86th Congress
1st Session

COMMITTEE PRINT

GOVERNMENT ASSISTANCE TO INVENTION AND RESEARCH: A LEGISLATIVE HISTORY

A STUDY OF THE SUBCOMMITTEE ON PATENTS, TRADEMARKS, AND COPYRIGHTS

OF THE

COMMITTEE ON THE JUDICIARY

UNITED STATES SENATE

EIGHTY-SIXTH CONGRESS, FIRST SESSION

PURSUANT TO

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STUDY NO. 22

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A STUDY OF PATENTS, PREPARED BY THE SUBCOMMITTEE ON PATENTS, TRADEMARKS, AND COPYRIGHTS

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[1] The late Hon. William Langer, while a member of this Committee, died on November 8, 1959.

Printed for the use of the Committee on the Judiciary

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1960

FOREWORD

This study, by Barbara H. Jibrin of the Legislative Reference Service, was prepared for the Subcommittee on Patents, Trademarks, and Copyrights as part of its study of the U.S. patent system, conducted pursuant to Senate Resolution 53 of the 86th Congress, 1st session. Chapters 5–7 of part 2 were written by Catherine S. Corry, Legislative Reference Service. Prepared under the supervision of John C. Stedman, associate counsel for the subcommittee, it is one of several historical digests covering important and recurring congressional proposals for encouraging invention, research, and development through amendment of the patent laws and other means. Five such histories have previously been published, dealing respectively with the test of "invention," recordation of patent agreements, compulsory licensing, Patent Office fees, and a single court of patent appeals.

How to provide more encouragement, stimulus, and direction to inventive and research effort, both within the Government and outside of it, is a subject that has received increasing attention in recent times. As Mrs. Jibrin's study shows, however, inquiries and legislation of this type are not new. Efforts to provide such assistance have taken many forms, including special provisions under the patent laws, such as patent extensions and waiver of patent fees; special governmental awards to both Government employees and private individuals; and the creation of special Government agencies to sponsor, channel, subsidize, and otherwise stimulate and direct research, invention, and creativeness. These latter have included such organizations as the Smithsonian Institution, the National Research Council and Academy of Sciences, the National Inventors Council, the National Science Foundation, and many others. The current interest in these matters is evidenced by the enactment in 1958 of important research and development provisions in the new Space Act and the Small Business Act of 1958. This study includes developments through the end of the 85th Congress in 1958.

This study is presented as a result of the work of Mrs. Jibrin and Miss Corry for the consideration of the members of the subcommittee. It does not represent any conclusion of the subcommittee or its members.

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

December 28, 1959.

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Joseph C. O'Mahoney,
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December 28, 1959.

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GOVERNMENT ASSISTANCE TO INVENTION AND RESEARCH—A LEGISLATIVE HISTORY

By Barbara H. Jibrin and Catherine S. Corry (Legislative Reference Service)

INTRODUCTION

The history of the United States, beyond that of any other country, has been a history of the application of new techniques and inventions by its citizens. The pioneering spirit of Americans, especially on the industrial front, has allowed us to achieve in less than two centuries what took hundreds and thousands of years to accomplish in other countries.

It is as true today, as it was in the very beginnings of mankind, that our fate—indeed, our very survival—depends upon the creative talents of our scientists and inventors. So it is a timely moment in history to review how we have been treating the inventor, and to look back at the attempts of the Federal Government to protect and encourage this valuable resource.

The Founding Fathers recognized the importance of rewarding the inventor, and provided in article I, section 8 of the Constitution that Congress shall have the power "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." It is the object of this report to review some of the important legislation designed "to promote the progress of science."

Part 1 covers the attempts by the Government to stimulate invention, or suggestions, among its employees. The present-day benefits are the result of over 100 years of court decisions and legislative action to insure the inventor his rights and to provide incentives for creative work. The efforts and contributions of Government employees and the ways developed to stimulate, reward, and protect these efforts, are part of the overall picture.

Part 2 sketches the legislative history back of some of the Government agencies engaged in research and how they deal with patents and other inventions. It also deals with proposals involving inventions made in the course of Government-financed research. The National Science Foundation is treated in especial detail, both because of its broad range of activities and wide influence, and because of the fact that the hearings and debates on its formation are replete with testimony on the need for, merits of, and risks involved in Federal assistance to science.

The research carried on in various other Government agencies, not primarily created for these purposes, such as the Departments of Agriculture, Commerce, and Defense, falls outside the scope of this report. The extensive research of the Atomic Energy Commission has also been omitted.

Part 3 covers legislative proposals for extending the life of patents, whether generally, to certain groups, or on behalf of specific individuals.

This report is essentially a legislative history based on congressional hearings, reports, and debates.

PART 1. INVENTIONS MADE BY GOVERNMENT EMPLOYEES

The Government, like private industry, has the right to establish policies with its employees, whether the policy concerns disposition of patent rights in employees' inventions or the giving of special awards for meritorious suggestions and ideas.

The respective rights of the Government and its employees in regard to inventions may range from complete ownership by the Government to complete ownership by the employee. In the Law Monograph of the 1947 report of the Attorney General concerning Government patent practices and policies,[1] the following sources of these rights are listed: (1) the common-law rights of employer and employee; (2) a statute such as the 1910 act as amended; (3) a contract with the employee; and (4) administrative regulations. To this list may be added (5) awards to Government employees for inventions or suggestions.

I. COMMON LAW RIGHTS

In the case of *Solomons* v. *United States*,[2] the Supreme Court held that an employee might exercise his inventive faculties with assurance that his invention was his own individual property, with the limitation that if he were expressly employed to devise or perfect an instrument, he could not, after accomplishing the work, plead title against his employer. In the case of *Houghton* v. *United States*,[3] it was held that where the Government employs an inventor to invent a particular device, it has a right to the exclusive ownership of the patent, and may compel an assignment when issued.

In the case of *United States* v. *Dublilier Condenser Corp.*,[4] the Supreme Court held that the Government was not entitled to an assignment of patents because the inventors had not agreed to exercise their inventive faculties in their work and their inventive activities were not within the scope of employment. They had not been "employed to invent," even though the work was conducted in Government laboratories, with Government money, and while drawing Government salaries. Justice Stone dissented, holding that the patents should be assigned to the United States. The Supreme Court did hold, however, that the servant who perfects an invention with "his master's materials and appliances" must accord his master a nonexclusive right to practice the invention.

[1] U.S. Department of Justice, Investigation of Government Patent Practices and Policies: Report and Recommendations of the Attorney General to the President, vol. III, p. 134 (1947).
[2] 137 U.S. 342 (1890).
[3] 23 F. 2d 386 (4th Cir. 1928), cert. denied, 277 U.S. 592 (1928).
[4] 289 U.S. 178 (1933).

