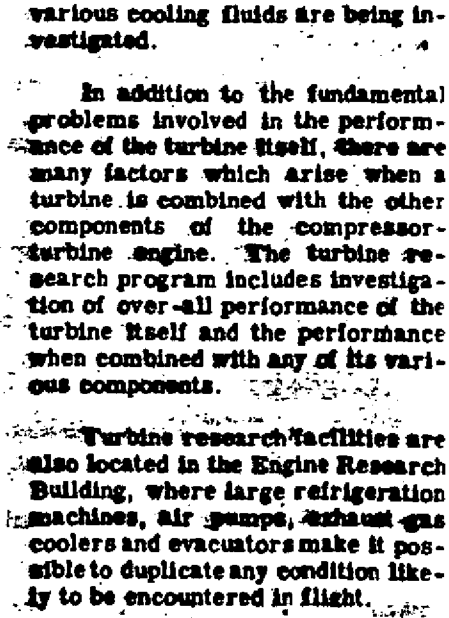
Foremost among turbine problems is that of increasing its efficiency, an improvement which affords a nearly directly proportional increase in engine efficiency. The most promising areas for research leading to future increases in turbine efficiency are in aerodynamic and thermodynamic improvements. A more detailed knowledge of the actual flow conditions through the turbine, an aerodynamic problem, is necessary to establish improved design methods. In addition, it is necessary that design principles and theory be developed to the point where the turbines will perform according to the design predictions. Theoretical and experimental studies are therefore in progress whose objective is to obtain basic aerodynamic information on the flow through turbine blades. Aside from the study directed toward the flow through a single stage, considerable effort is being expended on the equally important problem of determining the interaction of successive stages.

The net output and efficiency of a turbine is increased appreciably by an increase in the gas temperature at the turbine inlet, when accompanied by a corresponding change in pressure ratio. Two methods are available for increasing the allowable gas temperature: Development of materials which will withstand operation at increased temperatures; and providing means for cooling the turbine blades, thereby maintaining present blade materials within allowable limits while using hotter gases. Ceramic materials, which are known for their ability to withstand high temperatures, are among the logical materials for use at high turbine temperatures, and their application to turbine blades is being investigated.

Various methods of cooling are also under intensive study. Experimental test units are being used to investigate the cooling methods that have been favorably indicated by analysis. Heat transfer effects, direct blade-cooling methods, determination of optimum blade shapes for internal cooling, use of cooling fins, and evaluation of the merits of various cooling fluids are being investigated.

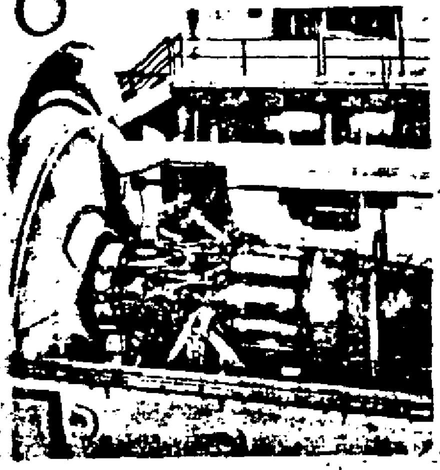
In addition to the fundamental problems involved in the performance of the turbine itself, there are many factors which arise when a turbine is combined with the other components of the compressor-turbine engine. The turbine research program includes investigation of over-all performance of the turbine itself and the performance when combined with any of its various components.

Turbine research facilities are also located in the Engine Research Building, where large refrigeration machines, air pumps, exhaust gas coolers and evacuators make it possible to duplicate any condition likely to be encountered in flight.



Turbines are studied to improve heat resistance, strength and performance.

PERFORMANCE OF COMPLETE SYSTEMS

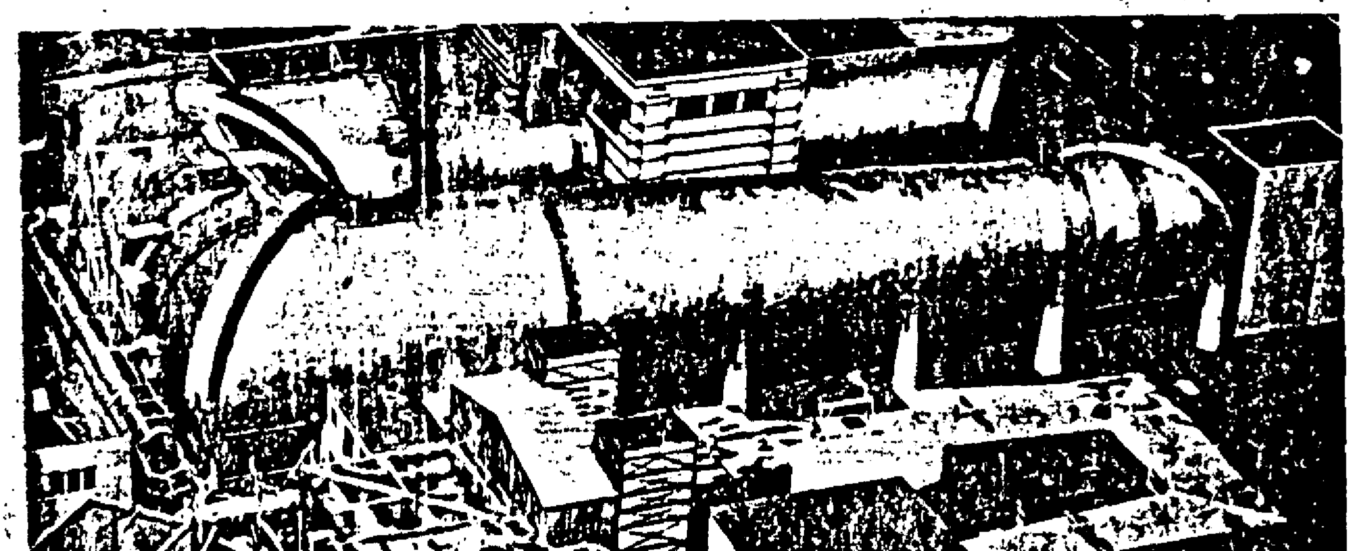


Evaluation and test of complete propulsive systems is necessary both to find out what a given engine will do under various conditions and to assess and integrate the basic work on the various components that has preceded. Facilities for handling all types of engines are available. The Engine Research Building houses numerous test cells for complete engines. The Jet Propulsion Static Test Unit is equipped to study turbo-jet engines. There are also engine-propeller test houses for both reciprocating and turbo-propeller systems, as well as rocket pits for investigation of rocket combustion and performance.

An important facility is the Altitude Wind Tunnel, in which jet and turbo-propeller engine installations can be studied in operation under simulated altitude conditions. The tunnel provides pressure altitudes up to 50,000 feet, temperatures down to minus 48 degrees Fahrenheit and speeds up to 500 mph. By use of special ducting, jet units can be investigated at supersonic speeds, enabling study of large ram-jet engine types.

Additional altitude chambers are available that are capable of reproducing approximately the same conditions of altitude as the Altitude Tunnel. The air supply system can provide ram-air pressures equivalent to high flight speeds. These facilities amplify the laboratory's capacity for research under simulated altitude conditions.

One of the many important developments from NACA engine performance study is thrust augmentation, by any of several means. These have achieved thrust increases up to 40 and 50 per cent of the original engine thrust. In combination with improved duct design, thrust augmentation made possible the high speed of the P-80-R which first broke the British speed record.



The Altitude Tunnel (background) at Cleveland enables investigation of complete propulsion systems in operation under altitude conditions. The Icing Research Tunnel (foreground), provides icing conditions for aircraft components and engines.

MATERIALS AND STRESSES

All aircraft engine designs could be greatly improved if the designer had a wider range of materials from which to choose, a more definite knowledge of the properties of materials, and how these materials will behave under any given set of conditions. For example, an increase in the operating temperatures of aircraft engines would increase the over-all power output from the unit and thus require less fuel for a given performance specification; the advent of new high-temperature materials would place this goal within the designer's grasp. Again, if operating stresses *in various engine components* were accurately known, it might be possible to reduce appreciably the mass of these parts and effect a saving in power absorbed in driving the engine; this would also be reflected in greater fuel economies, as well as in increased performance.

In order to improve current engines, an extensive program of evaluation of present high-temperature materials is being conducted. Fundamental research is under way on the basic reasons for the relative performance of heat-resisting materials in general, the mechanism of failure, the roles played by precipitated particles and mechanical and thermal treatments of materials, and the effect of protective coatings on turbine components. The laboratory is conducting a program aimed to extract basic experimental data such as the effects of elevated temperature on pure materials, and equilibrium data on alloy systems suitable for high-temperature use. Other research is under way for study of conservation of critical alloying elements in high-temperature materials.

Materials which go into turbines, compressors and other critical parts of new engines are studied for development of superior resistance to stresses and heat.

The general aim of the program on engine stresses is to obtain a more complete knowledge of permissible operating stresses and actual operating stresses of present designs of aircraft engine components. Studies have been undertaken on centrifugal and thermal stresses in turbine discs, and thermal and centrifugal vibratory stresses in turbine and compressor blades, with the aim of improving design of parts or substituting materials of equivalent thermal strength and superior mechanical properties. The main problem in this field is to evolve methods of measuring and recording operating or residual stresses in engine parts to confirm speculations. Projected research will involve engine balance and critical speeds, ducting, bearing, gear and valve vibration surveys, and investigation of the mechanism of failure of materials.

Facilities are provided in the Engine Research Building for investigation of vibration, effects of high temperatures, and study of material structure through use of electron microscopes.

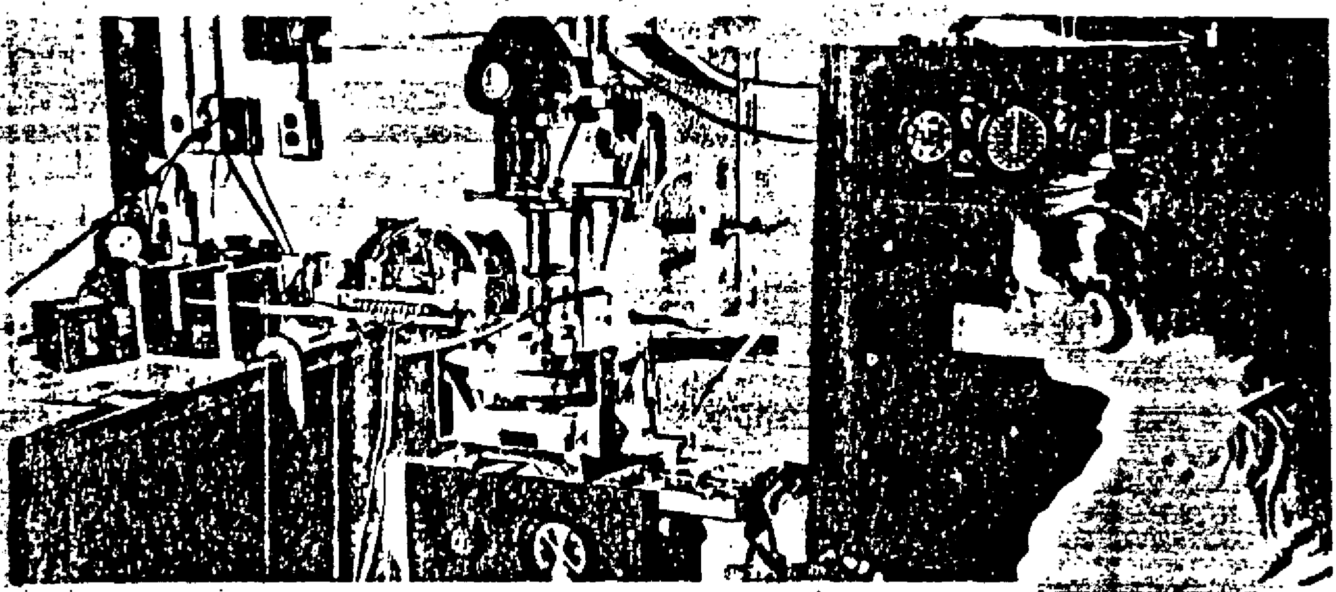
LUBRICATION, FRICTION AND WEAR

Previous research in the field of lubrication and friction has resulted in much useful information. However, much of this data is of an empirical nature, and truly fundamental information is required to help in extending the present data into the range of higher speeds and greater loads. The problem of high-speed bearings is an example of a field in which more research data of a fundamental nature are needed to extend present low-speed data into the speed range of 10,000 to 50,000 rpm. The problem of sliding and rolling friction also illustrates this point; there is a definite lack of information on the exact nature or mechanism of failures occurring in surfaces subjected to rolling and sliding. The complex behavior of plastic materials under the repeated surface stresses set up by rolling and sliding friction is, at present, far from being understood; consequently, a study of the fundamentals involved is needed in order to shed light on possible basic methods for alleviation of failures.

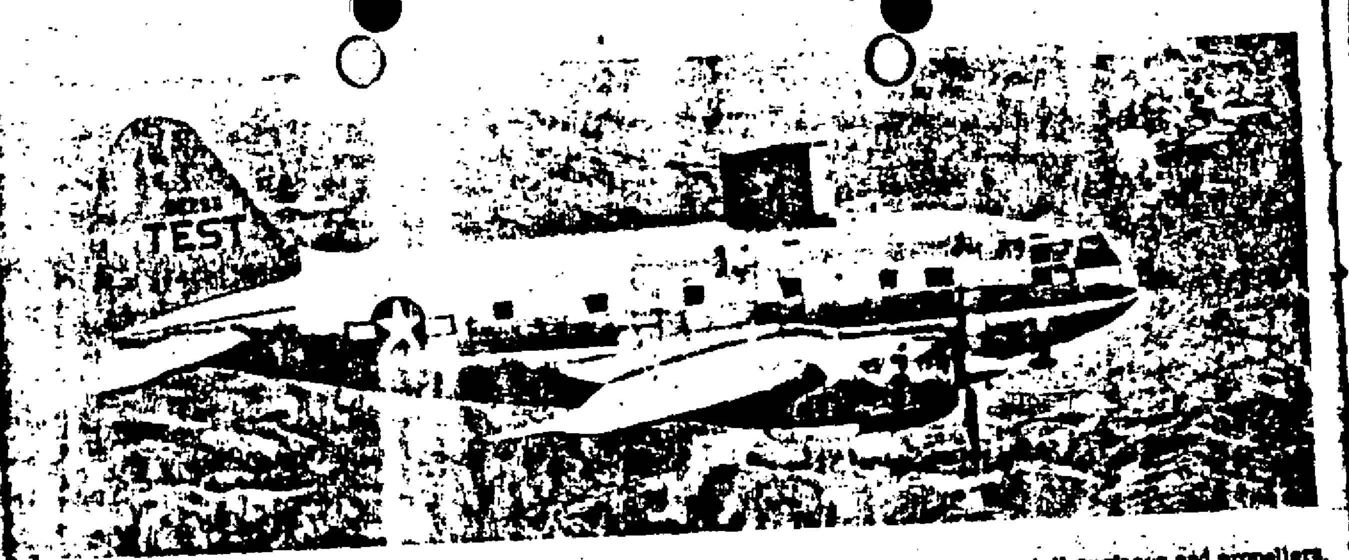
Problems met in connection with compressor and turbine bearings illustrate how new engine types can complicate an old problem. The compressor-turbine unit is heavy, imposing high loads over large bearing areas at high rotative speeds. The bearing thrust loads imposed by reaction forces are large and are further complicated by inertia loads caused by rapid accelerations and by gyroscopic forces.

Other typical problems are "run-in" of surfaces and the characteristics of various lubricants.

Research on basic friction and wear problems is carried on in the Engine Research Building. General and special devices are evolved as the need arises to meet any particular question. Backed by extensive service and the finest of machine shop facilities, scientists of the laboratory are ready to solve any problem incident to the research.



The basic problem of what happens to surfaces subjected to different types of friction is investigated in many ways to obtain knowledge on how to improve bearings and reduce wear. Test setups are improvised to provide the desired conditions.



An NACA icing research airplane, flown in investigation of thermal ice prevention on wings, tail surfaces and propellers.

OPERATING PROBLEMS

Important problems of aircraft operation during recent years have been icing, gust loads produced by atmospheric turbulence and landing loads. The latter includes both normal landing loads and emergency water landings of landplanes, popularly known as ditching.

The NACA thermal ice-prevention system provides a means for virtual elimination of icing hazards to aircraft powered by reciprocating engines and propellers. Research over a period of years, culminating in more than two years of safe flight research through icing conditions has proved the system and provided enough information to protect any properly equipped airplane from danger of icing. Recognition of this achievement was highlighted by award of the Collier Trophy for 1946 to Mr. Rodert, NACA engineer who headed the research program. Most new airplanes of the transport type incorporate thermal ice-prevention systems.

Icing problems of jet engines, however, remain to be thoroughly solved. Axial flow units are particularly vulnerable, and means of protection for these and other types is a subject of continued research at the Cleveland Laboratory.

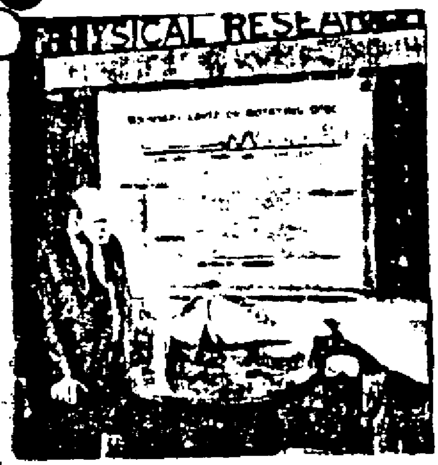
In addition to flight research facilities, the NACA has designed and built an icing research wind tunnel capable of furnishing 1,500 tons of simulated rain per 24 hours, refrigerated to provide almost any freezing condition at airspeeds up to 435 mph. This tunnel is used to study icing on aircraft components such as air ducts and inlets, radio antennae and pitot tubes. Downstream from the test section a complete airplane, without outer wing panels, can be mounted and studied under icing conditions with engine and propeller operating.

NACA research on turbulence and gusts has resulted in a large amount of data on gust structure and occurrence. The NACA began research in thunderstorms in the early 1930's. Records of gust loads from air routes all over the world have been made by means of the NACA V-G recorder, which records maximum accelerations as a function of the airspeed. The problem of gust loads increases in importance with increase in airplane speeds, and much knowledge remains to be gained about gusts and how to alleviate the loads.

Ditching investigations, started on military and transport landplanes during the war, continue on new military types and transports in order to establish operating procedure, to develop safety devices and modifications and to make recommendations on the structure where necessary.

Research on cabin heating and cooling and ventilation becomes of added importance as airplane speeds increase. Even high subsonic speeds bring the need for cockpit cooling. Looking ahead to supersonic flight, many problems of cooling and heat radiation come into play, not only in relation to pilot and passengers but to protect the airplane structure itself. The temperature rise accompanying supersonic speeds may well be the first limiting factor to high-speed flight. The questions of friction heating and heat balance of friction heating and heat radiation must be answered before cooling requirements can be determined. This is one of many new problems posed by high-speed flight that calls for new approaches and vigorous, inventive thought.

PHYSICAL RESEARCH



Much of the study of fundamental physical phenomena involves purely theoretical analysis. Theoretical study is often sufficient to provide adequate design criteria, but in many cases it serves rather as a guide for experimental investigations.

Because of the abstract nature of some basic physical problems, and the importance of securing generally applicable knowledge about them, the NACA has established a Physical Research Section at the Langley Laboratory to conduct a large amount of the fundamental theoretical work involved in other branches of research. Typical problems attacked in this section are high-speed flutter, propeller flow theory, compressible flow theory, boundary layer mechanics, and helicopter vibration.

