86th Congress
2d Session

COMMITTEE PRINT

PATENT PRACTICES OF THE GOVERNMENT PRINTING OFFICE

PRELIMINARY REPORT
OF THE
SUBCOMMITTEE ON
PATENTS, TRADEMARKS, AND COPYRIGHTS
OF THE
COMMITTEE ON THE JUDICIARY
UNITED STATES SENATE
EIGHTY-SIXTH CONGRESS, SECOND SESSION
PURSUANT TO
S. Res. 240

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FOREWORD

It appears from this preliminary report on patent practices of the Government Printing Office that this agency has not taken title to any of the patents which were granted to its employees during the past 15 years. It also appears that of the 39 applications for patents on employees' inventions, where final action has occurred, more than half covered inventions for which the Government has no present use, and some were never used. One question raised by the report is whether the Government is justified in incurring the expense of prosecuting patent applications for inventions which are neither used nor owned by the Government.

This report was prepared by Clarence M. Dinkins of the staff of the Subcommittee on Patents, Trademarks, and Copyrights, under the supervision of Robert L. Wright, chief counsel, as part of the subcommittee's study of the U.S. patent system, conducted pursuant to Senate Resolution 240 of the 86th Congress, 2d session. It is the ninth of a series dealing with patent practices of the various agencies. The purpose and scope of this series are more fully described in the forewords of the studies on patent practices of the Tennessee Valley Authority and the National Science Foundation and in the annual reports of the subcommittee issued in 1959 and 1960.

JOSEPH C. O'MAHONEY,
Chairman, Subcommittee on Patents, Trademarks, and Copyrights, Committee on the Judiciary, U.S. Senate.

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PRELIMINARY REPORT AS TO THE PATENT PRACTICES OF THE GOVERNMENT PRINTING OFFICE

I. Legal Authority as to Patents

There is no statutory language specifically relating to the handling of patent matters by the Government Printing Office.

II. Present Practice

A. ADMINISTRATION

1. Personnel

The preparation and administration of patents is handled by the Government Printing Office's Suggestions Committee. This is a permanent committee established by the Public Printer on September 18, 1947, by Administrative Order No. 44.[1] It consists of the following personnel:

Deputy Public Printer, Chairman
Comptroller
Director of Personnel
Plant engineer
Production Manager
Planning Manager
Safety officer acts as secretary

When an employee has an idea or invention, which he believes to be patentable, he may prepare a request on GPO Form No. 63 [2] for an arrangement with the Department of Justice to obtain a patent without cost to him. When this is done, the Suggestions Committee reviews the request and, if approved, it is forwarded to the Comptroller, who is the legal officer of the GPO and its liaison officer with the Department of Justice in the handling of patent applications. Technical drawings, etc., are handled by the plant engineer. When requests for patent applications are disapproved by the Suggestions Committee, the employee is notified in writing of the reasons for such disapproval. In cases of disapproval, the employee is then free to do as he wishes with his idea or invention. The secretary of the Suggestions Committee maintains a complete file of patent-application requests, correspondence, and related information.

These patent applications are filed in accordance with the provisions of title 35, United States Code, section 266. This section states:

> The Commissioner may grant, subject to the provisions of this title, to any officer, enlisted man, or employee of the Government, except officers and employees of the Patent Office, a patent without the payment of fees, when the head

[1] Appendix, p. 5.
[2] Appendix, p. 8.

of a department or agency certifies the invention is used or likely to be used in the public interest and the applicant in his application states that the invention described therein, if patented, may be manufactured and used by or for the Government for governmental purposes without the payment to him of any royalty thereon, which stipulation shall be included in the patent.

2. Performance statistics

The Government Printing Office has no records prior to 1945 relating to inventive suggestions coming from its employees. Since January 29, 1945, however, its records have been quite complete regarding these matters. The following tabulations shows the number of employee inventive suggestions received, patents applied for, and patents granted for the calendar years 1945 through 1958:

Calendar years	Inventive suggestions received	Patents applied for	Patents granted	Calendar years	Inventive suggestions received	Patents applied for	Patents granted
1945	21	14	[1] 1	1953	0	0	0
1946	15	7	0	1954	2	0	0
1947	7	3	0	1955	0	0	2
1948	5	4	0	1956	1	0	0
1949	10	4	2	1957	0	1	1
1950	0	0	3	1958	0	0	1
1951	4	5	1				
1952	3	1	3	Total	68	39	14

[1] The 1 patent granted in 1945 was issued to Morris Kantrowitz, Technical Director of GPO, but no record was found of the date of his suggestion or the date of patent application.

B. POLICY AS TO RETENTION OF TITLE

1. By employees

Although 14 patents have been granted to GPO employees since 1945, the Government has not taken an assignment of any of them but has taken a royalty-free, nonexclusive, irrevocable license in each case.

With further reference to this situation the Public Printer had the following to say:

> Since March 6, 1950, Executive Order No. 10096 (issued by the Government Printing Office as Administrative Order No. 58) has been the basic policy of the Office in connection with the patentable ideas or inventions of our employees. We believe that the contribution of the Government has been insufficient to equitably justify a requirement of assignment to the Government of the entire right, title, and interest of patents granted to employees since that date. However, should it be determined that any invention that is made by an employee (1) during work hours, or (2) with a contribution by the Government of facilities, equipment, material, funds, or information, or of time or services of other Government employees on official duty, or (3) which bear a distinct relation to or are made in consequence of the official duties of the inventor to equitably justify the assignment to the Government of the entire right, title, and interest in the invention, it will be the policy of the Office to assign the patent to the Government (letter to Senator Joseph C.

O'Mahoney, chairman, Subcommittee on Patents, Trademarks, and Copyrights, from Raymond Blattenberger, Public Printer, Government Printing Office, September 1, 1959).

In addition to the possibility of securing a patent on his invention, the employee may also obtain a cash award for suggestions which will result in improvement in the operations of the GPO. These cash awards given to employees are based upon savings resulting from the adoption of the suggestions. The acceptance of a cash award constitutes an agreement that the use by the United States of the suggestion for which the award is made shall not form the basis for a further claim of any nature upon the United States by the employee, his heirs or assigns. No award is paid to any official or employee for any suggestion which represents a part of the normal requirements of the duties of his position. For full details of this program, known as "Employee Suggestions Program," see Administrative Order No. 44 of September 18, 1947, in appendix, page 5.

2. By contractors and grantees

The Government Printing Office does not have any contracts or grants involving patent matters. However, it does have a nonexclusive, nonassignable license agreement with Dow Chemical Co., providing for royalty payments for the use of a Dow etching machine. This machine is used to etch printing plates before putting them on the printing press. During the fiscal year 1959 the sum of $3,155.10 was paid to the Dow Chemical Co. for this particular license.

C. FOREIGN FILING

1. By employees

The Government Printing Office has no information which would indicate that any of its employees have engaged in the foreign filing of patents.

2. By contractors and grantees

As previously stated, the Government Printing Office does not have any contracts or grants involving patent matters and, therefore, has no information relating to foreign filing.

D. USE BY PARTIES RETAINING TITLE

1. By employees

Of the 14 patents which have been issued to GPO employees since 1945 only 1 is known to be in commercial use at the present time. This is the Alher antijam unit, which is an automatic stop for a folding machine or a quad folding machine, and which stops the machine whenever a sheet feeding into the guide fails to make proper contact. Approximately 45 of these machines have been sold commercially by the employee-inventor.

The majority of patents granted to GPO employees have covered minor improvements or alternatives to industrial techniques and machinery used by the Government Printing Office. The remainder of these inventions, for the most part, cover products and processes having a very restrictive market.

2. By the Government

Although the Government Printing Office has not taken title to any of the inventions developed by its employees, it has and is now using several of them in accordance with its royalty-free license. For a complete tabulation of the 14 employee inventions and the Government use which is now being made of them, see appendix at page 9. For a tabulation of rejected patent applications processed under 35 U.S.C. 266, showing the name of the inventor, subject matter of invention, date of patent application, and GPO's use of the employee's idea, see appendix at page 10.

III. Agency Viewpoint

A. Judgment as to the effectiveness of the present policy

The Government Printing Office feels that its present patent policy following the provisions of Executive Order 10096 is adequate and acceptable to the Office and its employees. In further explanation of its position the Government Printing Office had the following to say:

> The present patent policy of the Government Printing Office (Executive Order 10096) is, and has been, satisfactory from both the standpoint of the Office and its employees. We believe, as set forth in the Executive order, that the circumstances under which the Government should obtain the entire right, title, and interest in and to all inventions made by any Government employees; or the circumstances under which the Government reserves a nonexclusive, irrevocable, and royalty-free license in and to these inventions, is equitable and reasonable.
>
> The present policy of administering the patent policies and programs, i.e., through a committee established by the Public Printer (under Administrative Order 44, dated September 18, 1947, and supplements thereto), is adequate and acceptable to the Office and its employees. There is no record suggesting any change in this policy either from an official of the Office or any employee (statement attached to letter to Senator Joseph C. O'Mahoney, chairman, Subcommittee on Patents, Trademarks, and Copyrights, from Raymond Blattenberger, Public Printer, Government Printing Office, February 19, 1959).

B. Recommendations as to future policy

None were offered.

APPENDIXES

APPENDIX A

Administrative Order No. 44—September 18, 1947

EMPLOYEE SUGGESTIONS PROGRAM

One of the outstanding indications of alert and loyal employees of the Government Printing Office, as of any other progressive industrial organization, is their continued effort toward the efficient accomplishment of the required work in the section or division to which they are assigned. Such employees also constantly strive to improve the methods and procedures by which the Office advances its work. They frequently submit suggestions for the betterment of the tools or the procedures the Office uses in performing its tasks.

By virtue of section 14 of Public Law 600 (79th Cong.) and Executive Order 9817 of December 31, 1946, this Office is authorized, within the limits of available funds and subject to the regulations promulgated by the President, to pay cash awards to employees for adopted suggestions.

Subject to the following regulations, all employees of the Government Printing Office, or their estates, shall receive cash awards for adopted suggestions submitted by them:

1. Any employee of the Government Printing Office—supervisory or nonsupervisory—may submit, through regular official channels or directly to the Chairman of the Suggestions Committee, plans or suggestions which he believes will, if adopted, result in improvement or economy in the operations of the Office, by way of increased efficiency, conservation of property, improved working conditions, better service to the requisitioning agencies or to the public, or in any other way measurable as a monetary saving or an improvement in an operation.

2. When submitted through regular channels, a copy of the suggestion shall be forwarded to the Chairman of the Suggestions Committee; but when sent directly to the Chairman by the employee, an original and one copy shall be submitted. It is preferred that suggestions or plans be submitted through official channels, so that consideration and disposition may be expedited.

3. Each submitted plan or suggestion will be acknowledged by the Chairman of the Committee hereinafter designated.

4. Each line supervisor and executive, to whom a suggestion is routed, shall promptly and carefully evaluate and forward it, together with appropriate comments and specific recommendations, to his official superior next in line of authority.

5. The head of the division or office shall promptly forward to the Chairman of the Committee each suggestion, together with his analysis of it, his recommendations, and a detailed statement of anticipated benefits and savings.

6. The Suggestions Committee shall consist of the Deputy Public Printer, who shall serve as chairman, the Comptroller, the Director of Personnel, the Mechanical Superintendent, and the Production Manager.

7. Each member of the Committee shall designate an alternate to serve when the member is unable to do so.

8. The Committee shall promptly submit its findings and recommendations, as to suggestions considered worthy of a cash award, to the Public Printer for his approval.

9. Papers relating to a cash award approved by the Public Printer shall be forwarded through the Division of Personnel for record purposes, and to the Division of Accounts for preparation of a voucher and scheduling for payment and necessary accounting action. A copy of the approved award shall be retained in the Division of Accounts, and all other papers shall be returned to the Committee.

10. The bases and amounts for cash awards will be determined as follows:

Whenever a suggestion is found to be meritorious and is adopted solely or primarily because it will result or has resulted in the saving of money, the amount of the award shall be based on the amount of the estimated saving in the first year of operation, in accordance with the following tabulation, unless, for special reasons, the Public Printer shall determine, subject to the limitations prescribed in the cited act, that a different award is justified.

Savings	*Awards*
$1 to $1,000	$10 for each $200 of savings.
$1,000 to $10,000	$50 for the first $1,000 and $25 for each additional $1,000 of savings.
$10,000 to $100,000	$275 for the first $10,000 and $50 for each additional $10,000 of savings.
$100,000 or more	$725 for the first $100,000 and $100 for each additional $100,000 of savings, provided that the maximum award for any one suggestion shall not exceed $1,000.

When a suggestion is adopted primarily upon the basis of improvement in the operations or services of the Office, the Public Printer shall determine the amount of the award commensurate with the benefits anticipated from the suggestion.

11. Cash awards shall be in addition to the regular compensation of the recipient.

12. The acceptance of a cash award shall constitute an agreement that the use by the United States of the suggestion for which the award is made shall not form the basis of a further claim of any nature upon the United States by the employee, his heirs, or assigns.

13. No award shall be paid to any official or employee for any suggestion which represents a part of the normal requirements of the duties of his position.

14. No award shall be paid for any suggestion which is not adopted for use within 1 year from the date the suggestion is first received by the Committee.

15. At the end of each fiscal year, the Chairman of the Committee shall prepare for the Public Printer a report to the Director of the Bureau of the Budget of the number of employee suggestions submitted, the number adopted, the total amount of cash awards, and the total amount of estimated annual savings.

16. This order shall become effective September 18, 1947, and will apply to suggestions meeting the foregoing requirements and submitted and adopted for use after that date.

A copy of this order shall be given to each employee of the Government Printing Office.

A. E. GIEGENGACK,
Public Printer.

Administrative Order No. 44, Supplement No. 1—April 21, 1952

To All Employees:

Administrative Order No. 44, dated September 18, 1947, created in the Government Printing Office an Employee Suggestions Program. Paragraph 6 of that Order is hereby amened to read as follows:

> 6. The Suggestions Committee shall consist of the Deputy Public Printer, who shall serve as chairman, the Comptroller, the Director of Personnel, the Plant Engineer, the Production Manager, and the Planning Manager.

JOHN J. DEVINY,
Public Printer.

Administrative Order No. 44, Supplement No. 2

To All Employees:

Administrative Order No. 44, dated September 18, 1947, concerning the Employee Suggestions Program in the Government Printing Office, is hereby revised, in part (Paragraph 10), to read as follows:

Savings	*Awards*
$1 to $1,000	$10 for each $200 of savings with a minimum of $10 for any adopted suggestion.

Cash awards will be made to all employees, including supervisory, for all suggestions which are considered acceptable and are approved by the Suggestions Committee.

This supplement is effective September 29, 1952.

JOHN J. DEVINY,
Public Printer.

APPENDIX B

G.P.O. Form 63

Date _____

SECRETARY, GPO SUGGESTIONS COMMITTEE,
U.S. Government Printing Office,
Washington 25, D.C.

SIR: Please examine the following-described idea or invention and if found to be of a patentable nature, make arrangements with the Department of Justice to obtain a patent for and without cost to me. If a patent is obtained it may be used by the Government for governmental purposes without payment of royalty with the understanding that royalties from all other sources will accrue to me with other rights and privileges pertaining to patents.

A general description of the invention or patentable idea is as follows:

(Reverse side hereof may be used for further detail if required)

Position _____ Name _____
Section _____ Residence _____

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON 25, D.C.

G.P.O. Case No. _____

Name _____ Date _____
Address _____ Hour _____

Receipt of the foregoing disclosure is hereby acknowledged. This idea or invention will be examined and if found to be acceptable to the Government, and if it contains possible patentable subject matter, necessary action will be taken by this Office with the Department of Justice to apply for a patent for you. Should the foregoing disclosure not be acceptable, you will be so notified and you may further pursue any action which may be desired to obtain a patent in the usual manner.

This letter is for your protection and disclosure should not be made to any other persons until patent has been obtained or other disposition has been made which advice will be furnished you.

Very truly yours,

Secretary, GPO Suggestions Committee.

APPENDIX C

Patents issued to the employees which were processed under 35 U.S.C. 266, and their use by the Government Printing Office

Inventor	Invention	Patent No.	Issued	Use
1. Kenneth M. Davis	Portable inserter for Cleveland model K folding machine.	2,617,647	Nov. 11, 1952	Not used at present.
2. Myron D. Alher	Automatic stop for folding machine and quad folding machine.	2,470,754	May 24, 1949	Used on (12) all Dexters and quads.
3. Leo R. Dickenson	Automatic stop for quad folding machine.	2,470,762	June 6, 1949	Not used.
4. Howard A. McClosky	Index printing machine.	2,807,207	Sept. 24, 1957	Used (1) regularly.
5. Thomas G. Maloney, Matthew G. Morris, Louis J. Naecker	Machine for casing in books.	2,820,230	Jan. 21, 1958	1 used regularly.
6. M. S. Kantrowitz	Process for manufacturing identifiable paper.	2,379,443	July 3, 1945	Used during World War II in the printing of rationing books and prisoner-of-war stationery.
7. M. S. Kantrowitz, Earl J. Gosnell	Water-detecting paper and a water-detecting coating composition therefor.	2,515,232	June 18, 1950	
8. M. S. Kantrowitz	Process for identifying normally invisible markings and composition therefor.	2,538,784	Jan. 23, 1951	
9. M. S. Kantrowitz, Earl J. Gosnell	Method and composition for producing silver coatings.	2,602,757	July 8, 1952	Currently in use.
10. M. S. Kantrowitz, Alden E. Yelmgren	Method of making bimetallic offset printing plates.	2,703,295	Mar. 1, 1955	Never used in GPO.
11. Norman D. Hall	Toggle base perforation and scoring rule catch.	2,520,928	Sept. 5, 1950	Never used.
12. William M. Berrick	Ludlow stick lock	2,586,776	Feb. 26, 1952	Regular use on 2 Ludlows.
13. Leo A. Schmitt	Mechanism for producing 36-unit type bodies in regular Monotype composition.	2,716,462	Aug. 30, 1955	Now used on 10 Mono keyboards; will be used on 11 on order (October).
14. Philip L. Cole	Alining makeup device.	2,527,532	Oct. 31, 1950	12 in use, Library Printing Branch.

APPENDIX D

U.S. Government Printing Office rejected patent applications processed under 35 U.S.C. 266

Inventor	Invention	GPO-applied-for patent	GPO use
Connelly	Paper slitter for offset press	Mar. 24, 1945	In use on 2 printing presses.
Seward	Space indicator for Monotype	Mar. 26, 1945	In use on all Monotype keyboard machines.
Davis	Electric heater for air feeders	July 26, 1945	Not in use.
Evans	Holder for Vinylite molds deposition.	Oct. 3, 1945	Do.
Betzinger	Separator for ink fountains	Sept. 27, 1945	Do.
Specter	Paper device to prevent changing of carbons without changing original.	Nov. 1, 1945	Do.
Skotnicki	Book holder	Nov. 7, 1945	Do.
Schmitt	Shifter rod for typesetter	Apr. 12, 1946	In use on all Monotype keyboard machines.
Gilliam	Material identifier	Sept. 19, 1946	Not in use.
Sherman and Craig	Visible centering device	Oct. 10, 1946	Do.
McClean	Vinylite holding device	July 18, 1946	Do.
Kantrowitz and Gosnell	Process for manufacturing permanent alkaline writing ink.	June 28, 1946	In use.
Johnson	Conveyor for Cleveland folder	Aug. 4, 1946	Not in use.
Becker	Letter spacer for Monotype	Sept. 30, 1949	Do.
Williams	Side arm attachment for cross feeders.	Jan. 14, 1948	Do.
Henderson and Price	Edge tear tester	Aug. 25, 1947	Do.
Mixsell and Erickson	Gathering and stitching cabinet	Feb. 13, 1948	Do.
Klibanoff	Dual feeder for Miehle press	Mar. 17, 1948	Used very rarely.
Dye	Separator for permafilm	Nov. 8, 1949	Not in use.
Beck	Adjustable bed for typecutter	Oct. 28, 1949	Do.
Dunbar	Ductor roller brake	Sept. 30, 1949	Do.
Hutcheson	Auxiliary and spacing can for perforator machines.	Apr. 17, 1951	In use on 1 machine.
Alber	Antijam device for Dexter Model N quad folders.	Apr. 3, 1957	In use on 12 machines.

84TH CONGRESS
2d Session

SENATE

REPORT
No. 1464

REVIEW OF THE AMERICAN PATENT SYSTEM

REPORT

OF THE

COMMITTEE ON THE JUDICIARY

UNITED STATES SENATE

EIGHTY-FOURTH CONGRESS

SECOND SESSION

MADE BY ITS

SUBCOMMITTEE ON PATENTS, TRADEMARKS, AND COPYRIGHTS

PURSUANT TO

S. Res. 92

ON

THE AMERICAN PATENT SYSTEM

JANUARY 30 (legislative day, JANUARY 16), 1956.—Ordered to be printed

UNITED STATES
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71008 WASHINGTON : 1956

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84TH CONGRESS } SENATE { REPORT
2d Session } { No. 1464

REVIEW OF THE AMERICAN PATENT SYSTEM

JANUARY 30 (legislative day, JANUARY 16), 1956.—Ordered to be printed

Mr. O'MAHONEY, from the Committee on the Judiciary, submitted the following

REPORT

[Pursuant to S. Res. 92 agreed to May 11, 1955]

INTRODUCTION

Pursuant to Senate Resolution 92, May 11, 1955, 84th Congress, 1st session, the standing Subcommittee on Patents, Trademarks, and Copyrights was authorized to review the statutes relating to patents, trademarks, and copyrights, and to take testimony thereon. The sum of $50,000 was appropriated from the contingent fund of the Senate for use of the subcommittee. Due to the lack of office space, the subcommittee was unable to launch its work until August 22, 1955. Approximately $24,000 will, therefore, remain unexpended on January 31, the termination date of the appropriation of the subcommittee as fixed in Senate Resolution 92.

It is already clear from the testimony which has been adduced, from the preparatory investigations of the staff, and from the reports and papers of well-known experts of training and experience who are generously cooperating with the subcommittee, that the study now in progress is of great importance. Although the work of the subcommittee is far from completion, the following preliminary conclusions are justifiable on the basis of the facts before it.

I. PRELIMINARY CONCLUSIONS OF THE SUBCOMMITTEE

1. The present patent system should be adjusted to modern conditions

When the patent laws were first drawn, invention and discovery were almost exclusively the product of the efforts of individuals working alone. Today, invention and discovery are largely the work of research laboratories. In other words, individual enterprise has been gradually yielding to collective enterprise. No less than 4,835

laboratories are now in operation in this country, and many of them are owned and operated by large corporations.[1] Seventeen years ago (1938) more than 50 percent of all patents issued by the United States Patent Office went to corporations.[2] This included 17.2 percent of the total which went to giant industrial corporations with assets over $50 million each. It is now estimated that 60 percent of the patents go to corporations and only 40 percent to individuals.[3] As a result, the independent individual inventor is continually finding it more difficult to defend and to market his own invention.

The subcommittee heard an almost unanimous chorus of dissatisfaction from individual inventors. The normal market, investment, and business hazards attending any innovation—whether a new product, a new machine, or a substantive improvement—are already so large that the additional and, in some respects as they see it, unnecessary administrative and judicial hazards now incurred in securing and protecting a patent represent the straw that breaks the camel's back.

It is true, of course, that the fault by no means always lies with the system. Many individual inventors are wasting time and money in filing patent applications that should never have been filed, and attempting to exploit inventions that should never be exploited. This happens because they do not have adequate technical background or sufficient knowledge of present-day problems in industry to qualify in the fields in which they have chosen to work. Unfortunately, some garret inventors, often with no experience in the problems at hand, have no hesitation in filing patent applications on everything from improved tools for brain surgeons to atom smashers.[4]

Notwithstanding these unfortunate experiences, the individual inventor working in a field in which he has technical competence and directing his efforts toward the current problems in that field, performs a vital and important function. The patent system is designed to encourage this type of inventor, and the patent statutes, Patent Office administration, and the patent system as a whole must be considered, and improved where necessary, in the light of this purpose.[5]

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[1] Information supplied to subcommittee by National Research Council: In 1950 there were 3,313 scientific laboratories employing 165,032 persons.

[2] Investigation of Concentration of Economic Power, 75th Cong., pt. 3, p. 1127.

[3] Hearings, American Patent System, pt. 1, 84th Cong., p. 25. The Patent Office is currently making a study for the subcommittee to determine the number of patents owned by large patent-holding corporations and the number owned by each of the 500 largest corporations.

[4] An illustration of the problem, perhaps an extreme one, was found in the experience of the Sinclair Oil Co. About 4 years ago, Sinclair, finding itself with excess capacity in its new research laboratory, under the guidance of P. C. Spencer, president, offered its facilities to independent inventors to test out any inventions relating to petroleum. In return, Sinclair asked only a royalty-free license for its own operations (hearing, p. 20).

The results were not happy. The company received 6,000 inquiries and 400 ideas or suggestions. More than half of the ideas were outside the petroleum field and only about 30 came within the ambit of the plan. Two-thirds of these were excluded because they were not patented or proper subjects for patenting. All but three of the remainder were excluded after screening that indicated they did not make sense. The remaining 3 were tested, 2 unsuccessfully; the third turned out to be economically unsound. The company concluded that there were no independent inventors in the petroleum field really in need of help, although the need for help might exist in other fields (hearings, p. 20).

[5] The problem here, fully corroborated and documented throughout our hearings, was stated by the chairman of this subcommittee on the opening day as follows:

"The question that now presents itself is whether the individual inventor still enjoys the sort of protection the drafters of the Constitution had in mind. The Senate by its adoption of a special resolution authorized the Judiciary Committee to undertake what was conceived to be a necessary study to determine what changes should be effected in the patent law if new frontiers are to be opened to the inventive genius of Americans in the modern era. The individual in our time finds himself in a field of competition with foreign nations and institutional research laboratories which did not exist as competitors when the Constitution was drafted and the patent laws first written."

The central patent issue seems to be that of the relation of the individual inventor and the business concern which puts inventions on the market. Phrased in another way, is the million-dollar laboratory usurp-

From the standpoint of complexity, there seem to be two extremes in the scale of invention. The simple "gadget" type requires relatively little scientific knowledge for its conception and limited capital for its exploitation. The more complicated invention requires extensive scientific knowledge and considerable capital to bring it to the point of even a successful commercial demonstration.