II. THE ACT OF 1910 AND THE 1952 AMENDMENT THERETO

A. EARLY HISTORY

Prior to the act of June 25, 1910,[5] a patentee, including Federal employees, seeking to recover compensation from the United States for the unlicensed use of his invention had to establish an express or implied contract by the Government to pay for such use.[6] In the absence of such contract, the patent owner as a rule had no remedy against the United States, unless Congress, by special act, gave him access to the courts.[7]

The act of June 25, 1910, attempted to remedy the situation for non-Government employees. The Government employee, however, was barred from receiving the benefits of this act. The act read:

> * * * whenever an invention described in and covered by a patent of the United States shall hereafter be used by the United States without license of the owner thereof or lawful right to use the same, such owner may recover reasonable compensation for such use by suit in the Court of Claims: *Provided, however,* That said Court of Claims shall not entertain a suit or reward compensation under the provisions of this act where the claim for compensation is based on the use by the United States of any article heretofore owned, leased, used by, or in the possession of the United States: *Provided further,* That in any such suit the United States may avail itself of any and all defenses * * * set forth in title 60 of the Revised Statutes: *And provided further, That the benefits of this Act shall not inure to any patentee, who, when he makes such claim is in the employment or service of the Government of the United States; or the assignee of any such patentee; nor shall this Act apply to any device discovered or invented by any such employee during the time of his employment or service.* [Emphasis added.]

An examination of the debates in Congress reveals arguments for and against including Government employees:[8]

> Mr. GOLDFOGLE. The amendment will shut out cases of employees who, availing themselves of experience gathered in the departments, have invented devices and then permitted the Government to use them, and therefore claim compensation from the Government.
>
> But, if the amendment be adopted, there will be still open a remedy to such employees. They still can come, as they now can come, before Congress, and lay their claims before us here. The amendment does not preclude them from such remedy, but the amendment does cut them out from availing themselves of the provisions of the bill. The amendment will prevent them suing the Government in the courts, and securing awards in cases where they ought not be awarded anything. They have ample opportunity of securing relief, if in fact they should have any. But they ought not, I

[5] 36 Stat. 851 (1910), 28 U.S.C. sec. 1498 (1952).
[6] See, e.g., *United States* v. *Burns*, 12 Wall. 246 (1870).
[7] See, e.g., *Schillinger* v. *United States*, 155 U.S. 163 (1894).
[8] 45 Congressional Record, p. 8785.

repeat, to be permitted to sue the Government in the courts in the cases referred to in my amendment.

Mr. CURRIER. I do not believe that in the end it will be for the benefit of the U.S. Government to say to all the distinguished men who happen to be in its employ, all the great scientists, and all the bright inventors, that they shall have no reward for their studies or for their talent in inventing things which can be used, perhaps by the Government only. * * *

Another important argument against including Government employees was that the inventor might use his official position to influence the Government to use his invention.

In 1918, the Supreme Court held that the 1910 act did not apply to infringement of a patent by a private contractor performing a Government contract and therefore did not protect the contractor against a suit for injunction and an accounting.[9] This decision resulted in an amendment on July 1, 1918, making the 1910 act applicable to use or manufacture of a patented invention "for" the United States (e.g., by a contractor) as well as "by" the United States (e.g., by an employee).[10]

However, the Government employee was still in the same position of being unable to receive the benefits from this act, and this condition continued until 1952 when it was alleviated by the legislation discussed below.

B. PUBLIC LAW 582 (82D CONGRESS), JULY 7, 1952

1. LEGISLATIVE HISTORY

Public Law 582 [11] had its origin in H.R. 3975, introduced by Mr. Rodino on May 4, 1951. It provided that the act of 1910 be amended to permit Government employees to maintain patent suits against the United States. The bill was reported out favorably by the House and Senate Committees on the Judiciary (H. Rept. 1726 and S. Rept. 1992), passed both Houses, and became law on July 7, 1952.

2. IMPORTANT PROVISIONS

The bill, as passed, eliminated the sentences prohibiting Government employees from suing and substituted therefor, the following:

> A Government employee shall have the right to bring suit against the Government under this section except where he was in a position to order, influence, or induce use of the invention by the Government. This section shall not confer a right of action on any patentee or any assignee of such patentee with respect to any invention discovered or invented by a person while in the employment or service of the United States, where the invention was related to the official functions of the employee, in cases in which such functions included research and development, or in the mak-

[9] *Cramp & Sons* v. *Curtis Marine Turbine Co.*, 246 U.S. 28 (1918).
[10] 40 Stat. 705 (1918), 34 U.S.C. sec. 521 (1952).
[11] 66 Stat. 757 (1952), 28 U.S.C. sec. 1498 (1952).

ing of which Government time, materials, or facilities were used.

3. SIGNIFICANT TESTIMONY AND COMMENTS

The House committee, in its statement, explained the exclusion of Federal employees from the benefits of the earlier act as follows:

> Section 1498 of title 28 was written into the act of June 25, 1910, in order to provide a safeguard against the possibility of a patentee in the Government service utilizing his official position to influence the use of his invention by or for the Government and then maintaining a claim for compensation for such use, and also to prevent a Government employee who made an invention in the course of his official duties from maintaining a claim for the use of the invention by the Government.

The hearings that were held by the House were not printed; however, Mr. Paul A. Rose, whose testimony was printed in the report, said:

> Obviously, it was inequitable and unnecessary to prevent all Government employees from maintaining a suit against the United States in order to erect safeguards against those few who might be in a position to benefit unjustly from use of their inventions by the Government. For instance, if a person made an invention in private life relating to armaments and later entered Government service, say in the Post Office, there is no valid reason why he should not maintain a suit against the United States if the Army or the Navy ordered the manufacture or use of a device which infringed his patent. The same would apply if he made the invention after entering Government service so long as it did not relate directly to his official duties.

III. THE ACT OF 1883 AND THE 1928 AMENDMENT THERETO

A. EARLY HISTORY

Since 1883 a Federal employee has had the right to obtain a patent on his inventions, without fee, if he were willing to grant the Government a free license thereunder. Until 1928, however, there was some question as to whether an invention so patented was not also open to free public use.

The act of March 3, 1883,[12] provided:

> The Secretary of the Interior and the Commissioner of Patents are authorized to grant any officer of the Government, except officers and employees of the Patent Office, a patent for any invention of the classes mentioned in [Rev. Stat., sec. 4886] * * * when such invention is used or to be used in the public service, without the payment of any fee: *Provided*, That the applicant in his application shall state that the invention described therein, if patented, may be used by the Government or any of its officers or employees in the prosecution of work for the Government, *or by any other*

[12] 22 Stat. 625 (1883), 40 U.S.C. sec. 143 (1952).

> *person in the United States*, without the payment to him of any royalty thereon, which stipulation shall be included in the patent. [Emphasis added.]