In the course of study of basic physics, many original devices and processes have been created. One of these was the first use of Freon 12 in aerodynamic study. The speed of sound in Freon is about half of what it is in air, therefore Mach numbers of 1 and higher can be provided with less power and at lower stream speeds than with air.

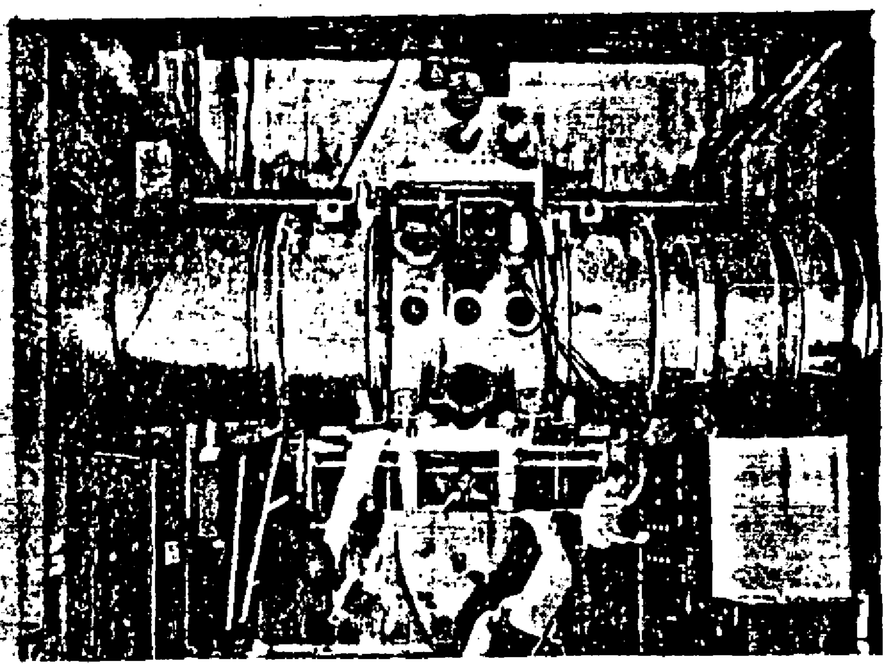
The division has facilities to provide experimental data on certain basic subjects, including a Flutter Wind Tunnel for investigation of aerodynamic flutter at high speeds and a free-flight apparatus for study of reactions of various bodies traveling freely at high speeds.

Free-Flight Apparatus

Tank 100 feet long, 8 foot diameter
Provides information on lift, drag, and stability of bodies propelled from compressed gas gun at velocities between 500 and 1,000 miles per hour
Test Medium: Air, Freon, or mixtures

Flutter Tunnel

Test Section	[illegible] 1/2 ft., circular, closed
Speed	M 0 to 0.90
Power	1,000 hp
Pressure	0 to 1.8 atmospheres
Test Medium	Air, Freon, or mixtures



The Flutter Tunnel is one of several pieces of special equipment used for study of basic physical phenomena such as high-speed vibration and flutter of wings.

FLIGHT AND PILOTLESS AIRCRAFT

Pilotless aircraft research by means of rockets has grown into a special, important branch of flight research. Through the use of many kinds of rockets, vital information has been obtained all through the speed range up to Mach numbers of 2 or more. In addition to basic wing and body studies, investigations are carried out on automatic stability and control of guided missiles and on high-speed flutter. Dynamically scaled models of actual aircraft are also studied in free flight for characteristics at high speeds in anticipation of piloted flight. This branch of research is one of our most valuable assets in reaching out ahead of man's present abilities, to find out what problems we shall run into and how to solve them.

The NACA Pilotless Aircraft Research Station, located on the seacoast of Virginia, is equipped with a variety of rocket launching, handling, and controlling equipment. Rocket vehicles and models are built in the shops at Langley Field, and transportation by air and boat links the rocket station with the laboratory.

Actual flight research is indispensable on general aerodynamics, stability and control and performance under conditions of speed, power, altitude, and accelerations not capable of simultaneous duplication in existing wind tunnels. Flight research provides the final check on any theoretical or wind tunnel findings, and extends the usefulness of wind-tunnel research by serving as a measure of verification or correction for wind-tunnel data. Conversely, wind-tunnel research provides a valuable guide in planning and interpreting flight tests.

During the war, a large amount of data had been obtained from the 16-Foot Tunnel at Ames on specific airplanes. At that time, the models were tested under power-off conditions without the effects of a propeller and application of the data to full scale, powered airplanes was under question. To furnish a direct comparison between tests on a detailed scale model of the P-51 and the actual airplane, the propeller was removed from a P-51 and the airplane was then towed aloft behind a P-63. At sufficient altitude the P-51 was released, and dive tests were made in a clean, propeller-less, power-off condition duplicating as nearly as possible the conditions simulated in the tunnel. The model had purposely been made to include the slight irregularities that are found in any service airplane. The results from these tests were in excellent agreement and established the reliability of the tunnel information. This is one of many unusual projects undertaken in flight research.

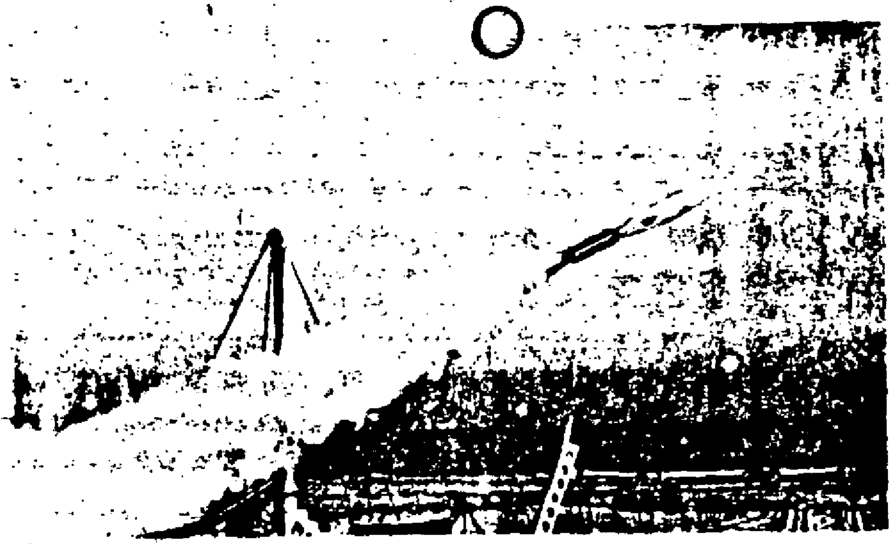
With the day of transonic flight at hand, flight research becomes even more important. Although wind tunnel speeds reach closer and closer on either side of the speed of sound, complete investigations at the speed of sound are still not feasible.

The D558-II is one of several research airplanes built for the NACA under contract to the Armed Services, for transonic flight research with piloted aircraft.

Such vital problems of scale, controls, and acceleration loads cannot yet be simultaneously studied on the ground. The answer to this situation was foreseen by the NACA in 1944. In March of that year the NACA proposed the plan that has resulted in practical transonic research airplanes like the XS-1 and the two phases of the D558, all built for and flown in NACA flight research.

Flight research projects include propeller surveys, helicopter flight, handling qualities, and a wide variety of airfoil and control research work at full scale.

Special methods in the high-speed field are NACA wing-flow tests and free-fall body tests. By the NACA wing-flow technique models are mounted in the region of high-speed airflow on a high-speed airplane wing, with recording instruments underneath. Aerodynamic measurements can then be made from low speeds continuously through the speed of sound up to a Mach number of 1.2 or more. Use of free-fall bodies, dropped from high altitudes, with data recorded by radar and telemeter, provides another source of continuous transonic information, in undisturbed air, up to Mach numbers of about 1.5. These bodies are used to obtain basic drag information on various wings and airfoils, flutter investigations and body shape studies.



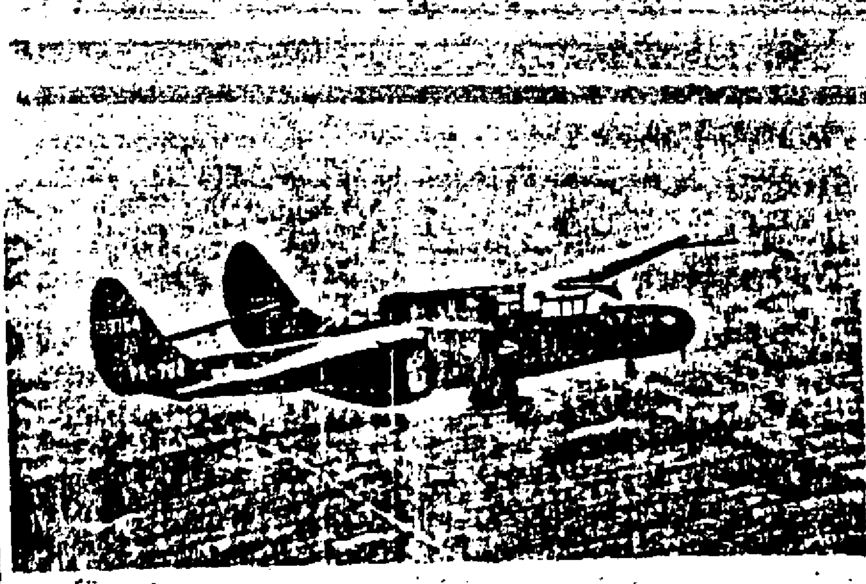
Launching of a Tiamat, an NACA research rocket designed to fly a predetermined course. Such rockets provide valuable data on automatic stability and control.

To carry out this broad program of flight research, the NACA maintains a flight section at each of its laboratories. NACA research pilots have to be engineers as well as highly skilled in flying, for the work involved has to be thoroughly understood and carried out with precision. The planning and preparation for flights is so careful that although many of the projects involve unusual flight procedures, virtually every flight brings back the sought-for data.

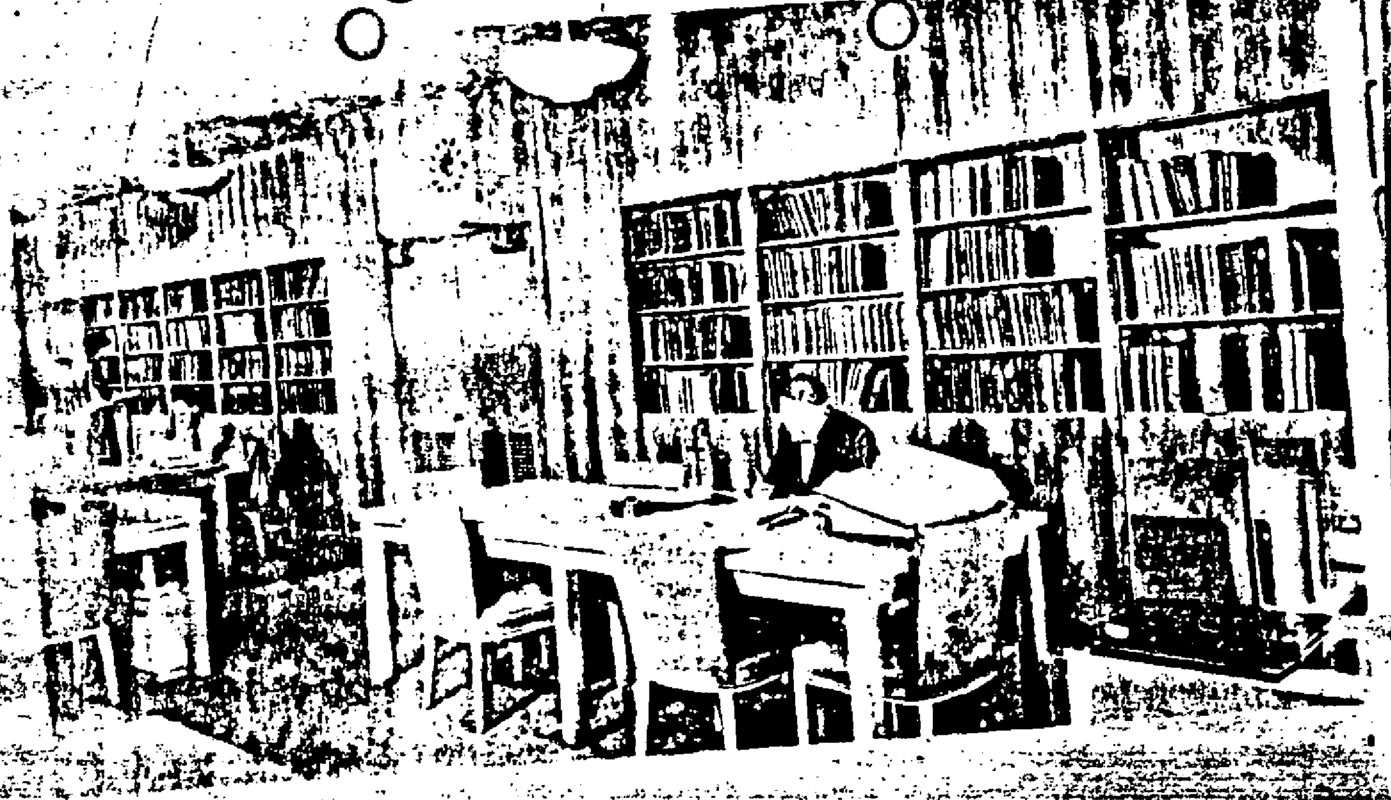
The airplanes used, generally loaned by the Air Forces or Navy, may start out as conventional aircraft, but they soon take on a new, strange look of their own. Models appear on wings; long booms with special airspeed and yaw heads grow out of wings and noses. The C-46 used in thermal ice-prevention research had a large low-drag airfoil mounted on top of the fuselage, while the B-24 used on the same project had a rebuilt nose carrying a variety of windshields to study their icing characteristics.

NACA flights have taken their research pilots into strange worlds. In the first studies of thunderstorm turbulence, the airplane was deliberately flown through thunderheads, and on one occasion was whirled up several thousand feet, to above its service ceiling, in a matter of seconds. Ever since the beginning of NACA flight research, NACA pilots have made a practice of exploring unknown regions of flight to bring back new information for increasing the performance, safety, and utility of aircraft.

Highlight of NACA flight research is the transonic flight research program, using specially designed aircraft built through contract with the Armed Services for the NACA. Using the new national flight test center at Muroc Dry Lake, California, NACA pilots are exploring a new flight range that represents man's first steps toward flight above the speed of sound.



NACA research airplanes and pilots carry out projects in all phases of aeronautical research. Here, combustion in an experimental ram-jet is studied in flight.



PERSONNEL INFORMATION

Variety and Scope of Research

The NACA is engaged in numerous research projects designed to improve the performance, efficiency, and safety of aircraft. Unusual opportunities exist for research on new and challenging problems in all phases of aeronautics. The scope of the Committee's research program is so broad that it is not limited by conventional bounds, but encompasses all of the physical sciences.

Chemists, Metallurgists, Physicists, and Mathematicians are being employed in increasing numbers to investigate problems encountered in the realm of transonic and supersonic flight.

Facilities and Equipment

In forecasting the trend of aeronautical development, the NACA designs and constructs its own facilities and equipment to investigate anticipated research problems. Its laboratories, therefore, are among the most modern and well-equipped in the world, and contain many facilities that are unique in the scientific field. In addition to its laboratories, the Committee has highly developed service organizations which provide mechanical, administrative, and technical assistance to facilitate progress of the research program. Competent and well-trained craftsmen work in large modern shops with the finest machine tool equipment. Some of the equipment, such as the airfoil machine, is unique in the field. Skilled machine shop personnel, instrument makers, aircraft metalsmiths, model makers, and many other specialized craftsmen make possible unusually complete and advanced research services.

Research scientists are served by staffs of trained computers who carry the burden of mathematical load, and editorial staffs who handle the mechanics of editing research reports. Also assisting these scientists are engineering and drafting services, photographic services, illustrators, and all other technical services which go to complete the operating team of a research organization.

Placement and Promotion

The NACA has actively partici- pated in the movement to obta proper appreciation of the problen and requirements of scientific wo and personnel in the Federal ser ice, and to offer adequate recogn tion and reward for successful sc entific endeavor. In addition to efforts to promote the welfare scientific personnel in general, t Committee constantly endeavors make the best possible use of own employees, through placem in the most suitable capacity.

Additional training and advancement are encouraged at the NACA, through lectures and instruction within the organization as well as outside courses with universities.

Since its inception in 1915, the NACA has increased in size from an organization of about 15 employees to one employing over 6000 personnel. Current expansion in major phases of the Committee's research program has created openings for well-qualified applicants. Scientific personnel are assigned to specialized research projects as soon as they report for duty, and are given ample opportunity to develop within their chosen field. Individuals will find no "blind alley" positions in the NACA: On the contrary, the policy of the Committee is to assure all possible recognition and advancement to those employees who merit them. In other words, promotions within the NACA may be quite rapid, depending upon the demonstrated ability and fitness of an employee to fill a higher level position.

Education and Training

The NACA encourages the educational and professional development of its employees by providing lectures and seminars to keep personnel advised of the latest developments in their own and related fields of specialization. In addition, arrangements have been made with local educational institutions to make available to NACA employees special after-hours courses offered by the engineering and scientific departments of these universities.

Professional Societies

Employees are encouraged to attend meetings of professional and scientific societies, and to take active part both in the presentation of papers and in the official conduct of society business. Where the activities at a meeting will contribute directly to the Committee's research program, selected members of the staff may attend the meeting at Government expense.

Scientific Prestige

Opportunity is offered for professional association with some of the nation's leading scientists who are directing research projects for the NACA.

Technical Publications

Information obtained as a result of investigations conducted by the NACA is prepared in report form, and disseminated to the military and naval services, the aircraft industry, and others concerned. These reports are prepared by the scientific and technical personnel working on the particular research projects; therefore, ample opportunity is offered for the preparation and authorship of technical NACA reports. In addition, the Committee actively encourages and sponsors the publication in scientific and technical journals of articles based on work performed in the Committee, or on other special interests of its personnel. Such articles are, of course, subject to security clearance.

Patent Policy

The patent policy of the NACA is designed to protect the employee's rights, as well as those of the Government. Patents on inventions related to the Committee's work programs will be secured without ex-

Construction of research models requires fine craftsmanship. The model shops are well equipped and maintain a high level of workmanship among skilled employees.

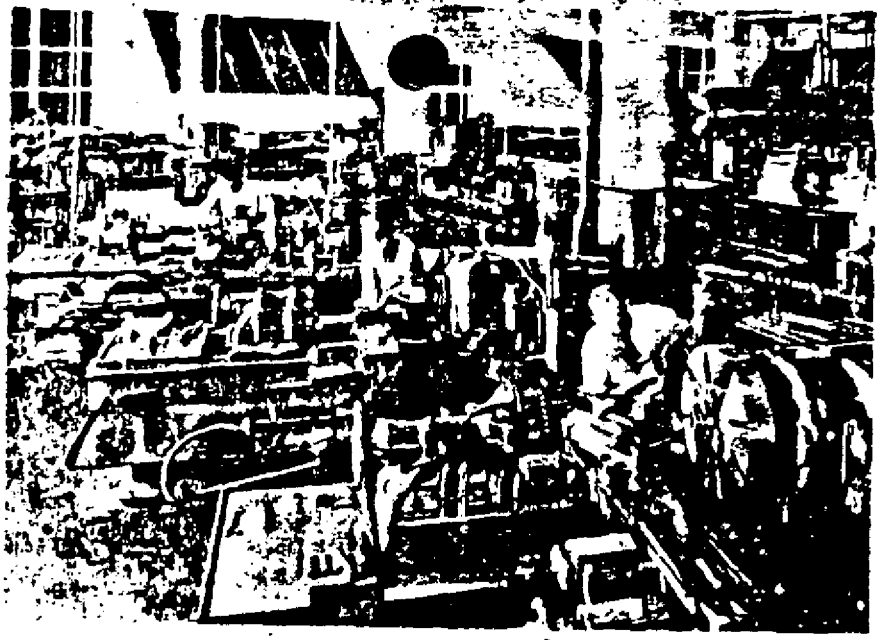
[illegible] to the inventor. The only instance in which the Government assumes full title to an invention is when the idea is integrally connected with the specific work assignment of the employee. In all other cases, the employee retains the commercial rights, or all rights, of the patent depending upon the nature of the invention.