In the gadget field, the subcommittee heard the testimony of Mr. Donn Bennett, producer of the TV program The Big Idea. This program over the past 6½ years has presented demonstrations of inventions with the purpose not only of entertaining the viewers but also of securing interest in production or sale of the invention. During that period of time, 36,000 inventors have submitted ideas to Mr. Bennett's program, more than 14,000 of them being rejected by letter. Of the remainder, he has been able to get less than 10 percent, or approximately 1,600, on the air. Of that number, however, almost 500 have found their way into the market place. Some have been extremely successful.[6] Another interesting incident: When a certain manufacturer described one of his problems over Mr. Bennett's program and offered the audience a reward for acceptable solutions, some 1,500 inventors submitted ideas. After review, six were found to be of practical merit.[7]

In the field of aiding the independent inventor, the Small Business Administration has undertaken a program to help manufacturers find new products and processes and also to assist distributors in finding products. It lists inventions in a circular published periodically and distributed to manufacturers throughout the United States, and also offers assistance through its regional and branch offices. There have been a number of good results from this program and many manufacturers express a desire to be on the mailing list.[8]

The Office of Technical Service of the Department of Commerce has also aided manufacturers and inventors by collecting and disseminating information of both patented and unpatented technical nature. The National Inventors Council, also of the Department of Commerce, provides both a stimulus and focal point for national defense inventions made by independent inventors.

The National Research Council is an independent organization in Washington, D. C., which aids Government, industry, and universities,

ing the function of the garret inventor; and, if not, how can we bring the inventor down from the garret and into the living room and eventually into the dining room, where he can pick up the profit? The problem comes up in several ways.

First, we find the practical business problem of the inventor in financing the research he must undertake and his cost of obtaining patents and marketing inventions.

Second, is the problem of the dealings of organized industry with inventors in order to achieve a satisfactory working arrangement which can best convert the fruits of the inventor's mind into merchantable commodities whose introduction into the market will benefit the public, the inventor, and the producer.

Third, is the problem of high mortality of patents—the fact that our courts so frequently hold patents invalid. What is its effect upon the inventor and the manufacturer? What is the underlying reason for this situation? What can be done to remedy it?

Fourth, is the cost of obtaining patents and of patent litigation. What is the effect of these costs upon inventors and industry? How can they be reduced consistent with maintaining a sound patent system?

Fifth, apart from financial costs, how adequate are our present court procedures both in terms of the time it takes to reach decisions and in terms of the correctness of those decisions? Are our courts equipped to handle the complex technical subjects involved in patent litigation; do they need the benefit of consultation with independent experts, or do we need special courts to hear patent cases?

Sixth, how adequate is Patent Office administration in terms of the time it takes, the results reached, and the issuance of patents that our courts will enforce? How can this administration be improved to the advantage of the inventor, the businessman, and the general public? Do we need more patent examiners? Do they need better working conditions so they can work more efficiently, and do they need better salaries so the Patent Office does not lose them to private industry after they have been trained? Can Patent Office procedure be improved, especially with respect to classification? (Hearings, pt. 1, pp. 1–3.)

[6] Hearings, pt. 1, pp. 5, 35.

[7] Hearings, pt. 1, p. 38.

[8] Hearings, pt. 1, p. 42.

as well as individual scientists. It has published books and articles on the subject of nonprofit research and patent management. Research Corp. is a nonprofit patent-management foundation which aids inventors and universities and other nonprofit organizations.[9]

A frequently mentioned obstacle to successful negotiation between inventors and the company research laboratory is the common use by companies of "idea submission" forms which outside inventors must sign before their ideas will be considered. Such forms are often legalistic in wording and sweeping in the protection they give manufacturers.[10] The latter justify this on the grounds of need to protect themselves both against unwarranted claims and against liability for the submission of ideas from the outside on which the research department of the company is already at work.[11]

2. The Patent Office and the United States courts are in conflict as to what is and what is not patentable

Testimony before the subcommittee indicates that more than 60 percent of patents brought before the various United States courts of appeal since 1947 have been invalidated.[12] In the district court the published decisions have ruled out more than 53 percent of the claims which the Patent Office had previously approved.[13] Although the action of the Patent Office has fared better in those cases in which opinions were not written by the courts, this conflict in approach is a matter of serious concern. Whatever the explanation for the gap now existing between the findings of the Patent Office and those of the courts, every effort should be made, consistent with the public interest and the constitutional objectives of the patent system, to narrow it.

The large number of patents held invalid has an especially devastating effect upon the independent inventor of small financial means. Because of the probability that infringement litigation will result in judgment for the alleged infringer, it encourages a tendency to ignore the rights of patentees even where the patents are valid. Since prosecution of infringement suits is extremely difficult, slow and expensive, patentees may balk at undertaking it, even though satisfied that their patents are valid. Investment in inventions, in con-

[9] Hearings, pt. 1, p. 21.
[10] Hearings, pt. 1, p. 38.
[11] Hearings, pt. 1, p. 58.
[12] Hearings, pt. 1, p. 178.
[13] At the instigation of the subcommittee, the Patent Office prepared a study of patents adjudicated in the period 1948–54 (hearings, pt. 1, p. 176, et seq). In approaching the problem of patent invalidity, in order to secure a balanced perspective it must first be recognized that only 1 out of every 290 patents issued is litigated (hearings, pt. 1, p. 176). During the 7-year period the United States Supreme Court passed upon the validity of 7 patents, of which 5 were held invalid and in 1 certain of the claims were held invalid. In the United States courts of appeal during the same period 62.7 percent of the patents involved were held invalid. The published district-court decisions reported 53.5 percent of the patents adjudicated invalid, though the unpublished decisions of the district courts show a considerably lower percentage of invalidity.

Partly as a result of this situation, a considerable reduction took place in the number of patent suits filed in 1954 as compared with 1938 (hearings, pt. 1, p. 182). The statistics also show a decline in the percentage of cases in which patents were held valid and infringed with a corresponding considerable increase in the percentage of patents held invalid in the courts of appeal from 1925–54 (hearings, pt. 1, p. 182).

At the request of your subcommittee, the Patent Office studied 50 patents recently held invalid by the United States courts of appeal (hearings, pt. 1, p. 183, et seq.). Thirty-four of the fifty patents were held invalid solely on the ground of lack of invention or anticipation. In nine others this was one of the grounds of invalidity. In six of these cases the patent was held invalid on the basis of the identical prior art that had been cited by the examiner.

In 34 cases new references were used or referred to. In 6 instances the court noted specifically that the references were not considered by the Patent Office; in 11 instances all of the references applied by the court were new. In the 17 remaining cases the holding of invalidity may or may not have been caused by new references and in some of these instances the new reference or references do not seem to have been of much consequence.

The foregoing statistical résumé provides a clue to what Justice Jackson may have had in mind when in a famous dissent he said that the only patent which is valid today is one which the Supreme Court has not gotten its hands on (*Jungerson* v. *Ostby & Barton Co.*, 335 U. S. 560).

sequence, is discouraged since the property value thereof is depreciated.[14]

On the other hand, infringement litigation is expensive for both parties and even a successful defense of a patent-infringement suit requires heavy expenditures; issued patents, whether valid or not, may have a high nuisance value in the hands of large corporate owners, since they can wreak financial havoc upon smaller competitors by infringement suits, even though the ultimate judgment is in favor of the infringer.[15]

3. Need for maintaining and expanding qualified Patent Office personnel

Because the Patent Office is one of the older Government agencies, it has suffered by comparison with newer agencies in salaries offered to the highly trained engineers and scientists whose services are essential. The examiner of ability can easily find a better salary and more attractive employment conditions outside the Government than are now afforded him in the Patent Office. This results in many resignations, particularly in the higher grades.[16] In turn, an unduly high proportion of less qualified or inexperienced examiners inevitably means slower and less competent processing of applications. If the quality and the rate of output at the Patent Office are to be improved, the positions should be made more attractive than they are now. The separation of able employees from the service should be discouraged and the enrollment of new experts of high qualifications should be secured by providing better incentives than is now the case. In addition to the salary scale of Patent Office examiners, the need for a considerably increased staff of examiners, engaged both in examining pending applications and in classification, and for improved working conditions in the Patent Office was forcibly brought out in the hearings.

One of the casualties of inadequate budget and staffing has been improvement of the Patent Office classification system. Classification of prior art is a crucially important function of the Patent Office—and at the present time a sadly neglected one. Classification is important for several reasons. In the first place, the Patent Office is a vast storehouse of technical information which should be available to the public. Without adequate indexing, this store of information becomes virtually inaccessible to the public. Second, an adequate classification is necessary to enable examiners of pending patent applications adequately to review the prior art which may anticipate pending applications. Failure to locate pertinent prior art as a result of inadequate classification is seriously detrimental to the public since it increases the number of invalid patents, inevitably resulting in unnecessary litigation and expense both to the patentee and to the alleged infringer. The high incidence of patent invalidity, already mentioned, is at least partly attributable to inadequate examination

[14] The existence of some prior art and prior uses of patented subject matter may be known only to industry and not be available to the Patent Office, which results in the inadvertent issuance of invalid patents, however thorough its examination. Nevertheless, the study conducted by this subcommittee shows that there is an increasing percentage of holdings of invalidity. A very large number of witnesses testifying before the subcommittee expressed the view that this is extremely undesirable from the standpoint of protecting the independent inventor in his attempt to enforce patents and to interest capital in investment. If continued, according to these witnesses, this tendence may result in a reversion to the mystery of the guilds of the Middle Ages where technology was suppressed and restricted to the initiated and the channels of free exchange of information and ideas were impaired. Such regression might be well nigh disastrous to the welfare of the country.

[15] Hearings, pt. 1, p. 108.

[16] Hearings, pt. 1, pp. 14, 17, 170, 171, 199.

and classification. Finally, inadequate classification seriously retards the examiner bent upon doing his best with the facilities at hand. Without pertinent information at his fingertips, with irrelevent materials mixed in with the relevant, he must rummage through a vast jumble of miscellaneous information, on the chance that it may contain a pertinent reference here and there—and when he is through, he has no assurance that he has explored all the possibilities.

Further study of the operations of the Patent Office is necessary to ascertain what other devices may be necessary to take care of the tremendous backlog of patent applications awaiting action. No stone should be left unturned to bring about a reduction in the unconscionably long time—some 3 years and 5 months on the average [17]—which is now required to secure a patent grant.

The long pendency of applications is a serious problem not only to those inventors who require the issuance of patents in order to interest risk capital but also from the standpoint of manufacturers innocent of any wrongful intent who embark upon manufacture of an item only to find after the lapse of some years that a patent has issued thereon.

Finally, it plays into the hands of those applicants who deliberately delay issuance in order to prolong the patent monopoly beyond the 17 years provided by the statute. As was repeatedly stated in our hearings, there is urgent need for prompt, intelligent, and stable decisions by the Patent Office in its issuance of patents.

The budget for the Patent Office submitted to the Congress for several years has been considerably less than that required satisfactorily to maintain adequate examining and classification personnel.[18] This has been so well understood by the Congress that last year the Appropriations Committee on its own initiative increased the Patent Office 1956 budget from a recommended $12 million to $14 million. Subsequent to preliminary inquiries made by the chairman of your subcommittee, the Patent Office prepared an 8-year program to reduce the backlog of pending patent applications from a present peak in excess of 220,000 to a manageable total of approximately 100,000.[19] This would enable the Patent Office to act upon applications within 3 to 4 months, in contrast to delays today, in many instances, of over a year.[20] Reflection of this 8-year plan is the budget for fiscal 1957 which proposes $17 million for the Patent Office. The proposed plan contemplates considerable increase in the size of the Patent Office examining staff and this entails recruiting engineering, physics, and chemistry graduates, a program which the Patent Office is now vigorously pursuing.

The efforts that are being made to solve these problems are encouraging. It is an unhappy fact, however, that the damage done by an inadequate budget, even for a single year or biennium, can have far-reaching effects and the process of convalescence—in this case, 8 years by the most optimistic predictions—can be distressingly slow.

It is essential that relief be considered as a long-range proposition. Examiners require several years of experience in the Patent Office

[17] Information furnished the subcommittee by the Patent Office. In 1954, the average was 3 years 6.8 months.
[18] Hearings, pt. 1, p. 164.
[19] Hearings, pt. 1, pp. 162, 195. The 8-year program will also increase the number of classification examiners to 141 from a present average of 17 (hearings, pp. 165, 203).
[20] Hearings, pt. 1, p. 162.

before the volume of applications which they are capable of handling reaches a satisfactory level. Only by maintaining the Patent Office budget on a long-range basis, can examiners be encouraged to make a career of Patent Office service instead of accepting the tempting lure of private employment—and only in this way can the backlog of pending applications be effectively reduced.

4. The need for a single Court of Patent Appeals

One of the recommendations of the Temporary National Economic Committee was the creation of a single Court of Patent Appeals, with jurisdiction coextensive with the United States and its Territories. Such a court would replace the present independent jurisdictions and should do much to assure uniform treatment of patents and to reduce the time and cost of patent litigation. It is true that since the rendition of the foregoing report, the lack of uniformity in decisions among the circuits which prompted the recommendation has to a considerable extent disappeared. It has disappeared because the circuits are now uniformly holding patents invalid.

The need for appellate judges having intimate acquaintance with patent-law problems is apparent. At the hearings, the view was expressed that such a court of appeals should be a rotating court with its bench drawn from the judges of the various courts of appeal rather than a court of technical experts.[21]

Regardless of whether the bench of such a court is selected in such manner or from the members of the bar having particular familiarity with patent matters, nevertheless, the court should be assisted in its determinations by a staff of technically trained experts.

II. SUMMARY OF SUBCOMMITTEE WORK DURING THE FIRST SESSION AND PROPOSED AGENDA FOR THE SECOND SESSION

1. October hearings on major patent problems

The subcommittee conducted hearings on October 10, 11, and 12, 1955, in the form of round-table conference discussions.[22] Approximately 49 inventors, inventor representatives, judges experienced in patent matters, and patent attorneys participated. A full and frank discussion of the problems of the independent inventor and small-business man in dealing with patents, as well as other problems relating to the patent system, ensued. Mr. Robert C. Watson, Commissioner of Patents, and Mr. P. J. Federico, Examiner in Chief, attended the hearings throughout, not only participating actively in the discussion and comments but also assisting the subcommittee in questioning the numerous witnesses. Subsequent to the hearings, those in attendance, as well as other experts in the field of patents, were requested to submit written statements on the subjects discussed at the hearings, as well as other topics of their own choosing. Approximately 58 persons responded to this request and their statements are being printed as an appendix to the transcript of the hearings.[23] The large number of persons participating in the hearings and even larger number sending in statements is ample evidence of the interest in and

[21] Hearings, pt. 1, p. 132.

[22] The transcript of the hearings is found under the title "American Patent System," 84th Cong., referred to herein as "hearings." The transcript is preceded by a synopsis prepared by staff members of the subcommittee.

[23] Appendix to hearings, pt. 1, p. 239, et seq. A synopsis of the appendix materials prepared by staff members is found at the front of the hearings.

concern for the welfare of the patent system, and underlines the importance of the current inquiries by this subcommittee.

2. Research studies in process

A most distinguished witness at the October hearings, the venerable Judge Learned Hand, retired chief judge of the United States Court of Appeals, Second Circuit, stated:

> I take it that you really want in this subcommittee to consider the thing anew from the bottom up.
>
> * * * * * * *
>
> Well, my own view is that the only step which will really be important—the rest will be skirmishing about, procedural skirmishing—is to have a thoroughgoing examination of how the present system works.
>
> As I say, I mean a very thoroughgoing investigation in which you would compel, for example, the corporations that maintain their laboratories and everybody else you could get and see if you could find out how far the present system contributes to the purpose, the underlying purpose being, of course, the promotion of the arts on which civilization has come to depend so completely, even for its very existence.
>
> I don't know that that has ever been done. I think that has never been done. Oh, there have been committees. I know I was on a committee. Perhaps I didn't pay enough attention, but nothing came of it (hearings, pt. 1, pp. 111–112).

The thoroughgoing inquiry urged by Judge Hand may be conducted by investigations and hearings, as well as through special studies undertaken by experts in the field. Whatever the method, the subcommittee often possesses facilities for obtaining needed information that may not be available to other groups. This was emphasized by Judge Hand. Thus, when Dean O. S. Colclough (acting director, Patent, Trademark, and Copyrights Foundation, the George Washington University) testified concerning the work of the foundation, Judge Hand, with a play on Dean Colclough's name and referring to the subpena power of Congress, commented to the subcommittee, "You have got the claws, and they have not" (hearings, pt. p. 123).

The subcommittee has heeded the counsel of Judge Hand. In the field of special studies, it has arranged for the preparation by eminent authorities of research papers covering a wide variety of subjects in the patent field. While some of these are already well along, most of them will not be finally completed until sometime during the second session.

The first of these papers to be undertaken and now nearing completion is a study by Dr. Vannevar Bush, recently retired president of Carnegie Institution of Washington, D. C., long a constructive critic of the patent system. He is the author of Science, the Endless Frontier; Modern Arms and Free Men; and many other studies and articles on the subject of technology, research, and the social significance of technological development. His present study embraces proposals to strengthen patent validity and protect against the misuse of patents, including their use for monopolistic purposes.

Included in his tentative suggestions are procedures for more careful processing of patent applications so as to increase the probability of validity; provision for technical advice and assistance to courts handling patent cases; and broader use of compulsory licensing at a reasonable royalty to deal more adequately with restrictive practices and other misuse, monopoly, or domination through patent concentration, domination through improvement patents, and patent suppression. He also takes up the underlying purposes and objectives of the patent system, its relationship to basic and applied science and

their shifting roles, and its relationship to the independent as compared to the corporate inventor and to innovation as compared to invention.

Other outstanding figures who are currently preparing studies for the subcommittee include:

Dr. Walton Hamilton, formerly associated with Yale Law School and the Antitrust Division and now practicing law in Washington, D. C.: Dr. Hamilton is author of TNEC Monograph 31 (Patents and Free Enterprise) and numerous other writings. His present study deals with the applicable technological and economic tests in the grant and use of patents, including analysis of the technical criteria that should be considered in determining whether a patent should issue and the economic criteria to be applied in determining the validity of licensing practices, concentration of patents and other patent conditions affecting the competitive structure of business and industry.

Dr. Archie Palmer, Director of the Office of Patent Policy Survey, National Research Council, and former president of the University of Chattanooga and chairman of the Government Patents Board: Dr. Palmer is author of a number of studies and reports dealing with patents and research, especially with respect to the policies and administration of nonprofit and university research organizations. His present study deals with this same subject, but with especial attention to the actual operation of such organizations, their relation to and effect upon the inventors whose inventions they administer, and the business, industrial, and competitive effects of their licensing policies.

Mr. John Schulman, practicing attorney, New York City: Mr. Schulman, a leading authority on copyright law, was one of the United States advisers who participated in the 1952 Inter-Governmental Copyright Conference at Geneva, Switzerland, which drafted the Universal Copyright Convention, ratified in 1954 by the Congress. He is the author of a number of articles, lectures, and other treatises on various aspects of copyright law. His present study involves a comparison of patents, copyrights, and trademarks, and of the respective functions, purposes, and objectives served by these different types of intellectual property. Following completion of this study, Mr. Schulman will prepare a study of "petty" patents comparable to the German "gebrauchsmuster," which would provide a short-period, limited-rights grant for novel contributions of a minor nature.

Prof. Seymour Melman, department of industrial engineering, Columbia University, New York City: Professor Melman has given considerable study over the years to modern industrial research, especially corporate research of the large-scale, industrial laboratory type. His present study will examine definitions and legal tests of "invention," as applied in the patent laws, in relation to these modern research methods, and the operation of the patent system generally in its application to corporate research.

Mr. Nathaniel Sage, director of the office of sponsored research, division of industry cooperation, Massachusetts Institute of Technology: Mr. Sage and his staff have had wide experience in working with business concerns, independent inventors, and Government agencies in the conduct of research and the development of new inventions to the point of successful innovation and commercial practicability. Their study, based upon actual case histories, will deal

with the patent system in terms of its significance as an aid to individual and independent inventors and to new and small businesses in their efforts to develop and successfully commercialize new inventions.

Prof. Leonard Emmerglick, professor of law, Georgetown University, Washington, D. C.: As former trial attorney with the Antitrust Division, Department of Justice, Professor Emmerglick tried, or participated in the trial of, several of the major antitrust cases involving patent and other technological features, including the Aluminum case, the General Electric Incandescent Lamp case, the Imperial Chemical Industries case, and several others. His study will analyze and evaluate the patent recommendations of the report of the Attorney General's National Committee to Study the Antitrust Laws, with especial attention to the probable effect of these recommendations upon the trial of antitrust cases involving patent issues.

Mr. Raymond Vernon, manufacturer and former Chief of the International Business Practices Division, State Department: Mr. Vernon is preparing a study of United States business and governmental policies and practices in relation to patents and technology involved in international trade. These will be examined from the standpoint of commerce in patents and technology as such and in products involving patented technology as well. The study will analyze business practices in relation to Government policies concerning international trade, foreign investment, and effect of technology, as well as their relation to antitrust policies in respect to international trade.

Prof. Murray Friedman, department of economics, Queens College, New York City: Professor Friedman is undertaking certain institutional studies relating generally to the relationship of research and technology to industrial size, and the competitive significance of this relationship. He is giving especial attention to the effect of mergers upon research activity and upon the acquisition and use of patents.

Mr. P. J. Federico, Examiner in Chief of the Patent Office, author of Statutory Disclaimers in Patent Law, and numerous studies and articles relating to the patent system, is preparing a comparative study of "opposition" and cancellation proceedings in foreign countries. He is also preparing a digest, survey, and tracing the historical development of proposals presented to Congress from 1870 to date for reforming and improving the patent system.

The Legislative Reference Service of the Library of Congress is undertaking several projects for the subcommittee. These include the preparation of a detailed bibliography of patent reference materials, appropriately indexed and classified; also a historical digest and analysis of congressional hearings, reports, and legislation on various subjects, including the following: (1) Efforts to establish a statutory standard of invention; (2) recordation of patent license and assignment agreements and regulation of international patent cartels, including appropriate parts of Federal incorporation proposals and proceedings with respect to the Habana charter; (3) licensing of patents, including various compulsory licensing proposals and provision for voluntary registration of patents available for license, as well as bills to require the licensing or dedication of Government-owned patents; (4) recommendations for Government assistance to and encouragement of invention and research, including proposals for dealing with inventions made by or for the Government, reward of Government-employed inventors, creation of organizations designed

to encourage and supervise research such as the National Research Council, National Inventors Council, and National Science Foundation, aid to private inventors through assistance, subsidy, awards, dissemination of information, etc., and proposals for favorable tax treatment of research expense and patent income; (5) Patent Office fees; and (6) proposals for expediting Patent Office procedures, including the 20-year law.

Other studies in the course of preparation relate to the historical development of remedies in patent-infringement cases, with especial attention to the development of equitable relief and the circumstances, historically, under which such relief would be granted; and a study of the legal development and scope of judicial doctrine relating to price restrictions in patent agreements as well as the economic and business factors back of such restrictions and economic evaluation of the applicable legal rules.

A number of other research studies are currently under discussion with selected and qualified individuals, both in and out of Government, who have indicated an interest in proceeding with them. Subject matter includes comparative studies of the patent systems of several other countries; further studies in the international field; legislative and historical developments in our patent system over many decades; further studies of Patent Office and court operations and procedures; the sociological and psychological foundations and effects of the patent system; the broad relationship of the patent system to scientific and technological development; further studies of the relationship of the patent system to problems of competition, monopoly, marketing practices and the antitrust laws; further studies of the system's role vis-a-vis the small businessman and independent inventors; the role of various Federal Government activities in relation to the patent system; and so on.

As the foregoing studies are completed and received by the subcommittee, it is contemplated that they will be printed, either separately or collectively, and made available for public distribution as committee prints, monographs or in some other appropriate form.

3. Staff investigations

(*a*) *Compulsory patent licensing.*—This is one of the most controversial subjects in the patent field. The Temporary National Economic Committee reported in favor of an amendment to the patent laws which would require licensing of patents at reasonable royalties. Subsequently as an adjunct of enforcement of the antitrust laws in the patent field, a number of antitrust civil decrees required defendants to license patents either at a reasonable royalty or royalty-free. The subcommittee determined that no study had ever been made of the effect of these provisions of the decrees either by the Antitrust Division or by others. Accordingly, a complete review of every antitrust decree in which compulsory licensing of patents was required has been undertaken to determine how effective it has been in opening industry to competition and what practical problems have arisen in the administration of compulsory licensing.

(*b*) *Patent-antitrust problems.*—In preparation for hearings on patent-antitrust problems, the staff is studying major topics of concern in the antitrust-patent field. Cooperation of the Antitrust Division of the Department of Justice has been secured in this work.

This preparation is in line with the subject matter discussed in the chapter on patent-antitrust problems in the report of the Attorney General's National Committee to Study the Antitrust Laws.

(c) *Relation of the individual inventor to corporate research.*—The staff of the subcommittee has undertaken to investigate the relationship of the individual inventor to corporate research. One of the first steps presently in process is a determination of what companies own the largest number of patents and how many patents are owned by the largest corporations in the United States. This work is being conducted in cooperation with the Patent Office.

In addition, the subcommittee, as a result of its hearings and publicity thereon, has received numerous complaints of unfair treatment of individual inventors by corporations to whom they have disclosed their inventions. If substantiated, these complaints indicate a very grave disregard for the rights of individual inventors. The staff of the subcommittee is now in the process of investigating the most serious of these complaints.

(d) *The automobile patent pool.*—A number of years ago the automobile industry by private cross-license agreement had in operation a system whereby patents acquired by any manufacturer were available to all competitors either without payment of royalty or on payment of a nominal royalty. Investigation by the staff of the subcommittee disclosed that this cross-license agreement had broken down and for all practical purposes is no longer in existence. Further investigation and eventual hearings are necessary.