The first court test of whether a patent issued under the act would be open to the public came in the case of *Squier* v. *American Telephone & Telegraph Co.*[13] In 1910, Major Squier, acting on the advice of the Judge Advocate General, applied for a patent on his invention (a wireless apparatus which simultaneously transmitted several messages over a single telephone wire), under the act of 1883. In accordance with the current views of the Judge Advocate General concerning his legal rights, Squier made public announcements of his intention to dedicate his invention to the public. However, on November 30, 1918, the Acting Judge Advocate General of the Army reversed the previous ruling that patents issued under that act required public dedication, and held that the 1883 act provided for free use for governmental purposes but not by the general public.[14] The same interpretation was given by Acting Attorney General Ames on March 22, 1920.[15] He said that the invention could be used free of royalty only if the use be in the prosecution of work for the Federal Government. This change of position led Major Squier to bring a suit against the American Telephone & Telegraph Co. for infringement of the patent he had obtained under the 1883 act. The district court, declining to follow the Acting Attorney General's opinion, held that a patent issued under the 1883 act was open to free public use and the other district courts agreed with this view.[16]

The War Department, in 1919, had already begun to sponsor or support a number of bills to amend the act of 1883 to make it clear that the inventor would not lose his commercial rights by filing thereunder. The resulting activity in Congress is described in the following section.

B. BILLS INTRODUCED AND CONSIDERED, 1919-25

1. S. 5066, JANUARY 24, 1919 (MR. CHAMBERLAIN)—65TH CONGRESS

S. 5066 provided for amending the act of 1883 to state expressly that the free license thereunder should extend only to the Government and not to "any other person in the United States." Hearings were held before the Senate Committee on Patents in January 1919.

Maj. A. M. Holcombe, speaking for the War Department, testified that it was the policy of that Department to leave commercial rights in the inventor and that the change in the 1883 act was sought to permit continuance of that policy while making use of the machinery of the act.

Senator Colt, also supporting the bill, commented as follows:

> Now if the inventor is to obtain no reward, if his invention is to be dedicated to the public, you take the heart right out of the whole patent system. I think the objection to this

[13] 21 F. 2d 747 (S.D.N.Y. 1924); 7 F. 2d 831 (2d Cir. 1925).
[14] 2 Ops. J.A.G., p. 1029 (1918).
[15] 32 Ops. Atty. Gen., pp. 145, 146 (1920).
[16] *Squier* v. *American Tel. & Tel. Co.*, 21 F. 2d 747 (S.D.N.Y. 1924). The district court also held that Major Squier, by permitting the War Department to announce, with his approval, that the use of the invention was free to the public, had thereby so dedicated it. The Circuit Court of Appeals affirmed on the latter ground. *Squier* v. *American Tel. & Tel. Co.*, 7 F. 2d 831 (2d Cir. 1925).

bill—I think what you said about the War Department is extremely just and equitable, and I think if this bill is framed upon the principle that the Trade Commission should take up the question of these patents, that the inventor should not be charged anything; then as a return for that, that the Government should have an exclusive license to these inventions. I do not like the idea, because I know that the pressure of manufacturers and of the Government is that every invention that is made while the inventor is in the employment of the Government or in the employment of the manufacturer belongs to the Government or the employer, and the aspect of this bill that I do not like, while it is voluntary, is that inventors have got an idea that while they are employed by the Government the Government will not grant them any patent or will not grant them any compensation for that patent.

The bill was reported out favorably by the Senate Committee on Patents (S. Rept. 661), but no further action was taken.

2. H.R. 13450, DECEMBER 19, 1918 (MR. CHARLES B. SMITH)—65TH CONGRESS

H.R. 13450 was identical to S. 5066. Hearings were held by the House Committee on Patents. Again, Major Holcombe testified in favor of granting the commercial rights under their inventions to Federal employees obtaining patents under the 1883 act. No action was taken on the bill.

3. H.R. 12192, JANUARY 31, 1920 (MR. KAHN)—66TH CONGRESS

Proposed amendment to the act of 1883 so that inventors applying for a patent thereunder would not have to give a license to the public. No action was taken.

4. H.R. 3267, DECEMBER 10, 1924 (MR. LAMPERT)—68TH CONGRESS

Provided for amendment to the act of 1883 so as not to require giving a free license to other than the Federal Government. For hearings, see H.R. 11403, infra. No further action was taken.

5. H.R. 11403, FEBRUARY 26, 1925 (MR. LAMPERT)—68TH CONGRESS

Provisions similar to H.R. 3267. Hearings were held by the House Committee on Patents on both H.R. 3267, supra, and H.R. 11403.

Colonel McMullen, Department of Judge Advocate General, and chief, central patent section, War Department, testified as follows in response to questions by Congressman Lanham:

> Mr. LANHAM. As I understand it, the necessity for this bill arises from this fact: That inventions are made by men in these respective services; that patents are not taken out on them, and that subsequently patents are taken out on them by people not in the service.
>
> Colonel MCMULLEN. Exactly.

Mr. LANHAM. And then, when the necessity arises for the Government to use those inventions, the Government makes itself liable to suits for infringement by people outside of the service on inventions which were made by people in the service.

Colonel MCMULLEN. Exactly.

Colonel McMullen also submitted a memorandum to the committee in which he stated:

> During the more than 40 years of the life of the act of 1883, comparatively few patents have been taken out by employees under that act, the impression throughout the service generally being that it gave the individual no protection to his rights and that the Government did not need it. As a consequence the Government has not received the patent protection which it undoubtedly otherwise would have received if the act had been in such form as to hold out some encouragement to service employees.

William N. Roach, chief, patent section, Ordnance Department, submitted a memorandum to the committee, in which he said:

> The act of March 3, 1883, under which the Ordnance is compelled to operate, provides a very poor basis for such operation:
>
> First, because the act is so indefinite and uncertain in its terms and that very few persons will agree as to its meaning.
>
> Second, because there are many instances where devices containing structure which may prove of great worth to the Government may not be patented under the act even though invented by Government employees.
>
> Third, because the act is such that it furnishes no incentive for the Government employee to disclose his ideas and patent them.

The House committee reported out H.R. 11403 favorably (H. Rept. 1596). Mr. Lanham, in submitting the report, said:

> The Committee on Patents held hearings on the provisions of this measure, and it developed in the testimony that the passage of this bill would likely result in the saving to the Government of a very considerable sum of money. The testimony shows that many useful inventions have been made by employees in various branches of the Government service which have not been protected by patents. Subsequent inventions by people outside of the Government service upon which patents have been procured have led to many suits for infringement, which have been costly to the Government.

No further action was taken on the bill.

C. PUBLIC LAW 325 (70TH CONGRESS), APRIL 30, 1928

Public Law 325[17] had its origin in H.R. 6103, introduced by Mr. Vestal, December 7, 1927. It provided for amending the act of 1883

[17] Act of Apr. 30, 1928, ch. 460, 45 Stat. 467 (1928), 35 U.S.C. sec. 45 (repealed 1952).

by eliminating the words "every other person" in the provisions for free licensing. Hearings were held by the House Committee on Patents.

Again, *Colonel McMullen* testified in favor of the amendment. He said:

> The purpose of the act of 1883 is to permit the issuance of patents without legal fee to officers and employees of the Government. Prior to the World War there was very little attention paid to patents in the Government service, and, as the result, when the war was over we were confronted with suits amounting to over a billion dollars on patents, and we have about $600 million still pending in the Court of Claims, and when we investigated the matter we found that a great many of those suits grew out of a situation where inventions had really been made in the Government service, but no patent applied for on the invention by the Government employee. For instance, we would find a patent come out, being "a Chinese copy" of one of our aerial drop bombs, would get hold of the drawing and make application for patent, and this act of 1883 has never applied to either officers or employees and given them any protection.