Recreational Facilities

It is the policy of the NACA to encourage and support any organized activity on the part of employees which will help to maintain a high working morale. Employees have formed social clubs, sports groups, musical organizations, hobby clubs and theatre groups which have a semi-official standing, and whose activities are reported in a weekly newspaper. Excellent social and recreational facilities are also offered in the communities in which NACA offices are located.

Salary Range

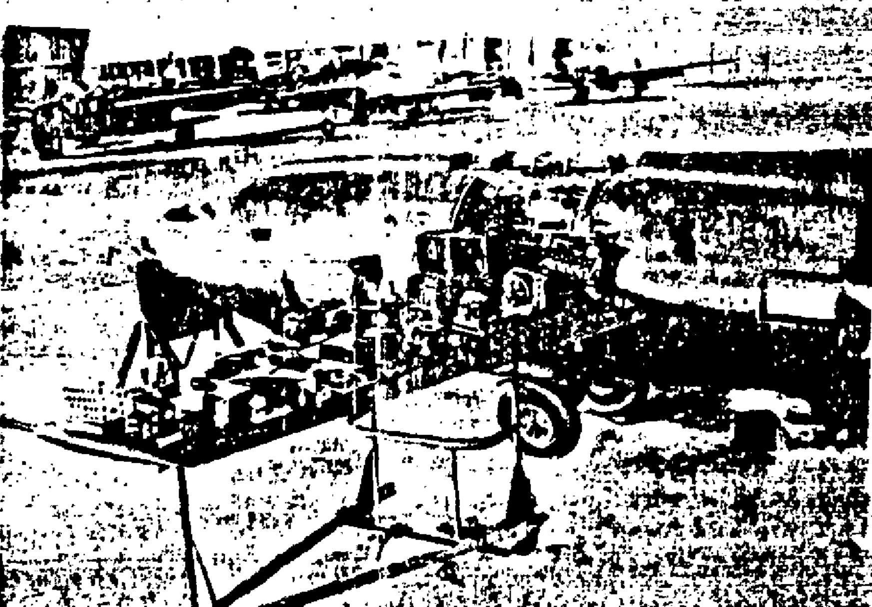
Entrance salaries, which are based on position duties, are determined in large measure by the qualifications of the appointee. Periodic increases are provided for employees whose performance meets prescribed standards of efficiency. Salaries are also adjusted from time to time to meet changing conditions.



Supporting technical services are a vital part of successful research. Modern machine shops, metal and wood working shops are operated to meet research demands.

Eligibility Requirements

Applicants with a bachelor's degree and one year of research experience are not required to take a written examination, but may qualify on the basis of their education and experience. Advanced scientific degrees may be substituted for the minimum experience requirements.



The reliability of NACA information has been due in large measure to the fineness of its instrumentation. Shown are NACA flight research instruments for the XS-1.

Leave of Absence

26 days vacation (or annual) leave, and 15 days sick leave, are earned each year. Leave is charged only for absence on regular work days, which does not include holidays or non-work days (usually Saturdays and Sundays). Vacation leave with pay, therefore, amounts to approximately 5 weeks each year. Legal holidays generally are observed as non-work days in the Federal service.

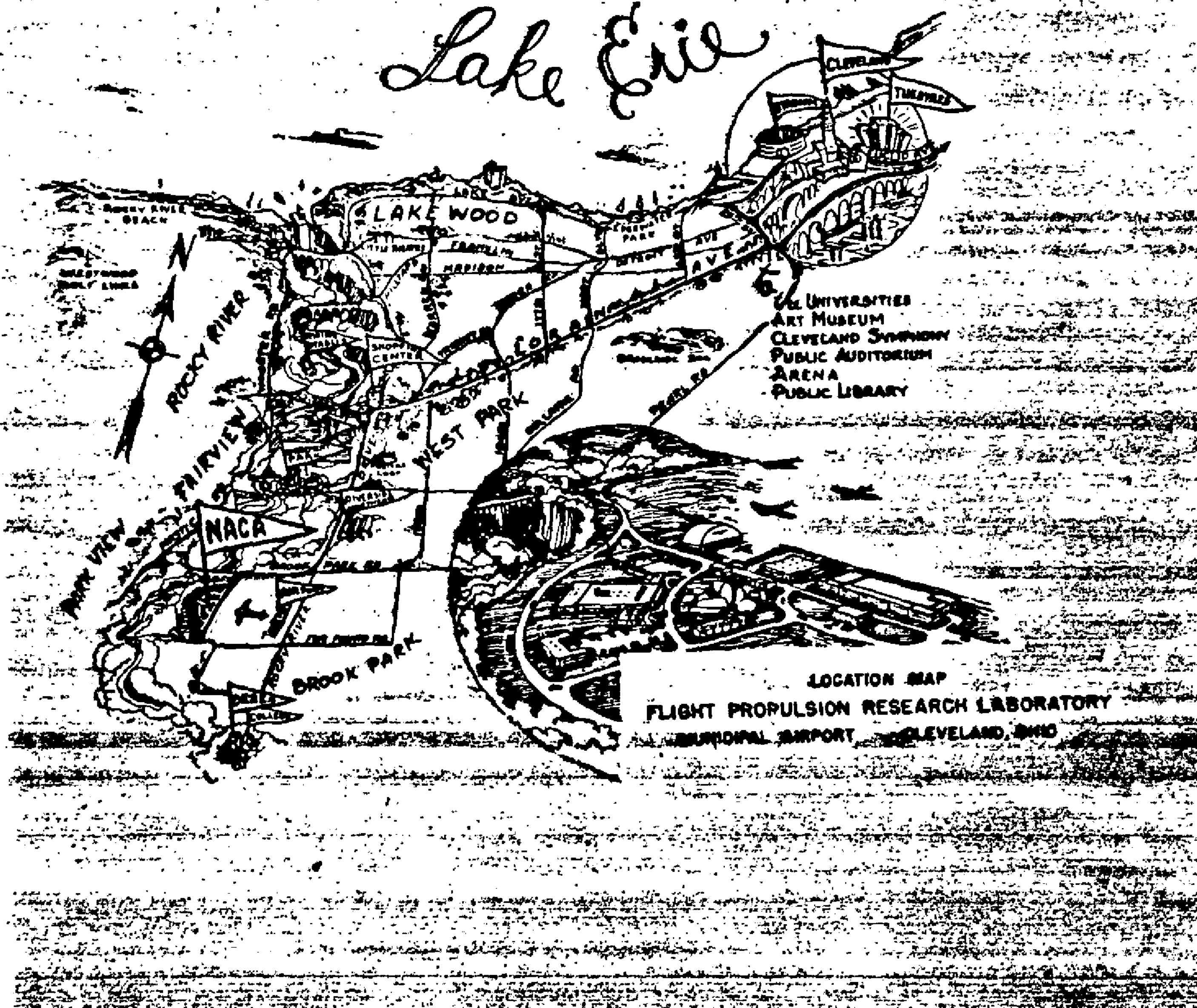
Work-Week

The normal work-week in NACA offices is forty hours ([illegible] hours a day, [illegible] days a week). Overtime is compensated either by [illegible] or by equivalent time off from duty.

Retirement

A liberal retirement program permits many employees to retire with substantial annuities at age [illegible] (or even 55) if they have the requisite amount of service. A small percentage of the base pay is deducted from an employee's salary for this purpose. The minimum annuity for an employee retiring at age 60, with 35 years of service, is one-half his highest average salary for five consecutive years.

LOCATION MAP
LANGLEY MEMORIAL AERONAUTICAL LABORATORY
LANGLEY FIELD, VIRGINIA



LOCATION MAP
FLIGHT PROPULSION RESEARCH LABORATORY
MUNICIPAL AIRPORT CLEVELAND, OHIO

LOCATION MAP
AMES AERONAUTICAL LABORATORY
MOFFETT FIELD, CALIFORNIA

FILE DESCRIPTION

BUREAU FILE

SUBJECT William Perl

FILE NO. 65-59312

SECTION NO. 10

SERIALS EBF 459

Inventory Worksheet
FD-503 (2-18-77)

VOLUME 10 EBE 459 HEADQUARTERS FILES

REVIEWED BY: 141

File No: 65-59312 Re: William Perl

Date: 4 78
(month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
459	6/21/51	CV report to HQ	12	—	referred to another agency 12 dupe Copy of serial 459 in file
		Ledger Sheet & Exhibit Card	2	—	referred to another agency
		Ledger sheet & Exhibit Card	2	—	referred to another agency
		OPA form D-25 & Exhibit Card	2	—	referred to another agency
		Envelope Containing above	1	1	

FBI/DOJ

105-59312-4459

FILE DESCRIPTION

BUREAU FILE

SUBJECT William Peel

FILE NO. 65-59312

SECTION NO. 10

SERIALS EBF 481

Inventory Worksheet
FD-503 (2-18-77)

VOLUME 10 EBF 481

HEADQUARTERS FILES

REVIEWED BY.. [illegible]

File No: 65-59312 Re: William Perl

Date: 4 78
(month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
481	8/17/44	research authorization #E110	99	-	referred to another agency with serial 481 in file

FBI/DOJ

FILE DESCRIPTION

BUREAU FILE

SUBJECT William Peel

FILE NO. 65-59312

SECTION NO. 10

SERIALS EBF 483

Inventory Worksheet
FD-503 (2-18-77)

VOLUME 10 EBF 483

HEADQUARTERS FILES

REVIEWED BY.. JAL

File No: 65-59312 Re: William Perl

Date: 4 78
(month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
483	6/30/51	SDNY Court Motion	50	50	

FBI/DOJ

IN THE
District Court of the United States
FOR THE SOUTHERN DISTRICT OF NEW YORK

UNITED STATES OF AMERICA,

v.

WILLIAM PERL, etc.,

Defendant.

MEMORANDUM OF LAW IN SUPPORT OF MOTION OF DEFENDANT TO DISMISS THE INDICTMENT ON THE GROUNDS THAT IT FAILS TO SHOW JURISDICTION IN THE COURT AND FAILS TO CHARGE AN OFFENSE

RAYMOND L. WISE,
Attorney for Defendant, William Perl,
80 Broad Street,
New York, N. Y.

ALFRED A. ALBERT
STANLEY KANAREK,
JOHN J. MURRAY, JR.,
Of Counsel.

June 30th, 1951.

APPEAL PRINTING CO., INC., 130 CEDAR STREET, NEW YORK, WO 4-3033

TABLE OF CASES

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Summary of Argument

1. U.S.C. Title 18, Sec. 1621 requires that the oath be taken "in any case in which a law of the United States authorizes an oath to be administered, . . ."

2. There is no law of the United States which specifically authorizes an oath to be administered before a United States Grand Jury within the meaning of 18 U.S.C. Sec. 1621.

3. It is true that Rule 6(c) of the Rules of Criminal Procedure states in part as follows:

> "The foreman shall have power to administer oaths and affirmations . . ."

4. But a rule of criminal procedure is not "a law of the United States" within the meaning of U.S.C. Title 18, Sec. 1621.

5. Nor is Title 18, U.S.C. Sec. 3771 "a law of the United States which authorizes an oath to be administered" within the meaning of those words in Title 18, U.S.C. Sec. 1621.

Rule 6(c) is not "a law of the United States" because Congress particularly intended to restore the rule making power to the Supreme Court and to refrain from legislating in the area covered by Sec. 3771. The rules are not Acts of Congress and cannot be dealt with as such. A mere reading of the legislative history of the revision and codification of U.S.C. Title 18, makes this abundantly clear.

The Supreme Court cases interpreting 18 U.S.C. 1621 (and its predecessor statutes containing the same language) uniformly hold that the administration of the oath must be clearly authorized by nothing less than an Act of Congress specifically authorizing the administration of an oath in each case or instance in which a charge of perjury is made.

18 U.S.C. 3771 merely empowers the Supreme Court to prescribe rules of criminal procedure. It is not a law specifically authorizing the administration of an oath within the meaning of Sec. 1621 or of the Supreme Court cases interpreting it.

The Fifth Amendment, the Sixth Amendment and the long line of cases dealing with the construction of a criminal statute all uphold the view that Sec. 3771 is not enough to supplement Sec. 1621, in a case of perjury before a grand jury.

One case, in particular, is *U. S.* v. *Eaton*, 144 U. S. 677. The case has been cited with approval by many other Supreme Court cases, one as late as March 1949. It has been distinguished but never overruled. It is decisive of the instant case because it holds that the words "required by law" in a criminal statute do not mean "required by regulation". The application of the principle of the *Eaton* case to the case at bar requires a ruling that the words in Sec. 1621 "in any case in which a law of the United States authorizes an oath to be administered" do not mean "in any case in which a law of the United States empowers the Supreme Court to prescribe a rule".

Hence, Sec. 3771 is not a law which "authorizes an oath to be administered" within the meaning of those words in Sec. 1621.

Therefore, there being nothing other than Sec. 3771 or Rule 6(c) which authorizes the administration of an oath to grand jury witnesses (and Sec. 3771 and Rule 6(c) being insufficient), the indictment must be dismissed.

POINT I

Only an Act of Congress specifically authorizing an oath to be administered satisfies the requirements of Title 18, Sec. 1621.

Title 18, Sec. 1621, reads as follows:

> Sec. 1621. Perjury Generally. Whoever, having taken an oath before a competent tribunal, officer, or person, in any case in which a law of the United States authorizes an oath to be administered, that he will testify, declare, depose, or certify truly, or that any written testimony, declaration, deposition, or certificate by him subscribed, is true, willfully and contrary to such oath states or subscribes any material matter which he does not believe to be true, is guilty of perjury, and shall,

> except as otherwise expressly provided by law, be fined not more than $2,000 or imprisoned not more than five years, or both.

The contention of the defense set forth in the above point has been passed upon by the United States Supreme Court and the lower courts. The holdings of these cases have been favorable to the defense.

In *U. S.* v. *George* (1913) 228 U. S. 14, the defendant was indicted under Sec. 5392 of the revised statutes. The latter was a predecessor statute dealing with perjury in substantially the same language as the statute in the case at bar and contained precisely the same words "* * * in any case in which a law of the United States authorizes an oath to be administered * * *." He demurred on the specific ground that no law of the United States authorized an oath to be administered. The demurrer was upheld by the district court and on a direct appeal to the United States Supreme Court, the district court was affirmed.

The facts are briefly as follows:

George was a claimant to a homestead. Section 2291 of the revised statutes provided that two credible witnesses make an oath as to the claimant's claim.

Section 2246 *of the revised statutes gave the* Secretary of the Interior power to make regulations to carry out Section 2291 and also authorized the administration of an oath. Section 2246 of the revised statutes read in part as follows:

> "The register or receiver is authorized and it shall be their duty to administer any oath required by law or the instructions of the General Land Office in connection with the entry or purchase of any tract of public lands."

The Secretary of the Interior, in the pretended power of delegation under Section 2246 issued a regulation to the effect that in addition to the two witnesses required by Section 2291 of the revised statutes, the claimant himself must submit an affidavit. Pursuant to this alleged regulation the claimant, *George*, submitted an affidavit which the government claimed in the indictment to be willfully false.

The court held that an indictment must be based on an affidavit authorized or required by law and that a charge of crime must have clear legislative basis. It was held that the Secretary of the Interior could not enlarge the requirements of Section 2291 by requiring the claimant to submit an affidavit.

The court said by Mr. Justice McKenna, at page 17, "It will be observed that the indictment charges that the oath was taken in a proceeding wherein a law of the United States authorized an oath to be administered. Whether it was is the question in the case, and we are brought to the inquiry as to what law of the United States authorized the oath".

At page 22, in discussing *U. S. v. United Verde Copper Co.*, 196 U. S. 207, Mr. Justice McKenna went on to say, "In other words, a distinction between the legislative and administrative function was recognized and enforced. And, similarly, this distinction must be recognized and enforced in the case at bar. The distinction is fundamental. Where the charge is of crime, it must have clear legislative basis. In illustration we may cite *Williamson* v. *U. S.*, 207 U. S. 425 . . ." and Mr. Justice McKenna went on to cite many other cases following the *Williamson* case.

This case is clear authority for the contention that nothing short of an Act of Congress authorizing the oath to be administered will satisfy the requirements of Title 18, Sec. 1621. It is likewise clear authority for the proposition that an administrative regulation is not sufficient to fulfill the requirement of Title 18, Sec. 1621.

The *George* case was distinguished but not in any sense overruled in *U. S.* v. *Smull* (1915), 236 U. S. 405. In that case the defendant was indicted under Section 125 of the criminal code—another predecessor statute of Title 18, Sec. 1621 dealing with perjury in substantially the same language and containing the requirement that the oath must be taken "* * * in any case in which a law of the United States authorizes an oath to be administered, * * *." The indictment alleged that the defendant, Smull, swore falsely in applying for homestead entry under revised statute Sec. 2289 as to any prior entry on his part onto the homestead claim. Section 2246 of the revised statutes set forth above specifically authorized the register or receiver to administer any oath required by law or by the instructions of the general land office. Revised statute, Sec. 2290 required the making of an affidavit in connection with entry. A department regulation required that the applicant state whether or not he made a prior entry. Revised Statute, Sections 161, 441, 453 and 2478 authorized the land office to make appropriate regulations. The indictment alleged that Smull made a false affidavit in connection with prior entry. The jurat to the affidavit was taken before one J. C. Ardry, who was then a duly appointed receiver of the land office and duly authorized, under Sec. 2246, to administer an oath.

The court held that the *regulation* requiring proof of prior entry under Sec. 2290 properly amplified the requirements of the latter within the scope of the sections authorizing regulations to carry out the law. Hence, unlike in the *George* case, which the Court went on to distinguish, the regulation was a valid one pursuant to a proper exercise of delegated legislative power. The court stated that Sec. 125 of the criminal code must be read together with Sec. 2246 of the revised statutes. The former required that an oath be authorized by a law of the United States and Sec. 2246 of the revised statutes was a law of the United States authorizing the administration of an oath. The court stated by Mr. Justice Hughes, at page 408, "The charge of crime must have clear legislative basis" and again, at page 409 the court said, "The false swearing is made a crime not by the department but by Congress, the statute not the department fixes the penalty".

The sustaining of the demurrer in the court below was reversed.

It is to be noted that both the *George* and the *Smull* cases are authority for the proposition that "the charge of crime must have clear legislative basis".

Both cases are authority for the contention that nothing less than a statute of the United States must authorize the administration of the oath in order to satisfy the requirements of Title 18, Sec. 1621 and its predecessor statutes.

In the *George* case the indictment was dismissed because the affidavit was required only by an invalid regulation and hence, clearly could not satisfy the statutory requirements of perjury.

In the *Smull* case the affidavit was required by a valid regulation and the oath to the affidavit was properly administered "in a case in which a law of the United States authorizes an oath to be administered", to wit, Sec. 2246, of the revised statutes.