(e) *Electronics patents.*—Within the past years antitrust actions involving electronics of major significance have been filed and consent decrees have been entered. Recently filed has been an action by the Government against Radio Corporation of America, charging an illegal patent pool in the electronics industry on patents acquired by Radio Corporation of America from General Electric, Westinghouse, A. T. & T. Co., and Western Electric. Recently settled by decree have been an action against Western Electric and A. T. & T. providing for compulsory licensing of all patents, both present and future, with no limit as to time or the use to which they may be put, and covering approximately 8,600 patents; and an action against International Business Machines Corp., likewise providing for compulsory licensing of patents and technical know-how. There are numerous agreements involving patents in the electronics industry. Further investigation of the patent picture and the enforcement of the antitrust laws as affecting patents in this growing industry is necessary.

4. Legislative action

Title 35 of the United States Code, dealing with patents and the Patent Office, was completely overhauled and codified in 1952. One may inquire, in consequence, why there should now be any occasion for other than minor legislative changes. The answer is twofold. First, that overhaul, except in certain minor respects, was a codification, not a revision, of existing law. Numerous substantive changes, some of which may have considerable merit, were suggested at that time, but were passed over in view of the sound disinclination to consider "new matter" at that time. These proposals should now be examined on their merits. Second, many important attributes of the

patent system, both in terms of its effect upon other laws and vice versa, may be the subject of legislation that lies outside the scope of title 35 as such. Antitrust matters, special relief bills, certain aspects of Government research and patent policies, many statutes relating to litigation, and various international aspects, come within this category. Trademark and copyright matters also lie outside the scope of title 35.

As a result of the evidence thus far obtained in our hearings, the chairman is ready to submit drafts of the following bills for submission to the Congress:

(1) A statement of intent by Congress that patents shall be issued only to inventors in accordance with the public interest and only after thorough search and consideration of the prior art, but after once issued by the Patent Office patents shall not be held invalid except upon the basis of clear and convincing evidence of improper issuance or on the ground of fraud.

(2) A bill which would create in the Department of Commerce an agency to assist inventors by making inventions more readily available to industry.

(3) The so-called 20-year bill, which was passed by the Senate April 26, 1940,[24] and which would limit the term of a patent to 20 years from the date of filing of the application but in no case more than 17 years from the date of issuance.

(4) A compulsory recording of license agreements bill which passed the House of Representatives April 1, 1946.[25]

(5) A bill permitting revocation or cancellation of patents on motion of the Patent Office, interested persons, or the Attorney General which in large measure follows the recommendations of the National Patent Planning Commission established by Executive order in 1941.[26]

(6) A bill for the creation of so-called short-term or minor patents and patents of addition which are found in the laws of many foreign countries.

(7) A bill for filing evidence of invention similar to a proposal which passed the Senate October 9, 1949.[27]

(8) A bill simplifying review of Patent Office decisions by eliminating one of the two alternative appeals now open to applicants.

(9) A bill requiring publication of interference counts after termination of the motion period and before the taking of testimony so as to give warning to manufacturers of the possibility of delayed issuance of patents involved in interference between two applicants.

(10) A bill to establish a single Court of Patent Appeals.

There are now pending in the Senate a number of bills relating to patents, trademarks, and copyrights which come within the jurisdiction of your subcommittee and require consideration by it. These include bills originating in the Senate, others which originated in and were passed by the House of Representatives, and others still pending

[24] 76th Cong., S. 2688, S. Rept. 747. See also: 79th Cong., H. R. 2631; 77th Cong., H. R. 3211, S. 892; 74th Cong., H. R. 4986; 73d Cong., H. R. 5554; 72d Cong., H. R. 10153, 11016, H. Rept. 1200.

[25] 79th Cong., H. R. 3756. There were a number of bills of similar nature in prior and subsequent Congresses.

[26] Recommendation of National Patent Planning Commission (1941).

[27] 81st Cong., S. 868, H. R. 1711, S. Rept. 675. Similar proposals in prior Congresses.

in the House but expected to be passed by it and referred to the Senate during the second session.

The following bills originating in the Senate are currently pending before this subcommittee:

S. 116 (companion bill H. R. 2128 presently pending before the House of Representatives): To authorize the extension of patents covering inventions whose practice was prevented or curtailed during certain emergency periods by service of the patent owner in the Armed Forces or by production controls.

S. 215: An act to amend the Trademark Act in certain particulars.

S. 590: Relating to the rendition of musical compositions on coin-operated machines.

S. 672: For the relief of Richard T. Harvey by the renewal and reviving of patent application No. 320,998.

S. 683: For the relief of Ashley G. Ogden by payment of a sum in satisfaction of his claim against the United States for use of an invention submitted to the National Inventors Council.

S. 1815: To confer jurisdiction upon the Court of Claims to hear, determine, and render judgment upon the claim of Antoine Gazda for use of certain patents.

S. 1968: To amend the act of June 30, 1950, relating to the extension of the terms of patents of World War II veterans.

S. 2233: To extend and renew letters patent relating to vehicle-door hardware.

The following bills have been passed by the House of Representatives and are now pending before this subcommittee:

H. R. 2068: For the relief of William F. Friedman in settlement for all rights in respect of his inventions placed in secrecy status.

H. R. 2383 (companion bill S. 2157): To provide for inventors' awards for those making inventive suggestions to the Armed Forces.

H. R. 5876: To amend the copyright law to permit, in certain classes of works, the deposit of photographs or other identifying reproductions in lieu of copies of published works.

Although not presently before the subcommittee, the House Committee on the Judiciary has reported favorably H. R. 4983 to increase Patent Office fees. The subject matter of this bill will in all likelihood come before this subcommittee during the second session.

5. Additional hearings on certain patent problems

One of the important chapters in the report of the Attorney General's National Committee to Study the Antitrust Laws is on antitrust-patent problems.[28] The Senate Subcommittee on Antitrust and Monopoly Legislation has undertaken extensive hearings on other chapters of the report but has specifically deferred hearings on antitrust-patent problems so that the Patents Subcommittee may conduct these hearings.

In addition, hearings on the patent policies of the Federal Government are highly desirable, both for their general significance in terms of public policy and for their effect upon monopoly, competition and concentration in our economy.

[28] Ch. V. Patent-Antitrust Problems, pp. 223-260.

Further, hearings are desirable on the international aspects of patents, including attention to the International Union for the Protection of Industrial Property (an especially significant matter at this time because of the contemplated meeting to consider revisions thereof, scheduled for Lisbon, Portugal, in 1957); the export and exchange of technology and patent rights as part of our foreign policy, in connection with cartel agreements, etc.; and a comparative study of the United States patent system and those of other countries.

Several witnesses stressed the extreme importance of making, as Judge Learned Hand put it—

> a thoroughgoing examination of how the patent system works. That is the only question in the end, how far does this system of what we call monopolies promote the public interest by stimulating progress, interstitial progress of the arts? That cannot be determined satisfactorily a priori by the beliefs that people have one way or the other. Not without a thoroughgoing investigation. I mean a very extended examination. Call everybody and see how it works. I don't care much about their opinions as to how it works. But how does it work? It will be a long job. It may be an impossible job (hearings, pt. 1, p. 118).

This examination the subcommittee proposes to undertake.

CONCLUSION

No basic changes in our patent system or its underlying principles have been made since 1836 when our "modern" patent statute came into being. Amendments have either dealt with specific, and often relatively minor, problems or have been largely revisory or declaratory in nature.

Yet with so relatively static a statutory structure, this country, like much of the rest of the world, has been the subject of dynamic development industrially, technologically and economically. Except for a few minor areas of business activity, the industrial and technological economy of today bears little resemblance to that of yesterday. The relatively simple, easily understood and inexpensive inventions have given way to highly complex inventions that require extensive scientific training to understand and substantial experimentation and capital to develop and perfect. The garret, garage, or basement inventor to a marked extent has given way to the laboratory technician who is both scientifically trained and versed in the latest techniques of experimentation and invention. The independent "lone wolf" inventor has given way to the coordinated group activity of the research laboratory.

An economy of scarcity, relying mainly upon manpower, craftsmanship, and simple tools, has been replaced by an economy of potential abundance increasingly mechanized, productive and efficient, with developments in automation, chemistry, electricity, electronics, and atomic energy increasingly measuring the pace and extent of advance. The science and technology of foreign countries that was almost as unavailable as undiscovered technology in an earlier day, is now, with certain obvious exceptions, capable of easy, rapid, accurate, and complete communication. An economy that once was slow moving and deliberate in its technological advances has given way to one that moves at fast and ever-accelerating speed.

A Government that once contributed little to technological development, other than to enact a patent law and provide a court system to enforce it, has today become a tremendous factor in this area, not only through its own direct research activities and financial assistance to

other public and private research institutions, but by increasingly posing the problems that require solution and thereby providing the incentive for their solution.

The genius of the architects of our patent system, like the genius of those who framed our Constitution, to some extent anticipated these basic shifts and built a structure that was adaptable to them and sufficiently flexible and far reaching in its underlying principles as to be able, with an occasional patching here and a shoring there, to weather these changes and continue to carry out with maximum effectiveness the constitutional purpose of "promoting the progress of science and useful arts." One cannot, however, question the desirability of an inquiry, as suggested by Judge Hand, to determine to what extent this is so and, even where it is so, to ascertain what patching or refurbishing may be desirable if the patent system is to perform even better in today's society.

These are some of the considerations that induced this subcommittee to shape the program and undertake the activities outlined in this report.

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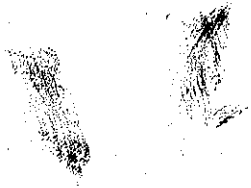

NATIONAL PATENT POLICY

HEARING

BEFORE THE

SUBCOMMITTEE ON PATENTS, TRADEMARKS, AND COPYRIGHTS

OF THE

COMMITTEE ON THE JUDICIARY UNITED STATES SENATE

EIGHTY-SEVENTH CONGRESS

FIRST SESSION

PURSUANT TO

S. Res. 55

ON

S. 1084 and S. 1176

JUNE 2, 1961

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NATIONAL PATENT POLICY

FRIDAY, JUNE 2, 1961

U.S. SENATE,
SUBCOMMITTEE ON PATENTS,
TRADEMARKS, AND COPYRIGHTS OF THE
COMMITTEE ON THE JUDICIARY,
Washington, D.C.

The subcommittee met, pursuant to notice, at 2:10 p.m., in room 2300, New Senate Office Building, Senator John L. McClellan presiding.

Present: Senators McClellan, Hart, Wiley, and Hruska.

Also present: Senators Anderson, Douglas, Gruening, Pastore, Saltonstall, Engle, Long (Louisiana), and Metcalf.

Staff members present: Robert L. Wright, chief counsel, Patents Subcommittee; Clarence Dinkins, assistant counsel; Herschel F. Clesner, assistant counsel; George Green, professional staff member; and Thomas C. Brennan, investigator.

Senator MCCLELLAN. All right, gentlemen, I think the committee may now come to order.

On behalf of the committee, I wish to welcome our colleagues who are not members of the committee who are here, particularly Senator Long who is the author of one of the bills that the committee has been studying, and the other Senators, Senators Gruening, Pastore, and Metcalf, who are not members of the committee. We are especially glad to have you because the witness we have this morning, Admiral Rickover, is one of the most prominent and most important among the personnel of Government today, particularly in the area of national defense and security, and in the course of studying this subject of patent rights and the Government's equity and interest in patents that arise out of Government contracts with the Government financing the project, we felt that Admiral Rickover had vast experience that would be helpful to this committee, and we sought his presence here today and invited him to come and testify and give us the benefit of his knowledge and of his counsel.

Admiral, we are happy to welcome you, and we appreciate your responding to our invitation. We want you to feel free to give your testimony, make your presentation in a way that appeals to you as being desirable and proper to get the information before us that you can give us.

If you prefer, we will let you just make a general statement without interruption, make such comments as you desire without interruption, and then members and visiting colleagues may ask you questions if you will permit us to do so.

TESTIMONY OF VICE ADM. H. G. RICKOVER, ASSISTANT DIRECTOR FOR NAVAL REACTORS, U.S. ATOMIC ENERGY COMMISSION, AND ASSISTANT CHIEF OF BUREAU FOR NUCLEAR PROPULSION, BUREAU OF SHIPS, DEPARTMENT OF THE NAVY

Admiral RICKOVER. Thank you very much for your kind and gracious words, Senator McClellan.

It is a great privilege to be here. It is both a privilege and a duty.

I have no prepared statement. I would appreciate that, at your pleasure as chairman and at the pleasure of the other distinguished Senators who are here, you interrupt me at any time and ask questions. I believe the problem can be more clearly developed by give-and-take questioning than by a formal presentation.

Senator MCCLELLAN. May I ask you then at this point, Admiral, if you have read, if you are familiar with the two bills that the committee has under consideration, a bill by Senator Long, S. 1176, and one by the chairman of the subcommittee, S. 1084?

Admiral RICKOVER. I am generally familiar with the bills; yes, sir.

Senator MCCLELLAN. You are generally familiar with them?

Admiral RICKOVER. Yes, sir.

I am primarily interested in the subject of patents as it relates to national security, the strength and safety of our country. I hope you will understand that everything I say flows from that concern.

I have not had the problem that contracting companies with whom I deal might refuse to work for the naval reactors program, because, subject to closely controlled exceptions, the law vests in the Government title to inventions made under AEC contracts. The reason is that the law removes the patent issue from our relations with contractors. It has not in any way handicapped us in obtaining from them contracts that are advantageous to the Government. The patent controversy is therefore not a problem in my own work.

But I am greatly disturbed that other agencies—notably the Defense Department which dispenses almost 70 percent of Government research and development funds—follows a policy of giving away inventions paid for by the American people. What disturbs me is not so much the fact—manifestly unjustifiable as it is—that individual companies may make a great deal of money out of inventions developed with public funds, but that this overgenerous policy has an adverse effect on our defense program. It is from this standpoint—the effect of patent giveaway policies on our national posture and strength in this period of extreme crisis—that I would like to talk.

Senator MCCLELLAN. Let the record show that Senator Anderson is present.

Senator ANDERSON. Thank you, Mr. Chairman, for the invitation.

Senator MCCLELLAN. Off the record.

(Discussion off the record.)

Senator MCCLELLAN. You said you had read the bills and were familiar with them?

Admiral RICKOVER. Yes, sir.

Senator MCCLELLAN. All right, proceed.

Admiral RICKOVER. Three years ago I testified before the House of Representatives Select Committee on Astronautics and Space Ex-

ploration. Legislation was then being considered for setting up the Space Administration (NASA). I was asked what I thought should be done about patent rights to inventions made with research funds that would be granted by the new Space Agency. I urged that the Space Act follow the rule laid down in the AEC Act, explicitly vesting in the Government title to inventions financed by NASA research funds. It seemed to me then—as it still does—that inventions developed with public money belong to the American public.

As finally passed by Congress, the patent policy laid down for the new Space Agency was in accord with these recommendations; it is essentially the same policy as that contained in the Atomic Energy Act. These two agencies are thus by law required to take title to inventions paid for by the American people unless it can be shown that the public interest requires some other disposition. The title policy is also followed by the Tennessee Valley Authority (TVA) and by the Department of Agriculture. A diametrically opposed patent policy, however, is followed by the Defense Department. Subject only in most instances to license-free use of publicly financed inventions by the Department itself, contracting firms are granted patents which give them a 17-year monopoly against the 183 million Americans out of whose pockets come all public funds dispensed by the Defense Department. All of these 183 million people are precluded, for 17 years, from benefiting from inventions for which they have paid with their taxes. The Defense Department does not sell patent rights—as any agency should be, of course, permitted to do provided no national security is involved. It does not bargain with contractors, granting patent rights as a quid pro quo for better contract terms. It simply hands over these rights as a matter of agency policy.

It seems to me important to pin point the difference between giveaway of public property by decision of a particular agency and dispensation of public subsidies to ailing sectors of our economy by act of Congress. Analogies are often drawn by defenders of the patent giveaway policy with farm subsidies, subsidies to shipping, other forms of transportation, et cetera. These subsidies are expressly granted by Congress. And Congress, in our form of government, is the only body that has the right to give away public property. In the case of these subsidies, moreover, a public interest in supporting particular segments of the American economy is involved. I do not see how one could make an analogous case for contracting firms obtaining Defense Department research grants. The firms who receive grants are a relatively few huge corporate entities already possessing great concentrated economic power. They are not ailing segments of the economy in need of public aid or subsidy. Nor is there any real need to offer patent giveaways in order to induce them to accept Defense Department research grants or contracts. I think it needs no special proof to say that Government contracts are and always have been highly lucrative and much sought after. To claim that agencies cannot get firms to sign such contracts unless patent rights are given away strikes me as fanciful nonsense.

So fas as I am aware, the only major case in point occurred when the drug industry refused Government grants for cancer chemotherapy and psychopharmacology research unless they were given patent rights to inventions made with public money. There was, I

believe, also the case of a firm refusing a NASA contract but in that case it was playing the Defense Department against the Space Agency. If we had a uniform Government patent policy, corporations could not do this. As I mentioned before, we in the Naval Reactors Group have had no difficulty obtaining contracts that are advantageous to the Government even though under the AEC Act we could not, if we wished, give away patents to AEC financed inventions.

The present situation is unsatisfactory. Agencies of the same U.S. Government pursue diametrically opposed policies on patent rights to inventions financed by the Government even when it may concern the same areas of technology, such as medical research where the Defense Department and the Department of Health, Education, and Welfare (HEW) follow different policies. This naturally makes for inequities. It leaves the power of decision on an important public matter that should be regulated by Congress to contracting officers of different agencies. As a result the House Appropriations Committee is insisting that the Defense Department should judge more strictly whether defense-supported medical research is limited to areas peculiar to military requirements. Furthermore, the Appropriations Committee felt that medical problems common to all our people, including those of miltary personnel, should not be investigated with Defense funds. Many people inside and out of Congress feel very strongly that the foundation of all agency patent policies should be the principle that inventions made with public money belong to the public, and that Congress should pass legislation requiring all Government agencies to proceed on that basis, with allowance for waivers in special cases, such as when corporations have contributed their own money to such inventions, or for bargaining purposes, that is, to enable the Government to obtain more favorable contracts. This is my own view. On the other hand, those who presently benefit from the patent giveaway policy of the Defense Department are making strenuous efforts to have that Department's policy made applicable to all Government contracts, most particularly to those of NASA. Leader in the attack against the AEC and NASA patent policy is the patent bar.

When $8, $9, $10 billion of public funds are invested in research, innumerable commercially useful inventions are bound to be made, in addition to those of primary military significance. Obviously, it is in the interest of the patent bar that such commercially useful inventions be privately patented since this will make for a good deal of lucrative patent business. When title to publicly financed inventions is vested in the Government, the patent bar may not derive any special benefit from the Government's vast research program. Hence, their extremely active support of the Defense Department's giveaway patent policy.

Senator LONG. Their influence is so pervasive that when last year the Government set up a study group to examine patent policy, this group went to the George Washington Patent Foundation for advice on what their position should be. The interesting thing is that the George Washington Patent Foundation is supported by the private patent lawyers and by inndustry, and they have an ax to grind. No one has a greater interest in preserving a system of taxing the public for private advantage than do the patent lawyers themselves.

Admiral RICKOVER. It has been my experience that the patent bar is a much stronger advocate of the giveaway patent policy than the contracting firms themselves. Of course, the firms get profits and other benefits from Government contracts whereas the patent bar depends wholly on the giveaway patent policy for extracting a benefit for itself out of public research contracts.

I would like to quote some remarks made by Senator Long before Congress last year which coincide exactly with my own experience: He said—

> the impression I have gained is that those who demand this unconscionable advantage are not so much those in big business as their patent lawyers. Most big businessmen with whom I have discussed the matter have quite readily conceded to me that what is sauce for the goose is also sauce for the gander; that if they employed someone to do research and development work for them, they would insist on retaining the patent rights for their company; and that it is logical for the Government to proceed on the same basis.

I cannot see how one can make out a convincing case for the right of patent attorneys to have their special interests considered in laying down Government policy on patents for inventions made under public research contracts. It seems to me we have here a clear conflict of interest between some 6,000 patent attorneys and the 183 million Americans who pay for Government contracts and to whose clear interest it is that useful inventions for which they pay should be promptly disclosed so that everyone can utilize them. Of course, advocates of the giveaway patent policy are silent on the advantages this policy bestows on the bar; their arguments proceed on the highest level of the American way of life, the free enterprise system, the Constitution, and so on.

The private interest of those who favor the giveaway patent policy has many advocates and is ably presented. Very few advocates defend the interest of the American people or of the Nation as a whole. I think it important that it be generally known that the principal defenders of the patent giveaway policy—as presently followed by the Defense Department—are members of the patent bar, and that in defending this policy they are defending their own special interest rather than the public interest.

For years the patent bar has very actively pursued the objective of preventing extension of AEC patent policy to other Government agencies. Particularly heavy pressure was exerted 3 years ago when the Space Act was under consideration by Congress. Nevertheless, in the end this act did incorporate the AEC patent policy. The patent bar sees this as merely a temporary setback. Though they were unsuccessful then, they are still in there pitching to reinstate the giveaway patent policy.

Senator LONG. Last year they actually succeeded in obtaining the help of some NASA officials who were advocates of the Defense Department policy, as they had come from there. Two such officials, for instance, were present at an important meeting of the Committee on Government Patent Policies of the American Patent Law Association on April 29, 1960. The meeting resolved once more that—

> the purpose of the patent system will be best achieved by the vestment of title to all inventions made by contractors in fulfilling research and development contracts, financed in whole or in part by the Government.

Thus NASA itself, without benefit of operating experience, on the recommendations of the patent bar, asked that the Space Act be amended to bring its patent policy in line with the Department of Defense giveaway practice rather than that which the Congress in its judgment had enacted.

Admiral RICKOVER. Since I am familiar with both the Defense Department and the AEC patent policy and with the effect both have on Government contracts, Senator Long asked me on April 8, 1960, to testify before his Subcommittee on Monopoly. With your permission, may I insert here my testimony before that subcommittee?

(The matter referred to is as follows:)

PATENT POLICIES OF GOVERNMENT DEPARTMENTS AND AGENCIES, 1960

Subject: Conference of Senator Russell B. Long, chairman, Subcommittee on Monopoly, Senate Small Business Committee, with Vice Adm. H. G. Rickover, U.S. Navy.

Place: Office of Senator Long.

Time: Friday, April 8, 1960, 9 a.m.

Present: Senator Russell B. Long; Vice Adm. H. G. Rickover; Benjamin Gordon, economist, Senate Small Business Committee; Robert Hunter, administrative assistant to Senator Long; Richard Daschbach, research assistant to Senator Long.

Senator LONG. Admiral Rickover, I want to know your views in general on the issue of whether you believe that when the Government buys research and development, the Government should take the patent rights or should permit the rights for commercial usage to go to the contractor.

Admiral RICKOVER. First, Senator Long, may I thank you for giving me the opportunity to discuss this matter with you. I appreciate testifying in your office where there are beautiful southern girls and the coffee is flavored with chicory. It is very unusual.

Second, I have no prepared statement.

Third, I am not a patent lawyer or any other kind of lawyer. I can only give you my views as they developed over a period of about 20 years in the conduct of research and development for the Department of Defense and the Atomic Energy Commission.

The patent situation today is quite different from what it was in 1789 when our Constitution was adopted. At that time, a patent was a matter that primarily concerned the individual; individuals were developing single items in a preindustrial age. Today, the development of patents generally involves large corporations and organizations. The U.S. Government alone is currently spending, in fiscal year 1960, nearly $8 billion for research and development. To grasp the significance of this sum bear in mind that the total expenditures of the U.S. Government for the 11-year period, 1789 to 1800, was less than $6 million. And in modern times the level of U.S. Government expenditures did not reach $8 billion until 1936.

Over the years I have frequently wondered whether in this modern industrial age patents are as important for industrial organizations as would appear from the statements made by patent lawyers. It may be that the patent lawyers are overemphasizing the present-day value of patents. It is quite possible our industry would not be hurt very much if we restricted the items that are patentable. I believe the important factor for an industrial organization is the know-how developed by it—the trade secrets and the techniques; these are not patentable qualities. They are something that are inherent in a company, in its methods, in its management; the kind of machine tools it has, how it uses these tools, and so on. Where the facilities are owned by the company itself, and where the know-how is its own; the Government shouldn't publish that information. When these conditions obtain, it is possible we have gone too far in making the information public.

Up to the advent of the Atomic Energy Commission in 1946 and the Space Agency in 1958 most research and development consisted essentially of adaptations to existing technology. That is, an industrial organization would be called upon by the Government to take an item it had already developed over a period of many years and change it to a new or improved item for military application.

On that basis there was considerable justification for the entrepreneur to maintain his background patent rights; he was merely adding a small novelty to an already existing item. But with the coming of atomic and space science, we have an entirely different situation; we are now dealing with equipment that has never before been used. In fact, most of it was never even conceived of. Consequently, nearly all the money for developing the complete item comes from the Government. I believe in the atomic energy field about 92 percent of the money being spent on research and development is supplied by the Government. It is for this reason I consider the existing patent provisions in the Atomic Energy Act and in the Space Agency Act fair and valid.

Where the Government bears all or nearly all of the cost, where the facilities belong to the Government, and where the Government bears all the risk, the people should own the patents. The American people are spending their money for the research and development; therefore, the patents should belong to them.

Senator LONG. Would that 92 percent be a conservative figure?

Admiral RICKOVER. It probably is. We are dealing with projects and with items that are novel, that have never before been developed. Furthermore, in nearly all cases the patents are being developed in facilities wholly or almost wholly owned by the Government; this is another compelling reason for rights to these patents to inhere in the U.S. Government.

Senator LONG. Admiral, I would like to read to you an excerpt from a speech delivered by a patent attorney. [Reading:]

"* * * may I remind you in the words of our Founding Fathers in the Declaration of Independence that I consider these truths to be self-evident: the American patent system is as old as our country, it is the best in the world, it is a fundamental part of our free competitive economy, it has contributed to the highest standard of living in the world, it has helped make America the strongest nation on earth, it will be as vital to our way of life in the age of space as it has been during our first 185 years as a nation, and any proposal which departs from the basic fundamentals of our patent system, no matter how gilded, must be stamped out as a thistle in a wheatfield."