The House and Senate reported favorably on H.R. 6103 (H. Rept. 871 and S. Rept. 765). The bill was debated in Congress,[18] and finally became law on April 30, 1928. As amended, the 1883 statute now provides that the applicant shall state in his application—

> 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.

IV. SPECIAL ACTS

A. BACKGROUND

Congress, under its general power of appropriation (U.S. Constitution, art. I, sec. 8, cl. 1, and sec. 9, cl. 7) and under its power to create and define the jurisdiction of the lower Federal courts (U.S. Constitution, art. II, sec. 1), is empowered to enact special acts which (1) authorize an outright payment for the use of an invention made by by a Federal employee or (2) remit the question of compensation to the courts for judicial determination on the basis of common law principles or other standards of liability. It has exercised this power in a number of cases, as described below.

B. INDIVIDUAL CASES

1. JOHN W. STOCKETT

During the period from 1898 to 1902, Stockett, a draftsman in the Ordnance Department, obtained patents for improvements in breech mechanisms for guns. At his own initiative, but with the approval of his superiors, he perfected the construction of the gun. On December 3, 1907, the Acting Secretary of War addressed a communi-

[18] 69 Congressional Record, p. 7066.

cation to the Speaker of the House of Representatives recommending legislation by Congress authorizing the Secretary of the Treasury to pay plaintiff $20,000 "as payment in full for his patents covering features of breech and firing mechanisms for breechloading ordnance which are now in use on guns owned by the U.S. Government." A bill (S. 2670, 60th Cong.) was introduced calling for an appropriation of this amount, but it was not passed. On December 21, 1909, the Acting Secretary of War addressed another communication renewing his previous recommendation of a $20,000 appropriation "in full payment for all past and future use of the patents, or any improvements thereon that may be patented, and for all royalties whatsoever." On January 18, 1910, another bill (H.R. 18628, 61st Cong.) was introduced. This bill was reported favorably by the Committee on Claims of the House, but on April 8, 1910, was referred to the Committee of the Whole House, which rejected it. Stockett testified before the House Committee on Claims on March 3, 1910, that he would consider $20,000 "a fair, square compensation." In 1911, S. 10838 (61st Cong.) was introduced in the Senate, directing payment of $142,500 to Stockett. The matter was referred to the Court of Claims. That court, in 1926, concluded that "whether the plaintiff should receive any compensation is a matter that rests in the discretion of Congress." The following statement in the court's findings bears on the merits of the issue:

> This device, while it involved a knowledge of existing inventions, and was in the line of evolution, was plaintiff's own work and not required of him as part of his duties, but was voluntary on his part.[19]

In 1928, a bill (S. 2319, 70th Cong.) was introduced in the Senate providing for payment of $142,500 to Stockett, but it received no action. In 1929, however, the War Department Appropriations Act passed by Congress included $50,000 for payment of Stockett's claims.[20]

2. D. M. SHEARER

During the period 1915–17, Shearer, an engineer attached to the Mississippi River Commission, made inventions relating to concrete revetments. On December 17, 1930, Shearer's claim against the United States for compensation for the use of his inventions was referred to the Court of Claims by Private Act No. 285 (71st Cong.). In 1938, the Court of Claims held that Shearer was entitled to compensation as to one patent on the ground that he was not on duty status when he conceived the invention covered thereby. With respect to a second patent covering an invention made while on active duty, the court held that the Government had an implied license.[21] The case was remanded and referred to a Commissioner to take testimony on the question of compensation for the Government's use of the first patent. In 1944, Shearer was awarded approximately $320,000.[22]

[19] S. Doc. 134, 69th Cong., 1st sess. (1925–26). The statement also appears in S. Rept. 537, 70th Cong., 1st sess. (1927–28).
[20] 45 Stat. 1349, 1381 (1929), 48 U.S.C. sec. 35 (1952).
[21] *Shearer* v. *United States*, 87 C.C.P.A. (Patents) 40 (1938).
[22] *Shearer* v. *United States*, 101 C.C.P.A. (Patents) 196 (1944).

3. SOLOMON VAN METER

In 1916, Van Meter, while a civilian not in Government employ, secured a patent for a parachute apparatus. He subsequently became an officer in the Army, and therefore was subject to the 1910 act which barred him from suing the Government for infringement. This disability was waived by the passage of a special act (Private Act 271, 68th Cong.). He brought suit and recovered $46,000. The decision of the district court was affirmed on appeal and claimant was held entitled not only to a reasonable royalty, but also to the profits resulting from the manufacture of his device.[23]

4. CAPT. RUSSELL WILLSON

Captain Willson while at sea in 1916 conceived an invention in connection with the secret communication facilities of the Navy. The invention was used by the Navy beginning in 1917, but for reasons of public policy was never patented. In 1935, the Navy Department recommended, and Congress enacted, legislation to pay the inventor $15,000 in full settlement for the use of his invention (Private Law 79, act of June 13, 1935, 49 Stat. 2077).

5. LT. JOHN A. DAHLGREN

Lieutenant (later Admiral) Dahlgren invented certain improved naval guns in the line of duty by means of experiments conducted at the expense of the United States. Dahlgren's widow filed a claim for compensation for the use of the inventions by the Navy Department and Congress passed a special act dated June 19, 1878,[24] referring the claim to the Court of Claims. Although that court found that the circumstances under which the inventions were made would at least have entitled the Government to "a complete defense" to the suit, it construed the special act as authorizing recovery notwithstanding such defenses if the patents were found valid, deeming the defenses to be pertinent only to the amount to be awarded. It awarded $65,000, the maximum permitted by the special act, and the patents were assigned to the United States as required by the act.

6. JOSEPH WYNN STEEL AND WILLIAM PETER KRUSE

H.R. 3220 was introduced in the 82d Congress for the relief of Steel and Kruse. It was reported out by the Committees on the Judiciary (H. Rept. 1815 and S. Rept. 1698), passed Congress, and became Private Law 770 (66 Stat. A120) on July 1, 1952. The act authorized payment of $10,000 each to Steel and Kruse for settlement of their claims against the United States for compensation covering their invention of a conversion unit for standard coin presses and its use by the United States—an invention calculated to save the Government several million dollars. They conceived this invention while working with the Bureau of the Mint.

[23] *Van Meter* v. *United States*, 47 F. 2d 192 (2d Cir. 1931).
[24] Act of June 13, 1935, ch. 237, 49 Stat. 2077.

7. JOHN J. BRAUND

H.R. 4549 was introduced in the 84th Congress for the relief of Braund. It was reported out by the Committees on the Judiciary (H. Rept. 264 and S. Rept. 611), passed Congress, and became Private Law 126 (69 Stat. A56), July 7, 1955. The act authorized the payment of $15,000 for settlement of claims against the United States.