In other words, both the *George* and *Smull* cases are clear authority to the effect that the perjury statute requires that an Act of Congress specifically authorize the oath to be taken. In both cases there was a statute which authorized an oath to be taken. In the *George* case an invalid regulation required that a third witness testify also under oath. In the *Smull* case a valid regulation required that certain matters be set forth under oath.

In both cases the Act of Congress and not the regulation prescribed had created the crime.

Another case supporting the contention that only an Act of Congress specifically authorizing the administration of an oath satisfies the requirement of the perjury statute is *Boehm v. U. S.* (C.C.A. 8th 1941), 123 F. 2d 791. In that case an attorney on the staff of the Securities and Exchange Commission had been designated by an order of the Commission to conduct an investigation as an officer of the Commission and had been empowered to administer oaths. Boehm was convicted of false swearing in the course of the investigation. The indictment charged perjury under criminal code, Sec. 125, 18 U.S.C.A. Sec. 231 (the predecessor section to Title 18, Sec. 1621). Sec. 231 contained the same words namely, "* * * in any case in which a law of the United States authorizes an oath to be administered * * *". The appeal was taken to reverse the conviction and sentence of Boehm. Boehm contended in the circuit court as he did in the district court that the oath he had taken before the attorney of the S.E.C. was not taken before a competent tribunal, officer or person in any case in which a law of the United States authorized an oath to be administered. The court held that the Commission had power to conduct the investigation and to appoint the attorney as a hearing officer and he might in turn be authorized to administer the oath. A number of other points were raised and dealt with but in connection with the question of whether or not the oath was properly administered the court, at page 801, said:

"The sections of the Act invoked by the Commission are specified in the order and the provisions thereof clearly empowered the officer so designated by the Commission to administer oaths and to take evidence upon the investigation".

The court was referring to Section 19(B) of the Securities Act of 1933, Section 21(B) of the Securities Exchange Act of 1934 and Section 18(C) of the Public Utility Holding Company Act of 1935.

The three sections of the three Acts are somewhat similar. Each one specifically authorizes a member of the Commission or any officer designated by it to administer oaths and affirmations.

It is to be observed that the statutes in the case specifically delegate the power to the Commission to designate what person or persons shall actually administer the oath.

The rationale of the above cases may be summarized by stating that it is settled law that the requirements of Sec. 1621 can be satisfied only by a statutory enactment, that is to say, an Act of Congress which clearly, specifically and unequivocally authorizes an oath to be administered.

This is supported by the statement of Mr. Justice McKenna at page 20 of the *George* case when he said:

> "This is indubitably so as to Secs. 161, 441, 453 and 2478; and certainly under the guise of regulation legislation cannot be exercised. United States v. United Verde Copper Co., 196 U. S. 207."

In the *Verde* case the regulation was held to be invalid and the court said:

> "Such power is not regulation; it is legislation."

18 U.S.C. Sec. 1621 requires a companion statute which must specifically and in plain language authorize the administration of the oath in the case in which the alleged perjury was committed.

In *Caha v. United States* 152 U. S. 211, which was also a Land Office case the oath was actually administered pursuant to revised statute 2246 by the receiver and by the register as the statute specifically required.

In *United States* v. *Morehead* (1917), 243 U. S. 607, revised statute 2290 required a member of the Armed Forces to make an affidavit in connection with a homestead application. The applicant was sworn before a notary public. The case therefore, merely holds that an affidavit can be sworn to also before a state officer and need not be sworn to only before the register or receiver of the Land Office pursuant to revised statute 2246. It is to be noted that a clear statutory enactment, namely, revised statute 2290 in plain language did authorize and require the making of an affidavit.

There may be cases which hold that a long established practice in a department of conducting its investigations by placing the witnesses or claimants under oath is sufficient to obtain an indictment but none of these cases are under 18 U.S.C. 1621 or any predecessor statute containing the words "any case in which a law of the United States requires an oath to be administered".

For instance, in *United States* v. *Bailey*, 34 U. S. 267, (9 Peters 238), the statute, being the Act of March 1, 1823, simply covered the case of "any person who shall swear or affirm falsely in support of a claim against the United States" and the charge was false swearing and not perjury. The case held that the Secretary of the Treasury had implied power to administer an oath.

Coming now to what appears to be the most recent case on the subject, in *United States* v. *Obermeier* (C.C.A.

2d, Dec. 1950), 186 F. 2d 243, certiorari denied March 26, 1951, 71 S. Ct. 669, the defendant was convicted for knowingly making a false statement under oath in a matter relating to naturalization and citizenship and he appealed. The court held that the evidence sustained the conviction. The defendant raised the question as to whether the naturalization examiner had legal authority to administer an oath. It was clearly established that there was no statutory authority expressly authorizing an oath in such an administrative pre-petition examination before the Bureau of Immigration and Naturalization.

It is to be noted that the indictment was not under 18 U.S.C. Sec. 1621 but under 8 U.S.C. Sec. 746(a)(1), the material portion of which makes it a felony for any person "knowingly to make a false statement under oath, either orally or in writing, in any case, proceeding, or matter relating to, or under, or by virtue of any law of the United States relating to naturalization or citizenship."

The court noted the rule of the Supreme Court in *U. S. v. George* (*supra*), and the reasons given in the cases cited in the footnote to the court's opinion. The court went on to hold that it is sufficient under 8 U.S.C. Sec. 727(b) that the Commission of Immigration is empowered to make proper rules and regulations in regard to the scope and nature of an examination. Pursuant to long standing custom, the regulations, properly within the delegation of power, authorized the swearing of witnesses.

The case is really a "compare" authority for the position maintained herein. In other words, the case says in effect that where the criminal statute specifically requires a law authorizing the administration of an oath nothing short of a law will suffice. In the *Obermeier* case the statute simply did not contain such requirement.

An examination of the cases, therefore, leads to the definite conclusion that in cases arising under 18 U.S.C. Sec. 1621, or under predecessor statutes containing the same language, nothing short of an Act of Congress specifically authorizing an oath to be administered is sufficient to support the indictment.

No claim is made here that witnesses sworn before the Grand Jury cannot be duly sworn under Rule 6(c) or that they have not been duly sworn as is required by due process of law to found an indictment under other sections of the criminal code than Sec. 1621.

The claim is simply that under Sec. 1621 the witnesses must be sworn before the Grand Jury pursuant to a statute which specifically so authorizes and they cannot be duly sworn under a rule prescribed by virtue of Sec. 3771.

Since there is no such statute there can be no crime under Sec. 1621 in respect to the testimony of witnesses before a Grand Jury until Congress corrects the situation by enacting a statute which specifically authorizes a Grand Jury to swear its witnesses. There was such a law, namely 28 U.S.C. §420, but, on June 25, 1948, Congress repealed it, without realizing the effect the repeal would have on 18 U.S.C. §1621. On the other hand, Title 28, U.S.C. §459 and §953, empowering a justice or a judge of the United States and a clerk of court or his deputies to administer oaths and affirmations, and take acknowledgments were not repealed.

POINT II

There is no Act of Congress specifically authorizing an oath to be administered to witnesses before a United States Grand Jury.

The reason is not far to seek. In June, 1940, Congress restored to the Supreme Court of the United States its rule making power, June 24, 1940, c. 445, 54 Stat. 688, (Title 18 U.S.C., 1940 edition, Secs. 687, 689). This restoration was enacted into positive law by Title 18 Sec. 3771 which reads as follows:

> "Sec. 3771. Procedure to and including verdict. The Supreme Court of the United States shall have the power to prescribe, from time to time, rules of pleading, practice, and procedure with respect to any or all proceedings prior to and including verdict or finding of guilty or not guilty by the court if a jury has been waived, or plea of guilty, in criminal cases and proceedings to punish for criminal contempt of court in the United States district courts, in the district courts for the Territory of Alaska, the district of the Canal Zone and the Virgin Islands, in the Supreme Courts of Hawaii and Puerto Rico, and in proceedings before United States commissioners. Such rules shall not take effect until they have been reported to Congress by the Chief Justice at or after the beginning of a regular session thereof but not later than the first day of May, and until the expiration of ninety days after they have been thus reported. All laws in conflict with such rules shall be of no further force or effect after such rules have taken effect.
>
> Nothing in this title, anything therein to the contrary notwithstanding, shall in any way limit, supersede, or repeal any such rules heretofore prescribed by the Supreme Court. June 25, 1948, c. 645, 62 Stat. 846, amended May 24, 1949, c. 139, §59, 63 Stat. 98; May 10, 1950, c. 174, §1, 64 Stat. 158."

Pursuant to its restored power the Supreme Court of the United States under date of December 26, 1944 transmitted its new rules of criminal procedure to the Attorney General who in turn on January 3, 1945 transmitted the new rules to the Congress of the United States. Rule 6(e) provided as follows:

(c) Foreman and Deputy Foreman. The court shall appoint one of the jurors to be foreman and another to be deputy foreman. The foreman shall have power to administer oaths and affirmations and shall sign all indictments. He or another juror designated by him shall keep a record of the number of jurors concurring in the finding of every indictment and shall file the record with the clerk of the court, but the record shall not be made public except on order of the court. During the absence of the foreman, the deputy foreman shall act as foreman."

This was part of an ambitious and thorough going codification, revision and enactment into positive law of the laws relating to federal crimes and procedure. Part of the general scheme of revision was to allocate to the Supreme Court the area of promulgating rules under the power later granted by the above section, Title 18, Sec. 3771.

In this connection the existing laws, 28 U.S.C.A. former Sec. 420 and 18 U.S.C.A. former Sec. 554(a), were repealed by Public Law 772 of the 80th Congress, Chapter 645, 2d Session (H. R. 3190) which was the public law which revised, codified and enacted into positive law Title 18 of the U. S. Code. Under Sec. 21, to be found at page 203 of *Public Law 772 and in the last volume* of Title 18, U. S. Code Annotated at page 563, the sections of the statutes enumerated in the schedule which immediately follows are specifically repealed.

The schedule which follows shows, at page 206 of Public Law 772, (Title 18 U.S.C.A. last volume pages 568 and 569) that the parts of Statute-at-large under date of March 3, 1911, which were Title 28 U.S.C. Secs. 419-442 are *specifically repealed*. Likewise the schedule shows, at page 208, of Public Law 772 (Title 18 U.S.C.A. last volume, page 573) that the part of Statute-at-large, dated April 30, 1934, which was Title 18, Sec. 554(a) was also repealed.

The effect of this was to remove from the statute books of the United States the only law, *i.e.*, the only Act of Congress, authorizing a Grand Jury to place the witnesses before it under oath or affirmation.

Since the enactment was a declaration of positive law, all prior laws on the same subject were repealed and Public Law 772 of the 80th Congress became the substantive law now known as Title 18 "Crimes and Criminal Procedure."

Title 28 U.S.C. Sec. 420, which was specifically repealed as above stated by the Act of June 25, 1948, Chapter 645, Sec. 21, 62 Stat. 862, effective September 1, 1948 read as follows:

> "28 U.S.C. Sec. 420.
> (Judicial Code, section 283.) Same; foreman. From the persons summoned and accepted as grand jurors, the court shall appoint the foreman, who shall have power to administer oaths and affirmations to witnesses appearing before the grand jury. (R. S. Sec. 809 March 3, 1911, C. 231 Sec. 283, 36 Stat. 1165.)"

It is to be noted that the repealed Sec. 420 is an Act of Congress which specifically authorizes the court to appoint the foreman of the grand jury and in turn specifically authorizes the foreman to administer oaths and affirmations. This was replaced by the first two sentences of Rule 6(c) of the Rules of Criminal Procedure which read as follows:

> "The court shall appoint one of the jurors to be foreman and another to be deputy foreman. The foreman shall have power to administer oaths and affirmations and shall sign all indictments."

Similarly, Title 18 U.S.C. Sec. 554(a) was repealed, as above stated, by Sec. 21, 62 Stat. 862 (Public Law 772). The repealed section read as follows:

"Sec. 554 (a) Same; objection on ground of unqualified juror barred where twelve qualified jurors concurred; record of number concurring.

No plea to abate nor motion to quash any indictment, upon the ground that one or more unqualified persons served upon the grand jury finding such indictment, shall be sustained if it appears that twelve or more jurors, after deducting the number so disqualified, concurred in the finding of said indictment: Provided, however: That no juror shall be permitted to testify, in this connection, as to whether he or any other individual juror voted for or against the finding of such indictment, but it shall be the duty of the foreman of each grand jury to keep a record of the number of grand jurors concurring in the finding of any indictment and to file such record with the clerk of the court at the time the indictment is returned. Such record shall not be made public except on order of the court (April 30, 1934, c. 170, Sec. 2, 48 Stat. 646.)"

It is to be noted that, among other things, this section deals with the question of whether or not a sufficient number of grand jurors concurred in the finding of the indictment. This phase of the statute was covered by the third sentence of Rule 6(c) of the Rules of Criminal Procedure which reads as follows:

> "He or another juror designated by him shall keep a record of the number of jurors concurring in the finding of every indictment and shall file the record with the clerk of the court, but the record shall not be made public except on order of the court."

The obvious purpose of the repeal of Title 28 U.S.C. Sec. 420 and Title 18 U.S.C. Sec. 554(a) was to take out of the area of legislative enactment the matters of administering oaths and affirmations to grand jury witnesses and the recording of the number of jurors concurring in the finding of an indictment. This was to be part of the area of rule making to be restored to the Supreme Court.

Unfortunately, in so doing Congress inadvertently completely overlooked the effect of their action on the clause in Title 18 U.S.C. Sec. 1621 which requires that the oath be authorized "by a law of the United States".

It is not claimed that Congress intended to abolish the crime of perjury by a grand jury witness.

It is claimed and it is a fact that Congress inadvertently did so.

This leaves only a Rule of Criminal Procedure, namely Rule 6(c) to deal with the matter of administering oaths and affirmations to witnesses before a United States Grand Jury. But the Rules of Criminal Procedure are not Acts of Congress and cannot be treated as such particularly to meet the exacting requirements of a penal statute which must be strictly construed.

"Fixed by law" and "fixed by a law" differ in meaning. The latter is limited in a technical sense to "a statute". This is the holding of *U. S. Fidelity & G. Co. v. Guenther* (1929), 281 U. S. 34, 37.

That a rule of criminal procedure is not a law will now be developed.

POINT III

Rule 6(c) of the Rules of Criminal Procedure is not "a law of the United States" within the meaning of U.S.C. Title 18, Sec. 1621.

While not a holding, there is dicta of persuasive force, even though in a dissenting opinion of a Supreme Court case, which supports the above point.

In Sibbach v. Wilson & Co. (1940), 312 U. S. 1, 61 S. Ct. 422, a rule of civil procedure was under consideration. The case dealt with the validity of Rules 35 and 37 of the Rules of Civil Procedure. The latter were adopted very much in the same manner as the Rules of Criminal Procedure after a statutory restoration of rule making power to the Supreme Court by the Act of June 19th, 1934, 28 U.S.C.A. Secs. 723b and 723c. The case turned on a point of whether or not the rules had to follow state practice and it was held that they did not have to in matters of procedure not affecting a right of substantive law. But, in a dissenting opinion, Mr. Justice Frankfurter, holding the rule did involve substantive law, said at page 18 (Sup. Ct. p. 428):

> "In this view little significance attaches to the fact that the Rules, in accordance with the statute, remained on the table of two Houses of Congress without evoking any objection to Rule 35 and thereby automatically came into force. *Plainly the Rules are not acts of Congress and cannot be treated as such.* Having due regard to the mechanics of legislation and the practical conditions surrounding the business of Congress when the Rules were submitted, to draw any inference of tacit approval from non-action by Congress is to appeal to unreality. And so I conclude that to make the drastic change that Rule 35 sought to introduce would require explicit legislation. * * *" (Italics supplied.)

The last volume of Title 18 of U.S.C.A. contains the legislative history of Public Law 772 of the 80th Congress. This legislative history as set forth on pages 579 to 680 of the last volume of Title 18, U.S.C.A., consists of the Senate Report, the House Report, Hearings before the House Committee of Revision of the Laws, House and Senate floor discussion, etc. A full reading of these pages leaves no doubt whatsoever that the Rules of Criminal

Procedure are not acts of Congress and that on the contrary, Congress was careful not to enact the Rules into law and did not desire to do so. The reason is clear. Having restored the rule making power to the Supreme Court, Congress did not wish to impinge upon the latter's prerogative by invading the area of procedure which had been allocated to the Supreme Court.

The superficial contention might be advanced in opposition to the argument herein that the following, which appears in the text of Public Law 772 at page 166, U.S.C.A. Title 18, last volume, page 322, might be taken to be an incorporation of Rule 6(c) into Title 18:

> "§3321. Foreman and deputies; powers and duties; records—(rule).
>
> See Federal Rules of Criminal Procedure.
>
> Appointment of grand jury foreman and deputy foreman; oaths, affirmations and indictments; records of jurors concurring, Rule 6(c). June 25, 1948, c. 645, 62 Stat. 829."

Nothing can be further from the fact. On the contrary, the paragraphs referred to are intended merely to be cross references for the convenience of the Bench and Bar, and it was desired that there should be no suggestion that Congress intended to enact the Rules into Law. This is basic and most clearly demonstrated by the remarks of Charles J. Zinn, Esq., Counsel to the House Committee referring to the predecessor statute, H. R. 3190, which in turn later became Public Law 772. His remarks are set forth in 92 Congressional Record A-60, A-62, and at U.S.C.A. Title 18, last volume, pages 675-676.

Mr. Zinn said in part:

> "Part II of the proposed code deals with criminal procedure. It should be of interest to the bench and

bar to know how this subject is handled in view of the Supreme Court's proposed Federal Rules of Criminal Procedure which have been reported to Congress by the Attorney General. There are a number of *substantive matters* relating to criminal procedure which are not properly the subject of court rules and these have not been incorporated in the proposed rules by the Supreme Court. The code proposed by H.R. 2200 contains all these statutory provisions as sections of part II. As to the matters covered by the proposed rules part II of the code furnishes them with section numbers and catchlines in their logical order, but instead of setting out the text of the rules there are merely cross-references to the rules themselves. The reason for this is that, although it is desirable to have the statutes and the rules in one place, inasmuch as Congress has restored to the Court its rule-making power, *there should be no suggestion by the incorporation of the text of the rules that Congress intends to enact the rules into law. When the code is enacted into law the text of the rules will undoubtedly be carried as notes to the respective sections of title 18 of the United States Code referring to them and the convenience of the bench and bar will be thus best served."* (Italics supplied.)

This is fortified by the House Report #304, U.S.C.A. Title 18, last volume, page 589, where the Report said:

"Much work on part II was done in anticipation of the adoption of the new Federal Rules of Criminal Procedure, effective March 21, 1946.

These rules modify or supersede many criminal procedural sections. Consequently effect was given to the changes they make by revising modified sections and repealing superseded provisions.

This revision of part II left a skeleton of former procedural statutes, which, after the adoption of the rules, represented only a small part of criminal procedure. In order to provide at one place a clear picture of all criminal procedure, cross-reference catch lines to the rules were inserted in logical order and interwoven into the fabric containing the remaining *statutory* provisions." (Italics supplied.)