What do you think of this statement?

Admiral RICKOVER. It's a good, ringing Fourth of July speech, Senator Long. It reminds me of an incident that occurred in one of the German States about 150 years ago. As part of a thoroughgoing reform of the judicial system, it was proposed to abolish torture as a means of obtaining confessions from persons accused of crime. A venerable jurist bitterly opposed this on the grounds that, since torture had been used for more than a thousand years, it must be good. Apparently, this man believed that anything that has existed for a long time must be good.

However, we are not discussing the patent law per se. No one is arguing that we do away with our patent law. We are merely discussing application of that law when the Government spends most of the money for doing the work. This is the real issue.

Senator LONG. Do you believe that the billions of dollars the Government is paying for research and development of new items are adequate incentive on the part of Government contractors to develop those items to the best of their ability?

Admiral RICKOVER. Yes, sir, I believe a most important factor motivating a company to seek out and undertake research and development for the Government is the realization that, instead of spending its own money, it now obtains these funds from the Government. One frequently hears it said the Government doesn't pay enough profit to companies performing research and development; that whereas the Government allows, say, only 5 percent profit on research and development contracts, the companies can make 10 percent or more on ordinary commercial or Government business. But that is not a valid argument. A company may spend, say, 1 to 2 percent of its gross income on its own research and development work; but when they do Government research and development they thereby get large additional sums of money to do such work. In this way they enhance their competitive position without having to use their own money. You will find many large corporations where the level of Government research and development they do is considerably more than they spend on their own research and development. In essence Government-financed research and development subsidizes and augments their own research and development effort, and so enhances their competitive position. These companies realize that in order to stay in business, to be healthy, to prosper, they must do research and development work.

The very fact they constantly keep on urging the Government to give them more research and development contracts despite the supposedly low profit rate is ample proof of the great value they attach to obtaining such contracts. Our large corporations are more aware of the desirability of doing Government research and development than the small companies.

We have had no difficulty in the Atomic Energy Commission getting contractors, large and small, to do research and development work. In fact, many of them are constantly urging us to give them such work. Further, a number of companies have built their own facilities, with their own money. Many businesses want Government research and development work in order to develop a strong position. They now wish to extend this to the atomic energy and the space fields.

Senator LONG. Contracts themselves are profitable, but those contracts, even if they do not have private patent rights, also lead to additional products if these companies are forward-looking, competitive companies developing products of their own outside these Government activities. Would you agree with this statement?

Admiral RICKOVER. Yes, sir. They develop many ideas and skills from this Government-financed work; also, their people are being trained and schooled at Government expense. These are very valuable assets, and the reason so many large corporations vie to obtain these research and development contracts. Now I can only consider this problem in the light of my own experience. I have never had a single case where the patent provision of the Atomic Energy Act influenced a company not to undertake Government R. & D. work. In fact, many of the very same companies who operate under the Department of Defense patent provisions, which are far more liberal to them than the AEC rules, not only accept research and development work under the Atomic Energy Commission patent rules, but even urge us to give them more such work.

Senator LONG. Do you have any indication that the companies charge you more to do research and development if they are not permitted to keep proprietary or commercial patent rights?

Admiral RICKOVER. No, sir; I know of no such cases. They are nearly all cost-plus-type contracts and the fees are about the same throughout the Government. Nor do I agree with the statement frequently made that unless there is such a patent provision, their employees will not work assiduously. I have never seen anything of the sort. A man who has an idea in his mind, if he is worth his salt, will want to get it out. He will fight all obstacles to get it out; it really makes no difference to the scientist or engineer one way or another because the company gets to own the patent rights anyway.

Now, the companies apparently take a different stand toward the Government than they do to their own employees. Their own employees must sign an agreement providing that the company takes title to the patents they develop. Apparently, the companies desire better treatment from the U.S. Government than they accord their own employees.

Senator LONG. I was talking to a young man who worked for an oil company about its research program. He told me that when he went to work for the company, he was required to sign a contract that said that anything he developed would be turned over to the company. Now he said that he didn't have to sign that contract, but he felt that if he was going to take the job, the company had every right to ask him to sign it. And yet his attitude was that if the company, in turn, was going to work for the U.S. Government on a project to be wholly paid for by the Government, it was no more immoral for the company to be asked to let the Government keep the patent rights than it was for him to be asked to let the company keep the patent rights if he went to work for that oil company.

Admiral RICKOVER. That is tantamount to what I said. I agree with you that companies in the employ of the Government should receive the same treatment from the Government as they give to their own employees. In Great Britain, as you know, there is a different system. There, the patent rights for work financed by the Government belong entirely to the Government; the Government licenses industry and even shares in the royalties industry receives from non-Government applications. In Russia, the Government, of course, owns all patents. So here we have three different patent systems working side by side. I know of no evidence indicating that the British or the Russians are being held back because they have not copied our patent system. One of the reasons the Russians have been able to make rapid progress is because they

disseminate technical information faster than we. They probably lead the world in the thorough and rapid dissemination of scientific and engineering information. I believe this is pretty good evidence there is little to the argument that unless we give industry full rights to patents where the Government has paid for the work, our economic system would be hurt. I doubt that very much. Perhaps there are too many patent lawyers in the United States.

Senator LONG. Here is another problem that concerns me, Admiral Rickover. It seems to me that if I had a company working on something that could conceivably be of immense value—for example, suppose I was trying to develop a new fuel that might be the fuel of the future; perhaps the fuel that could put a satellite into outer space or do things present fuels will not do. If I were able to achieve it first and to obtain a patent on it, that patent would be of enormous value in future years. Now, on the other hand, if my competitors were working on something similar to that, it seems to me that there would be an incentive on my part, looking after my pocketbook and stockholders, to tell my engineers: "Fellows, don't tell anyone about this thing. Hold onto it until we are able to get a patent on it." Does it occur to you that that logic might from time to time operate on work under Government R. & D. contacts?

Admiral RICKOVER. Yes, it could, except in the case of AEC and NASA work. In these fields the law places ownership of patents initially in the U.S. Government. This gives the Government the opportunity to make them available to everyone. In my opinion, this is a good system because it makes new information available quickly. Otherwise, there is the possibility of withholding information. All of our industry benefits greatly from free use of Government patents. As you have stated, it is essential in the race with the Russians that we do not handicap ourselves by delaying the emergence of new developments. The Russians have no such handicap.

The object of the patent system was to further human welfare and happiness. Take the medical profession, for example. As far as I know the medical profession rarely patents anything. New procedures, techniques, and instruments developed by doctors and medical researchers are free to be used by anyone. This is a noble attitude by a noble profession, and I have never heard it said that our doctors are loath to increase human health and happiness because they would not receive exclusive right to their inventions. And to illustrate the human misery that can result from undue secrecy there is the famous case of the first practical obstetric forceps. It was invented about 1600 by Peter Chamberlen, an English obstetrician. It was kept by the Chamberlens as a family secret for nearly a century. They wouldn't let anyone else know about it. So here we have a case where countless mothers were subjected to needless pain—pain that could have been avoided had that knowledge been made public. But the Chamberlen family kept it to themselves in order to retain a monopoly; they enriched themselves at the expense of human misery. This illustrates in a homely sort of way, a way a man can't understand but a woman surely can, the importance of not withholding information. Today I believe it would be considered unethical for a man in the medical profession to try to patent something of that sort.

Senator LONG. As a matter of fact, isn't it true that when most doctors develop a new procedure for operations, they are anxious to go to a medical society meeting and explain their new procedure so that other doctors might find it advantageous for humanity?

Admiral RICKOVER. Yes, sir. As I said, the medical profession is the most noble and ethical profession. Nearly every doctor is dedicated to improving the health and happiness of all humanity. I believe we could well adopt that same principle in many other fields. We would do well to have our scientists, our engineers, our industrial leaders, our Government servants, and our educationists emulate our doctors.

Furthermore, you must bear in mind we are not talking about the ability of industry to obtain patents when they use their own money. Even in the atomic energy field or in the space field, if you spend your own money you take title to the patent, except for weapons. Last year more than half the patent applications in the atomic energy field were filed by private industry. We should urge industry to spend more of their own money for research and development—in which case the patents will belong to them and they will build up a position of their own.

It may interest you to know that 90 percent of patents for peaceful applications in the atomic energy field are developed by 10 to 11 of the AEC contractors. There have been only three cases where contractors have objected to the AEC

patent provisions. These objections were based on the fact that the language of the contract was too all-inclusive; that the language took in more than was required for the actual performance of the contract. These three cases were not important ones. The AEC, I understand, intends to recommend changing the language.

No one has suggested in any instance I know of that industry can't have patents. We must sharpen the problem and point out that the real issue is whether patents, the development of which is paid for by the Government, belong to the people or belong to industry. That is the real issue. We are not discussing the patent system per se.

Furthermore, there is here involved a matter of broad national policy. At present, instead of Congress examining the patent situation, we are permitting each agency to decide for itself. I do not believe Congress should abdicate its constitutional rights and duties and permit any individual agency in the executive branch to set up its own rules which by perpetuation over a period of many years finally assume the force of law and then are used as precedents. The tendency of Government agencies is to let things continue as they are. It is easier for them this way; they don't have to think or to hurt anyone's feelings. It is also easier to have a simple rule such as the Department of Defense has, rather than to judge items on a case basis. I believe the application of our patent law should be considered as a general policy matter for the entire Federal Government; and that Congress should not permit each agency to set up its own rules. That, in effect, is like having several different Federal laws to cover the same subject.

I believe it is in accordance with the intent of the patent law that the Government should own patents resulting from work it has financed. In other words, the Atomic Energy Commission and the National Aeronautics and Space Administration patent rules are in consonance with the law, and not otherwise, as some would suggest.

Senator LONG. Now, isn't it also true that a great amount of basic research and development is not patentable at all until it has been developed into a practical application?

Admiral RICKOVER. Yes, sir. And that is why we have so many companies come to the Government, urging they be given Government funds to do research and development work; this will give them a better competitive posture in industry.

Almost every area in industry is now subsidized by the Government and since they have become accustomed to subsidization, they naturally desire patent rights also because this further helps to subsidize them.

I believe that patents should generally belong to the Government where Government money is used to develop them. In special cases where a great deal of prior work has been done by a company, an exception could be made. An exception could also be made in the case of small business if this is considered necessary by Congress to preserve our free enterprise system. But, aside from these exceptions, where the Government pays for the work the patent should belong to the Government.

Senator LONG. Now, Admiral Rickover, where you have several contractors working on similar problems for the Government, each one of whom has more than a hundred scientists and engineers working in their employ, isn't it to the advantage of the Government that every time one group or one team of scientists and engineers discovers something new that is useful, it should be immediately made available to all the others so that they can start working forward?

Admiral RICKOVER. Yes, sir; I definitely believe it should. This of course, is the intent of Congress in appropriating Government funds—that they be spent efficiently and effectively. Such interchange of information will add to the efficient and effective way of spending Government money. Isn't this exactly what our industrial corporations do? Do they not immediately make available to all of their divisions what each division invents or learns?

Senator LONG. Well, would there not be an incentive if a contractor could see the possibility of large profits for himself by holding back on this information until he can patent it? If hundreds of millions or billions of dollars are involved, wouldn't there be some incentive to hoard and to conceal what he knows, until he is in a position to protect himself with patent rights?

Admiral RICKOVER. Yes, it might be, and I believe there have been cases—these are a matter of record—where organizations have held inventions back in order to protect their future competitive position.

Senator LONG. I believe one of the witnesses of the Defense Department, one in charge of patent matters, who had been with industry as a patent lawyer, mentioned that some concerns find it advantageous when they have something very good, not to patent it, but to hold on to it, feeling that when they patent it, it becomes available and other people then start finding out how to achieve the same thing by a method which would get around that patent.

Admiral RICKOVER. I believe we should reevaluate our patent policies in the light of the present situation—where we are faced with an implacable foe who uses every means to achieve decisive military strength as fast as possible. It is important in this critical stage in our history to reconsider the patent policies and procedures from the standpoint of whether they are aiding or impeding our national progress. Today, there is no essential difference between military and civilian technology. So anything that holds up one, also hurts the other. As I said previously, the patent problem that faces us today was not envisioned by the founders. They lived in a preindustrial society—a society where a patent resulted from the efforts of an individual, not of a large organization.

Senator LONG. Do you have any idea or any judgment as to what you believe the people at the working level, the actual scientists and engineers, who are doing the technical and developing work, think about this matter and this issue?

Admiral RICKOVER. The men working on a Government project surely know it is the Government that is actually paying their salary. I have never found a lack of desire to do good work, just because it was being done in a Government laboratory instead of a private laboratory, or because the work was being paid for by the Government. When a company hires a man, they pay him for all his talents, including his ability to invent.

Mind you, sir, we must stick to the point; we are not now discussing our patent system; we are only discussing whether the Government should retain rights to patents for which it pays. To the individual scientist or engineer who makes the invention or contributes to it, there is no financial difference anyway. The company gets the patent rights; not he. If he is a good man, if he makes an invention or otherwise makes himself of greater value, he will be promoted and his pay increased whether the company is paying his salary directly, or the Government indirectly.

Senator LONG. As I understand your position, from your last statement, if the Government hired a contractor to develop something for the Government, the contractor, scientists, and engineers are actually working for the Government, notwithstanding the fact that the contractor is interposed between them and their Government.

Admiral RICKOVER. Yes, sir. As far as they are concerned, they do the same in either case, and get the same treatment.

Senator LONG. In other words, if I were a scientist working either for the AEC or a contractor of the AEC, I would be smart enough to know that I am actually working to develop atomic energy for the U.S. Government.

Admiral RICKOVER. Yes, sir. There is an analogy between this situation and the one that obtains in education—one of my favorite subjects, as you know. The National Education Association, a self-admitted lobbying organization, assumes to speak for the teachers. The NEA is constantly saying what they suppose the teachers to be thinking. The teachers rarely speak for themselves. However, I receive many letters from teachers who say: "Please don't quote me; I thoroughly disagree with the NEA, but I am afraid to talk." In the case of patents, everybody is talking for the scientists and engineers except they themselves. The patent lawyers are always telling us what the scientists and engineers think. Now, I happen to deal directly with many scientists and engineers; I have not heard them express the thoughts on patents as espoused by the patent lawyers.

Senator LONG. Would you care to elaborate further on what you do detect the attitude of scientists and engineers to be?

Admiral RICKOVER. The scientists and engineers? Why, I don't believe they have ever given this matter serious thought. It makes no difference to them anyway. As citizens, they probably would prefer that the patents belong to the Government.

Senator LONG. Well, as far as they are concerned, they are smart enough to realize whether they are working for a contractor or for a Government agency directly that they are working for the Government.

Admiral RICKOVER. Yes, sir. This is similar to the question I am asked about our nuclear submarines—whether we have a morale problem with the sailors because they are submerged for such long periods. I answer that we don't; since

there are no psychiatrists aboard these submarines, the sailors haven't found out that there is a problem, so there isn't any. Possibly, if there weren't so many patent lawyers, we wouldn't have so much of a patent problem, either.

Senator LONG. Admiral Rickover, have you given any thought to the problem involved in some of these contracts where it is provided that the Government, in letting a contract to develop some item, will accord the Government a royalty-free license to use this item for the Government, but that in no event will the Government be permitted to use this development to provide services to the general public?

Admiral RICKOVER. That, of course, is the system used by the Department of Defense, but not by the Atomic Energy Commission. Now, industry, for example, gets a great deal of benefit from the Government-owned AEC patents because they are rapidly made available to everyone. Many new developments in the atomic energy field are expedited because industry is able quickly to learn everything that has been developed and to build on that. This is a good way to get things done fast. It could even be that in this revolutionary and rapidly spiraling scientific and industrial age this is a faster way to develop our country industrially than is possible under the present patent system with its restrictions. Perhaps our patent laws should be investigated to see if they serve the intended purpose well.

Senator LONG. It has come to my attention that in a certain contract—I do not believe this was the usual case, but an exception—concerning the development of weather control systems, an attempt to develop weather control, one contractor was able to obtain a contract with a provision that anything developed under this contract could not be used to provide general services to the public. If we are ever able to develop some system to control weather, can you see much use that the Government would have for weather control, except to provide general services to the public?

Admiral RICKOVER. I definitely believe we should not turn over any element of weather control to a contractor.

Senator LONG. Well, the Government is working on weather control methods, Admiral Rickover. Assume that we eventually find a system whereby seeding the clouds might make the rain fall in the area where we want it and to prevent it from falling somewhere else. Would it not be rather extreme for us to have a provision in those contracts that the device which the taxpayers have paid to develop could not be used for their benefit?

Admiral RICKOVER. Such a provision I consider wrong, sir, because it is tantamount to the taxpayer underwriting somebody to get a patent which stops the taxpayer himself from using his own resources. Such a situation should not be permitted to occur. It may have been an oversight in the particular contract you mention.

Senator LONG. How can public policy permit any such private patent? Now, Admiral Rickover, your achievements in developing the atomic submarine are rather well known. Have you found that the inability to accord private patent rights to individual contractors has impeded the development of the atomic submarine?

Admiral RICKOVER. Categorically, I say "No." It is the same as the case of the psychiatrists in submarines. Having never heard about this situation, I didn't know there was a problem.

Senator LONG. Where you have a large number of contractors working on parallel projects, would you personally feel that progress would be impeded if each one had the right to take out patent rights and have property rights in the secrets they developed?

Admiral RICKOVER. Yes, sir; I believe there would be. With the system in use in the Atomic Energy Commission, all of this information is shared.

Senator LONG. And you have no difficulty in persuading anyone to share what he develops as fast as he finds it?

Admiral RICKOVER. I didn't know until this morning there was any difficulty.

Senator LONG. Do you have any knowledge of problems that exist in any other field outside of your own, where private contractors do not have the right to keep patents?

Admiral RICKOVER. I have heard there are cases in other fields, but to the best of my knowledge, when one attempts to substantiate these cases, they seem to evaporate. In fact our problem in the atomic energy field is we have too many contractors who want to do work under our patent conditions, and not the other way around.

Senator LONG. So, as far as you are concerned, you have no knowledge of any difficulty in persuading contractors to do the work for you.

Admiral RICKOVER. No, sir. I have difficulty keeping contractors away who are trying to persuade me to give them more work.

Senator LONG. Do you have any questions, Ben?

Mr. GORDON. Senator, I have a question, but I think that you covered it already. But this, perhaps, looks at it in a more general way and I wonder if I could ask it. We have received complaints that the policy of giving away patent monopolies to contractors has a tendency of hampering the dissemination of new scientific and technical knowledge, at least until it can be patented or exploited. What do you think of this? Does the AEC policy prevent this kind of a situation.

Admiral RICKOVER. There is a definite possibility that such a policy can hamper dissemination of scientific and engineering information. The present AEC and NASA policies tend to encourage rapid dissemination of information. This is of great help in developing a new technology. Mind you, we are talking about new technology which it is incumbent on us to develop as rapidly as possible from a national standpoint. We are not discussing the patent situation per se. You and I are not now talking about doing away with our patent system. We are merely discussing whether the Government owns the patents it has paid for. We are only talking about a particular aspect of the patent problem.

Senator LONG. Do you have knowledge of any companies who take the attitude that they are not interested in doing work for the Government unless they can keep private patent rights?

Admiral RICKOVER. I personally have never heard of any, sir. There may be some, but I have never encountered one. If a company attempted to do business with me that way I'd go elsewhere without a moment's delay. If we have to depend on any one company in the United States to do Government work we are in a pretty bad way. We had better see to it, without delay, there is another. This issue we are discussing also touches on the problem of national interest versus group interest. I believe too much of group interest obtains in the United States. At this critical time in our national life we should not permit any group interest to predominate over the national interest. Because if our country is not strong, neither will any of the groups in our country be strong. They all derive their strength from our Nation.

Senator LONG. Thank you very much, Admiral Rickover. You are always frank, and you give us your best advice.

Admiral RICKOVER. Typical of the arguments advanced by those who advocate the give-away of Government-financed inventions are remarks recently made by a vice president in charge of research of the Minnesota Mining & Manufacturing Co. He said that we are presently in a technological race with Russia in which we are lagging behind in two main areas—space and atomic energy. To quote him verbally:

It is more than a coincidence, I believe, that these are the only two areas thus far where there has been Government interference with the normal functioning of a patent system. This clearly indicates to me that Government control of patents has already reduced incentive to a point where this country's dominant position as a world power is in jeopardy.

I am glad Senator Anderson is here to answer this irresponsible accusation. He has been a member of the Joint Committee on Atomic Energy since its inception. He has also served as the chairman of that committee for several years. I believe the United States leads all others in atomic energy, and that this leadership is due in large measure to his wisdom. Would it be appropriate, Mr. Chairman, for me to request you to ask the Senator if he cares to make any comment? If the vice president of Minnesota Mining & Manufacturing is right in his claim that the AEC patent policy is responsible for our being allegedly behind Russia in the atomic energy field, then I think Senator Anderson is largely responsible for our losing our dominant position.

Senator McCLELLAN. Senator Anderson, do you wish to comment?

Senator ANDERSON. Yes.

I do want to say to you, Mr. Chairman, that I was glad to come here because I think Admiral Rickover has made a tremendous contribution to this country, and no small part of what he has accomplished has been due to the patent situation that this man complained about.

Would I be permitted 2 or 3 minutes?

Senator McCLELLAN. Certainly, Senator. Go right ahead.

Senator ANDERSON. When the first work was done at Arco under Admiral Rickover's direction looking toward the development of a good reactor, when it was developed sufficiently far enough Admiral Rickover told the Joint Committee that he could build an atomic submarine. He was, of course, criticized by some of his associates in the Navy. Nobody would be foolish enough to try to trust the lives of seamen in an atomic submarine. But he came to the Joint Committee and kept pleading his case, and under the then leadership of Brien McMahon, Senator Hickenlooper and others, Mr. Cole and Mr. Holifield and Mr. Van Zandt, they believed him, and I went along with them because they had had great experience in this field.

He showed us a model one day that didn't look as if it was possible, but it was possible. And a nuclear-propelled submarine was constructed.

That is the only field, up to date, in which we know we are ahead of the Russians. We do know that in the field of nuclear-propelled submarines we are substantially ahead of them. We would have stayed there, I think, if we hadn't made an exchange of plans with the British in exchange for certain information they supplied us.

The Joint Committee unanimously asked the people in charge not to make the transfer of plans to the British because we were afraid that their security was not as good as ours and might fall in the hands of the Russians. That, I assume, has happened because there has been a theft of plans, and people know that the only persons interested in stealing them might be the Russians.

But we were ahead and far ahead in that field.

Now there was a byproduct to that that ought to be of interest to American industry. The submarine that Admiral Rickover built worked. Not only does it work but the subsequent models like the *Skipjack* work and work fantastically better, I think Senator Pastore would tell you, than the original *Nautilus*. The *Nautilus* was a little clumsy compared to these attack submarines that they have which just operate like a sports car. It is the difference between driving a truck and a sports car with these two submarines.

But, as a result of that, the American people who were interested in development of utilities became attracted. In the eastern part of the country, under the leadership of Mr. Webster, the Yankee plant has been constructed. The admiral can tell you more than I can tell you about the design, but I believe it is safe to say that it follows exactly the design of the Shippingport construction.

Admiral RICKOVER. The reactors that industry has built and is building to a great extent are based on the technology which was developed by my project and other Government projects, projects that were paid for by the Government.

Senator ANDERSON. Yes.

We went along and built the Shippingport plant, which is very expensive. It costs lots of money to maintain because it is doing the research work for the private companies, and when they built a plant as Mr. Webster did, I don't believe we charged them anything for the patent rights.

Admiral RICKOVER. No, sir.

Senator ANDERSON. It is open to the public.

Furthermore, when Willis Gale of Commonwealth Edison in Chicago got ready to build a plant, he debated a long time and talked to me on the telephone and said, "I don't think I ought to do it, but I am tempted to." And I helped tempt him a little bit, and they built a very fine plant in Chicago, the Dresden plant.

The technology of the Dresden plant is a direct successor of the technology of the first reactors at Arco, the *Nautilus* plant, the Shippingport plant and the great line that has followed along in these other plants, and I think no small part of our extremely good success in certain types of ventures is due to the fact that we have had this policy of the Government owning what it paid to develop and making it available fully to every manufacturer.

Senator Pastore knows better than anybody. We had a long discussion with the Italians, the French, the Belgians and others about entering an organization such as EURATOM. EURATOM was going to build some powerplants, and we were called upon to make some guarantees as to the life of certain cores. The thing looked as if it was going to cost a great deal of money to the United States, but it won't because, by the time they get ready to build, there will have been enough work done at Shippingport by the expenditure of Government money so that the private companies who were going to test these cores, either General Electric, Westinghouse or Allis-Chalmers, whoever may build them, will know what to do.

And I just want to say I was somewhat, I hope, helpful in seeing to it that there was written into the Space Act the same general guarantee that we had in the Atomic Energy Act, namely, that when the Government spends billions of dollars out of its Treasury, the patents belong to all of the people of the country, freely to be used by anybody without any royalties paid to anybody, and that, I think, has worked very well indeed.

I don't know where this man from this company got the theory that these programs were in such bad shape. The British are trimming down their plan substantially because they have had some difficulties and they found the power reactors aren't as cheap as they thought they were going to be. We even have information that the Russians have somewhat changed their power reactor program, that they are attracted a little bit to the use of the midstream which we have found advantageous, and I know that there has been a substantial change in their programs and the British programs.

I think the British will eventually go to the gas cooled type of reactor that will work very well, but so are we.

All of these have their ancestry back in the work the Government did, and I didn't know that Admiral Rickover was going to turn to me as the culprit, but I am glad to be the culprit because we in the Joint Committee on Atomic Energy felt that a fine job has been done in this field.

I know that the Space Committee had to take it on faith, but I believe before they get through the Space Committee will recognize it as extremely valuable.

Senator LONG. May I just ask a question at this point. Would the experiences of the Manhattan project tend to support your argument, or support the argument of the gentleman from Minnesota Mining & Manufacturing Co.