8. WILLIAM F. FRIEDMAN

H.R. 2068 was introduced in the 84th Congress for the relief of Friedman. It was reported out by the Committees on the Judiciary (H. Rept. 260 and S. Rept. 1815), passed Congress, and became Private Law 625 (70 Stat. 264), May 10, 1956. The act authorized payment of $100,000 for settlement of rights in respect of his inventions relating to military, naval, and air communications facilities which had been placed in secrecy status by the War Department or the Department of Defense.

9. LAURANCE F. SAFFORD

S. 1524 was introduced in the 85th Congress for the relief of Safford. It was reported out by the Committees on the Judiciary (H. Rept. 1896 and S. Rept. 1473), passed Congress, and became Private Law 494, July 22, 1958. The act authorized payment of $100,000 for settlement of claims against the United States in connection with cryptographic systems and apparatus invented and developed by Safford while serving on active duty in the U.S. Navy and which have been held in secrecy status by the U.S. Government.

V. ADMINISTRATIVE REGULATIONS

One of the first agencies to effect patent regulations was the Department of Agriculture. In a general order of May 8, 1905, the Secretary required employees making useful discoveries or inventions in connection with the work of the Department, and while utilizing Government time and Government money, to apply for patents under the terms of the act of 1883. In the report of the Secretary of Commerce and Labor in 1907,[25] the effect of the ruling was described as follows:

> This policy is in line with the decisions of the courts upon the doctrine that when an employee takes out a patent, the subject matter of which is in the general line of his employment, there is an implied license in the employer to use the patent. There is a marked distinction, however, between this doctrine and the practice in the Department of Agriculture, in that the ownership of the patent right in the former case remains in the inventor, who can regulate its use as he may see fit, subject to the employer's license, while the method required in the Department of Agriculture takes the entire property right from the patentee, leaving him nothing of monetary value.

[25] "Patents Granted to Officers and Employees of the Government," H. Doc. 914, 60th Cong., 1st sess., p. 8 (1907-08).

The second report of the National Patent Planning Commission,[26] after studying each Government agency, had the following to report on the general practices of the departments:

> A number of Government departments have issued regulations dealing with inventions of their employees. With minor exceptions these departments expect or require that inventions made within the specifically assigned duties of the employee shall be assigned to the Government, in conformity with the decisions of the courts regulating the matter in default of specific agreement. The departments generally assert no rights in inventions made by an employee on his own time, without the use of Government facilities, and in a field unrelated to his employment, except as may be voluntarily granted by the employee. In situations other than these two the general rule is that the invention and the patent belong to the employee in the absence of a specific agreement to the contrary, although the employer may have the right to use the invention without payment of a royalty. Some departments follow this general rule while others require assignment of the patent in cases where the invention is closely related to the duties of the employee and the work of the department.
>
> In general, when research is conducted primarily for the benefit of the public as a whole, Government agencies tend to permit retention of private commercial rights by the employee in a smaller proportion of cases than when the research is aimed at improvement of governmental functions and operations. In the latter cases the direct needs of the Government are completely met by its freedom to make and use any invention which may result, or to have the invention made and used for governmental purposes, without payment of royalties or any restrictions.

The Commission recommended that two principles, established by numerous court decisions, were so equitable, so firmly established in the common law, and relatively so susceptible to administrative adoption and enforcement, that they be made applicable throughout Government service. They are:

(*a*) Inventions made within the specifically designated duties of the employee shall be assigned to the employer, since he has only produced that which he was employed to invent.

(*b*) Inventions made by an employee on his own time, without the use of his employer's facilities, and in a field unrelated to his employment, shall be the exclusive property of the employee, who shall be entitled to all patent rights.

In the areas not covered by (*a*) and (*b*), the Commission felt it inadvisable to devise a uniform law, but proposed that each case be judged on its own facts, since a great deal of flexibility is necessary. However, the Commission recommended:

> * * * that policies and regulations adopted by any agency be submitted to a central control body for approval before they become effective, and that this body also serve as an

[26] "Owned Patents and Inventions of Government Employees and Contractors," H. Doc. 22, 79th Cong., 1st sess., p. 9 (1945).

appellate tribunal with power of final decision as regards appeals which employee-inventors may desire to take from agency decisions.[27]

Subsequent to the report of the National Patent Planning Commission, the next, and most comprehensive of all studies which dealt with this general subject was the investigation by the Department of Justice which covered a span of 3 years (1943–46). In 1947 the study culminated in a three-volume work called "Investigation of Government Patent Practices and Policies—Report and Recommendations of the Attorney General to the President." The recommendations of the Attorney General were as follows:

I. Patent aspects of Government research

The research and development activities of the Government have mirrored our national history, concentrating on military science in revolutionary times, expanding to meet the needs of agriculture, public health and other fields in the 19th century, and skyrocketing during the past 5 years into a multi-billion-dollar program concerned primarily with aviation, transportation, communications, ordnance and atomic energy. Federal participation in postwar research will be large and of major significance. The fruits of this great national resource are advances in science and technology, usually susceptible of civilian as well as governmental uses; and since many of these advances consist of patentable inventions, their use and enjoyment by the Government and by the people of the United States may depend upon the control of patent rights.

This study has sought the answer to the following inquiry: What disposition of patent rights as between the Government, its employee or contractor, and what use of patent rights owned by the Government, will best serve the public welfare and stimulate the progress of science and the useful arts?

II. Inventions made by Government employees

A. Findings and conclusions of Attorney General

Inventions financed with public funds should inure to the benefit of the public, and should not become a purely private monopoly under which the public may be charged for, or even denied, the use of technology which it has financed. The weight of informed opinion and the evidence of experience establish that the ownership of patent rights is not a necessary form of incentive to the great majority of Government scientists and technicians. Such opinion and experience further establish that patent rights are in fact an undesirable form of incentive because they may induce lack of cooperation and secretiveness among research workers; may unduly emphasize the patentable phases of their work; would provide an unequal form of reward for performance of com-

[27] Id. at p. 10.

parable merit and usefulness; and would permit public-financed technology to be suppressed, used restrictively, or made the basis of an exaction from the public to serve private interests.

B. Recommendations of Attorney General

1. The Government should obtain all rights to inventions made by its employees (i) during working hours, or (ii) with a substantial contribution by the Government (in the form of facilities, equipment, materials, funds or information, time paid for by the Government, or services of other Government personnel), or (iii) bearing a direct relation to the employee's official functions.

2. In other cases, where there is some contribution by the Government, or some relationship between the invention and the employee's official functions, but where these are clearly insufficient to warrant the assignment to the Government of all rights in the invention, as determined by the Government agency concerned, with the approval of the Government Patents Administrator (the head of the central agency which this report recommends be established to administer the Government's patent policy), ownership of the invention should be left to the employee, subject to a nonexclusive, irrevocable, royalty-free license to the Government to make, have made, use, and dispose of the invention, and also subject to the obligation on the part of the inventor or his assignee to exploit the invention diligently or to grant nonexclusive licenses thereunder at a reasonable royalty to all applicants.