Mr. Charles J. Zinn also testified at a hearing before the House Committee on Revision of the Laws, prior to the passage of Public Law 772 and he said in part, as follows (U.S.C.A. Title 18, last volume, page 593):

"I should like to give you briefly the historical background of the revision of the Federal criminal laws. *Before doing this, however, it may be desirable* to spend just a few moments to distinguish between the scope and objectives of H. R. 5450, and the Proposed Federal Rules of Criminal Procedure. The rules are being promulgated by the Supreme Court of the United States through its advisory committee under the authorization granted to it by Congress in 1940 as a proper exercise of the Court's rule-making function. The rules will in all likelihood be reported to Congress by the Attorney General at the opening of the next session and by the provisions of the authorizing act will become effective at the close of that session without any affirmative action being taken on the part of Congress. *It is not a legislative job.*

"On the other hand, the revision and codification of the criminal statutes contemplated by H. R. 5450 is purely and strictly a legislative one. * * *

"*These are two different and distinct works—the rules and the laws—and it is important to bear the distinction in mind.*" (Italics supplied.)

and later in his testimony (U.S.C.A. Title 18, last volume, p. 596) Mr. Zinn said:

"Furthermore by virtue of the act of Congress authorizing the United States Supreme Court to *promulgate rules of criminal procedure*, when those rules become effective all laws in conflict therewith shall be of no further force or effect. I ask you to consider the implications of that authorization and its effect upon laws relating to criminal procedure unless Congress takes action to *conform the laws to the rules* and specifically repeals obsolete laws." (Italics supplied.)

Mr. William W. Barron acted as Chief Reviser to the West Publishing Company and the Edward Thompson Company, both of which worked very closely with the Senate and the House. Mr. Barron testified (U.S.C.A. Title 18, last volume, p. 608) and said in part as follows:

"Much work on part 2 was done in anticipation of the adoption of the proposed Federal Rules of Criminal Procedure by the Supreme Court.

These rules will modify or supersede many criminal procedural sections. Consequently we gave effect to the changes they will make by revising modified sections and repealing superseded provisions.

This revision of part 2 left a skeleton of former procedural statutes which, after the adoption of the rules, will represent only a small part of criminal procedure. In order to provide at one place a clear picture of all criminal procedure, cross-reference catch lines to the rules were inserted in logical order and interwoven into the fabric containing the remaining statutory provision."

Another witness who made a distinction between the Rules and the statutory Criminal Code, was Mr. John F. X. Finn, Special Counsel to the Committee on Revision of the Laws, who testified (U.S.C.A. Title 18, last volume, p. 610) in part as follows:

"... Yet who will say that the Federal Rules of Civil Procedure have not proved a unifying boon to American jurisprudence? And who will say that they are not even now accepted to the full, not only in law but in spirit as well? A few years hence I am sure that the same wholehearted 'acceptance' will be found of the Federal Rules of Criminal Procedure and of this as yet unborn *statutory* criminal code." (Italics supplied.)

That the Public Law 772, now known as Title 18 of the United States Code is intended to embody in itself all the substantive law and that the Rules of Criminal Procedure are not acts of Congress is further shown by the remarks of Senator Wiley in the Senate floor discussion (94 Congressional Record 8906) U.S.C.A. Title 18, last volume, page 671, where Senator Wiley says in part:

"The bill makes it easy to find the criminal statutes because of the arrangement, numbering, and classification. The original intent of Congress is preserved. A uniform style of statutory expression is adopted. The new Federal Rules of Criminal Procedure are keyed to the bill and are reflected in part II of title 18. . . .

"Obsolete and executed provisions are eliminated. Uncertainty will be ended and there will no longer be any need to examine the many volumes of the Statutes at Large as the bill, upon enactment, will itself embody the substantive law which will thus appear in full in the United States Code."

It is clear that the Rule 6(c) is not an Act of Congress and cannot fulfill the requirement of the words "a law of the United States" in 18 U.S.C. 1621.

POINT IV

Nor is Title 18 U.S.C. Sec. 3771 "a law of the United States which authorizes an oath to be administered" within the meaning of those words in Title 18 U.S.C. Sec. 1621.

The argument will undoubtedly be advanced that Sec. 3771 by giving the Supreme Court the power to prescribe Rules of Procedure with respect to all proceedings prior to verdict impliedly gave the Supreme Court power to prescribe Rule 6(c).

This is not denied. On the contrary it can fairly be said that Congress expected and intended the Supreme Court to prescribe Rule 6(c). Congress repealed the statutory enactments authorizing the swearing of witnesses before Grand Juries for the very reason that Congress intended that that matter should be covered by a rule.

But in so doing Congress and the Revision Commission, in the overwhelming complexity of the many facets of the revision of Title 18, overlooked the legal effect of the repeal of the statutory enactment authorizing the administration of an oath before a Grand Jury on the enforcement of Title 18 U.S.C. Sec. 1621. It cannot be said, therefore, that Sec. 3771 is a *law* within the meaning of Sec. 1621 authorizing the administration of an oath because Congress clearly did not intend that the administration of the oath to witnesses before Grand Juries should be done by statutory authorization; quite the contrary, this was to be done pursuant to a rule and *not* pursuant to a specific statute. Sec. 3771, therefore, not only clearly falls short of the requirement of Sec. 1621 but actually negatives any inference that Congress intended Rule 6(c) to comply with the special requirements of Sec. 1621 that the oath be taken pursuant to specific statutory authority.

In other words the general authorization to the Supreme Court to make rules under Sec. 3771 coupled with the admittedly valid Rule 6(c) does not make Sec. 3771 a law which authorizes the administration of an oath within the meaning of Sec. 1621.

It has long been settled and the law is well founded which requires criminal statutes to be strictly construed. While it is true that the principle of strict construction of statutes does not mean that they must be given their narrowest possible meaning (*Singer* v. *U. S.*, 323 U. S. 338, 341-342), nevertheless the words therein must be given their plain common meaning. (*Winters* v. *People of the State of New York*, 333 U. S. 507, 515, 516.)

So here the words, "a law of the United States" in Sec. 1621 have a plain, common, and ordinary meaning. They mean a statutory enactment, an Act of Congress, which in its terms if it is to support a criminal indictment, must state clearly the essential requirements of the crime.

Applying these principles to the case at bar, Sec. 3771, in order to support Sec. 1621 as a supplementary statute would have specifically to authorize the swearing of witnesses before Grand Juries.

This, Sec. 3771 fails to do for the very reason that Congress intended not to give explicit instructions in that area of rule making but to leave the rule making power to the Supreme Court.

The question of whether or not Sec. 3771 is sufficient to support Sec. 1621 has already been settled by the Supreme Court of the United States in the cases of *U. S.* v. *George* (*supra*) and *U. S.* v. *Smull* (*supra*) where the court made it clear that there must be a statute which in plain words authorizes an administration of an oath. None of the cases decided since have in any way altered or varied the clear holding that a charge of crime must have clear legislative basis. In fact, the latest case on the subject, *U. S. v. Obermeier (supra)* in the Second Circuit as late as December, 1950, stated that the Supreme Court had held that "... the oath must be permitted or required by at least the laws of the United States ..."

The interpretation of the word "law" here contended for was the basis of the decision in and was upheld by *U. S. v. Eaton (1892)*, 144 U. S. 677.

In the Eaton case, a regulation, dated August 25, 1886, issued by the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury under Sec. 20 of 24 Stat. 209 (Act of August 2, 1886, c. 840) required *wholesale dealers* in oleomargine to keep a book and make a monthly return showing certain prescribed matters. The defendant, George R. Eaton, a wholesale dealer in oleomargine failed to comply with the regulation. Sec. 18 of 24 Stat. 209 reads as follows:

> "Sec. 18. That if any manufacturer of oleomargarine, *any dealer* therein or any importer or exporter thereof shall knowingly or wilfully omit, neglect or refuse to do, or cause to be done, any of the things *required by law* in the carrying on or conducting of his business, or shall do anything by this act prohibited, if there be no specific penalty or punishment imposed by any other section of this act for the neglecting, omitting or refusing to do, or for the doing or causing to be done, the thing required or prohibited, he shall pay a penalty of One Thousand Dollars ..." (Italics supplied.) (The act goes on to provide for the forfeiture of all oleomargine owned by the offender.)

The court held:

(1) The defendant was not liable to the penalty imposed by Sec. 18 because he did not omit or fail to do a thing

"required by law" in the carrying on or conducting of his business.

(2) There are no common law offenses against the U. S.

(3) It is necessary that a sufficient statutory authority should exist for declaring any act or omission a criminal offense; the statutory authority in the present case was not sufficient.

The court pointed out that while Sec. 5 of the Act required the defendant to keep such books and render such returns as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, might require by regulation, Sec. 5 contained no penalty and the defendant could not be punished under Sec. 5.

The Court, by Mr. Justice Blatchford, said at page 686:

> "The question, therefore, is whether a wholesale dealer in oleomargarine who omits to keep the books or render the returns prescribed by the regulation made under the authority of Sec. 20 of the act, is liable to the penalty prescribed by Sec. 18, as having omitted or failed to do a thing 'required by law in the carrying on or conducting of his business' within the meaning of Sec. 18."

The Court went on to say that the regulation was a proper one and pointed out that Sec. 161 and Sec. 251 of the Revised Statutes authorized the head of each department to prescribe regulations not inconsistent with law for the conduct of his department.

Mr. Justice Blatchford went on to say, page 687:

> "Sec. 20 of the act in question would be fully carried out by making regulations of the character of those provided for in Sec. 161 and Sec. 251 of the Revised Statutes, without extending the provision of Sec. 18 so as to make a criminal offense,

as a neglect to do a thing 'required by law,' of a neglect to do a thing required only by a regulation of the Commissioner of Internal Revenue."

"It is well settled that there are no common law offenses."

The Court then cited several cases in support of the last statement including *U. S. v. Hudson*, 7 Cranch 32; *U. S. v. Britton*, 108 U. S. 199, 206; and *Manchester v. Massachusetts*, 139 U. S. 240, 262, 263.

The Court cited *Morrill v. Jones*, 106 U. S. 466, with approval, holding that the Secretary of the Treasury cannot by regulation amend a revenue law.

Mr. Justice Blatchford went on to say, pages 687, 688:

"Much more does this principle apply to a case where it is sought substantially to prescribe a criminal offense by the regulation of a department. It is a principle of criminal law that an offense which may be the subject of criminal procedure is an act committed or omitted in violation of a public law either forbidding or commanding it', 4 American & English Encyclopedia of Law, 642, 4 Bl. Com. 5.

"It would be a very dangerous principle to hold that a thing prescribed by the Commissioner of Internal Revenue, as a needful regulation under the oleomargarine act for carrying it into effect, could be considered as a thing 'required by law', in the carrying on or conducting of the business of a wholesale dealer in oleomargarine, in such manner as to become a criminal offense punishable under Sec. 18 of the act, particularly when the same act, in Sec. 5, requires a manufacturer of the article to keep such books and render such returns as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, may, by regulation, require and does not impose, in that section or elsewhere in the act, the duty of keeping such books and rendering such returns upon a wholesale dealer in the article.

"It is necessary that a sufficient statutory authority should exist for declaring any act or omission a criminal offense; and we do not think that the statutory authority in the present case is sufficient. If Congress intended to make it an offense for wholesale dealers in oleomargarine to omit to keep books and render returns as required by regulations to be made by the Commissioner of Internal Revenue, it would have done so distinctly, in connection with an enactment such as that above recited, made in Sec. 41 of the Act of October 1, 1890.

"Regulations prescribed by the President and by the heads of departments, under authority granted by Congress, may be regulations prescribed by law, so as lawfully to support acts done under them and in accordance with them, and may thus have, in a proper sense, the force of law; but it does not follow that a thing required by them is a thing so required by law as to make the neglect to do the thing a criminal offense in a citizen, where a statute does not distinctly make the neglect in question a criminal offense."

"The questions certified are answered in the negative."

There is a clear and compelling analogy between the *Eaton* case and the case at bar which would seem to make the *Eaton* case decisive in favor of the contention here raised.

In the *Eaton* case Sec. 18 imposed a penalty for failure to do "any of the things required by law" by either a manufacturer or a dealer.

18 U.S.C. 1621 imposes a penalty for wilful perjury when the oath has been administered "in any case in which a law of the United States authorizes an oath to be administered."

In the *Eaton* case Sec. 20 authorized the Commissioner of Internal Revenue to make regulations.

In the case at bar, 18 U.S.C. 3771, authorizes the Supreme Court to make rules.

In the *Eaton* case a regulation required a wholesale dealer to keep books but no *law* made such requirement. The *law*, Sec. 16 required only a manufacturer to keep books.

In the case at bar no law but only Rule 6(c) authorizes the foreman to swear witnesses before a grand jury.

In the first place the *Eaton* case is a square holding to the effect that the words "a law" in Sec. 1621 mean nothing short of a clear statutory enactment and not a regulation or a rule. The *Eaton* case says, in effect, that to punish a defendant under Sec. 1621 for false swearing before a grand jury, Sec. 1621 would have to read "in any case in which a law of the United States or a rule of the Supreme Court authorizes an oath to be administered."

The *Eaton* case holds that to punish for a violation of regulations made pursuant to a statute authorizing the making of the regulations, the statute must, in plain words, make a violation of the regulations punishable.

In brief, the *Eaton* case is decisive authority for the proposition that Sec. 1621 has to be supplemented by a statute, *i.e.* an Act of Congress, clearly authorizing the grand jury to administer oaths or affirmations to witnesses before it. Otherwise, the administration of the oath would not be authorized by "a law of the United States".

The *Eaton* case says that "required by law" does not mean "required by regulation" (or rule).

The Eaton case has been cited many times. It has been frequently distinguished but it has never been overruled. The cases which distinguish it are cases in which the criminal statute under which punishment is sought makes a violation of the rules properly promulgated under the statute a crime as well as a violation of the statute itself.

A leading and early case which cites the *Eaton* case and makes this distinction is *U. S.* v. *Grimaud* (1910), 220 U. S. 506.

In that case, Congress gave the Secretary of Agriculture power to issue regulations in regard to grazing on forest reservations. Defendants were indicted for grazing sheep on a reservation without a permit.

The Forest Reserve Act provided that "any violation of the provisions of this act or such rules and regulations of the Secretary shall be punished as prescribed in Sec. 5388 of the Revised Statutes as amended."

The court held: The regulations were validly issued pursuant to an Act of Congress. A violation of them was made punishable by an Act of Congress. At page 518, *U. S.* v. *Eaton*, 144 U. S. 677, was cited and discussed with approval but distinguished by the very fact that in the *Grimaud* case an act of Congress did make a violation of the regulations punishable.

This was an administrative regulation and not legislation. On this point, Mr. Justice Lamar, at page 517, quoted with approval Mr. Justice Marshall in *Wayman* v. *Southard*, 10 Wheat. 1, 42, who said in the latter case "It will not be contended that Congress can delegate to the courts, or to any other tribunals, powers which are strictly and exclusively legislative. But Congress may certainly delegate to others, powers which the legislature may rightfully exercise itself."

The *Grimaud* case when applied to the case at bar means that the words "a law of the United States" in Sec. 1621 must be a law enacted by Congress *and the administration of the oath must be pursuant to an exercise of the exclusively legislative function of enacting a companion statute to Sec. 1621. This function cannot be delegated to a court as is done in Sec. 3771.*

The *Eaton* case is cited with approval in *Hutchins Mutual Insurance Co. v. Hazen* (1939 C.A.D.C.), 105 F. 2nd 53, 57, and also in *U. S. v. Fish* (1940 C.C.A. 3rd), 103 F. 2nd 969, 971, 972.

In *Viereck v. U. S.* (1943), 318 U. S. 236, 63 S. Ct. 561, the conviction of the defendant was reversed. He was prosecuted for a violation of the Foreign Agents Registration Act. The lower court tried to read into the statute and the regulations of the Secretary of State, which were properly issued pursuant to a statute, a meaning which the regulations did not have.

At page 241, S. Ct. page 563, the court by Mr. Chief Justice Stone cited *U. S. v. Eaton* with approval and said:

> "One may be subjected to punishment for crime in the federal courts only for the commission or omission of an act defined by statute, or by regulation having legislative authority, and then only if punishment is authorized by Congress. United States *v.* George, 228 U. S. 14, 20-22, 33 S. Ct. 412, 414-415, 57 L. Ed. 712."

Again at page 245, S. Ct. page 565, the court used the following language which is particularly appropriate to the case at bar as it is clear that the situation presented in the instant case occurred by inadvertence.

> "Even though the specific restriction of § 3(c) were due to defective draftsmanship or to inadvertence, which hardly seems to be the case, men are not subjected to criminal punishment because their conduct offends our patriotic emotions or thwarts a general purpose sought to be effected by specific commands which they have not disobeyed. Nor are they to be held guilty of offenses which the statutes have omitted, though by inadvertence, to define and condemn. For the courts are without authority to repress evil save as the law has proscribed it and then only according to law."

Nor is the applicability of the *Eaton* case to the case at bar in any way diminished by *Singer, et al. v. U. S.* (1944), 323 U. S. 338, 65 S. Ct. 282. In that case the question was whether the words "conspire to do so" modified all six specified acts which the phrase followed or only the last of the six acts. The court held that the words "conspire to do so" modified all six acts. The court stated that strict construction of criminal statutes does not mean that they must be given their narrowest possible meaning. At pages 344 and 345, S. Ct. pages 285 and 286, the court discussed at length the *Eaton* case and distinguished it by the fact that Sec. 11 of the act under discussion in the *Singer* case specifically made it a crime to do acts either by way of omission or commission in violation "of the act or the rules or regulations issued under it" (p. 345, S. Ct. p. 286). The court went on to say page 345, S. Ct. page 286:

> "Sec. 11 is therefore a law of the United States which imposes criminal sanctions for disobedience of the selective service regulations. Since Congress has made the violation of regulations a felony, it can hardly be contended that those regulations are not a 'law' for the purposes of §6 of the Criminal Code."

It should be noted that the court clearly does not regard a rule or a regulation as a law because it puts the word "law" in quotes. All that the court means is that since the regulations are properly issued under a law and a violation of them made punishable by a law, violations of the regulations are punishable pursuant to statute.

Similarly in *M. Kraus & Bros. v. U. S.* (1946), 327 U. S. 614, 66 S. Ct. 705, the defendant was indicted for violating a maximum price regulation by a combination sale. A regulation issued under the Emergency Price

Control Act of 1942 was held not to be so clear and unmistakable as to warrant a conviction for a combination sale. The court at page 620, S. Ct. page 707, distinguished the *Eaton* case by saying that the Emergency Price Act made a violation of any regulation or order unlawful. The court held also at page 621, S. Ct. page 707, that "The same strict rule of construction that is applied to statutes defining criminal action must be applied to regulations, a violation of which is made punishable by statute."

By analogy, of course, in the instant case, 18 U.S.C. 3771 and Rule 6(e) must be strictly construed if either is sought to be employed as a companion statute to Sec. 1621.

In *U. S. v. Evans* (1948), 333 U. S. 483, 68 S. Ct. 634, the defendant was indicted for concealing aliens. The indictment was dismissed on direct appeal. The court refused to determine the penalty which Congress intended should be applicable to 8 U.S.C. Sec. 144 because of the great degree of uncertainty which existed in the language of the statute. The court held that to determine the question would require the court to exceed the bounds of judicial interpretation and, in effect, to legislate. The court cited the *Eaton* case with approval and said at page 486, S. Ct. page 636, by Mr. Justice Rutledge:

> "In our system, so far at least as concerns the federal powers, defining crimes and fixing penalties are legislative, not judicial functions."

Again, at page 495, S. Ct. page 641, the court said:

> "This is a task outside the bounds of judicial interpretation. It is better for Congress, and more in accord with its function, to revise the statute than for us to guess at the revision it would make.

That task it can do with precision. We could do no more than make speculation law. The judgment is affirmed."

The language in the Eaton case and indeed the principle involved are peculiarly applicable here.

It would be a simple matter for Congress, within forty-eight hours after the situation is brought to its attention, to pass a statute clearly authorizing the grand jury to place its witnesses upon oath and affirmation. It is not for this court judicially to legislate by saying that Congress has done so when it has not in fact within the meaning of the Constitution and the long line of reported decisions which require nothing less than a clear statutory prohibition against an act sought to be punished.