Admiral RICKOVER. I think it is not only the Manhattan project, but what we have done since and what we are doing now. I think it is all Government research. If it is looked after and followed through properly, it would support the argument that when the Government spends billions of dollars belonging to all the people of the country for research the results should be made available to all U.S. industry, research companies, universities, and individuals.

The reason I mentioned the statement of this industry official is to show the absurd extremes to which some people are going to defend their right to our patents paid for by the taxpayers. It is generally recognized that the United States is the leader in the atomic energy field. But this man, who apparently knows nothing about the whole matter, makes public statements claiming that we are behind in atomic energy and in space because of the patent law.

Senator LONG. I wonder if he is one of these Department of Defense contractors who has some connection with this outer space deal. It is only on military contracts which do have these private patent rights that we have, so far, suffered our greatest scientific defeats.

Admiral RICKOVER. Yes, sir. He doesn't know too much about what he is talking about in the space program, either. You can't blame our position in space today on patents or any other single cause or person. There are many deeper reasons that underlie our present position in space. Certainly if we had started in space at the same time that we started in atomic energy and if we had had the vigorous leadership of such men as Brien McMahon and Senator Anderson and others, we wouldn't be in this fix. We were years behind in space science and technology activities when the National Aeronautics and Space Act of 1958 was enacted. Furthermore, we have tended to underestimate, and we lack the ability to evaluate, the past and present potential of our competitor in the space race. There is also the fact that American industry is geared to mass production and is not used to producing custom-made items where far greater precision and accuracy is necessary—as in the missile and atomic fields.

It is all too easy to look at everything in terms of one's own particular interest. Arguments blaming Government patent policy for real or alleged delays in atomic energy and space developments have no basis in fact, but they are constantly reiterated in speeches made by advocates of patent giveaways. Perhaps I took unfair advantage of Senator Anderson by springing this on him here but I did want to nail down this ridiculous accusation by this official of Minnesota Mining right here and now. It is typical of many things that are being said against AEC and NASA patent policy. This committee does not often get a chance to get an instant refutation such as the one just given by Senator Anderson. I appreciate this very much, sir.

Senator ANDERSON. Well, I would like to add just one more thing, Senator McClellan.

Whatever has happened in space, all the lag that we may have developed took place a number of years ago. We have been making great strides in the last couple of years. And in those last 2 years it is the only time that this prohibition of patents has been in the law. Previously space development was entirely in the general field of the Defense Establishment where they had no statutory rule whatever on patents, and that is how badly off this man—I didn't catch who it was; you said Minnesota Mining—is because it has only been in the last 2 years, only since we wrote the space bill that the patent provision has applied to space activities of NASA as I recall it. And during those 2 years I think we have made extremely fine progress and have some possibility of catching up with our adversaries a little bit in that field. It is going to take time. We have a long way to go. But if ever there was proof of the patent situation, that ought to be it. And on atomic energy, as I say, in the field where they turned atomic energy loose, we developed faster than other parts of the world, and we realize now how much faster.

Senator McCLELLAN. Thank you.

I wanted to let the record show that immediately preceding Senator Anderson's comments, Senator Wiley, a member of the committee, and Senator Engle had come in the room, and the remarks I made at the opening, in my opening statement, welcoming members of the Senate who are not members of the committee, apply to them and all others who may come in. We appreciate having you.

All right, now, Admiral.

Senator WILEY. Mr. Chairman, may I apologize for being late, but the kind of schedule that we have got now almost drives a fellow into some kind of a condition. Four different subcommittees and one Senate, and now your committee here.

The point I want to get at: what were you discussing when I came in? The practicality of giving to the Government the patents, exclusive patents where the ideas evolved as a result of Government expenditure of funds? Is that the thing you were talking about?

Admiral RICKOVER. I had started to, Senator Wiley. I have not yet discussed it. I believe the major subject of discussion this afternoon is what patent rights the Government should have in research and development for which it pays. I had not gone into that yet. I was about to start, sir.

Senator WILEY. Well, did it relate to all patents or patents that you might say were necessary in governmental defense?

Admiral RICKOVER. No, sir. It relates to all patents, because today you cannot make a distinction between inventions of purely military value and inventions that have other uses. Virtually all inventions have repercussions beyond their own narrow field. That is the essential difference in the patent situation today as against what it was 50 or a hundred years ago, and especially as it was when the first patent law was enacted by Congress in 1790.

For example, take Eli Whitney's cotton gin. That was a simple device that could stand on its own. You could identify it easily, it had very little relation to anything else. That was generally the nature of patented inventions until about 1870 or 1880. But you cannot patent anything in any field anywhere today that doesn't have an immediate and direct effect on everything else we do.

The arguments of the patent lawyers disregard this scientific and technological fact. In seeking to prevent extension of the patent policy of the Atomic Energy Commission Act to other agencies, a favorite argument of theirs is that atomic energy is such a narrow and specialized field that one might conceivably justify special patent rules for the AEC but this would not apply to other fields in which agencies make research contracts—notably NASA and the Defense Department. This is a fallacious argument. The impact on other areas of inventions made in the atomic energy field today is very broad. For example, nuclear reactors are used to generate electrical power, propel submarines and surface ships, create medical and industrial isotopes, explosives. And I believe this is true of virtually all inventions made under Government research contracts, whether they be in space or in public health or in agriculture. This is why, in my opinion, the whole patent situation should be considered anew.

I also feel that this subject you are now considering may have a greater effect on the ultimate strength, welfare, and safety of our country than many of the other matters to which Congress is devoting considerable time. This is so because the patent problem is a basic issue. If you don't settle it, if you don't provide for better incentives for individual inventors and for rapid outflow of new technological information—and that is what the strength of any country depends upon today—everything else falls.

I would like to discuss the patent problem from two standpoints. First, the specific one; namely, do we have difficulties in the Atomic Energy Commission because we retain patents? And why does the AEC follow a different policy from the Defense Department? I can show you that I am able to obtain equally advantageous terms for the Government whether I contract under the Defense Department or under AEC; in neither case do I presently contract away the title of the Government to inventions made with public funds. I should like to stress this point.

The other point I want to emphasize is that perhaps this is a good time to reexamine the legal and historical basis of patents. Patent lawyers in general take the position that the patent law as it now stands is something as constant and fundamental as an 11th Commandment—a solemn rule handed down by God to Moses on Sinai. They sometimes argue that unless the patent law remains exactly as it now stands the American standard of living, our free way of life, free enterprise, and what have you will crumble.

I am no patent lawyer but I have taken the trouble, since I was asked to come here, to more fully familiarize myself with the subject. It has been my experience that many apparently complex subjects rest upon simple basic principles. These can readily be understood by laymen who will take a little time to investigate the matter.

Experts are often so concerned with complexities that have mushroomed around basic principles that they lose sight of these principles, so a layman can contribute something. He can contribute a mind uncluttered with technical details. Not infrequently problems that expert opinion concluded were permanent and insoluble have suddenly disappeared when circumstances have shifted or new minds have tackled them. I am of the considered opinion that on this patent issue a body of shrewdly competent experts have been needlessly confusing the relatively simple principles on which the patent law rests.

Now what we have is a controversy as to who in law owns title to inventions made under Government contracts. Going back to the origin of patents, to the purpose for which they were intended, may help clarify the issue. I beg your indulgence if I speak of matters with which many of the Senators present are, no doubt, far more familiar than I am.

Patents are a survival of so-called letters patent which used to be issued in large numbers during the Middle Ages and through the age of mercantilism. These were open (hence the word "patent") royal letters announcing to one and all that the possessor had been given by the monarch exclusive rights to some specified office, privilege, or commercial monopoly. Originally, the purpose of letters patent granting industrial or trade monopolies was promotion of a public interest; namely, expansion of the Nation's industry and trade, of the national economy. It was then believed that the best, if not the only way, to induce people to invest large capital sums in new industries or trading ventures was to guarantee them freedom from competition, that is, a monopoly.

It is, of course, characteristic of monopolies that they allow charging all the traffic will bear, while under a free competitive enterprise system prices are brought in line with reasonable costs and profits through the working of the marketplace. Well-known commercial monopolies protected by letters patent existed for necessities such as the manufacture and sale of salt, vinegar, oil, starch, paper; for products requiring special skill such as printing, glassmaking, mirrormaking, and so forth; for trading ventures such as those of the monopolistic East India companies.

Though commercial monopolies by letters patent were enormously beneficial to those who obtained them, it is important to keep in mind that it was then believed these individual benefits ultimately served a public interest in that they strengthened the economy of the nation.

In time the public interest was disregarded by monarch who granted letters patent to court favorites or sold them to the highest bidder in order to enrich their privy purse. In the reign of James I, Parliament finally put an end to the whole system of private monopolies and privileges through its Statute of Monopolies of 1624. One exception was reluctantly made, one type of letter patent was allowed to survive, the patent granted to inventors. For a limited time a monopoly under the patent was allowed in order to encourage inventors to invest their brains, time, and money in research. It was believed that this was the best, if not the only, way to induce people to produce inventions.

Though a patent monopoly is valuable to the inventor, permitting him to exploit his invention without fear of competition, it was then, and still is, believed that these benefits to inventors ultimately serve a public interest in that they promote economic growth through technological progress. To further this public purpose government temporarily walls off the area of knowledge covered by a patented invention and keeps the public out; it allows the patentee to erect a barrier across one step in the technological ladder where he may either levy tribute or bar the way entirely if he decides to "sit" on his invention.

The 1624 Statute of Monopolies contains the first formulation of conditions required for the granting of a patent and of the limitation

in time of the monopoly privilege patents confer. Our own first patent law of 1790 incorporated the same basic formula. So did most other national patent laws though there are variations in emphasis. Thus French law considers the inventor's right to a patent as a natural right, German law regards the patent as a contract between inventor and society, English law retains something of its earlier attitude that patents, being monopolies, should be regarded with disfavor by the law.

Industrial nations have influenced each other's patent legislation. Patents are not peculiar to the American way of life or our free competitive enterprise system. American patent practice differs chiefly in that we are less concerned to reward inventive genius than some other Western industrial nations who have recently been changing their laws to return to the original principle of patent law of rewarding individual inventors. In our country the common law master-servant doctrine which gives the employer a right to all inventions made by his employees has been further strengthened by the common practice in industry to demand an express waiver of rights to inventions as a condition of employment. German patent law declares such contracts null and void unless the inventor retains some interest. So have the courts of a number of other continental nations.

American patent practice differs, too, in that we are just about the only Western nation where the Government grants patent monopolies for a mere fee and does not put the patentee under some continuing obligation, either to pay an annual tax on his patent or to work it within a given period of time—usually 5 years—on pain of forfeiting the patent. Also, we permit patents to remain in force for a longer period than many other nations—17 years. The original formula set down in the 1624 Monopoly Statute was 14 years. With knowledge now doubling every 9 years, it seems unduly long to authorize a barrier on the ladder of technology lasting 17 years during which time no person may use the invention without paying tribute to the patent holder.

When defenders of the giveaway patent policy argue that contracting firms have a right to patent inventions made under Government contract they demand for themselves a different status than they are willing to give their own employees and subcontractors. Mass production and the virtual disappearance of the independent inventor have changed the intended purpose of the patent law which was to encourage individual inventiveness. Patents now largely do not go to the inventor but to those who employ him and provide him with necessary facilities. By depriving employed inventors of any right to the products of their inventive brains, industry has precluded itself from making a valid claim to inventions paid for by Government funds. Once you disregard the claims of talent, know-how, and personal effort in favor of the claims of monetary investment in research, you have to accept the fact that patent rights lodge entirely in whomever pays for the research that produces inventions. There is no merit in arguments that somehow there should be a different law between private and public research investment.

(Senator Saltonstall entered the hearing room at this point.)

Senator McCLELLAN. Senator, we have before us two bills. One just outright says that all inventions, patentable inventions arising out of Government research or contracts where the Government pays

for the work to be done, the title shall be in the Federal Government.

Now there are those who contend that there ought to be modifications; and there are some who think the Government ought to get only a license to use, a royalty-free license to use and not title, that the title should stay in the corporation that had the contract.

So it is on these measures and another bill by Senator Long that we have been holding these hearings.

Now the contention is made—many contentions, among others—if the Government has title to it, it doesn't get distribution, it doesn't get out and get applied.

Another is that the Government had no right to take more than just a license to use it for itself. It had no right to commercialize it or prevent the company or the individual from commercializing it even to the exclusion of others. And there are various issues like that.

We have different things happening now in the Government. With the Atomic Energy Commission the Government usually takes title to everything. In the Defense Department it doesn't; at most it only takes a license. And in other agencies there are different policies and practices.

The thought about it is that maybe the Government should have a uniform policy and that it ought to be fixed by law.

Now that is what we have been studying, and Admiral Rickover here can refute, as I understand it, the contention that if the Government takes title you are not going to get contractors interested in doing your research and so forth; they will say "Well, that is some incentive to us. If you take that away from us, we are not going to be interested."

Now, I think Admiral Rickover's experience refutes that. So we wanted to get him in and get the benefit of his knowledge, the knowledge he has gained from experience, and his own ideas as to how the equities of the Government should be taken care of and what should be written into the law.

Admiral RICKOVER. You see I am in a peculiar position where I am responsible for contracts both for the Atomic Energy Commission and the Defense Department at the same time. So I see both sides of it.

I can tell you very clearly that I have not had difficulty in getting contractors to take Atomic Energy work or Department of Defense work even though they get no patent rights. I can get contractors on Department of Defense contracts to agree to the same terms we set in the Atomic Energy Commission. So there is no problem.

I think the problem has been created largely by the patent lawyers themselves. Last year, when Senator Long asked me to testify to his subcommittee, I told him I didn't know there was a problem. This is why I was so amazed.

Now I have heard that the Space Agency has had some difficulty with one or two contractors not being willing to undertake work on account of the patent provision in their act, but I am sure they will find many others who will. I have heard also that in at least one of these instances, the cryogenic gyro contract with General Electric, the reason was that agencies of the Department of Defense gave the contractor the identical contract without even retaining a license for the Government to manufacture and use the invention—an outright gift of Treasury funds—whereas the Space Agency is required by

the patent provision in its act that even where it waives title to the patented invention it must retain a license for the Government's use, and the use by any ally of the United States under treaty agreement.

Furthermore, if we get into a situation where some big company won't undertake work for the U.S. Government except on its own terms, then we are in a pretty bad way.

Senator LONG. Could I ask just one question?

Here is the question that you might know something about, and you perhaps have thought about it. I am worried about this.

It seems to me that if you have got three services—the Army, Navy, and Air Force—each with a certain amount of jealousy between them, and then if each of them lets contracts, let us say, to 50 contractors, each of them working on a related aspect or perhaps the same aspect of a problem, why are the Russians getting so much more thrust in their missiles? They are up there with 14 tons. The best we have been able to do is 5. They had 5 up with Sputnik II 4 or 5 years ago. Why are they getting so much thrust?

Suppose some fellow comes up with an idea, checks it out, and finds it will work. Well, it would appear to me that this fellow would be in a position, if he is going to have a patent on it, to have control, because for 17 years nobody can use that for commercial travel.

If you can just push yourself up 100 miles and make a speed of 17,000 miles an hour and bank your engines on the way down, that would be the future means of all long-distance travel. Instead of traveling at 30,000 feet, you travel 100 miles up.

Now, it would seem to me that if a fellow has got the idea that it will work, in the public interest he ought to say "Tell everybody," and all scientists then move forward to the next frontier of knowledge together. But it would seem to me if he has got this thing, the idea could result in a fantastically valuable patent. He would say, "For Pete's sake, don't let Lockheed know about this. Don't tell a soul. Keep it a secret until we are in a position to file our patent application." And that, it seems to me, creates a Tower of Babel in your DOD research program because each fellow has an ax to grind, has a personal advantage in not communicating to his neighbor.

Admiral RICKOVER. Senator Long, you will notice in this morning's paper that the Secretary of Defense has insisted on seeing the research reports each individual service gets, because he found out that the Army, Navy, and Air Force were spending money and getting results that they wouldn't show to each other. So he now wants to check for himself. This is the sort of thing I am advocating.

All of you, of course, are familiar with the internecine warfare that goes on inside the Department of Defense. We are fighting among ourselves right in the Pentagon with more energy than we are fighting our potential enemies. This goes on all over the country—in government, in industry, and by patent lawyers, too.

It seems to me we have two big problems: First, how to increase incentives for employed inventors who get no benefit whatever out of the patent system as it has evolved; second, how to improve dissemination of inventions so there won't be needless time-consuming and expensive duplication of effort. Increased inventive activity and better dissemination of knowledge about inventions are key factors in strengthening the economy and hence the international stature of the United

States, so we cannot be indifferent to what our chief competitor is doing. The Russians are presently doing better than we on both counts. I would like to mention this here.

Someone remarked it is political suicide to suggest that the United States might learn something from another country, particularly from a country whose economic and political system we abhor. To suggest that there are areas where we are not superior to everyone else in the world has come to be regarded as almost a form of treason. But we are presently living in a period of extreme danger to our own country and to the free world. This is not the time to worry about personal disadvantage that might result from speaking about unpleasant truths. I hope I don't have to waste time explaining here how utterly distasteful Communist theory and practice is to me before I proceed to report that nevertheless the Russians have a pretty effective system to stimulate and utilize the inventive genius of their people. Strangely enough, it is a system that would not basically run counter to our own free competitive enterprise system.

First, as to rewarding individual inventiveness. It is possible to obtain a patent in Russia. They have a patent system. But few people apply for patents since there is an alternative, much simpler, and also more advantageous system whereby the individual inventor can obtain a monetary reward for his invention, their system of "certificates of authorship." Anybody with a new idea can file for a certificate of authorship at no cost to himself. This entitles him to a monetary reward depending largely on how much saving is made in industry by using the certified invention or idea. By Russian standards, the monetary reward is substantial, certainly substantial enough to stimulate inventiveness. Last year they had 60,000 applications; 60,000 applications by individuals. That year we had 80,000 patent applications, 70 percent of them assigned to corporations, not to individuals. It seems to me that this shows their system is advantageous to the individual inventor. Other satellite countries, such as Bulgaria and Rumania, have similar incentives directed at the individual inventor.

As for Russia, about half the applications for certificates of authorship are normally granted, 90 percent of them within a year. Russian law requires processing of these certificates within 6 months, but this they have not yet been able to accomplish. But they do process patents much more quickly than we in this country. We, too, validate roughly half the applications for patents, but it takes about 41 months to do so and of course it is done at the expense of the applicant. The Russians employ about as many persons to process certificates as we do in our Patent Office to process patent applications. It looks as if in a short time their certificates will just about equal our patents in number.

Patenting an idea benefits the country because it involves an available printed disclosure; the quicker a country gets the inventor to disclose, the speedier will be the country's technological progress. The Commissioner of patents says one reason for delay here is that companies applying for patents are often loath to have them processed rapidly.

Senator LONG. Why would they be loath to have the patents processed?

Admiral RICKOVER. I will tell you why.

If a man has a lot of capital invested in a particular way of doing business and has grabbed hold of an invention that would make all this obsolete, though it would in the end make for greater efficiency, he might well prefer to sit on the invention rather than utilize it, delaying patent processing so as to give out as little information as possible. There are numerous cases where there is inadequate disclosure or no real disclosure at all; where a company decides that, "now I have this new device; I can use this know-how, but it is more advantageous if I just keep it to myself as long as possible." Now this is a viewpoint strictly limited to consideration of what most benefits the company itself. Multiplied, it will keep our country from benefiting from the inventiveness of our people. And while companies thus are busily engaged in looking out for maximum profits, technological progress may be artificially halted. The information is bottled up for 3 to 4 years during the period of application. Thereafter, even though the information is available, tribute must be paid to use it, of course. In the meantime, the country that is our chief competitor speeds technological progress by promptly disseminating and utilizing all useful new ideas.

We always talk of patents as if all they did was stimulate inventiveness. Yet the patent law as it now stands may permit artificial suppression of the fruits of native inventive genius. This is a serious matter when you consider that Russia bends every effort both to stimulate their people to invent by rewarding the individual inventor, and to make the quickest and most complete use of all inventions. Owners of certificates of authorship in Russia, if they are called in to aid in the development of their inventions, have all their expenses and salaries paid. Of course, there are no patent attorneys.

Now the second problem we have is to improve dissemination of information concerning new ideas and inventions. One of the basic reasons why governments of countries with a free competitive enterprise system are willing to set up and protect temporary patent monopolies in that in return for the grant of the monopoly a patentee must fully disclose his invention. It is immensely important that what has already been invented be known so that there will be no needless duplication of effort. Scientists and engineers must have easy and prompt access to such information. Most of them work in narrow fields and cannot possibly be familiar with all pertinent developments affecting their work unless positive steps are taken to bring these to their notice. Last April the staff of a Senate Subcommittee on Government Operations found our efforts to coordinate and make available information on research quite inadequate. Of course, the job is terrific. There are now more than 160,000 tasks being performed in the physical sciences alone, in about 9,000 research installations.

The staff report states that today there exists not even a complete inventory of the Government's own research and development program, still less of course of total national research. On the other hand, the Russians have an excellent system of collecting, translating, tabulating, and distributing technical information from all over the world. All of this goes automatically to all scientists who might find this information helpful in their own researches. Our Office of Technical Services of the Department of Commerce performs a simi-

lar function, but I do not believe it is making anywhere like as much useful material available as the Soviets.

Operating from the very highest level of Government, they have created a State Committee To Coordinate Research and an All Union Institute of Scientific and Technical Information to collect and distribute information and know-how, to prevent duplication, and to speed the introduction of new technology. One responsibility of these agencies is to encourage everyone to develop new ideas. To encourage individuals, mind you, sir; not industrial organisms but individuals. Another responsibility is to set up throughout the country additional centers of information—they now have 100 such centers—each making information available.

In our own country there is really only one place where information contained in patent disclosures is readily available—that is right here in Washington. There are a number of patent libraries in other parts of the country but the information is not so arranged as to make it readily possible for every individual to find out what is going on in the whole field of new inventions. The patent copies that he may consult are not broken down by their classifications or system. If they were, and if other necessary tools were made available we could progress much faster into new areas of knowledge. The cost of setting up information centers would be more than repaid by the advantages researchers would derive from them.

For years we have underestimated Russian technological achievements and, in particular, the thrust of their forward movement. One reason certainly has been that we lack a central information agency that quickly makes public what is published in Russian technical literature. This literature can be found in some libraries and bought in some bookstores but not everyone, especially our working engineers and scientists have easy access to it. It also takes a lot of time to locate the relevant material. Much of it has not been translated and, since reading knowledge of Russian is not wide-spread, will therefore escape notice. This would be nothing undemocratic in setting up a center to collect and translate Russian—and other foreign—technical publications.

To underestimate a potential adversary is dangerous. Knowing what he does is immensely important. We could not spend public money for a better purpose than to set up an agency in this country which would do for American inventors what the Russian information center does for theirs.

So far we have talked about ownership to inventions made with Government funds from a purely legal viewpoint. It is important to bring out that when Government takes title to publicly financed inventions it follows precisely in the footsteps of industry; it does no more than claim the same right that industry claims under existing patent law. But there is an additional reason—to my mind a far more important reason—why such inventions should belong to the Government. At best patent disclosures are not equivalent to the Government's practice of throwing new inventions into the public domain. The country is strengthened far more in the present technological race with the totalitarians when new ideas and inventions become public property than when they are patented. This is because these ideas, when they contain basic discoveries, are not merely useful in them-

selves, opening new opportunities for business, but are even more useful as stepping stones to further technological progress.

When they are in the public domain anyone with an inventive mind can build still more inventions upon those already made; but when inventions are patented they are walled in by the patent monopoly, and the vitally important decision whether they may or may not be used as stepping stones remains for 17 years within the discretion of the companies whose commercial interest may well make it preferable for them to keep these ideas under wraps. The advantage of vesting title to publicly financed inventions in the Government can be clearly seen in the atomic energy field.

The Atomic Energy Act requires the Atomic Energy Commission to make all information developed under AEC contracts immediately available to the public. We follow through on this. We go to great pains to carry out this mandate. We see to it that every new discovery and invention becomes at once part of knowledge in the public domain. There are none of the delays caused by processing patents and of course the disclosure is complete as well as prompt. In atomic energy, I think, we do as well as the Russians insofar as distributing information about new ideas and inventions is concerned. But in other fields I fear the Russians have the advantage of us.

Senator LONG. Admiral Rickover, the fact that our law provides that the man who is entitled to the patent right is the first one with the idea rather than the first one to make the application supports this program of these fellows holding out new ideas and new processes, something that they might subsequently get a patent on, doesn't it?

Admiral RICKOVER. Yes, sir. I would like to develop this point. I hope you will interrupt me at any time. I think you can see I feel very strongly on this subject.

Senator PASTORE. Could I ask a question at this point?

Admiral RICKOVER. Yes, sir.

Senator PASTORE. Would you make a distinction between a contract that is competitive and one that is cost-plus?

Admiral RICKOVER. Are you talking about research and development, or are you talking about procurement of material, sir?

Senator PASTORE. Well, on either one, depending on the type of contract. I mean where you throw out a contract on a competitive bid, you might have some competition which might involve certain rights that might evolve to the competing contractor if he were to compete with all of his adversaries. But where you have a cost-plus research program I don't see that there is any question at all but it all should belong to the Government. That is the way it is done in the AEC. I mean you have given that as an example, but most of our contracts in AEC have been cost-plus. I mean, to me, you wouldn't have an argument on principle at all. It would belong to the Government.

Admiral RICKOVER. Senator Pastore, I actually make some research and development contracts on a fixed price basis. I manage to do this in some cases because I give the companies a sum of money which they think is large at the time, but it actually works out that it is cheaper for the Government as it forces the contractors to put good people on the job and do the best he can.

Senator PASTORE. That is true, and in that particular case I see no harm in the Government owning outright——

Admiral RICKOVER. But we are talking about research and development, and normally you don't make research and development contracts on a competitive basis. They are normally cost-plus fixed fees.

Senator PASTORE. That is what I said. It makes a difference, a big difference. Anyone who undertakes an obligation with the U.S. Government and is being paid his cost plus a profit has no right to complain that the invention belongs to the Government because he stands no chance of losing anything. He is not gambling on anything.