3. In all other cases, the Federal employee should retain all rights to his inventions, subject to existing provisions of law. At the inventor's election, the Government may undertake to patent the invention free of any charge to the inventor under the act of 1883, as amended, subject to the governmental license provided for therein.[28]

On January 23, 1950, President Harry S. Truman signed Executive Order 10096 [29] to provide for a "a uniform patent policy for the Government with respect to inventions made by Government employees and for the administration of such policy." The policies and provisions contained in this Executive order had been recommended strongly by the 1947 report of the Attorney General.

Executive Order 10096 is administered by the Chairman of a Government Patents Board (GPB) established by the order. This Board consists of an independent chairman and a representative from each Cabinet department and executive agency (except the Atomic Energy Commission) which is substantially concerned with inventions made by Government employees. The terms of the order, briefly, are as follows:

[28] Vol. I, at pp. 2-3.
[29] 37 C.F.R. sec. 300 (Supp. 1956).

Paragraph 1 sets forth the substantive criteria for determining the relative rights between the Government and its employees in inventions. Paragraph 1(a) provides:

> The Government shall obtain the entire right, title, and interest in and to all inventions made by any Government employee—
>
> (1) during working hours, or
>
> (2) with a contribution by the Government of facilities, equipment, materials, funds, or information, or of time or services of other Government employees on official duty, or
>
> (3) which bear a direct relation to or are made in consequence of the official duties of the inventor.

However, paragraph 1(b) of the order provides that if the Government contribution as determined by the criteria of paragraph 1(a) is "insufficient equitably to justify a requirement of assignment to the Government," or if the Government is not sufficiently interested in an invention to require title, the executive agency concerned, if it has the approval of the Chairman of the Government Patents Board, shall permit the employee to retain title to the invention "subject, however, to the reservation to the Government of a nonexclusive, irrevocable, royalty-free license in the invention with power to grant licenses for all governmental purposes."

Paragraph 1(c) describes four categories of employment in the research and development field. These are, (1) to invent or improve any subject matter which falls within the class of patentable inventions; (2) to conduct or perform research or development work; (3) to supervise, direct, coordinate, or review Government financed or conducted research or development work; and (4) to act in liaison capacity among agencies or individuals engaged in such work.

If an employee is assigned or employed in any one of the four categories, paragraph 1(c) establishes the presumption that any invention made by him falls within the purview of paragraph 1(a). Any invention made by an employee whose assigned duties are outside the enumerated categories is presumed to fall under paragraph 1(b), in which case the employee retains the title, but gives a free license to the Government. Either of the presumptions of paragraph 1(c) may be rebutted by the facts or circumstances surrounding the making of a particular invention. Furthermore, notwithstanding all the foregoing provisions of the order, a determination under paragraph 1(d) is not precluded. This states that whenever the facts do not entitle the Government to either an assignment under paragraph 1(a) or a license under paragraph 1(b), the entire right, title and interest to the invention shall be retained by the employee, "subject to law."

One of the several noteworthy private contributions to the literature in this field is: "Federal Employee Invention Rights—Time To Legislate," by Marcus B. Finnegan and Richard W. Pogue.[30] Messrs. Finnegan and Pogue submitted proposals for legislation which they believed would give equitable treatment to inventors in Government employ. Two objectives of the legislation would be (1)

[30] 55 Mich. L. Rev. 903-966 (1957).

that it be straightforward and direct, with a minimum of detailed administrative complication and (2) that treatment of each Government agency be uniform. The foundation of the legislation would be provided by the *Dubilier*[31] and other Supreme Court cases.

Section 4 of their proposed legislation sets forth the criteria for determination of rights:

> Except as otherwise provided by law, each agency shall determine rights in inventions made by employees of that agency in accordance with the following criteria and in accordance with such regulations as may be issued by the head of such agency in conformance with these criteria:
>
> (a) Title to any invention made by an employee shall be in the employee, subject to no rights in the Government (unless otherwise provided by law), unless the invention was made under circumstances described in (b) or (c) below.
>
> (b) Title to an invention made by an employee shall be in the employee, subject to a nonexclusive, irrevocable, royalty-free, worldwide license to the Government to practice and cause to be practiced the invention by or for the Government, if the invention was made or developed to practical form with a substantial contribution by the Government of time, facilities, equipment, materials, or funds, and the invention was not made under circumstances covered by (c) below.
>
> (c) Title to an invention shall be in the Government, subject to no rights in the employee, if the invention is the direct result of a specific hiring or assignment of duty to make the invention.
>
> (d) Notwithstanding the provisions of (c) above, if the agency concerned finds that the Government is entitled to an assignment of title to the invention but is insufficiently interested in the invention to publish the invention or to seek patent protection, it may determine that domestic and/or foreign title in the invention shall be left in the employee subject to a nonexclusive, irrevocable, royalty-free, worldwide license to the Government to practice and cause to be practiced the invention by or for the Government.

Howard I. Forman, in his book on U.S. Government patent policy[32] concluded that a central, governmentwide coordinate body was needed to establish a just and uniform system of patent rights. Although Executive Order 10096 came closest to attaining uniformity, he felt that the order, if strictly construed and implemented, would have created a good deal of antagonism and pointed out that it was deemed by some to be unconstitutional. He felt that there would be a good chance that a new order, returning the administration of the Government's patent rights to each of the individual departments and agencies, would replace Executive Order 10096. It would define anew the policy for deciding when a Government employee would keep title to his invention, and when the Government would take title thereto.

[31] *United States* v. *Dubilier Condenser Corp.*, 289 U.S. 178 (1933).
[32] Forman, Howard I. Patents, Their Ownership and Administration by the U.S. Government, (New York, 1957).

In weighing the two policies, Mr. Forman said:

> Whether or not this probable reversion to a status of nonuniform interpretations of policy relating to the division between the Government and its employees of rights in the latter's inventions will be a serious loss is a matter of opinion. It would be nice, of course, if all Government agencies could think and react alike so that interested persons would know that decisions relative to ownership of employee inventions are the same in one agency as in another. A far greater loss that will occur if the Board is terminated is its potential for administering the Government's patent rights in the way the present author, as well as the National Patent Planning Commission, has recommended that they should be: to wit, to put those patents to work, doing the job patents were created for, namely, to promote the progress of the arts and sciences.

VI. AWARDS FOR SUGGESTIONS OR INVENTIONS OF GOVERNMENT EMPLOYEES

A. BACKGROUND

It has long been the practice in some of the Government agencies to reward employee inventors for meritorious suggestions and inventions. One of the first agencies to obtain such a law for its employees was the Ordnance Department of the Department of the Army. Under Public Law 227 (62d Cong.), enacted July 17, 1912,[33] cash awards were to be given employees for valuable suggestions for improvements or economies in manufacturing processes or plants. The Post Office Department, also in 1912, was granted authority to give rewards for inventions.[34] Other departments obtaining early legislation to provide such awards were the Department of the Navy, the Tennessee Valley Authority, and the Department of the Interior.