As late as March, 1949 the *Eaton* case was cited with approval in *Krulewitch v. U. S.* (1949), 336 U. S. 440, 69 S. Ct. 716, at page 457, S. Ct. page 724, for the proposition "that there can be no judge-made offenses against the United States and that every federal prosecution must be sustained by statutory authority."

POINT V

The rule in the *Eaton* case is based on the fundamental legal principle that all elements of a crime must be clearly specified and prohibited by nothing less than an Act of Congress.

The principles of the *Eaton* case are well supported by authority thoroughly imbedded in our law and are substantially as follows:

(1) There are no federal common law crimes.

(2) The Sixth Amendment requires that a criminal statute must in clear and unmistakable language suffici-

be administered by some tribunal, officer, or person authorized by such laws to administer oaths in respect of the particular matters to which it relates", and later, at page 673, Mr. Justice Harlan said, "We are not aware of any Act of Congress which gave such authority to notaries public in the different states at the several dates given in the indictment."

The court then examined and rejected several statutes relied on by the government.

Other cases follow:

Donnelly v. *U. S.* (1927), 276 U. S. 505. Sec. 2—Title II of the National Prohibition Act placed a duty on the Commissioner of Internal Revenue and his assistants to investigate and report violations.

Sec. 29 prescribed a fine of $500.00 for violating any provision of Title II where a special penalty is not prescribed.

Defendant Donnelly, prohibition director in Nevada, failed to report a violation. He was convicted and the conviction was sustained.

Mr. Justice Butler said at page 511, "As there are no common law crimes against the government (*U. S.* v. *Eaton*, 144 U. S. 677) each case involves the construction of a statute to determine whether the acts or omissions of the accused are denounced as punishable. And regard is always to be had to the familiar rule that one may not be punished for crime against the United States unless the facts shown plainly and unmistakably constitute an offense within the meaning of an Act of Congress. *U. S.* v. *Lacher*, 134 U. S. 624, 628. *Todd* v. *U. S.*, 158 U. S. 278, 282. *Fasulo* v. *U. S.*, 272 U. S. 620, 629."

U. S. v. *Gradwell* (1916), 243 U. S. 476. The case holds that a conspiracy to influence a congressional election by bribery of voters was not a conspiracy to defraud the United States within the then Sec. 37 of the Penal Code.

In construing the statue, Mr. Justice Clark said, at page 485:

"When to all this we add that there are no common-law offenses against the United States (U. S. v. Hudson, 7 Cranch 32; U. S. v. Eaton, 144 U. S. 677), that before a man can be punished as a criminal under the federal law his case must be 'plainly and unmistakably' within the provisions of some statute (U. S. v. Lacher, 134 U. S. 624, 628) * * * we cannot doubt that the District Court was right * * * * " (in dismissing the indictment.)

Morrill v. *Jones* (1882), 106 U. S. 466. A law admitted all imported animals duty free. A regulation limited the exemption to those of "superior stock". In a suit for the duty, the court held the duty not collectible and said by Mr. Chief Justice Waite, at page 467:

"The Secretary of the Treasury cannot by his regulation alter or amend a revenue law."

In *Todd* v. *U. S.* (1894), 158 U. S. 278, R. S. Sec. 5406 punished intimidating witnesses "in any court of the United States". Defendants were indicted for intimidating a witness in a preliminary examination before a Commissioner of the Circuit Court. The court held: this was not a case pending in "any court of the United States" within the meaning of Sec. 5406 R. S.

Mr. Justice Brewer, at page 284, cited with approval *U. S.* v. *Clark*, 1 Gallison 497, where a statute covering perjury in any suit "in any of the courts of the United States" was held not to apply to perjury in a preliminary investigation before a Judge of a District Court. The judge was not a court. (The statute was then changed to R. S. Sec. 5392 (which contains the same words as Sec. 1621 re: "a law of the United States").

ently apprise the accused of the nature and the cause of the accusation. The criminal statute must be unambiguous as to the meaning of its words and where there is no ambiguity the common meaning of the word is to be used. There should be nothing left to be done but to read the statute or statutes to see what is prohibited.

(3) Similarly a statute or a regulation which is intended to supplement or to be a companion to a criminal statute must also be strictly construed and nothing which is prohibited can be left outside of the words of the statute.

(4) Rules and regulations may specify specific things which are prohibited by the general words of a criminal statute but the rules and regulations *cannot of themselves create a new crime.*

(5) Violations of the rules and regulations must themselves be made clearly punishable.

There are numerous cases supporting the above principles.

One which is particularly in point in reference to perjury is *U. S.* v. *Curtis* (1882), 107 U. S. 671. The defendant was indicted for perjury under R. S. 5211 and R. S. 5392.

R. S. 5211 required a sworn report to the Comptroller of the Currency.

R. S. 5392 was the predecessor of Sec. 1621 and had the same language as to "competent officer" and "a law of the United States authorizes an oath to be administered."

The court held that a state notary public was not a competent officer to take the oath as there was no statute of the United States authorizing a state notary to administer the oath.

Mr. Justice Harlan, at page 673, after stating that the officer need not be an officer of the government said, "But the statute does mean that the oath must be permitted or required by at least the laws of the United States, and

Fasulo v. U. S. (1926), 272 U. S. 620, held that a scheme to obtain money by threats of murder was not a "scheme to defraud" within the meaning of Annotated Code Sec. 215 (R. S. 5480). The conviction was reversed.

Mr. Justice Butler said, at page 629, citing *U. S. v. Chase*, 135 U. S. 255, that while penal statutes should be construed in reference to the evil they were designed to suppress, the rule would not apply "to instances which are not embraced in the language employed in the statute, or implied from a fair interpretation of its context".

U. S. v. Resnick (1936), 299 U. S. 207. A law prescribing the size of hampers for fruits and vegetables referred specifically to nine sizes. Held, inapplicable to two-quart hampers.

The court held, by Mr. Justice Butler, page 209:

> "Statutes creating crimes are to be strictly construed in favor of the accused; they may not be held to extend to cases not covered by the words used. United States v. Wiltberger, 5 Wheat. 76, 95. *Fasulo v. U. S.*, 272 U. S. 620, 628."

Again at page 210:

> "Before one may be punished, it must appear that his case is plainly within the statute; there are no constructive offenses. *U. S. v. Lacher*, 134 U. S. 624, 628. *U. S. v. Chase*, 135 U. S. 255, 261; *Fasulo v. U. S.* (*supra*), 629."

U. S. v. Chase (1890), 135 U. S. 255. A sealed and addressed letter was held not to be a "writing" within meaning of Act of July 12, 1876, 19 Stat. 90, c. 186, which prohibited sending obscene "writing" through the mails.

Mr. Justice Lamar said at page 261:

> "We recognize the value of the rule of construing statutes with reference to the evil they were

designed to suppress as an important aid in ascertaining the meaning of language in them which is ambiguous and equally susceptible of conflicting constructions. But this court has repeatedly held this rule does not apply to instances which are not embraced in the language employed in the statute, or implied from a fair interpretation of its context, even though they may involve the same mischief which the statute was designed to suppress." Citing U. S. v. Sheldon, 2 Wheaton 119; and other cases.

Fulbright v. *U. S.* (1937), 91 F. 2d 210;
Hensley v. *U. S.* (C.C.A. 9th, 1948), 171 Fed. 78;
Manhattan etc. Co. v. *Commissioner* (1935), 297 U. S. 129.

As stated above in Point I, the cases such as *U. S.* v. *George* (*supra*), *U. S.* v. *Smull* (*supra*), *Boehm* v. *U. S.* (*supra*), and other cases interpreting Sec. 1621, all make it clear that the administration of the oath must be pursuant to a statute specifically authorizing the administration of an oath in plain words.

Finally it is clear that the authority to make an administrative rule, such as 18 U.S.C. 3771 granted to the Supreme Court, is not a delegation of legislative power. Nor is the fact that a violation of such a rule or regulation is made punishable sufficient to raise the rule from an administrative to a legislative character. The reason, of course, is clear.

Only Congress can legislate. It cannot delegate its power to enact a companion statute to 18 U.S.C. §1621, to the Supreme Court, and the authority to make an administrative rule cannot be a delegation of legislative power. That was well stated in *U. S.* v. *Grunenwald, et al.* (D.C. W.D. Pa., 1946), 66 F. Supp. 223. In that case the court held that the Second War Powers Act of 1942 included delegation of authority to the Price Administrator to prohibit counterfeiting of ration documents.

The Second War Powers Act of 1942 authorized the President to issue executive orders in connection with the allocation of materials found vital to the successful prosecution of the war effort.

The statute also made a violation of any rules and regulations issued to carry out the provisions of the act punishable.

The question in the case was simply whether sugar could be legally construed to be one of the "essential materials". The court held that it could be so construed and said by Conley, D. J., at page 220:

> "It is a well known principle of law that the legislature cannot delegate its power to make a law, but it can make a law to delegate a power to determine some fact or state of things upon which the law makes or intends to make its own action depend. To deny this would be to stop the wheels of Government. There are many things upon which wise and useful legislation must depend which cannot be known to the law-making power, and must, therefore, be a subject of inquiry and determination outside of the halls of legislation. The authority to make administrative rules is not a delegation of legislative power, nor are such rules raised from an administrative to a legislative character, because the violation thereof is punished as a public offense. If a person violates such a regulation, the offense is not against the person who promulgated the same, but it is against the United States. Field v. Clark, 143 U. S. 649, 694, 12 S. Ct. 495, 36 L. Ed. 294."

Applying the *Grunenwald* case to the instant case, Congress could not have intended by 18 U.S.C. 3771 to empower the Supreme Court to legislate, that is, to make, a law which would be a companion statute to 18 U.S.C. 1621. The case, therefore, supports the contention that Sec. 3771 was nothing more than what it appears on its face to be, the granting of power to the Supreme Court to prescribe rules of court. The Supreme Court by prescribing Rule 6(c) could not create "a law of the United States which authorizes an oath to be administered". That is solely the function of Congress.

Summary of above rules and their application to the case at bar.

All federal crimes must be clearly, unequivocally and plainly prohibited by the words of one or more specific statutes.

The statutes are to be given their plain and ordinary meaning and are not to be given a strained construction amounting to judicial legislation.

All the cases interpreting 18 U.S.C. Sec. 1621, down to date, have made it clear that the administration of the oath must be authorized by nothing less than a statute. No conviction was ever upheld where the oath was not administered pursuant to a statute of the United States which stated in clear language just how and when the oath could be administered. The administration of the oath has never yet been left to authorization by rule or regulation, or been based upon strained construction or judicial replacement of what Congress may have inadvertently omitted.

In spite of the length of this brief, which seeks only for the convenience of the court to embody in one place the lengthy research in which counsel has engaged, the point at issue is really a very simple one.

Is 18 U.S.C. 3771 a law of the United States which authorizes the administration of an oath within the meaning of the words "in any case in which a law of the United States authorizes the administration of an oath" in 18 U.S.C. Sec. 1621?

Logic and all of the decided cases require a negative answer!

U. S. v. Eaton, 144 U. S. 677, is decisive authority for holding that Sec. 3771 is less than what is required by Sec. 1621. For when Sec. 1621 and Sec. 3771 are read together they do not make false swearing before a grand jury a crime. Sec. 3771 merely leaves it to the discretion of the Supreme Court to prescribe rules in respect to criminal procedure. This is not enough to support a charge of crime for violating an oath authorized by "a law of the United States". It can be assumed that Congress expected and intended that the Supreme Court would issue Rule 6(c). But Congress did not intend 6(c) or any other rule to be "a law of the United States" for that would be permitting the Supreme Court to legislate. *The case is unlike those which leave it to an administrator to prescribe what shall go into an affidavit when a statute authorizes the administration of the oath.* In those cases the crime is defined by Congress. Once the administration of the oath was properly authorized by a clear and specific statute a valid regulation could prescribe what must be sworn to and an invalid one could not so prescribe. This is very different from saying that the administration of the oath, which 1621 requires shall be authorized by statute, can be authorized by rule.

The rationale of the *Eaton* case is that when something is "required by law" (or in this case "a law which authorizes") nothing less than a statute which specifically states what is "required" (or what the law "authorizes") is sufficient to support an indictment.

The *Eaton* case says, in effect, that before Sec. 3771 could be accepted as a companion statute to Sec. 1621, Sec. 1621 would have to be amended to read:

> In any case in which a law of the United States authorizes the administration of an oath or in which a law of the United States delegates the power to make a rule authorizing the administration of an oath.

The added words are not in the statute and they cannot be interpreted into the statute. *A law which authorizes the administration of an oath is one thing. A law which leaves it to the discretion of a court or administrator whether or not to prescribe a rule which authorizes the administration of an oath is an entirely different thing.* The discretion would have to be exercised in respect to a matter of substantive law required by Sec. 1621, not procedural law (even though the law happened to deal with the subject of procedure). Rule 6(c) is a procedural rule and even when coupled with Sec. 3771 it cannot become a substantive law, nothing less than which is required by Sec. 1621. Such a law can be enacted only by Congress.

POINT VI

The requirements of the due process of law clause of the Fifth Amendment are not satisfied by Sec. 3771. Due process requires nothing short of an Act of Congress specifically authorizing an oath to be administered to satisfy the requirements of Title 18, Sec. 1621.

This is self-evident and is amply supported by all the cases cited in Points I, IV and V hereof. Due process of law requires that a charge of crime must have clear legislative basis. There must be a positive unequivocal statutory enactment in plain and common language to support an indictment. The statute intended to supplement Sec. 1621 must in itself specifically and clearly authorize the administration of the oath in the particular instance where punishment for violation is sought.

Sec. 3771 is not a law which authorizes the administration of an oath as required by Sec. 1621 within the meaning of the due process clause.

Sec. 3771 is merely a general delegation of power in an area in which Congress intended to refrain from legislating.

POINT VII

The clause of the Sixth Amendment declaring that the accused shall be informed of the nature and cause of the accusation requires nothing short of an Act of Congress specifically authorizing an oath to be administered to satisfy the meaning of Title 18, Sec. 1621.

Similarly all of the cases cited in Points I, IV and V of this memorandum support the above point. The accused cannot be informed of the nature and the cause of the accusation, unless he can readily ascertain that there is a law specifically authorizing the administration of an oath in the particular situation and there must in fact be such a statute and it must be clear and unequivocal, and couched in language commonly used.

Such a law must authorize the administration of an oath in the specific kind of case in which the defendant is accused of falsifying. It cannot be a delegation of power which may or may not be exercised. The fact the power is exercised cannot cure the defect for then the Supreme Court and not Congress is informing the accused of the cause of the accusation and is thereby legislating, a function reserved exclusively to Congress by the Constitution.

POINT VIII

Conclusion.

Sec. 1621 requires that the oath be taken "in any case in which a law of the United States authorizes an oath to be administered, * * *"

Rule 6(c) is not a law of the United States.

Section 3771 is not a law of the United States which authorizes an oath to be administered within the meaning of Sec. 1621.

It is at most a law which gives to the Supreme Court the discretion to enact Rule 6(c). It is a delegation of power in an area in which Congress intended to refrain from legislating.

The Fifth and Sixth Amendments, the cases under Sec. 1621 and its predecessor statutes, and the cases in respect to the strict construction of criminal statutes all require that an Act of Congress and nothing short thereof specifically authorize the administration of the oath to fulfill the requirements under Sec. 1621.

U. S. v. Eaton, 144 U. S. 677, cited with approval many times, once as late as March, 1949, distinguished, but never overruled, is decisive of the case at bar. It holds that the words "required by law" in a criminal statute do not mean "required by regulation". The application of the principle of the *Eaton* case to the case at bar requires a ruling that the words in Sec. 1621 "in any

... in which a law of the United States authorizes an ... to be administered" do not mean "in any case in which a law of the United States empowers the Supreme Court to prescribe a rule".

Respectfully submitted,

RAYMOND L. WISE,
Attorney for Defendant, William Perl.

... A. ALBERT,
... KANAREK,
... J. MURRAY, JR.,
Of Counsel.

June 30th, 1951.

FILE DESCRIPTION

BUREAU FILE

SUBJECT William Perl

FILE NO. 65-59312

SECTION NO. EBF

SERIALS 546

[redacted]

Inventory Worksheet
FD-503 (2-18-77)

VOLUME 12

HEADQUARTERS FILES

REVIEWED BY [signature]

File No: 65-59312 Re: William Perl (EBF)

Date: 3/78
(month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
546	10-4-51	To: Director Letter From another agency	2	–	referred to another agency
	10-4-51	Exhibit A	4	–	" " " "
	9-21-51	Exhibit B	21	–	" " " "
	10-4-51	Exhibit C	1	–	" " " "

FBI/DOJ

FILE DESCRIPTION

BUREAU FILE

SUBJECT William Perl

FILE NO. 65-59812

EBF ~~SECTION~~ NO. 647

SERIALS

Inventory Worksheet
FD-503 (2-18-77)

VOLUME EBF 647

HEADQUARTERS FILES

REVIEWED BY [illegible] ckt

File No: 65-59312

Re: William Perl

Date: 3/78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
EBF 647		Altitude Wind Tunnel Test	215	—	referred to another agency along with serial 647 vol 13

FILE DESCRIPTION

BUREAU FILE

SUBJECT William Perl

FILE NO. 65-59312

SECTION NO. EBF

SERIALS 656

[redacted]

Inventory Worksheet
FD-503 (2-18-77)

VOLUME 14

HEADQUARTERS FILES

REVIEWED BY [signature]

File No: 65-59312 Re: William Perl (EBF)

Date: 3/78
(month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
EBF 656	12-16-50	Letter from another agency plus enclosures	21	0	Referred to other Gov't agency

FILE DESCRIPTION

BUREAU FILE

SUBJECT WILLIAM PERL

FILE NO. 65-59312

SECTION NO. 14

SERIALS EBF 668

Inventory Worksheet
FD-503 (2-15-77)

VOLUME 14

HEADQUARTERS FILES

REVIEWED BY.. WXS

File No: 65-59312 Re: WILLIAM PERL Date: 7/78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
EBF 668	2.5.52	OTHER AGENCY LTR TO HQ	22		HANDLED AS REFERRAL

FBI/DOJ

FILE DESCRIPTION

BUREAU FILE

SUBJECT William Perl

FILE NO. 65-59312

SECTION NO. 15

SERIALS EBF-711

Inventory Worksheet
FD-503 (2-18-77)

VOLUME 15

HEADQUARTERS FILES

REVIEWED BY.. 8

File No: 65-59312 Re: WILLIAM PERL Date: 10-10-78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
711 EBF	5/21/52	HQ RECEIPT (2 copies) for NASA DOCUMENTS ATTACHED	22	0	Referred to govt. agency

FILE DESCRIPTION

BUREAU FILE

SUBJECT William Perl

FILE NO. 65-59312

SECTION NO. 18

SERIALS EBF - 939

Inventory Worksheet
FD-503 (3-18-77)

VOLUME 18

HEADQUARTERS FILES

REVIEWED BY [illegible]

bulky enclosures to serial 939

File No: 65-59312 Re: William Peel

Date: 4-78 (month/year)

Copies of these documents are the best ones available.