Admiral RICKOVER. Well, the way companies deal with inventors among their employees is to have them sign away their patent rights as a condition of employment. If you want to work for a company you have to agree to their rules; that is all right. But when the Government makes a research and development contract with the same company, the company claims that now everything is different. When these companies make contracts for R. & D. using their own funds, they insist on having complete rights to everything that is developed, just as they do with their own employees. Yet when they themselves are being employed by the Government, they say that is different. They say the Government can't do what the companies do; that it must let them have title to inventions. This is the issue we are talking about. The companies want a double standard.

Senator PASTORE. Well, why haven't you had any difficulty? You say you haven't.

Admiral RICKOVER. For two reasons. In the Atomic Energy Commission I am protected by the law. In the Department of Defense I have been able to use the AEC patent provisions.

Senator PASTORE. I realize that, but the point I am getting at here is that are we suffering from the lack of law or from a lack of good administration?

Admiral RICKOVER. The way the Department of Defense handles patents was all right as long as they were dealing with items that had already been developed by industry and merely needed some small adaptation to make them suitable for military use. This was true of virtually all Government contracts with industry up to World War I and of a lot of them even through World War II. The Department of Defense contracted for already-existing items needing only minor changes. Under those circumstances it was just and legally correct that companies supplying these items should retain commercial rights. No major research at Government expense was involved in the contract.

But patent policies which were right at that time are wrong today because now the Defense Department contracts for wholly new devices, things that don't yet exist. The major part of all the research and development in the United States is now paid by public funds awarded by the Defense Department to contracting firms. Inventions made with these public funds obviously belong to the American people. Yet the Department just hands them over to the contractors.

We are having all this agitation in favor of changing the Space Agency patent policy to conform to that of the Defense Department because the Space Agency now dispenses huge public funds. As I said, the fight is led by the patent bar. All the people who fought against the Atomic Energy Commission patent policy and against enactment of the same policy in the Space Act of 1958, are now concentrating on getting the NASA Act changed because they can readily

see that with billions of tax dollars to be spent by NASA, a change in patent policy would bring much lucrative business to the patent bar.

Senator PASTORE. You would certainly have no trouble with me on the principle you enunciate. I am with you 100 percent. I am merely trying to find out if you would work it even in the case of competitive bids.

Admiral RICKOVER. I don't think the issue arises. Competitive bids generally enter where you have a completed item.

Senator PASTORE. In that particular case would you allow the contractor to retain the rights to his invention?

Admiral RICKOVER. Only if he developed the invention with his own funds, not if the whole thing was Government-financed.

Mind you, sir, we are not arguing here whether or not a man who invents something by investing his own money should have the right to patent this invention. There are a good many patents even in the atomic energy field that have been granted to people who have spent their own money to develop them. They own these patents. We are not arguing about that. We are not arguing about taking patents away from a man who has spent his own money to invent. That isn't the issue at all.

Senator SALTONSTALL. Mr. Chairman, may an outsider ask a question?

Senator MCCLELLAN. Indeed, Senator.

Senator SALTONSTALL. Admiral, is there anything in the distinction being made between a patented article that is valuable only to something that the Government wants as opposed to a patented article that might be used by the Government and also might be used by industry? I have in mind, for instance, something to do with the power of thrust up to the moon, or something to do, we will say, with a submarine or something of that character. Could you draw a line?

Admiral RICKOVER. No, sir, I don't think you can draw a line any more because you can develop hardly anything today which doesn't immediately have application elsewhere.

Suppose a company developed over a period of many years a gear which it used and it was necessary to use this gear in a space vehicle. The Government couldn't take the right to that patent. It wouldn't be fair. We are not arguing that at all.

On the other hand, take the case of Raytheon. That name has been mentioned.

The Raytheon company got its real start during the war with Government research and development contracts. They have publicly stated that their success is almost entirely due to money invested by the Government in their research work and that their commercial business has not been profitable. I believe nearly 100 percent of their research funds comes from the Government. Yet Raytheon officials are going about the country making speeches castigating as inequitable the AEC patent policy because it vests title to Government-financed inventions in the Government. So a company almost wholly financed by money collected from the American people complains bitterly that inventions under the AEC and NASA Acts belong to the people, saying this great country of ours would cease to be great unless we gave them title to publicly financed inventions.

I believe there is an important difference when contracts between Government and industry involve mere adaptation of existing items as against when they involve development of wholly new items. My position is that today most Government research and development contracts are of a latter kind. At any rate this is so in atomic energy, space, and the Defense Department.

Suppose the Government wants to develop a brandnew type of vehicle, and goes to Company Z and this company develops it and at that time there appears to be no commercial use for this new vehicle. This is the sort of thing you are talking about.

Senator SALTONSTALL. The duck, for instance, would be an example.

Admiral RICKOVER. There are, however, a lot of patentable things in the duck that are now being used in other parts of industry. That is the point. You can no longer make a distinction. That is why I consider a reexamination of the whole patent system is in order, not merely of patent rights for Government-financed research. It may be that our patent system is hurting us. Other countries have reexamined their patent systems and evolved new patent procedures. The Netherlands is the most recent one.

I mentioned the Russian case where essentially all inventions belong to the Government. But they use what we think of as capitalist incentives to stimulate their people's inventiveness. They do not automatically take new ideas from those who conceive them—as does industry here; as does Government too in most cases. They reward the inventor for turning over his invention to the Government. They give him this certificate of authorship that entitles him to monetary bonuses based on the usefulness of his invention. With these fine capitalist incentives they are getting increasing numbers of inventions from their people.

We might well consider whether we ought not to go back to the original intent of the Constitution and devise some reward for inventors, whether they are Government or industry employees. Actually a Government employee is today better off, unless the agency has the foreign and domestic rights, than an employee of a private firm because he may obtain title rights to foreign patents on his invention and can take these with him when he leaves his job. But if he is employed by a company, he has contracted away both domestic and foreign patent rights and when he leaves his job he will have nothing whatever to show for his inventive work.

The purpose of the patent clause in the Constitution was to protect the individual inventor. Now it is a curious thing that so far as I know the only important law enacted by Hitler that was retained by West Germany, for a period of years, is his law on patents which invalidates waiver of patent rights by employees and vests title to inventions in the man who actually did the inventing—not in the company that employs him. I understand Hitler did this to create greater material incentives and to make it easier for the individual inventor. He was about to start a war with all of Europe and did everything he could to improve German technical ability. He thought this could best be done by changing the patent law so that individuals would get title to their inventions. You don't have to approve of

Hitler to see that this was both an equitable and a practically useful change in patent law.

West Germany has for some years being growing at a faster rate under its free competitive enterprise system than we have, so their retention of this provision and its modification in 1957 has some interest for us. They have another interesting provision. Patentees have to pay a tax on their patent—this is in addition to the regular fee for obtaining the patent. The tax is relatively small to start off with, but after a few years it gets quite onerous so that a patentee who has not been successfully working his patent—thus making it useful to society—will eventually find it advisable to give up the patent and let others have a try at developing it.

England has another procedure designed to stimulate utilization of patents. Here is what the 1959 Encyclopedia Britannica says on this point:

> In certain cases the comptroller may grant compulsory licenses. Since the original object of the patent laws was the establishment of new industries, the main grounds for the grant of such licenses are that the patented invention is not being worked within the country to the fullest practicable extent, or that the demand for patented articles is not being met on reasonable terms, or is being met by importation in place of home manufacture. Other grounds are that the existence of the patent monopoly, or the terms imposed on licensees, unfairly prejudice the development of commercial or industrial activities. The owner of a patent of later date may also apply for a license on the ground that the earlier patent precludes the use of his invention, but in such a case the later patentee may be required to give a cross license (Patents, vol. XVII, p. 376).

All these foreign patent provisions attempt to promote production in the respective countries.

The Defense Department patent rules give the contractor commercial and foreign patent rights. The company can then manufacture the patented product developed under Government research and development in a wholly or partially owned foreign subsidiary and then exclusively market it in this country. Such actions could create unfavorable balance-of-payment situations for us. Under the AEC patent rule where the Government takes title to such inventions, other U.S. companies at least can have the opportunity to compete because they can obtain a license from the Government. Now to get back to overall Government research and development contracts.

Of necessity these Government research and development contracts go to a relatively few industrial giants who have the know-how and the facilities. Government contracts to some extent contribute to the undesirable concentration of industrial power in a small number of companies. If you are interested in helping small and middling business, you can't do it by demanding that the Government give them a larger share of research and development contracts; most of them simply could not meet the necessary standards. But you can help small business and help them immensely by making certain that title to inventions made with Government money belongs to the Government, for then these inventions are made public and can be utilized by everyone, instead of merely by the few large companies who are already being greatly favored by obtaining the major share of R. & D. contracts.

Senator LONG. I think 10 companies have got 70 percent of all this research and development money.

Admiral RICKOVER. Somewhat like that, sir.

Senator ENGLE. May I ask something?

I had a small research outfit come in to see me last week. They have, I think, about 65 people. They had a small contract with the Federal Government to do some research and development work which involved about $85,000, and it was only a little chunk of their business. And they came up with something which might have fitted into the particular research but which had been developed over their general operation. It had some relevancy, however, to this particular contract.

They disputed that it was directly involved. Nevertheless, the Government grabbed it off and asserted a proprietary right to that idea, and it ended up with some big company producing it. So what this fellow said to me from Los Angeles was, he said, "We have got to find a way to get clear in or get clear out because here we sit with a little old ragtag of a contract and we have developed something through our other resources which has some bearing, but not a significant bearing, and we lose these rights."

He said, "We are going to go in head over heels or we are going to get clear out." That is what he said to me.

Now that bears on the point you are talking about. I would like to think of some way to help these small outfits out in southern California—and we just have them by the dozens out there—that are in this research and development field—many of them on their own money; very few of them in the Government field—to get the benefit of what they develop. And they are the ones that bring up this type of complaint that I have heard, that they lose the proprietary rights to these ideas, and all of a sudden the research and development show up being produced by big companies.

Admiral RICKOVER. Senator, I would doubt that they would lose anything they had developed on their own. I am, of course, not familiar with the details of this particular case.

Senator ENGLE. These things do overlap a good deal.

Admiral RICKOVER. Yes, and you could make a policy. You might, in any law you enact giving benefits to small business, include a provision that gives them special patent rights. But then you will be up against the dilemma of defining small business. There are all sorts of definitions. One is 500 people.

What is it? 500 scientists or 500 ditchdiggers?

This is a dilemma you get into when you start making a law where you try to define these things. In my opinion, we should make sure that anything that is developed under Government contract is immediately made available to the public. I think the case you cited is not a matter of patent policy but rather a bad mistake made by a contracting officer who for some reason or other wholly disregarded the small company's rights.

Take another example. The Post Office Department made a contract with Food Machinery & Chemical Co. to develop a new post office. The contract provided that if some other Government agency or department wanted to use it or any patented inventions, they couldn't. If the Navy Department, for example, wanted to build the same type of office using inventions developed under this contract, they would have to make a special contract with Food Machinery or with one of their licensees, and pay royalties to them.

You get yourself into a situation like that which is nonsensical. This sort of situation shows we certainly ought to have a uniform patent policy in the Government. I always thought the Post Office and the Navy and the Air Force were all in the same Government although I am beginning to doubt that now.

The Constitution expressly vests the duty of making patent laws in the Congress, not in the Department of Defense or any other executive department. If you let every agency or branch of the Government make its own rules you are going to have a number of different sets of Federal patent laws. Once you set up these different rules it gets progressively harder to establish a uniform principle because the different agencies and their contractors get a vested interest in the way things have been done. It is easier to go along with these vested interests than to do a little thinking about what are actually the basic principles underlying patent law.

Also, letting each agency set its own policy leaves protection of the public, the taxpayer, to agency contracting officers who have no direct interest in the matter. A contracting officer is mostly interested in getting a particular contract signed and the material delivered. He isn't interested in seeing that some national policy is carried out. Anyway, this shouldn't be left up to him.

Senator LONG. Let me ask a question, if I might, Mr. Chairman, that has been going through and through these hearings.

I have heard a dozen witnesses say this kind of thing to me when I have conducted hearings for small business, and I hear them telling the Judiciary Committee this. We keep hearing this allegation that a company must have a patent monopoly in order to put out a new product, that if you don't give them a patent monopoly and they are going to have to compete with somebody, that they just won't develop and won't put out a new product. We have challenged the representatives of the National Association of Manufacturers—at least this committee challenged representatives of the National Association of Manufacturers.

I have challenged a number of witnesses who made that statement to produce a single example.

Admiral RICKOVER. Yes, I am familiar with that.

Senator LONG. They have never produced any to me. They made themselves look silly trying to hedge around on that issue.

Do you know in your field of atomic energy responsibility of any commercial application of something you have for which there would logically appear to be a present-day commercial market which is not being developed?

Admiral RICKOVER. No, sir. I don't know of a single instance. Incidentally, I have heard these statements, too, but I have never had them substantiated.

I have not experienced a single instance where a company has refused to take business because of the AEC patent law. I have only had one instance of a company refusing to take business at all, and this was because I insisted that they agree not to divulge what they were doing to foreign countries. That is the only case. It had nothing to do with patents.

Senator LONG. I have a different point. I think you somewhat misunderstood my question. What I had particularly in mind was this:

Do you—for example, suppose you have some idea for a superior battery which would be charged in an atomic oven and put in an automobile. Do you know of any particular product that has been developed under the Atomic Energy Commission contracts for which there would logically appear to be a commercial market but which is not being developed or put out to sell to the public in the absence of a patent monopoly?

Admiral RICKOVER. No, sir. I know of no such case. I do know that people are coming around all the time to get money from the Government to do research to develop new ideas.

You will remember, sir, I told you last year that I was surprised when you asked me about this problem. Until you asked me, I didn't know that any problem existed. I know that TVA and Agriculture have had great success in getting their inventions utilized through nonexclusive royalty free licenses to all. There are maybe 1 in 500 more inventions that possibly might have a commercial market but are not being developed due to the absence of exclusive commercial rights. However, this may be due to the inherent risk of financing and introducing any new market item.

In my opinion, this problem is largely fabricated in the minds of patent lawyers. I have a specific recommendation to make which might solve this problem.

Why doesn't Congress enact a law to pay each of these several thousand patent lawyers the same pay he is now getting income tax free, and let him retire provided only that he doesn't get a replacement? I think that will solve your problem in a very cheap way.

This may sound funny, but it might be the most economical way to solve the problem.

Senator PASTORE. I take it you are not a lawyer.

Admiral RICKOVER. Sir?

Senator PASTORE. That you are not a lawyer.

Admiral RICKOVER. Well, I wasn't castigating all lawyers because I have a suspicion you are a lawyer, too, sir.

Senator PASTORE. No. I quite agree with you, Admiral.

Admiral RICKOVER. You don't agree on this retirement. Don't express yourself publicly on that, sir.

Senator PASTORE. No. All of the ballyhoo that I ever heard on patents was at the time we were considering the 1954 amendment to the atomic energy law. Before that time there was never, never any doubt in anybody's mind. We were in agreement that everything was secret. All of the contracts were negotiated on a cost-plus basis. All the inventions that were discovered became the exclusive property of the U.S. Government.

Now, for what commercial uses they have been put to I don't know. I know we had quite a squabble in 1954 when we amended the law and allowed private industry to come into the field. At that time the academic discussion came up about the patent law, but since that time we have had no trouble with it at all, and I am very much refreshed by what you say, that this was all news to you until this matter came to your attention.

But I quite agree that you ought to have a definite public policy on this, and I don't think that the problem is as simple as some of us have been trying to state it is. There is a great deal involved. There are a lot of problems. This isn't a simple thing. This isn't a question of killing off all the patent lawyers and solving it. I think the problem still would be with us.

Admiral RICKOVER. I am not so sure you would have so much of a problem if it wasn't fomented and agitated. They don't have the same problem in other countries.

Senator PASTORE. They have a different kind of economy. You mentioned Russia. In Russia everything belongs to the state.

Admiral RICKOVER. Look, we have a form of government which is dedicated to the greatest benefit for the individual, to preservation of individual rights. That is what we are all here for, and we want to maintain that. Yet we have stopped benefiting the individual inventor and we are giving everything to the corporation that employs him.

The Russians, who believe in state monopoly, turn around and benefit the individual.

For the last 30 to 40 years, all the theorists have been arguing that you can't have a viable Communist system, that it won't work. Meanwhile, it creeps up on us. The Russians now control half the people of the world. That is, the Communist system controls about half the people of the world. They are the second largest industrial power. They are increasing their rate of productivity at 7 percent; we at about 3 percent. And we keep on saying that their system is no good from a production standpoint.

The purpose of the U.S. Government is not just to support production. The purpose is freedom. And individual freedom may not always coincide with maximum production of consumer goods by giant business or with maximum business for the patent bar.

Senator SALTONSTALL. Admiral, if you are going to protect and improve the freedom of the individual citizen in the United States, which you say and which we all want, you have got to stimulate that freedom by the initiative that comes from the imagination and incentive that is given by the patents.

Admiral RICKOVER. I am all for that, sir.

But when you say that we must stimulate the freedom that patents give to imagination and incentive you are actually speaking of the individual inventor. Nothing is really created by a team or by an organization. Every new idea comes out of a single human mind. You can provide the environment where new ideas best flourish—which may be a group of people with good inventive minds mutually stimulating each other and coordinating their research findings—but in the final analysis it is always the individual who creates. The original purpose of the patent law was to stimulate individual inventive creativeness by means of a temporary monopoly set up and protected by government during which the inventor would have the sole right to use and benefit from his own brainchild. I am all for rewarding the individual inventor. I think he should get a specific reward for coming up with a useful invention; it should not be considered part of his regular duties and be appropriated automatically by his employer.

I am not against the idea of rewarding individuals. On the contrary, that is really what I am fighting for. But today we have a situation where the individual is not being encouraged to develop as many ideas as he could. Patent law, as it has evolved, no longer serves its original purpose as far as employed inventors are concerned and they are in the overwhelming majority. Fewer and fewer people are self-employed now. And under the master-servant doctrine the employer appropriates all the fruits of the inventive genius of his employees.

The point I would like to get back to is that over and beyond the question whether title to inventions made with Government funds does or does not vest in the Government, we should give some thought to the constitutional mandate which is not being fulfilled. The Constitution clearly states that the Government's purpose in granting patents should be "to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." Present patent policy does not accord very well with this purpose. For employed inventors the master-servant doctrine and the waiver to patent rights in employment contracts have completely destroyed this constitutional mandate.

Today somewhat more than 70 percent of all patents are assigned to corporations, yet a corporation obviously does not invent. These patents often aren't even earned by the corporation in the sense that it specifically paid for and guided research leading to the patented invention. The corporation has the right to grab every idea the inventive minds of employees may spin even if these are incidental inventions never contemplated or provided for by the corporation. Recently Life magazine told the story of an invention that illustrates my point.

A scientist employed by his company to develop a stronger tire cord experimented with cellulose. He noticed that mixing cellulose with water produced a jellylike substance. Because he had the kind of mind that could perceive unexpected ways to utilize a new phenomenon, the scientist instantly conceived the idea that this mixture might be made into a substance that would have all the characteristics of a food, yet no calories. Now he certainly had not been hired to dream up what Life called a nonfood but, in line with universal practice, the corporation paid him a dollar and appropriated his invention. With millions of Americans permanently on diets, the company is bound to make a nice profit out of this windfall. The invention has, of course, been patented. It seems to me that this cannot have been the intent of the Constitution when it authorized Congress to establish temporary patent monopolies.

Apart from the question of equity, I believe we dry up a source of inventiveness when we so completely disregard the right of the individual inventor. He will more and more be an employee either of a corporation or of government. Technology has now reached a level where individual tinkerers and mechanical geniuses no longer come up with really important inventions, or only rarely. More knowledge, more talent, and more expensive facilities are needed to invent anything important than in the past. The major manpower source of the kind of inventions that will move us ahead technologically, that will strengthen our economy, are the scientists and engineers. Yet, though

these have enormously increased in number, the ratio of the number of patents issued to them has been steadily going down.

Perhaps we ought to think about ways to stimulate them to be more inventively active by devising new ways to reward them. We need effective incentives. Nobody can force a man to invent or, when he has invented something, to disclose it to his employer. It has been true that scientists, especially physicians, working for universities or other nonprofit institutions rarely patented their inventions; for them the honor came when they published their findings, in some cases the professional emoluments, prizes, and the like, even the satisfaction of having added to the common fund of knowledge provided sufficient incentive. The case is rather different when a scientist sees his invention taken over and patented by his company which sometimes may not even permit him to publish his findings for reasons of their own and at their own discretion.

It certainly must discourage inventiveness to see one's achievement being blandly taken away, perhaps to be buried. The possibility of salary increases or advancement to higher positions in the company seems to me rather a poor reward and not likely to prove an effective incentive. The same applies to Government employees, although they at least obtain most of the satisfactions that spur industry men to engage in inventive activity. Also, we have had the U.S. Government Incentive Awards Program since 1954; this applies to Government employees only. We also have section 306 of the NASA Act of 1958. Section 306 applies not only to Government employees but could be applied to employees of industry also. However, much more along this line should be done. Particularly since new ways to reward individual inventiveness have been devised by a few of our companies, by other industrial democracies—and, of course, by the totalitarians—as I pointed out. I think that what a flourishing free enterprise country such as West Germany has done to bring its patent laws back to the original purpose of providing incentives for individual inventors has some relevance for us. Statutes and court decisions of European countries directed to the same end also have relevance for us.

(Senator Douglas entered the hearing room at this point.)

Senator LONG. Admiral Rickover, would it be a fair statement that if the Government does take title to these Department of Defense inventions that won't put all the patent lawyers out of business? As a matter of fact, even the Government prepares patent applications and files and prosecutes them. Maybe the Government might have to hire more of those boys. But in that event there would be work for them to do.

Admiral RICKOVER. No, I don't think it will put them all out of business, sir.

But you know I have been studying the preamble to the Constitution over and over again after reading all these mumbo-jumbo speeches of the patent lawyers and I can't find anything that says that the Constitution was adopted to protect either patents or the patent bar. What it says right there is that among other purposes for which our Government was established, it should promote "the general welfare." If we apply that test to inventions made with the people's money I can't see how you can have any doubts that it will promote the gen-

eral welfare to have these discoveries promptly disclosed so that they can be utilized by everyone. And, what is more important, that they become part of knowledge in the public domain from which we can then proceed to other new inventions. This is how technology advances.

In my experience, people in industry who are actually running the companies are not anywhere near as avid for this patent stuff as are the patent lawyers. This is so because the thing that counts today is know-how, and that is something you develop within a company.

I could give somebody the blueprints of a generator and he still couldn't make it properly. He would have to actually go into the factory and see how it is done. That is what a company gets when it takes a Government contract, regardless of the patent rights. It gets this all important know-how.

I believe the patent problem is way overrated. I am certain that if you talked to officials of the companies who are familiar with it, and if they gave it some thought, they wouldn't put anywhere near as much value on it as the patent lawyers do.

This has been my experience. When we have had difficulty in negotiating contracts I always ask that they remove the lawyers.

I'm sorry. I hope——

Of course, I am not referring to present company.

Senator PASTORE. Don't let it bother you. I haven't practiced law in 20 years. Don't let it bother you.

Admiral RICKOVER. I found out that when we could get to the officials of the company we got to doing business pretty fast.

Senator WILEY. Admiral, can I ask you a question.

It seems to me you made pretty clear what your position is in relation to situation No. 1, where the Government puts money into the contract. In that case you have said in substance, that there shouldn't be a patent granted except to the Government.

Now the other question that I am interested in is this: You spoke when I was coming in, about the atomic energy which has changed this world in which we are living. Did I understand you to say that you felt that the law was inadequate to deal with a situation where a patent is granted to an individual who develops it, and it is found that the patent relates to matters of the Nation's security. Is it your feeling that under present law there is not sufficient authority for the Government to reserve to itself the use of such patent?

Admiral RICKOVER. We have that authority now, sir. We can take control. The law today permits the Government to use any patented invention for governmental purposes, subject, however, to the right of the patent owner to sue for compensation from the Government. That is not in issue.

Senator WILEY. That is what I am asking.

Because we often have had bills before us in Congress to compensate folks whose patents we have taken.

Admiral RICKOVER. Yes, sir. We use a patent right on payment of reasonable royalty under section 1498, title 28, United States Code.

Senator WILEY. Well, then what is the real issue here, if we already have the law that provides for the Government to take the patent and pay for the taking, if such taking is for national defense?

Admiral RICKOVER. Yes, sir, but why pay again for something you have already paid for? Also we first have to know that there is something to take over.

Take the Ramo-Wooldridge situation which I am sure everybody in this room is familiar with. Here is a group that acted as an engineering agent for the Air Force, and the Government spent billions of dollars through them, and yet they got commercial rights to all patents the Government paid for developing. Ramo-Wooldridge was just a holding outfit, the Government financed the whole thing.

The profits that private firms make on Government-financed research and development contracts are considerable. Almost all these contracts are on a riskless, cost-plus-fixed-fee basis.

Even though the usual fixed fee may be from 6 to 15 percent the profits on their net worth are quite high.

Senator Long has pointed out in his testimony before your committee that Ramo-Wooldridge received fixed fees in 1954, 1955, and 1956 of 5.8 percent, 9.7 percent, and 8.1 percent. The return on their net worth, though, was 69 percent in 1956, 64.3 percent in 1955, and 30.8 percent in 1954, before taxes. And they are not even required to pay taxes on these large profits.

If you want to determine how well this company fared in comparison with the whole economy, you will find it was 9 times more profitable in 1956, 5½ times more profitable in 1955, and 4½ times more profitable in 1954 than all industrial groups in the economy. Also the officers, directors, and certain key employees did very well. In addition to their salaries, they received stock options which increased 346 times in value in a period of 5 years. To be precise, their shares went up in value from $45,000 to $15.6 millions.

There were three different types of patents with which they were concerned.

Senator WILEY. You want that changed?

Admiral RICKOVER. Let me tell you what they are. It partly answers your question. May I go on, sir?

One type of patent was for items of distinct commercial value. They were in an awful hurry to get the patents on those. So, without delay, they got on record that these patents belonged to them.