Concerning such awards, the findings and recommendations of the Attorney General in his report were as follows: [35]

> ***III. Rewards to employees***
>
> ***A. Findings and conclusions of Attorney General***
>
> 1. Any system of special financial rewards, promotions, or salary increases to employees on account of their making a patentable invention or discovery is undesirable because, by offering a premium to the employee who produces the invention, it may induce secrecy and lack of cooperativeness on the part of research and technical employees; it will involve administrative difficulties of selecting the person to be rewarded whenever the invention was the result of group endeavor; it may create dissatisfaction among unrewarded members of a research group as well as among personnel assigned to functions not likely to produce a patentable invention; and it may lead the employee to slight or ignore such functions.

[33] 37 Stat. 193 (1912), 50 U.S.C. sec. 58 (1952).
[34] Act of August 24, 1912, ch. 389, 37 Stat. 539.
[35] Investigation of Government Patent Practices, etc., vol. I, pp. 3-4 (1947).

2. A general system of cash bonuses, promotions, and salary increases for meritorious suggestions or ideas, regardless of whether they are patentable or not, would be free of these objections and may tend to remedy any inadequacies in the salary structure.

3. A valuable form of incentive and reward for outstanding scientific contributions and suggestions within the Government would be public, official, and professional recognition of meritorious contributions.

B. Recommendations of Attorney General

1. The establishment of a system of cash bonuses, promotions, and salary increases for scientific or technological suggestions or contributions should be left to the initial determination of each Federal agency, but as a matter of basic Government policy, no system should be maintained within any agency which in terms or in practice is limited to or emphasizes the patentable invention, or which offers greater reward for an invention than for other types of scientific or technological suggestion or contribution. Any reward system should make adequate provision for entire research groups or teams producing valuable scientific advances.

2. A system should be established, under the direction of the Government Patents Administrator, to provide for public, official, and professional recognition of meritorious scientific contributions and advances by Federal employees, through the issuance of certificates of merit by the President or the head of the Federal agency, announcements to the press, articles in scientific periodicals, and other forms of recognition.

3. All Government agencies adopting a system for rewarding valuable scientific or technological suggestions and contributions should report the operations and success of the system periodically to the Government Patents Administrator, who should correlate the experience of each agency, and inform, advise, and make recommendations from time to time concerning the operation and improvement of the system.

4. A survey should be made of the Government salary scale for scientific and technical personnel, in order that such upward revisions should be made as may be warranted by the recent rise in the cost of living and other pertinent factors.

B. LEGISLATIVE ENACTMENTS, 1946 TO DATE

1. PUBLIC LAW 600 (79TH CONGRESS), AUGUST 2, 1946

Public Law 600 [36] had its origin in H.R. 6533, introduced by Mr. Manasco, May 24, 1946. Section 14 of the bill, set forth below, provided for payment of cash awards to employees making meritorious

[36] 60 Stat. 809 (1946), 5 U.S.C. sec. 116a (1952).

suggestions. Both the House and Senate Committees on Expenditures in the Executive Departments reported the bill favorably (H. Rept. 2186 and S. Rept. 1636). The bill was passed by Congress and became Public Law 600.

Section 14 of the act reads as follows:

> SEC. 14. The head of each department is authorized, under such rules and regulations as the President may prescribe, to pay cash awards to civilian officers and employees (or to their estates) who make meritorious suggestions which will result in improvement or economy in the operations of his department and which have been adopted for use and to incur necessary expenses for the honorary recognition of exceptional or meritorious service: *Provided*, That no award shall be paid to any officer or employee for any suggestion which represents a part of the normal requirements of the duties of his position. With the exception of the War and Navy Departments, the amount of any one award shall not exceed $1,000 and the total cash awards paid during any fiscal year in any department shall not exceed $25,000. Payments may be made from the appropriation for the activity primarily benefiting or may be distributed among appropriations for activities benefiting as the head of the department determines. A cash award shall be in addition to the regular compensation of the recipient and the acceptance of such 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 him, his heirs, or assigns.
>
> Effective July 1, 1946, all other Acts or parts of Acts in conflict with provisions of this section are hereby repealed.

2. PUBLIC LAW 429 (81ST CONGRESS), OCTOBER 28, 1949

Public Law 429 [37] had its origin in H.R. 5931, introduced by Mr. Murray, of Tennessee, August 9, 1949, and S. 2379, introduced by Mr. Long, August 4, 1949. H.R. 5931 was reported out in H. Rept. 1264 and S. 2379 in S. Rept. 847. The final version adopted was reported out in Conference Report 1447. The House passed H.R.5931 and the Senate also passed it in lieu of S. 2379 and it became Public Law 429.

Section 1002 of title X thereof, provided for the establishment in each Government agency of an efficiency awards committee. The duties of the committee were:

> (1) to identify those supervisors and employees within the department whose superior accomplishments have contributed to outstanding efficiency and economy in administration and (2) to award to such supervisors and employees, * * * cash awards or increases in rates of basic compensation which * * * are commensurate with their demonstrated superior accomplishments: *Provided, however*, * * * such awards * * * shall not exceed 25 per centum of the estimated saving * * *.

[37] 63 Stat. 954 (1949), 5 U.S.C. sec. 1071 (1952).

3. PUBLIC LAW 763 (83D CONGRESS), SEPTEMBER 1, 1954

Public Law 763 [38] had its origin in H.R. 2263, introduced by Mr. Hagen, January 29, 1953. Title III thereof set forth an awards program for all Federal agencies and departments except the TVA. This section was part of a larger bill for postal pay increases. H.R. 2263 was reported out by the House and Senate Committees on Post Office and Civil Service (H. Rept. 1464, S. Rept. 1992, and Conference Rept. 2665), was passed and became Public Law 763.

The Senate report contains the following comment from the Civil Service Commission which strongly favored title III:

> by consolidating existing laws authorizing incentive awards, S. 2665 (similar to H.R. 2263) would simplify administration of a coordinated government program. The bill would also remove another obstacle to effective management by making the Civil Service Commission responsible for direction of the entire Government's incentive awards program. At present, this responsibility is diffused.

The Commission also endorsed the expanded coverage of the awards program, and the elimination of salary increases with cash awards substituted instead. It believed that the bill would correct inequities in existing statutory authorities covering awards for inventions, since under this bill, inventions would be covered under a governmentwide incentive awards program.

Important sections in the act include sections 304 and 305. Section 305 repealed certain laws, including Public Law 600 of the 79th Congress and Public Law 429 of the 81st Congress. Section 304 reads as follows:

> (a) The head of each department is authorized to pay cash awards to, and to incur necessary expenses for the honorary recognition of, civilian officers and employees of the Government who by their suggestions, inventions, superior accomplishments, or other personal efforts contribute to the efficiency, economy, or other improvement of Government operations or who perform special acts or services in the public interest in connection with or related to their official employment.
>
> (b) Presidential awards may be issued in addition to awards authorized in subsection (a).
>
> (c) Awards * * * may be paid notwithstanding the death or separation from the service of the officer or employee concerned * * *
>
> (d) A cash award under this section shall be in addition to the regular compensation of the recipient and the acceptance of such cash award shall constitute an agreement that the use by the Government of the United States or the municipal government of the District of Columbia of any idea, method, or device for which the award is made shall not form the basis of a further claim of any nature upon the Government of the United States or the municipal government of the District of Columbia by the employee, his heirs, or assigns.