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
939	7-16-51	Cleveland Lab Work Sheet	2	—	both sides / referred
		w/enclosures	99	—	referred
	11-30-51 12-17-51	WFO Lab Work Sheet	2	—	both sides / referred
		w/enclosures	21	—	referred
	10-24-50	NO Lab Work Sheet + copy	1/1	—	referred
		w/enclosures	5	—	referred
	11-1-51	Cleveland Lab Work Sheet	2	2	both sides of 1 pg.
	8-22-50	Cleveland Lab Work Sheet + copy	2/1	2/1	both side of 1st pg.
		w/enclosures	12	12	
	1-30-51	Cleveland Lab Work Sheet	1	1	
	11-17-50	NY Lab Work Sheet	1	1	
	9-9-52	LA Lab Work Sheet	1	1	

Inventory Worksheet
FD-503 (3-15-77)

VOLUME 18

HEADQUARTERS FILES

Bulky enclosures to serial 939

REVIEWED BY .. [illegible]

File No: 65-59312 Re: William Peel

Date: 4-78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
	8-16-50	Cleveland Lab Work Sheet	1	1	
	1-11-52	NY Lab Work Sheet	2	2	both side 1 pg
	3-12-51	NY Lab Work Sheet	1	1	
	5-24-51	WFO Lab Work Sheet & copy	2/2	2/2	both sides
	8-7-50	NY Lab Work Sheet & copy	1/1	1/1	
		w/enclosures	104	104	
	10-25-50	NY Lab Work Sheet & copy	1/1	1/1	
		w/enclosure	1	1	
	8-2-50	Cleveland Lab Work Sheet & Copy	1/1	1/1	
		w/enclosures	5	5	
	8-8-50	NY Lab Work Sheet & Copy	2/1	2/1	both sides pg. 1
		w/enclosures	10	10	20 enclosures copied on 10 pgs.

Inventory Worksheet
FD-503 (2-18-77)

VOLUME 18

HEADQUARTERS FILES

Bulky enclosures to serial 939

REVIEWED BY. jmb/

File No: 65-59312 Re: William Perl

Date: 4-78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
	9-21-50	WFO Lab Work Sheet & Copy	1/1	1/1	
		w/enclosure	1	1	
	11-9-50	HQ Lab Work Sheet & copy	2/2	2/2	both sides
	5-13-53	Albany Lab Work Sheet & Copy	2/1	2/1	both side pg. 1
	3-1-51	Albany Lab Work Sheet & copy	1/1	1/1	
	8-8-50	NY Lab Work Sheet	2	2	both sides
	8-22-50	Cleveland Lab Work Sheet	1	1	
	8-24-50	Cleveland Lab Work Sheet & copy	2/1	2/1	both sides pg. 1
		w/enclosure	1	1	(envelope empty)
	8-23-50	Cleveland Lab Work Sheet & Copy	3/2		both side pg. 1 referred
		w/enclosures	150	—	referred
	undated	Envelope containing negatives of all enclosures	—	—	not being counted, charged for or released

Inventory Worksheet
FD-503 (3-18-77)

VOLUME 18

HEADQUARTERS FILES

Bulky enclosures of serial 939

REVIEWED BY.. [illegible]

File No: 65-59312 Re: William Peel

Date: 4-78
(month/year)

Serial	Date	Description (Type of communication, to/from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
	5-13-52	Lt Lgt Hal [illegible]	4	-	Referred

FBI/DOJ

65-59212-939 4-881

BULKY ENCLOSURE

BIN # 60

11/2/51
pjr

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

20
11
11/2

Re: WILLIAM PERL, wa;
ESPIONAGE - R
PERJURY

File # 65-59312-574
Lab. # D-139736 BS

LAB FILE

Examination requested by: SAC, Cleveland 65-2730

Date of reference communication: 10/26/51

Date received: 11/1/51

Examination requested: Document

Result of Examination:

Examination by: Dahlgren 11/27/51

Q27 & Q28
Obliterated writing examined & photographed under U.V. light & results detailed on reverse of worksheet.

Specimens submitted for examination

Chemicals would possibly make obliterations more clear - but not used since would permanently stain documents. Further exam. using chemicals will be made if desired by field office.

Q27 Original Leave Card for William Mutterperl, dated 12-23-43.
Q28 Original Leave Card for William Mutterperl, dated 11-8-44.

return evidence
co New York 65-15387

[illegible]
11-29-51
pjr

3rd space under column headed "FROM"
has present writing "8:30". Previous hw. not discernible

6th space under columns headed "FROM-" & "TO-
has no writing written over obliterated writing
Oblit. hw. under col. "FROM" not discernible. Oblit.
hw. under col. "TO" appears to be "3:35 pm"

19th space under column headed "Days" has an
obliterated "1" indicating change from 1 day to 1 hr
Oblit. hw. where "830" and "930" now appear
appears to include "7 __ 44" - but day
cannot be made discernible. Oblit. hw. where
3-7-44 appears twice cannot be made clearly discernible
but some characteristics present suggest oblit.
hw. under "830" may be "8:30". Oblit. hw.
under "930" appears to begin with "5" and
may be the time, "5:00" or "5:30"

22nd space under column headed "Days" ~~appears to~~ has an
obliterated "3" indicating change from
3 days to 4½ hrs. Prev. writing where "8-26-4
now appears can't be determined. Spac where
"12:31" now appears, appear to have "12:30" also
prev. written in this space. Obliterated hw. where
"5:00" now appears cannot be determined.

Oblit. hw. Q28 can't be determined. 4th space under

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Recorded 8-28-50
gcb

Laboratory Work Sheet

15
8

Re: ~~XX~~
WILLIAM PERL
~~XX~~ ESPIONAGE - R

File # 65-59312-29
Lab. # D-120603 HE

Lab. File

Examination requested by: SAC, Cleveland (65-2730)

Date of reference communication: Let. 8-17-50 Date Received: 8-

Examination requested: Document

Result of Examination: Examination by: Dulleven

Ident Hw. Qc9 → Qc11 with William Perl
Kc1 → Kc3 + (Kc2 + Kc3 in 65-59242).

Specimens submitted for examination

Qc9 A ~~photostatic~~ photographic negative of an Application for ~~XXXXX~~ Domestic Money Order #50990, payable to A. SARANT, dated 8-30-48.

Qc10 A photographic negative of an Application for Domestic Money Order #52296, payable to A. SARANT, dated 9-23-48.

Qc11 A photographic negative of an Application for Domestic Money Order #54227, payable to A. SARANT, dated 10-22-48.

1 cc: New York
8 cc: Albany

yellow + Lab. 65-59242

8-21-50

Oc7 A. Sarant Ithaca N.Y.

W. Perl Brockley Ave. Lakewood 7 Ohio

Oc10 A. Sarant W. Perl Hts Rd.

Oc11 A. Sarant Ithaca N.Y.
W. Perl Brockley

Wm. Perl Kc1 → Kc3 + (Kc2 Kc5 (65 - 57 - 42))
Lab Millie Anne Mill
N.Y. Blum St Ave
W. Perl St Bobby committees
Larchwood Ave. Clev. O
Lakewood 7 O. Brockley Ave
Rothrock Bell Perl Ohio
Lot Alfred Sarant

FED[illegible] BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Recorded 8-28-50
gcb

Laboratory Work Sheet

Re: SE
WILLIA[redacted] PERL
IE ESPIONAGE - R

File # 65-59312-29
Lab. # D-120303 BE

Lab. File

Examination requested by: SAC, Cleveland (65-2730)

Date of reference communication: Let. 8-17-50 Date Received: 8-22-50

Examination requested: Document

Result of Examination: Examination by: Dahlgren

Negatives & flimsy sent to Photographic section for ... negs enclosed D

Specimens submitted for examination

Qc9 A ~~photostatic~~ photographic negative of an Application for ~~[illegible]~~ Domestic Money Order #50790, payable to A. SARANT, dated 8-30-48.

Qc10 A photographic negative of an Application for Domestic Money Order #52276, payable to A. SARANT, dated 9-23-48.

Qc11 A photographic negative of an Application for Domestic Money Order #55227, payable to A. SARANT, dated 10-22-48.

Form 6001—Rev. 7-46

POST OFFICE DEPARTMENT No. 5-4227

THIRD ASSISTANT POSTMASTER GENERAL

DIVISION OF MONEY ORDERS

Stamp of issuing office

FD FEE 18

CLEVELAND OHIO
OCT 22 1948
KAMMS STA.

The Postmaster will insert here ______ the office drawn on, when the office named by the remitter does not transact money-order business

Spaces above this line are for the Postmaster's record, to be filled in by him

Application for Domestic Money Order

Spaces below to be filled in by purchaser, or, if necessary, by another person for him

Amount—

USE FIGURES, DO NOT SPELL 46 Dollars 00 Cents

To be paid to: A. Savant
(Name of person or firm for whom order is intended)

Whose address is: RD 1 Cayuga Hts. Rd. Street

City and State: Ithaca, N.Y.

Sent by: N. Peel
(Name of sender)

1257 Brockley Ave. Street

City and State: Lakewood 7, O.

PURCHASER MUST SEND ORDER AND COUPON TO PAYEE

(FOR FEES SEE OTHER SIDE)

W. W. STICKLE
Cleveland, Ohio 8-16-50

Form 6001—Rev. 7-48

POST OFFICE DEPARTMENT

THIRD ASSISTANT POSTMASTER GENERAL

DIVISION OF MONEY ORDERS

No. 52296

Stamp of Issuing Office

CLEVELAND, OHIO KAMMS STA.
SEP 23 1948

FEE 18

The Postmaster will insert here the office drawn on, when the office named by the remitter does not transact money-order business

Spaces above this line are for the Postmaster's record, to be filled in by him

Application for Domestic Money Order

Spaces below to be filled in by purchaser, or, if necessary, by another person for him

Amount— USE FIGURES, DO NOT SPELL 46 Dollars 00 Cents

To be paid to A. Servant (Name of person or firm for whom order is intended)

Whose address is RFD 1 Cayuga Hts. Rd. Street

City and State Ithaca, N.Y.

Sent by W. Perl (Name of sender)

1257 Brockley Ave. Street

City and State Lakewood 7, Ohio

PURCHASER MUST SEND ORDER AND COUPON TO PAYEE

(FOR FEES SEE OTHER SIDE)

W. W. STICKLE
Cleveland, Ohio 8-16-50

W. W. STICKLE
Cleveland, Ohio 8-16-50

Form 6001—Rev. 7-[illegible]

POST OFFICE DEPARTMENT No. 50990

THIRD ASSISTANT POSTMASTER GENERAL

DIVISION OF MONEY ORDERS

Stamp of Issuing Office

CLEVELAND, OHIO
AUG 30 1948
KAMMS STA.

FEE 18

The Postmaster will insert here the office drawn on, when the office named by the remitter does not transact money-order business

Spaces above this line are for the Postmaster's record, to be filled in by him

Application for Domestic Money Order

Spaces below to be filled in by purchaser, or, if necessary, by another person for him

Amount—

USE FIGURES, DO NOT SPELL 46 Dollars 00 Cents

To be paid to } A. Savant
(Name of person or firm for whom order is intended)

Whose address is } RD 1 Cayuga Hts. Rd Street

City and State } Ithaca, N.Y.

Sent by W. Perl
(Name of sender)

1257 Brockley Ave. Street

City and State } Lakewood 7, Ohio

PURCHASER MUST SEND ORDER AND COUPON TO PAYEE
(FOR FEES SEE OTHER SIDE)

W. W. STICKLE
Cleveland, Ohio 8-16-50

Form 6001—Rev. 7-48
POST OFFICE DEPARTMENT No. 5-4227
3 ASSISTANT POSTMASTER GENERAL
DIVISION OF MONEY ORDERS

Stamp of Issuing Office

F.D. FEE 18

The Postmaster will insert here the office drawn on, when the office named by the remitter does not transact money-order business

CLEVELAND OHIO
OCT 22 1948
KAMMS

Spaces above this line are for the Postmaster's record, to be filled in by him

Application for Domestic Money Order

Spaces below to be filled in by purchaser, or, if necessary, by another person for him

Amount—
USE FIGURES, DO NOT SPELL 46 Dollars 00 Cents

To be paid to a. Grant
(Name of person or firm for whom order is intended)

Whose address is RD 1 Cayuga Hts. Rd. Street
City and State Ithaca, N.Y.

Sent by N. Peel
(Name of sender)
1257 Brockley Ave. Street
City and State Lakewood 7, O.

PURCHASER MUST SEND ORDER AND COUPON TO PAYEE
(FOR FEES SEE OTHER SIDE)

65-59312

Oc 11

W. W. STICKLE
Cleveland, Ohio 8-16-50

Form 6001—Rev. 7-45

POST OFFICE DEPARTMENT No. 52296
THIRD ASSISTANT POSTMASTER GENERAL
DIVISION OF MONEY ORDERS

Stamp of Issuing Office

CLEVELAND, OHIO
SEP 23 1943
KAMMS STA.

FEE 18

The Postmaster will insert here ________ the office drawn on, when the office named by the remitter does not transact money-order business

Spaces above this line are for the Postmaster's record, to be filled in by him

Application for Domestic Money Order

Spaces below to be filled in by purchaser, or, if necessary, by another person for him

Amount—
IN FIGURES, DO NOT SPELL $ 46 Dollars 00 Cents

To be paid to A. Savant
(Name of person or firm for whom order is intended)

Whose address is RFD 1 Cayuga Hts Rd. Street

City and State Ithaca, N.Y.

Sent by W. Perl
(Name of sender)

1257 Brockley Ave. Street

City and State Lakewood 7, Ohio

PURCHASER MUST SEND ORDER AND COUPON TO PAYEE
(FOR FEES SEE OTHER SIDE)

65-59312

W. W. STICKLE
Cleveland, Ohio 8-16-50

Form 6001—Rev. 7-46

POST OFFICE DEPARTMENT No. 50990
THIRD ASSISTANT POSTMASTER GENERAL
DIVISION OF MONEY ORDERS

Stamp of Issuing Office

CLEVELAND, OHIO
AUG 30 1948
KAMMS STA.

FEE 18

The Postmaster will insert here ______ the office drawn on, when the office named by the remitter does not transact money-order business

Spaces above this line are for the Postmaster's record, to be filled in by him

Application for Domestic Money Order

Spaces below to be filled in by purchaser, or, if necessary, by another person for him

Amount—
USE FIGURES, DO NOT SPELL 46 Dollars 00 Cents

To be paid to A. Savant
(Name of person or firm for whom order is intended)

Whose address is RD 1 Cayuga Hts. Rd Street
City and State Ithaca, N.Y.

Sent by W. Perl
(Name of sender)
1257 Brockley Ave. Street
City and State Lakewood 7, Ohio

PURCHASER MUST SEND ORDER AND COUPON TO PAYEE
(FOR FEES SEE OTHER SIDE) 16—8301-6

65-59312

Oc 4.

Form 6001—Rev. 7-46

POST OFFICE DEPARTMENT No. 52296

THIRD ASSISTANT POSTMASTER GENERAL

DIVISION OF MONEY ORDERS

Stamp of Issuing Office

CLEVELAND, OHIO SEP 23 1949 KAMMS STA.

FEE 18

The Postmaster will insert here the office drawn on, when the office named by the remitter does not transact money-order business

Spaces above this line are for the Postmaster's record, to be filled in by him

Application for Domestic Money Order

Spaces below to be filled in by purchaser, or, if necessary, by another person for him

Amount—

USE FIGURES, DO NOT SPELL 46 Dollars 00 Cents

To be paid to A. Savant (Name of person or firm for whom order is intended)

Whose address is RFD 1 Cayuga Hts. Rd. Street

City and State Ithaca, N.Y.

Sent by W. Perl (Name of remitter)

1257 Brockley Ave. Street

City and State Lakewood 7, Ohio

PURCHASER MUST SEND ORDER AND COUPON TO PAYEE

(FOR FEES SEE OTHER SIDE)

W. W. STICKLE
Cleveland, Ohio 8-16-50

65-59312

Form 6001—Rev. 7-46

POST OFFICE DEPARTMENT No. 50990

THIRD ASSISTANT POSTMASTER GENERAL

DIVISION OF MONEY ORDERS

Stamp of Issuing Office

CLEVELAND, OHIO
AUG 30 1948
KAMMS STA.

FEE 18

The Postmaster will insert here the office drawn on, when the office named by the remitter does not transact money-order business

Spaces above this line are for the Postmaster's record, to be filled in by him

Application for Domestic Money Order

Spaces below to be filled in by purchaser, or, if necessary, by another person for him

Amount—

USE FIGURES, DO NOT SPELL 46 Dollars 00 Cents

To be paid to A. Sarant
(Name of person or firm for whom order is intended)

Whose address is RD 1 Cayuga Ht. Rd. Street

City and State Ithaca, N.Y.

Sent by W. Perl
(Name of sender)

1257 Brockley Ave. Street

City and State Lakewood 7, Ohio

PURCHASER MUST SEND ORDER AND COUPON TO PAYEE

(FOR FEES SEE OTHER SIDE)

W. W. STICKLE
Cleveland, Ohio 8-16-50

6... 1512

W. W. STICKLE
Cleveland, Ohio 8-16-50

Form 6001—Rev. 7-46

POST OFFICE DEPARTMENT No. 54227
THIRD ASSISTANT POSTMASTER GENERAL
DIVISION OF MONEY ORDERS

Stamp of Issuing Office

CLEVELAND, OHIO
OCT 22 1948
KAMMS STA.

FD FEE 18

The Postmaster will insert here the office drawn on, when the office named by the remitter does not transact money-order business

Spaces above this line are for the Postmaster's record, to be filled in by him

Application for Domestic Money Order

Spaces below to be filled in by purchaser, or, if necessary, by another person for him

Amount—
USE FIGURES; DO NOT SPELL 46 Dollars 00 Cents

To be paid to: a. Grant
(Name of person or firm for whom order is intended)

Whose address is: RD 1 Cayuga Hts. Rd. Street
City and State: Ithaca, N.Y.

Sent by: N. Peel
(Name of sender)
1257 Bradley Ave. Street
City and State: Lakewood 7, O.

PURCHASER MUST SEND ORDER AND COUPON TO PAYEE
(FOR FEES SEE OTHER SIDE)

65-59312

Form 6001—Rev. 7-48

POST OFFICE DEPARTMENT No. 54227

THIRD ASSISTANT POSTMASTER GENERAL

DIVISION OF MONEY ORDERS

Stamp of Issuing Office

FD FEE 18

The Postmaster will insert here the office drawn on, when the office named by the remitter does not transact money-order business

CLEVELAND OHIO
OCT 22 1948
KAMMS STA.

Spaces above this line are for the Postmaster's record, to be filled in by him

Application for Domestic Money Order

Spaces below to be filled in by purchaser, or, if necessary, by another person for him

Amount—

USE FIGURES, DO NOT SPELL 46 Dollars 00 Cents

To be paid to A. Savant (Name of person or firm for whom order is intended)

Whose address is RD 1 Cayuga Ht. Rd. Street

City and State Ithaca, N.Y.

Sent by N. Peel (Name of sender)

1257 Bonnlley Ave. Street

City and State Lakewood, O.

PURCHASER MUST SEND ORDER AND COUPON TO PAYEE

(FOR FEES SEE OTHER SIDE)

W. M. STICKLE
Cleveland, Ohio 8-16-50

65-59312

W. W. STICKLE
Cleveland, Ohio 8-16-50

Form 6301—Rev. 7-46

POST OFFICE DEPARTMENT No. 52296

THIRD ASSISTANT POSTMASTER GENERAL
DIVISION OF MONEY ORDERS

Stamp of Issuing Office

CLEVELAND, OHIO
SEP 23 1948
KAMMS STA.