The second type of patent was for morale purposes, to take out a patent for the morale of the individual inventors, the scientists and engineers who worked for them.

The third kind had military application.

About those having military application—they were very slow telling anybody. Yet this outfit was set up to further our military interests. This is the sort of thing you can get into, sir. Furthermore, if the Government desired patent protection on inventions having military application only, the Government had to file for the patents, because Ramo-Wooldridge did not file.

Another example. The subcontractors who dealt with Ramo-Wooldridge were loath to give them helpful information because they were afraid Ramo-Wooldridge would take advantage of them.

Senator LONG. So here this company is with the contract, with several key contracts for outer space activities, trying to get us into outer space. Most of their contracts were for outer space.

Admiral RICKOVER. You know my feeling, sir, that practically everything you develop now has applicability anywhere. I don't think there is much distinction any more.

Senator LONG. Here is the point. Each one of these patent applications represented a new idea we needed to get into outer space. They were holding out on some of this stuff. They weren't telling the other man, who was still butting his head against a stone wall of ignorance trying to solve problems that had already been solved with U.S. Government money.

Admiral RICKOVER. Despite mandatory statutory language requiring them to keep each other informed of research activities, the Air Force and NASA spent a year having separate contractors develop identical space vehicles. The Comptroller General reported this wasteful duplication last year. He estimated it cost the American public more than $16 million plus a whole year of wasted research effort. Yet it probably was difficult for the Air Force and NASA to know what was being accomplished. This may be due to the strange theory being propounded by the patent lawyers, that it is supposed to be a good idea to withhold patent knowledge, information, and know-how because that forces the other man to work harder in order to find out what is going on in research.

This is like saying that when you run for office as a Senator, your opponent should be given a bonus of 50,000 or 60,000 or 200,000 votes; that this is a good thing, since it will make you work harder in order to get elected.

Senator MCCLELLAN. That theory will never be accepted and applied in politics.

Admiral RICKOVER. You have never accepted it in politics, but you are willing to accept it in patents, sir.

Senator MCCLELLAN. We may have already done it.

Admiral RICKOVER. We can't really get away with that any more, because knowledge is very fragile. You just have to get it out quickly.

With the present patent law you permit people, even Government contractors and grantees to withhold this information.

Senator LONG. And you give them an enormous financial incentive to do it. That is the problem as I see it.

Admiral RICKOVER. You know how it is with many of these companies. Take the aviation industry where some outfit comes in with a relatively small amount of capital, gets the facilities paid for by the Government, gets all the research and development paid for by the Government, and then gets control of all the commercial and foreign patent rights. Our allies if they adopt an American weapon or weapons system, in order to use or manufacture such weapons, must then negotiate a patent licensing agreement with the American companies who developed these products under U.S. Government research and development funds and who hold the foreign patent rights. This can involve payment of royalties to these American firms by the foreign government. This is an intolerable situation and you get into it by not claiming for the Government its legal right to Government-financed inventions.

Senator LONG. This particular outfit you mentioned classified 11 of their patents as being sufficiently basic to control an entire new industry.

Admiral RICKOVER. That is right, sir.

Senator ENGLE. Which was that?

Admiral RICKOVER. Ramo-Wooldridge.

Senator HART. Admiral, running through these hearings—I think Senator McClellan may have gotten the same impression—is the desirability of a uniform law with respect to the treatment of patents resulting from Government-financed undertakings.

I know you make the point that everything is the same, but there has been some very good testimony from small business people that they are the segment of commerce which would suffer most if the offshoot idea that they come up with cannot be protected in their hands in order to finance this consumer marketing.

Admiral RICKOVER. Senator Hart, I would have an adjudication, possibly as called for in the Space Act, which could grant title to the patent to small business if it is in the public interest, with the Government retaining a license. Also if the company had already done something themselves or owned related patents, they would get credit for it. I would not take this away from them. I think that would be illegal. It would be morally wrong. But since all except some 2 to 3 percent of Government research money goes to large corporations, we really don't run into this particular problem. The problem comes when research is almost all Government financed, and the contracting company nevertheless wants not only to hold on to title to inventions but also to delay disclosing them. There is a case on record—I believe Senator Long mentioned it at one time—where an investigation was made of a certain company to see how they handled information. When it was information they wanted to acquire from Government and other research activities, they had a large and efficient group to obtain the information at once and to disseminate it among all their own divisions as fast as possible. But when it came to information they had developed under Government contract, they were not so fast in getting it out. So that other companies, large and small, were delayed in benefiting from this new knowledge. They delayed sometimes for a year. That is the difference.

Now here is where it applies to small business: I should think if I were a small businessman and wasn't able to support a large research information group, I would like to be able to get all this information as soon as possible and use it on the same basis as the large corporations do, particularly where the Government pays for it.

I don't see that small companies are particularly disadvantaged when the Government takes title to Government-financed inventions. Of course, whether the company be large or small, if the work they do under Government contract is based upon research they had previously completed with their own funds, they must certainly be compensated for what they have done. They have an equity in their own research work. I would never suggest that such an equity be taken from anyone.

Now here is another point I would like to take up. With knowledge now doubling every 9 years, it seems to me we ought to consider lowering the time limit of patent monopolies—perhaps to coincide with this 9-year period. It makes little sense to have a monopoly period of 17 years today when in our own 1790 Patent Act it was only 14 years, as it was in the English statute of monopolies of 1624. In those times it

took perhaps a century or more to double knowledge. There should be some sensible relation between the time it takes to produce new knowledge and the length of the patent monopoly. In the case where the Government owns title to an invention, I would make it available without cost. It would be a terrific bookkeeping problem—with the size of today's Government research investments to charge a royalty for a license to use patents resulting from such Government research and development work. Besides it doesn't make sense considering the basic purpose of patents. It seems to me only fair that the public which paid for the research should get the fruits at no cost.

Senator LONG. And lower prices is one of the benefits of competition.

Admiral RICKOVER. Yes, because there is no use setting up a large new bureaucracy to police the costs. I don't think it is worth it. But, as you know, such a system is used in England. When research and development is done for the British Government, the Government gets the patent. The Government then charges their own companies for use of it. In some cases, as I understand it—the case of the Rolls Royce engine is an instance—they have recovered more than the cost to the Government of the original research and development.

Senator LONG. May I ask about this? Professor Melman of Columbia University did a study for this very subcommittee some years ago. He was on one of the research teams, including the one that went to Russia to see how they were doing.

Admiral RICKOVER. Yes, I know about him, sir. I believe he was studying machine tools.

Senator LONG. He gave us this illustration: He said he had had some contact with a large research organization in this country which spent a large amount of money to put in an information cataloging system so that on stuff that appeared in publications, stuff that was done by others, when this knowledge came to them they could catalog it immediately and get it available to their scientists in each field that these fellows were working on so as to hasten their progress.

He said that with this large expenditure they managed to shorten their time, the time on acquiring this information, by 2 weeks. But he said in this same organization they decided to make a study on how long it took the average information that they were developing to get out, and he said the average period was 4 years, and a lot of it never did get out.

Now if that situation obtains in the Department of Defense with three services trying to work on missiles, I don't see how we are going to——

Admiral RICKOVER. Senator Long, you will remember that when I began my testimony I said the ramifications of what we are discussing here go deeper than patents. It affects our national posture and national defense more than most people realize. It gets back to this: the Russians, in addition to expediting the issuance of certificates of authorship have also instituted a system of taking positive steps to push new ideas into their industry. They have recently reorganized their research and development efforts with the idea of getting new technology and automation introduced into their industry as fast as possible. It stems from the highest levels; the Presidium and Central Committee of the Party, the Council of Ministers, and Khrushchev himself——

I think there has been testimony in a subcommittee in which Senator Humphrey is involved that brings up this point.

We are woefully negligent in getting information out fast. I am sure everyone here is familiar with the fact that we were caught napping when sputnik I made its spectacular appearance because we did not have the kind of central information clearing system the Russians operate. The timetable for sputnik had been given well ahead of time in several Russian publications available in this country, just as their current timetable for landing on the moon can be found in Russian technical literature.

Mr. Clesner of this subcommittee staff made a speech recently to an industry patent group in which he gave several examples showing the unfortunate consequences caused by inadequate facilities and procedures for disseminating information. On the moonshot timetable he cited the Wall Street Journal of May 8, 1961, which reported Mr. Webb, NASA Administrator, as saying that we had no way of knowing what the Russian moon conquest timetable is. Yet this timetable has been reported in Soviet literature and so far that published schedule has come true.

The House Science and Space Committee used figures given out by NASA purporting to show that we are getting ahead of the Russians in space because we had published 64 technical papers and the Russians had only published 8. Subsequently this too was looked into by Mr. Clesner and an associate, and they could find more than 100 Russian papers. Another case concerned publication in 1950 in a Russian journal of a report on successful application of Boolian algebra, a form of symbolic logic, to the design of relay contact circuits in computers used in modern machines and weapons. From 1950–55 scientists of various American computer manufacturers tried to do the same work over again, wasting 5 fruitless years and much research money before it was discovered that the Russians had solved the problem and published their work.

These are all cases where the information was available in this country but nobody had picked it up; it wasn't actively disseminated. By not using this information fast enough we have been and are still hurting ourselves.

Senator SALTONSTALL. Admiral, have you ever looked at the space law that was drafted 4 or 5 years ago?

Admiral RICKOVER. I did at the time, sir.

Senator SALTONSTALL. I was on the Space Committee at that time and I was one of those who worked on it. It seemed to me we tried to work out the question of the rights of the individual who was working on a Government contract what belonged to the Government and under what conditions he could have application, and it seemed to me we worked out a pretty good——

Admiral RICKOVER. I think you did, sir.

Senator SALTONSTALL. It was a very contentious point.

Admiral RICKOVER. Yes, sir.

The Space Administrator, as you know, has the authority to decide whether a company has a sufficient equity to be given exclusive commercial patent rights. But what was proposed last year was that the company have such equity in all instances, unless there was a special circumstance where the Government had a need and took title. Thus there would be a giveaway with no written record. The record would

only justify those special circumstances where the Government should receive greater rights than a licensee to use the invention. The burden of justification would have been shifted to the Government rather than to the contractor. That is the point at issue.

The change proposed by the patent lawyers would make a general rule out of the present authorization to give away patents under special circumstances; it would also let NASA give away patents without keeping records and justifying their action.

I think this is indefensible.

Senator SALTONSTALL. There we lean over backward to give the Government first rights.

Admiral RICKOVER. The NASA law protects everybody. You did a good job on that law, if I may say so.

Senator SALTONSTALL. I was just one.

Admiral RICKOVER. The law is perfectly all right, but the proposed new amendment is tantamount to saying that NASA's Administrator can give away title to inventions to contracting firms and he doesn't even have to make any written justification for his action.

Senator LONG. Admiral Rickover, just one other point that it seems to me should be considered. There are two problems that bother me. One is this: We are still providing an incentive for somebody to hold out on the other guys, I fear.

Admiral RICKOVER. We still have that built in.

Senator LONG. It is a more dubious right and it would be narrowed by the Space Act, but it is still there. The incentive to hold back and not communicate would still be there.

And then I am fearful of this other problem——

Admiral RICKOVER. Let me take up that one first. I think you could get around the problem by making it part of the law or part of any contract that there must be very rapid disclosure. We have that in the Atomic Energy Commission although it isn't always lived up to. We have some private companies doing work for the AEC—so-called private companies although practically every penny is directly or indirectly contributed by the Government—that delay getting out their reports. I think it should be made a provision of every contract that all information must be rapidly disseminated where no issue of security is involved. I would get around your point that way.

Senator LONG. Now I can definitely see certain places where the industry is entitled to a patent, and the best example is in the petroleum industry. I gave that example to the committee, where these fellows have done 98 percent of the research with their own money and aren't even interested in government contracts.

The Government says the chances are, knowing all the trade secrets that Standard Oil of New Jersey has, for example, they would get a jet fuel developed quicker than we can. They have poured $50 million into research relative to this subject that they have in their files already. So, in that case I think a good case could be made that they ought to have the patent if they develop a better jet fuel.

But, on the other hand, I am concerned about the case where a fellow—these people don't do anything more than scratch the ground a little bit and contend that they ought to be the guy to get the job. For example, if the Government is going to build something new that hasn't been built before, the Corps of Engineers is going to build a new structure, someone goes out and spends a few dollars in the field

and kicks a few things around and says he is better qualified in the field than anyone else and it should be negotiated rather than put out on bids.

What would be your proposal if you are going to take the NASA approach in keeping this fellow from saying he is entitled to take out patents?

Admiral RICKOVER. If he is a brandnew outfit who hasn't done anything, he has no right to them. If he is an experienced outfit and has knowledge in this particular field, he ought to get a percentage. That could be determined.

Senator HRUSKA. With a resulting setup that he can be recompensed for a particular project he has. Take the case of Standard Oil of New Jersey. They have 98 percent of the knowledge. They ought to get practically all the patents.

Admiral RICKOVER. Nobody is arguing that any rights be taken away. That isn't the issue. We are arguing that the taxpayer shouldn't have any of his rights taken away.

Senator HRUSKA. Suppose it is 54 and 46 percent instead of 98.

Admiral RICKOVER. You can get a rough estimate of that, sir. It is possible.

Senator HRUSKA. And divide the proceeds of the patent?

Admiral RICKOVER. Yes, sir, it is being done.

Senator LONG. Actually England uses the system, doesn't it?

Admiral RICKOVER. Yes, sir; it can be done; you can work out a system for doing it.

Senator HRUSKA. It calls for more patent lawyers to determine the percentage.

Admiral RICKOVER. No, this isn't really a patent determination. This is really more a determination by people of commonsense. You don't need a patent lawyer to solve problems of that kind. You don't need a patent lawyer for you and me to divide this pad of paper.

Senator HRUSKA. If I was in IBM and we made a $50 million investment in a machine and we said we did 46 percent, and the Government says we only did 3 percent, I have an idea that would become a legal problem.

Admiral RICKOVER. I think in general the Government leans over backward to take care of industry. Industry makes out pretty well.

Senator HRUSKA. That is not the way I know of the procedure. You give them 4 percent and it is not long before they get 40 percent, just by self-aggrandizement. That is the way it is done, as some of us have observed. Maybe it occurs differently in other fields.

Admiral RICKOVER. I can only talk from my own experience, from the knowledge I have of Government people. I don't think there is a tendency of that kind.

Senator HART. Admiral, how would you apply the equities in a case like this? This was the thing I was trying to give voice to earlier.

A Government-financed research project is going to somebody that is doing well in business machines; not as big as IBM. And they produce a good end result for the Government, but in the process, and quite by accident, by conceivably drawing on their background nonetheless unconsciously, they come up with a way to control temperatures in houses very cheaply. Now should the Government take title to that and make it royalty free?

Here is what happens as I understand it. If this firm does have this idea, unless it is given the patent protection, the exclusivity for a time, they are unable to finance the production commercially, and some company like General Electric is able to take the now publicized idea and put out the unit.

Admiral RICKOVER. Well, you might provide a sliding scale where you consider the size of the company; how far is the item off the basic thing that they are working on. You might give them credit for that. But, you know, talking from personal experience, with the loose way the Government generally runs research and development you will at times find contractors working on things they like and not always on what they are supposed to with the Government money. You have a hard time keeping them hewing to the line. The companies don't always put their best people on Government research and development either.

An approach such as that of NASA or AEC could solve the problem where the Government gets first patent rights but the administrator may waive these rights. If Congress considers it is in the public interest to protect small business in these occasional instances a waiver should be granted, and a written record made of the reason for the waiver.

Senator LONG. How about the possibility of using your money to fence in a patent?

Admiral RICKOVER. No, no.

Senator LONG. Has that ever——

Admiral RICKOVER. No, I would never permit that.

Senator LONG. You understand what I am talking about?

Admiral RICKOVER. Yes, I do understand. It should not be tolerated. It will make the little companies bitter if they can't get Government contracts because they haven't the know-how and the facilities, and on top of that can't get the use of Government-financed inventions, these also going to the big contracting firms. It is already difficult enough for the small companies to compete. It sounds like a lot of pious nonsense for the big companies that get most of the patents to tell the little ones that it is good for the little fellow to work harder. That if they work very hard and long enough they may find another way to do the thing the big company finds it easy to do because it has the rights to Government patents. If the little companies work hard and long enough in such an unfair competition they will go broke, too.

Senator LONG. Here is the kind of thing I am talking about, where there is a technical problem which has been overcome and a satisfactory answer has been found and the patent is applied for. There are inferior ways of doing the same thing. Now your competitor—take the automobile industry. If you have got a new gearshift or something, your competitor when he sees this thing, is going to find another way to do it to get around your patent.

Admiral RICKOVER. And it is generally inferior and more expensive.

Senator LONG. Usually inferior methods.

It seems to me that a fellow who has got a very, very valuable scientific breakthrough with great commercial possibilities would, if he could, spend a lot of your research and development money fencing in that patent to find every conceivable way of doing the same thing.

Admiral RICKOVER. He could.

Senator LONG. Which is a waste of money. You are spending a lot of your money——

Admiral RICKOVER. Senator Long, under normal conditions, under conditions where our country was not in mortal danger from an international conspiracy, the only harm that would be done is that one party, taking advantage of a patent he obtained from a Government contract would have an undue advantage over a competitor. But today when we don't have enough scientific and research people even in the Military Establishment it is foolhardy to have them waste their energy on anything that is not absolutely necessary. We are doing a lot of useless duplication in the United States. We simply can't afford that waste of talent from the standpoint of national safety.

Senator LONG. All we get out of financing this patent is the privilege of spending our money for making the monopoly most costly to us. That is about how it works out, isn't it?

Admiral RICKOVER. I agree with you, sir, although I fully understand this is not a simple problem. The two major points I have made are these: that generally where the Government pays for the work, the Government should own the patent; and that the trend in research and development, the trend of technology all over the world, is to make all knowledge interdependent.

Senator LONG. You nodded your head, I believe, in answer to my previous question. I understood that to mean that you were saying yes for the record?

Admiral RICKOVER. That is right.

Senator WILEY. May I ask a question outside the patent area?

Have the Russians got any atomic submarines?

Admiral RICKOVER. I would like to talk off the record, sir.

Senator MCCLELLAN. This will be off the record.

(Discussion off the record.)

Senator LONG. Could I ask about four questions here?

I think they could be answered very quickly.

What is your offhand reaction to a proposal which would permit private contractors in Government research and development to take out patents on the conversion of salt water to fresh water?

Admiral RICKOVER. As I understand it, sir, the President announced in a recent speech that whatever success we may have in developing saline conversion, we would share it with foreign countries. This, I think, is a noble and a generous attitude. But if a contract for research and development in saline conversion had been made in accordance with present Department of Defense patent regulations, the President would be stopped from carrying out his policy; the foreign and domestic commercial rights would belong to the private contracting company even though the Government had paid for the development.

Senator LONG. All these contracts would provide the Government a license to use, but this does not permit the Government to provide services to the general public?

Admiral RICKOVER. Correct, and I think that is wrong.

I would assign the saline conversion program to the Federal Aviation Authority, or to another agency that follows a different patent policy.

Senator LONG. Give it to Agriculture. They have got a law——

Admiral RICKOVER. Or give it to Interior, because they would retain title to the patent. I am sorry Senator Anderson has left because I believe he is interested in that matter.

I certainly would not let the Department of Defense get hold of the saline water conversion program or any similar project as long as they stick to their present policy. Certainly not unless it is made absolutely mandatory by the express will of Congress.

Senator LONG. Now we ran into this: Here was a fellow working on weather control. That could be very valuable, and we find that these people over there have given him, signed up with him on one of these Department of Defense blank form contracts where the contract said that he would have commercial patent rights or the right to deny the Government the use of weather control for the benefit of the general public.

Admiral RICKOVER. This is similar to the point we have been discussing. A considerable number of Government agencies are now involved in weather phenomena and in related research: the Air Force, the Navy, the Army, the AEC, the FAA, NASA, Agriculture, National Science Foundation, and, of course, the Weather Bureau. They certainly should all have ready access to all information developed by their Government, no matter what particular agency spends the money. Yet they operate under different patent rules.

There should be uniform patent rules. Congress should not permit every Government contracting officer to set up his own rules on the patent rights of the Government. That is a responsibility of Congress. I strongly urge that you consider legislating a uniform rule. The various agencies will, of course, object. They will all say that their problems are so difficult and so different that it is impossible to pass a law. They will also say that Congress, of course, doesn't understand their problems, can't understand the complexities of their particular situation. But I think it is essential that Congress prescribe a uniform patent policy for all Government contracts.

Senator MCCLELLAN. That is one of the purposes of studying these bills, to try to come up with some uniform——

Admiral RICKOVER. There are three things that are fundamental, sir. The first is death and taxes. The next is the second law of thermodynamics which states that work has to be done to prevent any system from deteriorating. Although this is a physics concept, it has an analogy in human affairs; unless we are constantly alert and work to prevent it, everything runs downhill. And the third is that every human being tends to create a monopoly for himself, if let alone.

Senator LONG. Here is another question and then I am through.

What do you think about this program of permitting private patents on these cancer cures? We are spending about $50 million this year, I think, trying to get an answer to cancer. I particularly think back to what happened with penicillin. There is something the Department of Agriculture did. We are lucky HEW didn't do it. Agriculture did that, and the cost of penicillin at wholesale has gone down since it was discovered from $20 per hundred thousand units down to 66 cents, I think.

Admiral RICKOVER. Less than that, I believe.

Senator LONG. I believe it is from $2 down to 6 cents per hundred thousand units.

Now the correct figure would be that it is now selling at about one-thousandth of the price it was selling for originally, thanks to competition.

Admiral RICKOVER. The price is per hundred thousand units.

Senator LONG. Because the Department of Agriculture had that patent.

Now, if they get our cancer cure under our present contract for the public who is paying for all of this to get the benefit of it I am fearful they might be required to pay $50 every time they go to the drugstore when the stuff should be available for 50 cents.

Admiral RICKOVER. Senator Long, I think there you have got to get back to basic principles. You remember earlier I mentioned that when England did away with monopolies in 1624, they retained letters patent for inventions, reluctantly and as an exception. A legally established monopoly, protected by law, is recognized as being contrary to their basic philosophy of freedom and free enterprise, so English law looks upon patent monopolies with not much favor. There and in many other European countries patents are not granted for such things as processes relating to agriculture or the like, or medical or surgical treatment though they may be granted to certain agricultural or surgical instruments and drugs. There are borderline cases here and the law should be reexamined and perhaps changed in the light of the massive governmental and community efforts being made today to lick the major scourges of mankind. I think we must never lose sight of the fact that the inventor asks society to help him set up a monopoly, and society has the right to refuse to do this in cases where it would hurt itself gravely, as with monopolies that are used to put so high a price on medicines on which human life depends that illness will bankrupt average families.

No one argues that drug companies haven't a right to make profits but society has always intervened if prices for necessities are driven beyond tolerable limits because someone has a monopoly on these necessities. Senator Kefauver's committee certainly brought out some scandalous facts on profits made by drug companies that are overcharging suffering humanity. When our young men are asked to give their lives to their country in time of war, it is surely not too much to ask drug companies to join with the people and with the Government in research for weapons in the war against disease, and to accept Government research contracts even when these do not grant company patent rights for inventions they make with public money. Of course, no one can force them but their behavior should be made known to the public.

Consider how it contrasts with that of scientists who create epoch-making discoveries. You mentioned the case of penicillin. Now that was discovered by Sir Alexander Fleming in the course of his investigations into influenza. It has rightly been called a "triumph of accident and shrewd observation." Because of his intelligence and training, Fleming immediate saw the tremendous potentialities of mold, merely by noticing, in passing, that mold had appeared on one of his staphylococcus culture plates and had created a bacteria-free circle

around itself. His discovery is the basis of a whole family of antibacterial drugs. And it was not patented by its inventor.

You may remember, Senator Long, that last year when I talked to your subcommittee I mentioned the case of the obstetric forceps that the Chamberlen family invented in England. They kept it secret for a hundred years. Hundreds of thousands, perhaps millions of women suffered a lot of pain in childbirth just because this one family kept their invention secret; kept it a monopoly.

Senator LONG. And death.

Admiral RICKOVER. Yes, sir.

With so many people dying from cancer, so much pain being suffered by cancer victims, so much money and effort being spent by Government and private organizations in the search for a cancer cure, I think it is unconscionable for a group of drug companies—ethical drug companies—to insist on exclusive rights as the price of their joining in this effort. I doubt Congress would tolerate it for 1 minute if someone tried to set up a monopoly in a vitally needed food. Why allow it for a vitally needed way to treat or cure cancer patients?

Senator HART. We had testimony this morning from HEW which has a rule that title shall vest in Government, that they had to make one exception, and the one exception was the instance of cancer, cancer research.

Admiral RICKOVER. Yes, we have all read in the newspapers of the facts brought out during the recent investigations of the Senate under Senator Kefauver and yourself into the drug business. The unconscionably high prices exacted by the ethical drug firms appear to be possible only because of their possession of patents on vitally needed medicines. Some things are going on in this so-called ethical field which I personally would not consider ethical.

Senator LONG. Look what this cancer thing is going to mean. It looks as if we are going to get the medicine. We are making some headway.

If you have cancer, either you must have this medicine or you are going to die. It is just that simple. And the fellow with that patent is in a position to charge you whatever price he wants.

Admiral RICKOVER. Well, without any question, I would amend the HEW patent rules so that under no circumstances when the Government pays money for research in the field of health, should there be any question that any individual or firm may control that via patent monopoly. I think that is wrong. That is my personal opinion.

Senator HART. Of course, this gets you back to the starting point. This one firm took the position "I will not undertake the research in the absence of this condition."

Admiral RICKOVER. Senator Hart, this gets us back to conflicts between private interest in maximum commercial profit and public interests that may run counter to such profit. For any man or firm or group of firms to put personal or group interest above a vital concern of the American people, of a very large part of the American people, or above an important national need—well, I had better not say what I think of such people.

Where are you going to stop? At what point do you stand up and solemnly declare that this Nation, this great country, is not being run

solely to protect private business. There are national considerations that must override their interest to get maximum profits.