FEE 18

The Postmaster will insert

here
the office drawn on, when the office named by the remitter does not transact money-order business

Spaces above this line are for the Postmaster's record, to be filled in by him

Application for Domestic Money Order

Spaces below to be filled in by purchaser, or, if necessary, by another person for him

Amount—
USE FIGURES, DO NOT SPELL 46 Dollars 00 Cents

To be paid to A. Sarant
(Name of person or firm for whom order is intended)

Whose address is RFD 1 Cayuga Hts Rd. Street

City and State Ithaca, N.Y.

Sent by W. Perl
(Name of sender)

1257 Brockley Ave. Street

City and State Lakewood 7, Ohio

PURCHASER MUST SEND ORDER AND COUPON TO PAYEE
(FOR FEES SEE OTHER SIDE)

65-59312 Dc10

Form 6001—Rev. 7-46

POST OFFICE DEPARTMENT
THIRD ASSISTANT POSTMASTER GENERAL
DIVISION OF MONEY ORDERS

No. 50990

Stamp of Issuing Office

CLEVELAND, OHIO
AUG 30 1948
KAMMS STA.

FEE 18

The Postmaster will insert here the office drawn on, when the office named by the remitter does not transact money-order business

Spaces above this line are for the Postmaster's record, to be filled in by him

Application for Domestic Money Order

Spaces below to be filled in by purchaser, or, if necessary, by another person for him

Amount—
USE FIGURES, DO NOT SPELL 46 Dollars 00 Cents

To be paid to A. Savant
(Name of person or firm for whom order is intended)

Whose address is RD 1 Cayuga Hts. Rd Street

City and State Ithaca, N.Y.

Sent by W. Perl
(Name of sender)

1257 Brockley Ave. Street

City and State Lakewood 7, Ohio

PURCHASER MUST SEND ORDER AND COUPON TO PAYEE
(FOR FEES SEE OTHER SIDE)

W. W. STICKLE
Cleveland, Ohio 8-16-50

65-59312 Q-9

F-12

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

84 R
2/8

RECORDED 2-2-51

Laboratory Work Sheet

Re: WILLIAM PERL, was.
Espionage - R

File # 65-[illegible]312
Lab. # D-127335

Examination requested by: Cleveland 65-2730

Date of reference communication: Let. 1-27-51

Date Received: 1-30-51

Examination requested: Doc.

Result of Examination:

Examination by:

K1 includes original of one of letters included with Kc1 previously submitted and in addition the accompanying envelope for this letter. This envelope is addressed to Mr. Addison M.

2/7/51

Specimens submitted for examination

(Original of portion of Kc1)
K1 Envelope and accp. letter addressed to Mr. Addison M. Rothrock, letter dated February 12, 1947, signed by BILL PERL.

Rothrock, Chief of Research, Aircraft Engine Research Laboratory, NACA, Cleveland Airport, Cleveland Ohio.

Kc1 was used to identify

2/9/51
HLD

RECORDED
11-21-50
ej

7-12

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

FLA
11/21

Re: WILLIAM PERL
ESPIONAGE - R

File # 65-59312-175
Lab. # D-124289

Lab File

Examination requested by: New York 65-15387

Date of reference communication: let 11-16-50 Date Received: 11-17-50

Examination requested: Doc.

Result of Examination: Examination by: Dahlgren

Photos made -
Kc1 prev. ident Kc2 - results
furnished N.Y. - 11-21-50
EJ

Specimens submitted for examination

Orig. of a letter in Kc2 dated Feb. 4, 1940, bgn. "Dear Ma, I am well..." and signed "Willie" in the hw. of the subj.

Lab Rept
11/27/50
EAJ:JA

7-2

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

9/12/52
pjr

Laboratory Work Sheet

LAB FILE

Re: WILLIAM PERL, wa..
~~XXXXXXXXX~~
ESPIONAGE - R,
Perjury

File # 65-59312-729
Lab. # D-154009 BE

Examination requested by: SAC, Los Angeles 65-5075

Date of reference communication: 9/2/52 Date received: 9/9/52

Examination requested: Document

Result of Examination: Searched NSF no ident 9/18/52 DAA
(Dom 3. + 6)

Examination by: Dahlgren
9/18/52

Specimens submitted for examination

K14 Slip of paper containing kn hw beg. "Nellie Hirshfeld, 1944 wife of......"

cc New York 65-15387

[illegible] 9/3/52

F-12

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

RECORDED 8-10-50

Laboratory Work Sheet

CL 27
8/2

Re: WILLIAM PERL, aka
Espionage - R

File # 65-59312-11
Lab. # D-120211 BE

LAB FILE

Examination requested by: Cleveland (1) 65-2730 (1) 65-2726

Date of reference communication: let. 8-8-50

Date Received: 8-10-50 mdp

Examination requested: Doc.

Result of Examination:

Examination by: DAHLGREN

No known tw. has been submitted by Knoxville in this case for comparison with tw. on Q7.
No ident. hw. + hp. K4 or tw. Q7 (Unclass. + L.C. Smith elite - New Section) with N.S.F.

Specimens submitted for examination

Q7 Postal card bearing tw. addr. "Mr. Perl 16802 Larchwood Avenue Cleveland 11, Ohio," pm. "KNOXVILLE TENN. JUL 20 1950 6:30 PM," from Division of University Extension, Knoxville, Tennessee, containing the typewritten words on the reverse side " 'Good Food' ."

K4 Post card addressed to "William Perl 16802 Larchwood Ave. Cleveland 11, Ohio U.S.A., beg. "Dear Will, I am taking a....," signed "Sam," containing the purported kn. hw. of Sam Perl.

ALSO SUBMITTED: Film pack containing exposures of above listed cards.

AMSD
2 cc New York

Tw. Q7 too limited for definite classification - could be L C Smith elite (996)

7-2

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

+D 8/18

Re: William Perl
Espionage - R
Perjury

File # 65-59312
Lab. # D-143040 B?

Examination requested by: N.Y. (65-15387)

Date of reference communication: 1/4/52 Date received: 1/11/52

Examination requested: Miscellaneous

Result of Examination: Examination by: Dahlgren

Using 2 Leica Cameras + 4 photographers doing work - could photo up to 1885 to 2000 pages easily within 17 hours. Could probably complete work in 10 to 15 hours if time exposures, lighting + film loading arranged in adv

Specimens submitted for examination

Request concerning time required to photograph documents receipted for by William Perl during April and May of 1948 and on July 3, 1948

Receipted for on 7/3/48 - Documents numbering approx 800 pages

in Apr + May 1948 - approx. 1085 pages

Total 1885

1 of documents reported as receipted for by Perl 4/16/48 - not included with list of documents recd from WFO with letter 1/30/51

1885 or roughly 2000 frames

36 exposures per roll $36 \overline{)2000}$ 55 or 56 rolls

$\quad 180$

$\quad 200$

56 rolls of film may have been loaded in advance - or if not, should not have required more than 3 to 4 hours time film loading and emptying cartridges. Some time may have been spent in making test exposures before project begun. This could have been done in less than 1 hour if equipment on hand and ready to set up when project begun. Time required for snapping camera for about 2000 exposures - conservatively should easily do 300 pages an hour. 2000 pages should not take more than 7 to 8 hours

1 hr. making test exposures
4 hrs. loading film cartridges and emptying
8 hrs. to make exposures

13 hrs

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

LAB FILE

CL 22
3/14

Re: WILLIAM PEHL, wa.
ESPIONAGE - R

File # 65-59312
Lab. # D 129147 BE

Examination requested by: New York 65-15360

Date of reference communication: 3-10-51

Date Received: 3-12-51

Examination requested: Doc

Result of Examination:

Examination by: Dahlgren

Ident. Hw. Q24 with K1

3/14/51

special delivery

Specimens submitted for examination

Q24 Handwritten letter dated Oct. 3, 1941 beg "Dear Anne, Joe, Eleanor, Bobby, Thank you all ...." and signed "Yours, Willie".

ccNew York 65-15360
~~65-15287~~

Q24 Dear Anne Joe Eleanor Bobby
If you'll from it
Willie

K1 Dear I fact I at
William year
Engine

7-12

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

C28

5/28

RECORDED 5-26-51.

Re: WILLIAM PERL, wa.
Espionage - R
Perjury

File # 65-59312-404
Lab. # D-132592 BE

LAB FILE

Examination requested by: Washington 65-5543

Date of reference communication: let. 5-21-51 Date received: 5-24-51 mdp

Examination requested: Doc.

Result of Examination: Examination by: DAHLGREN

Ident K2 (Feb. 4, 1940 letter) Q23 (Apr. 8, 1945 letter) + Q24 (Oct 3, 11 letter) with known of Perl K12, K13 + K1 (letter to Addison M. Rothrock)

Specimens submitted for examination

~~XXXX~~

K12 Two pages bearing penciled handwriting and figures entitled "Rothrock's special project," dated 6-18-48, signed W. PERL.
K13 Two-page letter dated 4-12-46, ~~xxgxd~~ signed "Best regards, Bill."

Return original evidence to New York (65-15387)

Initial 5/28/51 HLD: melee

Q 3 Will also letter pay I do
from Apr. 8, 1945
would

Q24 Dear Anne Joe I from Western
Willie I for private

K2 Dear I feel with just
Willie There

Questions

K1 (letter signed Bill Perl, dated 2/12/47 and addressed to Addison M. Rothrock, Chief of Research, Aircraft Engine Research Laboratory NACA)

Dear I will fast my

K12 Dear fairly at your New plan to
K13 layer W Perl
few

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

Re: Wm. Perl
Esp. - R
Perjury

File # 65-59312-404
Lab. # D-132592

Examination requested by: W.F.O.

Date of reference communication: Let. 5/21/51

Date Received: 5/24/51

Examination requested: Doc

Result of Examination:

Examination by: CRUIGAN -1

Specimens submitted for examination

K12 } Known Hw. of Wm. Perl
K13 }

compare Hw. K2, Q23 + Q24 with K12 + K13 + K1

Ident

Dear I you New York

Dear I you getting

F-12

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Recorded 8-7-50
ab

Laboratory Work Sheet

Re WILLIAM PERL, wa.;
ESPIONAGE - R

File # 65-59312
Lab. # D-120238 BE

Lab file

Examination requested by: New York (65-15387)

Date of reference communication: Let 8-4-50

Date Received: 8-7-50

Examination requested: Document

Result of Examination:

Examination by: Dahlgren

Searched N.S.F. ~~Old~~ new H.W. Section
Old Section Domestic 5 } No Ident 8-9-50

Specimens submitted for examination

KC2 Sixty-two photostatic copies bearing the purported known handwriting of WILLIAM PERL.

8-10-50

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Recorded 8-7-50

Laboratory Work Sheet

Re: WILLIAM PERL, was.;
ESPIONAGE - R

File # 65-59312-6
Lab. # D-170230 [illegible]

Lab File

Examination requested by: New York (65-15387)

Date of reference communication: Let 8-1-50

[redacted]

Examination requested: Document

Result of Examination:

Examination by: Dahlgren

Specimens submitted for examination

XC2 Sixty-two photostatic copies bearing the purported known handwriting of WILLIAM PERL.

[redacted]

[illegible] 550

7654

[illegible]

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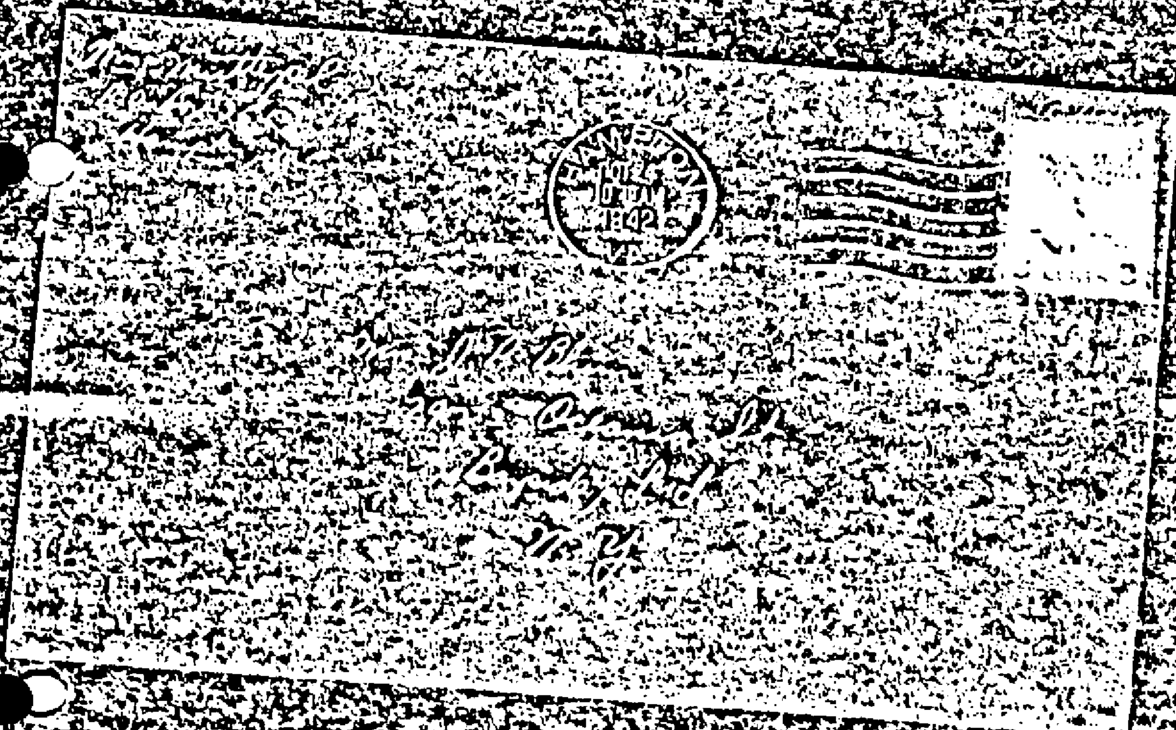

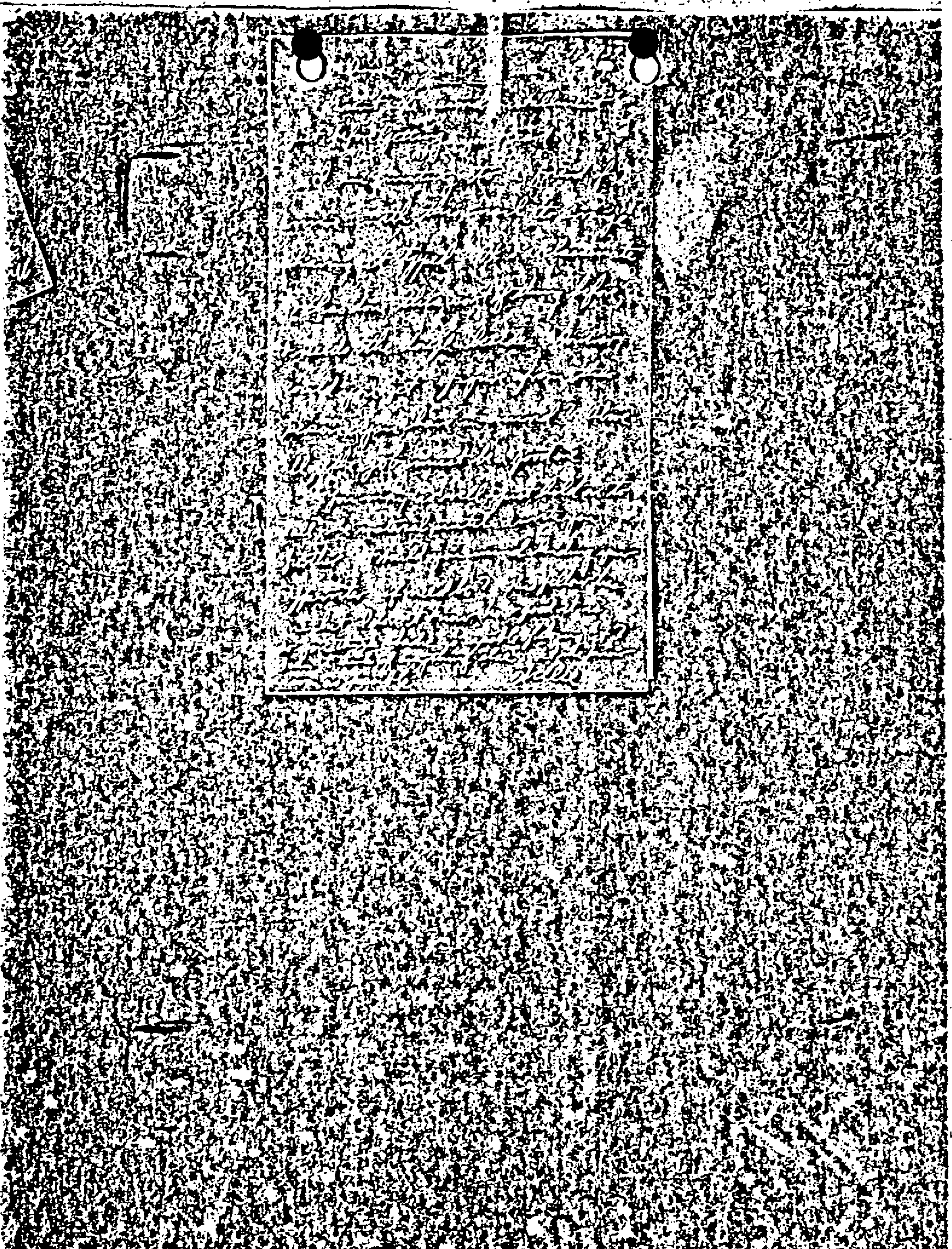

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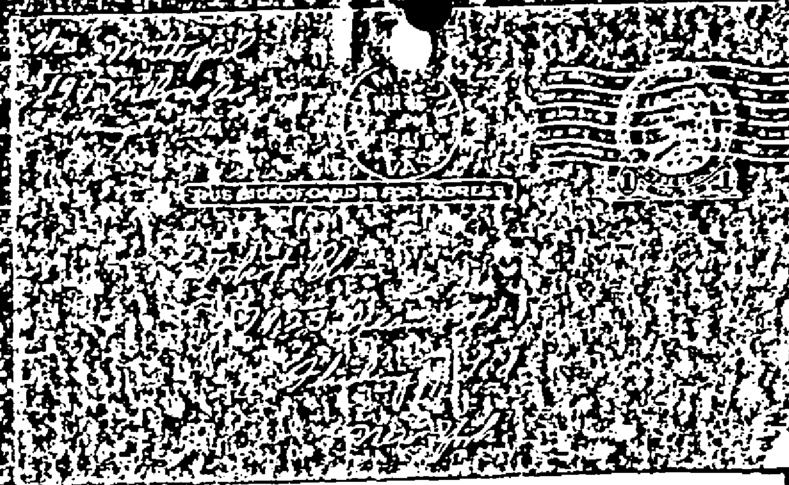
[illegible]

Dear Bobby,

I got your letter and am [illegible] tell you that your penmanship has improved a great deal since the previous letter (it was such a long [illegible]). I am very tickled that you have taken off real dollar bills to get A's in arithmetic. When I was your age a nickel would have been enough for a whole barrelful of A's. At this rate you'll have your family broke in no time. I hope your sister is completely well by now. Regards to family & [illegible].

[illegible]

Uncle Willie


THIS SIDE OF CARD IS FOR ADDRESS

[illegible]

THIS SIDE OF CARD IS FOR ADDRESS

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ELEANOR

[illegible]

[illegible]

[illegible]

get his furlough this summer. Perhaps I can take a few days off then too. I would like to see Bessie's grave sometime but don't especially feel like making a ceremony out of it. However, more about that in the future.

Regards to all,

Willy

[illegible]

Tyre Prussia

Case [illegible]

of 1793 [illegible]

Pleasant [illegible]

Sh.

Dublin

[illegible]

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Cordially yours,

Nellie

[illegible]