But of course you have but to mention private enterprise when you talk of conflicts of interest between individuals or groups and the Nation as a whole to be accused of being against private enterprise, against our free competitive enterprise system. An analogy would be to accuse defense attorneys of being against the law of the country and the country itself when they defend a person accused of crime. That we don't do since we accept the fact that a lawyer has the duty to defend his client. It is not held against him that he opposes the public prosecutor. It doesn't immediately cast a stigma on him; nobody calls him an enemy of the law.

It seems to me we should learn to accept that one can be all for the free competitive enterprise system and still have reservations or criticisms about certain of its manifestations or certain segments of business or industry. A man should be able to state his opinions on the working of our economic system without having people throw it in his teeth that he is supposedly against free enterprise, against democracy, against the American way of life. Nothing is more certain than that the principle underlying our way of life, the principle of individual freedom, is constant. But how we realize it will have to change if the principle is to be kept inviolate in the midst of vast changes in our economic life. Cliche thinking is very common and much of it simply consists of confusing a principle with the way it is applied.

You hark back to the way a constant principle was put into effect say a hundred years ago, and you argue that unless this procedure is continued for all eternity the principle will be violated. In reality, under changed circumstances a principle remains intact only if procedures are adapted to these changed circumstances. This surely applies to patents. If we want to preserve the two principles underlying patent law: (1) to stimulate individual inventiveness and (2) to benefit the country by utilizing inventions to promote technological progress, then we will have to make some changes in procedures that have evolved in the patent business.

I believe just as much in individual liberty and the free competitive enterprise system as these patent lawyers whose articles I have been reading. They talk a lot about defending the Constitution, the law, the flag, and the American way of life. But a lot of that is cliche talk camouflaging their particular interest in obtaining extra business out of Government research and development contracts. Those contracts are made for purposes other than providing a new lucrative field for patent business. They have a higher national purpose and they should be handled in a way that will best serve the Nation and the people.

One of the arguments the patent bar falls back on if all else fails is to claim that inventions made under such Government contracts will not be properly utilized unless they are handed over to private companies under a patent monopoly. This seems to me even more fantastic than the double standard they are advocating—one law, that of master and servant, for employers and subcontractors of private companies; another law for the companies themselves when they are the servant and the Government, the American people, is the master, as in research and development contracts.

They argue that it takes a patent monopoly to induce a company to work an invention—mind you, not to make the invention. They argue that the company must be given a monopoly to develop the invention that has already been made with Government money. This really goes right back to the kind of economic thinking that prevailed in the Middle Ages and in the age of mercantilism and led to letters patent for all sorts of commercial and trading ventures; to monopolies granted by the sovereign in order to induce people to invest money in a new industry or business. I though this sort of thinking went out when the Western World went for free competitive enterprise. It's a line of reasoning that runs counter to every principle underlying free competitive enterprise. It makes the preposterous assumption that contracting firms must be allowed a patent monopoly to invest money in utilizing a new invention.

That's surely turning the patent law principle upside down. Patents are given to inventors because otherwise their inventions would immediately be used by lots of people and they would get nothing out of them. Now it is argued that companies must get patent monopolies for inventions paid out of public funds because nobody would use them unless his expenses were covered by a patent monopoly. How does the risk in development of a new invention differ in principle from the risks free enterprise undertakes every time something new is started? How does it differ from the risk a man takes when he opens a new grocery store or a new hardware store on a corner where none existed before? We would be going a long way towards abandoning our free competitive enterprise system if we granted legal monopolies for what are essentially normal business risks. The giveaway advocates certainly have managed to twist the original purpose of patents out of all recognition.

Senator HART. I just want to make the point, that there is at least one character out loose who does take the position that he would not furnish his skills in pursuit of a cure for cancer unless he is guaranteed a patent.

Admiral RICKOVER. Why should a committee as august as this one pay attention to such a position?

Senator HART. We were listening to the agency that surrendered to that character in this one instance.

Admiral RICKOVER. I would certainly require that agency to change its rule quickly, sir.

Senator ENGLE. Is that the only fellow who could do the research? Is that the reason he could take such a position?

Senator HART. The witness was not in the conference which produced the agreement, but presumably——

Senator ENGLE. That is a fine state of affairs when there is only one fellow in the country who can invent a cancer cure.

Senator LONG. You have a contract that allows you to waste time and money, and then, on top of that, you can have your price on it for 17 years.

Admiral RICKOVER. I believe there is one element of Government research and development you haven't touched on, and perhaps you should. I read in the paper several months ago that the Department of Defense is now starting to hand out money to various organizations, especially the large companies, just to do what they want with it, with no specific assignment.

Senator LONG. Not even with the right of a license; nothing?

Admiral RICKOVER. Right, sir.

I wish this committee would come up with some way that each on of us here could get in on this wonderful giveaway of public funds.

Let us talk about this later on and see if we can come up with something, sir.

Senator LONG. And the argument there is that they want to encourage these people to maintain their organizations.

Admiral RICKOVER. You mean the fledgling electrical industry and the fledgling steel industry and the fledgling electronics industry. All these poor infant industries.

Senator LONG. I don't believe Senator Douglas knows about that. He is sitting there.

Senator DOUGLAS. No.

Admiral RICKOVER. Did you hear that one?

There is a recent regulation set up by the Department of Defense that they can just hand out money, grants of money to anybody to do any kind of research and development they want. The Government has no rights to it.

Senator LONG. The Government doesn't even get the right to use it. It gets nothing. It just gives them the money and——

Admiral RICKOVER. I was asking the chairman how the people sitting around this table could get in on this racket.

Senator DOUGLAS. It would be regarded as a conflict of interest. I do not approve of it.

Senator MCCLELLAN. Senator Douglas, did you have any questions?

Senator DOUGLAS. No, I have no questions.

I say that I have no questions, but there is one query that comes to my mind that probably has been expressed.

Suppose a process is developed or an invention discovered under a Government branch which, if it becomes patented and known, has high security value and may get into Russian hands. Is there any way to guard against that?

Admiral RICKOVER. Yes, sir. There is authority in the Atomic Energy Commission, NASA, and the Department of Defense to have such patents made secret. Furthermore, the Government retains the right to be able to declare such a contract secret. That can be done.

Senator LONG. I was just about through, but I do want to ask you one thing.

I said this morning, and I want to ask your reaction to it, you have got these 17 electrical contractors, the biggest in the business, from General Electric on down, that went before the Federal judge and pleaded guilty or nolo contendre to this charge that they had been systematically cheating and defrauding the U.S. Government when they had been bidding for procurement over a period of 10 years.

Now what would be your reaction to a contracting officer who sat across the table in that same 10-year period with these fellows systematically overpricing these things and practically stealing our eyeballs from us, you might say, where they were bidding on that? Do you think the contracting officer would have put the signature of the United States on that?

Admiral RICKOVER. I really do not know what contracting officers of other Government agencies have in mind when they make these

contracts. I am sure they feel they act in the best interest of their respective agencies. But it may be that long and close personal association leads them unconsciously to identify agency interest with the interest of the men from industry who sit across from them and with whom they should be bargaining in a tough way. And then we have this practice of moving people to and fro between business organizations and policy positions in the executive departments of the Government.

I know you feel strongly that, as you said in the Senate on May 16, 1961 (Congressional Record, p. 7498)—

> private businessmen on loan to Government from large corporations, high-ranking military officers, who expect, after they retire, to work for some of the same corporations with whom they are now signing contracts, are holding out to continue this patent giveaway.

I have no information on this point. But I think one cannot close one's eyes to the fact that there is rapidly growing up a powerful military-industrial complex. In his farewell address to the Nation, President Eisenhower warned that "we must guard against the acquisition of unwarranted influence, whether sought or unsought," of this complex. As he said "the potential for the disastrous rise of misplaced power exists and will persist."

I personally have long felt that this business-military complex has in it the seeds of a very real danger to the Nation. It can reduce the strong sense of a conflict of interest that is needed for hard bargaining on a contract. The special interest of big business frequently seems to outweigh vital national interests. The giveaway patent policy of the Defense Department, in my opinion, is a case in point. I think we should take to heart these words in President Eisenhower's farewell address:

> We should take nothing for granted. Only an alert and knowledgeable citizenry can compel the proper meshing of the huge industrial and military machinery of defense with our peaceful methods and goals so that security and liberty may prosper together.

How to make certain that security and liberty may prosper together is really the crux of the problem of patents in Government contracts.

Whatever you in Congress decide to do about this problem, in final analysis everything depends on the people who face each other across the table when government contracts are being negotiated. I have faced highly cooperative and patriotic contractors; also others who seem to be out for profit alone; some who seem to drive hard bargains with their Government; some who did not appear to give their best services to the Government but put their less able people on Government contract work. Here I would like to digress and put in the record the case of a man who belongs to the first category. He is Mr. Robert Paxton, former president of the General Electric Co. I had experience with him when he was running the Philadelphia Switchgear Plant of the General Electric Co. during World War II. It was right after Pearl Harbor. A number of our warships were severely damaged. It was essential to return them to service in the shortest possible time. I will tell you this: he turned that plant inside out and they delivered new electrical equipment for us in record time. This enabled us to put those ships back into service much earlier than we had expected.

I just want to mention this. Of course, it has no direct bearing on the distressing recent disclosures of collusion by General Electric and Westinghouse and others in fixing prices in Government contracts. Whatever else may have happened, Mr. Paxton did do a deal to help when the going was hard and tough during the early part of the war.

But do I know whether there was collusion between agency contracting officers and the electrical firms that were unlawfully fixing prices when bidding for Government business? My answer is, I do not know, but I cannot make myself believe that any agency contracting officer ever knowingly made a contract where there was collusion on the industry side.

Senator LONG. Let me briefly get into this for a moment.

In my judgment, you are one of the few men I have known in the military service who can be counted upon to say what they honestly think, regardless of consequences to themselves personally.

Admiral RICKOVER. I have given you the best answer I could. From my experience of many years in Government, I don't know of any. I think people may have done foolish things but not criminal things. I think some officers and other officials, some may have been taken in by adulation, by social entertaining and the like that is done for commercial purposes—that sometimes goes to a man's head. But I don't—I know of no official who knowingly has either given a contract to a company or would have signed it if he thought there was collusion on their part.

Senator LONG. Let me pose this question to you, though, Admiral.

Admiral RICKOVER. Yes, sir.

Senator LONG. Standard Oil of New Jersey maintains a capacity for commercial construction. They are not interested in building office buildings or even their own plants. But they maintain this capacity so that they can tell whether their contractors are giving them the right prices. And when they ask for bids to build something on that Standard Oil plant—they call it Humble now in most of the producing plants—but when they ask for a bid, their own letter is lying out there on that table with that sealed bid of theirs alongside of their contractor's.

Now if the low bid of their contractor is out of line, if they think those companies got together the night before and agreed what they were going to bid and that one fellow was going to get the bid with the others putting in complementary bids, then Standard Oil has its own bid in there that is cheaper than the contractors', and they proceed to build that thing with their own contract labor.

They know within one-quarter of 1 percent what they ought to pay for anything that is constructed on that property, and they have bids against their own contractors. Not that they want to build; they don't.

And the same thing goes for the Corps of Engineers of the Army. They put a sealed bid on the table against their own contractor, and when those bids are opened, if this Army Engineering bid is 10 percent below the low bid on that table, then the Army Engineers build that. They take their own boys and go out and build it. And many of those contractors are outraged when this happens, feeling that some incompetent officer has given them a poor deal. And sometimes they

will hire a man, they will take one of their best people and have him police the job and make sure that there is no padding on the Government job to see that the Government did the right thing.

That is a wise and prudent thing to do, and most commercial firms do that type of thing, recognizing how those methods, methods of that sort, can prevent you from being skinned.

How can we justify an officer, over a period of 10 years, sitting there while these collusive bids were coming in with out suspecting or reporting or doing something to protect the Government's interest?

Admiral RICKOVER. If he gets different bids, how can the official judge these figures are dishonest?

I was witness in a Federal case in 1939 I believe, when the bids on electrical cable for the Navy were identical. Supreme Court Justice Clark was then working for the Department of Justice. He prosecuted the case and he was able to prove they all used the same price.

But how is the Government official going to know there is collusion when he gets prices that are just a little different from each other? Of course, if the price is way out of line he can suspect. But I don't see how he can tell.

Senator LONG. My impression is that antitrust made that case and made it stick just with a little peanut appropriation in their general antitrust activities.

Now, if they would come across that and get the evidence to nail it, make these fellows go to jail, it would be difficult for me to see how a responsible and competent contracting officer could sit there and get taken; not just on one contract but systematically for 10 years.

Admiral RICKOVER. You understand my work is about 95 percent technical. I get into the contracts only at the end, to the extent of approving them after people come to me and say "We have got such and such proposals for such and such items, and we recommend you award it to so and so."

Usually, after we get these proposals. I discuss them with the officials of the companies, and frequently I have been able to get the prices down. If I think the prices are still too high, I send a team of Government people into the factories to check up on their costs, their profits. I do that at times, but it is very difficult, very time consuming.

I don't see how you can expect the ordinary person in a Government agency to expect that there is collusion. If you start in running the country on that basis, on the basis of distrust, the whole thing falls down. You can't do that.

Senator MCCLELLAN. Senator Metcalf, any questions?

Senator METCALF. No.

Senator MCCLELLAN. Senator Hruska, anything further?

Senator HRUSKA. No, thank you.

Senator MCCLELLAN. Mr. Wright, would you care to ask a question?

Mr. WRIGHT. Just two or three.

Admiral, I noticed you referred to the practice of NASA now in waiving title to inventions in certain cases after they see what the invention is, and I wondered when you said it was possible to determine the amount, the relative amount of contribution that the contractor makes and of the Government in response to questions from Senators Hart and Hruska, I believe, do you think that can ever be done before you see what the invention is itself?

Admiral RICKOVER. No, sir.

Mr. WRIGHT. Could you ever do that at the stage where you are letting the contract?

Admiral RICKOVER. No, sir. I think you might have to let the thing ride and have a provision for the recovery by the Government.

Mr. WRIGHT. And I gather as far as waiver is concerned you have no objection to these waiver provisions providing that a public record is made or governmental record is made which shows why the title was waived. Am I correct about that?

Admiral RICKOVER. Yes, sir. I would put the onus on the administrator and not the other way around.

Mr. WRIGHT. I see.

Admiral RICKOVER. But the Space Administrator has that right now, and the AEC has it right now, too.

Mr. WRIGHT. I understand.

Admiral RICKOVER. The law is not completely restrictive. Is says you can make a determination. But under no circumstances would I let any Government agency give Government property away without a written record.

Mr. WRIGHT. You would be satisfied if there were a presumption created that the Government was entitled to title which could be waived upon a proper showing on behalf of the contractor?

Admiral RICKOVER. You have that now, sir.

Mr. WRIGHT. Yes; I understand.

Admiral RICKOVER. That is why I don't understand what is the issue.

Mr. WRIGHT. We have that only in the AEC and Space.

Admiral RICKOVER. I know, but the push to amend the space agency bill is the issue there. The Administrator already has the right, but he has to certify it. Now there is the proposal that this be changed so he won't have to certify. I think the law should perhaps be clarified to require the Administrator to make a through study and that he justify in detail and in writing why he has decided to give away a patent. The onus should be on him to justify the waiver of title by the Government.

Mr. WRIGHT. One other thing I want to ask you about. You say you find it very difficult to make a distinction between various fields in which inventive activity occurs. It is a fact, is it not, that under the present AEC practice they treat what they regard as so-called outfield inventions differently from what they term infield inventions; that is, inventions of some classes they will make a contract under which the contractor can have title. If they are not in the immediate atomic energy field. Is that right?

Admiral RICKOVER. Yes, sir. I think that is generally the case. Suppose a man has developed a type of instrument with his own money and the AEC wants to buy a slightly different type from him. I think they will make a contract where he essentially retains his equity. There are many patents in the AEC field which belong to private contractors.

Mr. WRIGHT. And you believe that practice that the Commission now pursues is, you think, adequate to take care of these?

Admiral RICKOVER. Yes, sir; I think it is.

Mr. WRIGHT. These special interests of the contractor?

Admiral RICKOVER. I consider the Atomic Energy Act is a pretty good one. It certainly has stood the test of time. I believe there have only been a very small number of cases during the entire period the

law has been in effect where anyone has complained, and these were minor complaints that were readily remedied.

If you can have any law where you only get such a small number of complaints in 14 or 15 years, I think even the Senators here who are lawyers will admit it is a pretty good law. It is a law that works no hardship on anyone. It protects the equities of the Government and of the contractor.

Senator HRUSKA. Mr. Chairman, I would like to ask Admiral Rickover, you have been discussing situations where you feel the Government as a result of its expenditure of money in a given field and on a given project would be entitled to have the patent. Once that happens, what will the Government do with the patent according to your thinking? What will it do with it?

Admiral RICKOVER. The Government could do several things. For example, the Federal Aviation Authority has decided to charge royalties. There have been cases where Government-owned patents have been used by industry without permission being asked, and the Government has done nothing about it. I think the Government should not charge royalties.

I maintain that once the Government gets title to an invention it should dedicate it to the public. I think the bookkeeping, the bureaucracy that would otherwise be involved would be fantastic and expensive.

Make sure of quick publication; disseminate the information rapidly; let anyone use it who wants to. That is what I suggest, sir.

I don't know whether I have made clear my strong feeling that one of the most important things we must do today—and it transcends in importance the particular intracacies of our patent system—is that we must make information available quickly. That is the most important thing.

Senator HRUSKA. Then we get into the field suggested by Senator Hart, don't we, because if it is an article in common use or an article that is widely used, let us say, or used in volume, the company that has the ability to fabricate them quickly and advertise them quickly and exploit them quickly, they are the big companies. The small company would not be able to do that, the small business.

However you define it—and I agree with you there is difficulty in defining small business—would we then run into considerations of getting into monopoly because those things would tend to gravitate into the hands of big business, the big producers?

Admiral RICKOVER. You could do this: you might try to get some definition of a small business. Give them some tax relief.

There are various things you could do, but today getting scientific information out is absolutely essential for the safety of our country. That is the point I want to make here. It is essential to our survival.

In talking here this afternoon I hope all of the members have understood I am not primarily interested in the money aspect of the patent problem, that a company or individual makes a lot of money out of Government contracts or patents. That, to me, is relatively unimportant as compared with the grave danger we are in and the extreme importance for our national safety of getting information out quickly. I would hope that as a result of these hearings, you might provide for setting up an information system that would be at least as good as

the Russian system. At present the Russians have the best system for dissemination of information.

Senator HRUSKA. Of course, we are engaged in general legislation. After all, if we are going to consider bills along the line of either S. 1176 or S. 1084, it will be general legislation. It will not be legislation which will pertain to articles or equipment or commodities that will bear on this immediate defense project.

Admiral RICKOVER. I understand that, sir. But, of course, I am talking here as a public servant whose job it is to think about this and who has it evermost on his mind. To me, this is more important than anything else.

Senator HRUSKA. I'm sure you do, but, you see, if we are going to consider legislation like that that is before us, I don't know of any field of activity which will not be embraced in it.

Adimarl RICKOVER. That is right, sir.

Senator HRUSKA. Because there is scarcely an activity that any of us know of that doesn't have some Government money in it. For example, tools or the tooling process.

Admiral RICKOVER. Yes, sir.

Senator HRUSKA. Measuring devices, drugs, and medicine. And, in the case of public works, dam locks or gates; chemicals of all kinds; farm implements; textile looms, fork lifts, fuel, tractors or guns, even as simple a thing as a shotgun or a revolver or a machinegun. The boom for a weed spreader or liquid fertilizer distributor. There isn't any of those activities, nor any other activity that you can think of today that doesn't have in some form quite directly Government funds in it.

Admiral RICKOVER. Perhaps our difficulties stem from tying in the patent situation with antitrust laws. It may be that. I think we have really got a huge overall problem or rather two problems, and there is a confluence of these two problems, and that is why you can't come to a simple answer.

But I would say this from what I know of industry, and I have dealt with industry for many years and I am also familiar with scientific and engineering techniques. I say that I consider the value of patents to be overrated, and that the overrating tends to confuse and hinder us.

I understand that the particular aspect we are talking about today is whether the Government should own the patents it pays for. But that is only part of the problem. I believe it would clarify the problem if the entire issue of patents were to be reexamined. A reevaluation, bearing in mind basic principles, might demonstrate that the patent issue is obfuscating other more important issue.

You see, it may be if we did away with the patent issue our problems would be simpler. There is an analogy with the Department of Defense. When we had the Army and Navy, we had two difficult problems. When we got the Air Force the difficulty multiplied geometrically. It would be a good idea, I believe, to separate the several parts of our problem and get one after another out of the way. I want to stress once more that in my opinion the patent system is overrated, today. It was a good system when it was set up initially. It served its purpose, but like everything else, it needs to be adapted to changing economic and political conditions.

In any institution there must be change. It must be reexamined. If it has been going on for a long time new values appear and have to be considered. Certain things that once were held to be eternal truths no longer are so.

At one time a lot of people believed in slavery. Its virtues were argued persuasively, indeed with even greater oratorical fervor than the giveaway patent case is presently being argued. But today no one believes in slavery any longer. In time perhaps no one will believe in giving away public property on the say-so of a government agency and without express authorization by Congress. There are many things we thought were true at one time that today we no longer think are true. The patent system is not sacred. I think it should be reexamined. Since the original purpose of patent monopolies was to stimulate individual inventiveness and our modern industrial setup renders patents very nearly ineffective for this purpose, it might be advisable to consider establishing a different system of awards for employed inventors. Germany has a mandatory system of rewards for inventors employed in industry and in government. As it now stands, the patent system in our country does not produce the maximum possible stimulus for inventive effort. We can't afford to let this go on. Rapid technological progress has become a condition of survival.

Senator HRUSKA. Then we would have to weigh the hindrances that might develop as a result of abolishing or radically amending our patent laws.

Admiral RICKOVER. No good thing ever comes into the world that doesn't bring with it other things that are not good. That is what you have to pay for progress. Nothing is unalloyed.

Senator HRUSKA. I am speaking of that process of reasoning or logic. We say there are a lot of detriments to the present patent system. So we are going to change that patent system. And then we get new evils and new hindrances. And you have to balance them, don't you?

Admiral RICKOVER. Well, I hope you don't believe that life is orderly, that you can ever get life to be orderly and logical. As a politician you know that it is not true, sir.

Senator HRUSKA. We strive for it. We have to strive for it.

Admiral RICKOVER. Yes, and I hope you find the Holy Grail. Other people have not.

Senator HRUSKA. In that balancing process to which I refer I am not looking for the Holy Grail. I am looking for a system that has the least disadvantage to our progress as a civilization.

Admiral RICKOVER. Today the immediate problem that faces us is national survival. When we lived in an era when this horrible problem of survival wasn't facing us with such immediacy, we could do many things that in today's situation have become unwise, even dangerous.

Any system works, in a fashion. But today I think you have to look at everything from the standpoint of national survival. This may induce you to make some changes which are good from this standpoint but which may have some deleterious effects elsewhere. That just can't be helped, sir.

Senator HRUSKA. I think a guidance system on a submarine that will take the submarine under the North Pole bears on national survival, but when a forklift in a warehouse is improved in some way, and the company who improves it happens to have a patent on the forklift at the same time, it is difficult as a practical matter to see the the casual relationship. The forklift has nothing to do with national survival, and it is the necessity of general legislation to deal with the guidance system for a submarine and also with the forklift improvement, you see. Both have to be all under general legislation, and how are you going to separate the two?

Admiral RICKOVER. All you can do is lay down general statutory principles with guidelines and purposes. The Congress does this and gets around the difficulties you mentioned by providing a certain amount of discretion to the administrator to adjudicate and decide the problems that arise. In this manner there can be fairness to the Government and to the contractor.

You remember I strongly urged that when a man has equity in something like the forklift, that equity should not be taken away from him; not at all.

Senator HRUSKA. Yes, you have been very fair on that, and I think that would be very equitable, but as a lawyer I am hindered a little bit by the necessities of proofs, and those things involved in the process of adjudication.

Admiral RICKOVER. Yes, but lawyers are not the only people who have something to say about how this country is run. Why don't you try to get help from other people?

Senator HRUSKA. We try our best. We call witnesses in like yourself. We ask for inspiration from you, and I think we have got a lot of it today.

Admiral RICKOVER. I didn't give you much inspiration. My knowledge is limited. I am a naval officer with technical knowledge, and my views are limited. I am not a lawyer.

Senator HRUSKA. If your views are limited I think our prayers should be for more limitations on knowledge.

Thank you very much.

Admiral RICKOVER. Thank you, sir.

Senator MCCLELLAN. Gentlemen, any questions?

Admiral, would you care to make a closing statement or any further comments?

Admiral RICKOVER. The only thing I can say is that I am deeply grateful for having been given the opportunity to talk with this distinguished group. I appreciate the courteous way I have been treated.

I have tried to give the best advice I could. I don't know whether it will be helpful, but at least you have one another viewpoint.

I have no ax to grind. I am not a patent lawyer.

I do not believe the public, the taxpayers' part in this matter from all that I have read, has been adequately presented. I respectfully suggest you tell the patent lawyers to stop making that same old speech and get another one. Again, sir, may I thank you for your courtesy. If there is anything else I can do, if you require additional information, I shall be only too glad to help.

Senator MCCLELLAN. Thank you, Admiral. We appreciate your coming. And from the standpoint of the Chair, at least, this was a

new problem, and it has become rather complicated and we try to go through it and study it, and my first impression was that you ought not to have one agency of government over here doing one thing and another agency over here with the same contract or making a different contract for the same government. There ought to be some uniformity.

I don't know just where the real equities are, but we have gone into this to try to study it.

Admiral RICKOVER. I certainly would have uniformity. The TVA, of course, says their problem is unique. The DOD says their problem is unique. When you finally get down to it you will find you have 183 million unique problems if you hear enough people.

Senator MCCLELLAN. That is true. We have to do this in almost all legislation. You have to make some provision, have to leave some discretion in administration, and you have to do this.

Admiral RICKOVER. To answer your question, if you stated what the policy was to be and left the administrator to be guided by that, I think the problem could be worked out.

Senator MCCLELLAN. Thank you, Admiral.

The committee will stand adjourned.

(Whereupon, at 4:20 p.m., the committee adjourned.)

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