[38] 68 Stat. 1105 (1954), 5 U.S.C. sec. 1105 (supp. IV 1957).

(e) Awards * * * may be paid from the funds or appropriations available to the activity primarily benefiting or may be paid from the several funds or appropriations of the various activities benefiting * * *

(f) An award under this title shall be given due weight in qualifying and selecting employees for promotion.

(g) A monetary award granted under this title shall not exceed $5,000, except that an award in excess of such amount but not in excess of $25,000 may be granted, with the approval of the Commission, in special cases in which the head of a department certifies to the Commission that the suggestion, invention, superior accomplishment, or other meritorious effort for which such award is proposed to be made is highly exceptional and unusually outstanding.

C. OTHER BILLS

1. S. 2665 AND S. 3507 (MR. CARLSON)—83D CONGRESS

S. 2665 was introduced on January 11, 1954, and S. 2307 on May 24, 1954. The provisions of both were similar to H.R. 2263, supra. No action was taken on either of them.

2. H.R. 7774 (MR. HAGEN)—83D CONGRESS

H.R. 7774, introduced February 8, 1954, contained a section establishing a uniform system for the granting of incentive awards as part of the Federal Employees Pay Act. The bill was reported out (H. Rept. 1344 and S. Rept. 1993). It was passed by both Houses, but received a pocket veto.

PART 2. INVENTIONS MADE BY NONGOVERNMENT EMPLOYEES OR BY GOVERNMENT FINANCED RESEARCH

I. THE ESTABLISHMENT OF AN INVENTIONS AWARDS BOARD

A. BACKGROUND

One important field, where it was felt that the patent laws could not always assure a proper compensation to the inventor, was in the field of national defense. The Government did not have a method of rewarding valuable, but possibly unpatentable suggestions; nor did it assure a proper return on inventions which were patentable. The Government has long solicited inventions and inventive contributions for national defense without being in a position to give proper awards for the invention, although in some cases, the invention had made important contributions to the saving of lives and the winning of the war. One of the ways suggested for solving this problem was to set up a board that would compensate for inventions, irrespective of their patentability. The following efforts have been made to effect this.

B. BILLS INTRODUCED

1. H.R. 7316, MARCH 31, 1952 (MR. CELLER)—82D CONGRESS

a. Provisions

This bill would authorize the establishment of an inventions awards board within the Department of Defense to recommend to the Secretary the making of awards for meritorious inventions substantially contributing to the national defense. The Board, appointed by the Secretary, would consist of 15 members from civilian life eminent in the fields of invention, science, research, development, and patent law, to serve for such terms as the Secretary shall specify. No award should be paid in any amount exceeding $75,000 until such award had been transmitted and approved by the Congress. Approval would be deemed to have been granted upon the expiration of the first period of 120 calendar days of continuous session of the Congress following its transmittal for approval, if no concurrent resolution were passed during such period disapproving the award.

b. Hearings and significant testimony

Hearings were held before Subcommittee No. 2 of the House Committee on the Judiciary on May 14, 1952, 82d Congress, 2d session, on H.R. 7316. Testimony of the witnesses is summarized below:

(1) *Representative Emanuel Celler* (pp. 4–6) presented the opening statement:

> The National Inventors Council, under the able chairmanship of Dr. Charles F. Kettering, has come to the conclusion that to stimulate the inventive genius of the United States

in all phases of invention of war material, it is necessary to appropriately remunerate inventors promptly. Reports from various authorities on the subject of awarding compensation to inventors were carefully studied and the National Inventors Council conducted an informal canvass of inventors whose inventions had been processed through the Council. As a result, it was found that there was needed a great deal of improvement in the methods of properly and promptly compensating inventors.

Mr. Celler felt that the present awards system was inadequate, since it mainly affected Government employees and did not specifically provide for contributions of an inventive nature.

He described the Inventions Awards Board, as provided for in the bill, as a board to which inventors could go if they were not satisfied with their compensation or treatment by defense agencies. Awards that exceeded $75,000 would become effective 120 days thereafter unless Congress took adverse action. The Board would handle awards to both Government and non-Government employees.

The term "invention" was defined in the bill as any new art, machine, manufacture, composition of matter, or any new improvement thereof, which is useful in the national defense of the United States. Mr. Celler remarked that this definition should clarify the point that patentability is not an issue under the act. He said the three requirements for eligibility for award were: (1) that the invention be a new process or device which is useful in the national defense; (2) that the invention be communicated to a defense agency; and (3) that the agency actually use the invention.

(2) *John C. Green,* representing the National Inventors Council (pp. 6–11), told why the Council supported this legislation. The Council had done much to solicit inventions, but did nothing in the way of determining whether the inventor should receive any recognition if any invention were adopted. It was recognized that inventors should be properly compensated for their inventions, but many difficulties were encountered in securing proper remuneration. As a result, inventions for national defense did not receive the benefits of free enterprise, as would other inventions. First, inventors felt they could not spend a great deal of time and money in their inventive efforts since the return of the investment was so indefinite and, second, they had only one possible customer—the Army, Navy, or Air Force.

Another discouraging factor was that in the great maze of governmental machinery, the inventor and his invention often became separated. Even if he were able to follow through, he found himself confronted with many rules and regulations which were extremely difficult for him to follow and, in many instances, precluded his receiving any compensation. One of these rules was the requirement of the armed services that if an invention is first actually reduced to practice through use of Government money, the inventor must give the Government a royalty-free license. This regulation might be inequitable if the Government were the only customer. Another difficulty was the fact that in many instances the suggestions did not disclose an "invention" falling within the protection of our patent laws and yet it could be of extreme benefit to the services.

Mr. Green explained that this legislation would set up an Awards Board which would recommend a suitable reward to the inventor, or to which the inventor could go if he were not satisfied with the compensation he was offered by the Armed Forces.

(3) *George N. Robillard,* representing the Department of Defense (pp. 11–19), urged the passage of H.R. 7316. He suggested that those who contributed time and money to the invention might receive some award as well as the inventor. He also stressed the fact that the invention should be "original;" that someone who has searched the Patent Office files and has dug up an old idea and adapted it, should not be eligible for an award.

(4) *E. Burke Wilford,* aeronautical research engineer (pp. 19–25), suggested four changes to the proposed bill: (1) Awards for inventions should not be limited to the Department of Defense; (2) an award should be possible to the inventor regardless of ownership of patents; (3) $75,000 as the top figure payable without the approval of Congress should be raised, perhaps to $150,000; and (4) an inventor should be permitted to receive an award, even if he had been previously compensated if "such past compensation has been wholly inadequate or grossly inequitable."

Mr. Wilford attributed the difficulties in benefiting from any invention in the aeronautical industry, to obstacles in getting a basic patent, the short life of an aircraft patent, and the difficulty of establishing the validity of the patent during this time. About the awards system of the NACA, he said:

> The private designer has practically no chance of collecting even his research and development costs for he is bound to be stopped by one of these three hurdles mentioned above. In the meantime, he starves, is embittered, wastes his creative years when he can be of the most service in aeronautics. What happens in most cases is that he is forced by necessity to work in the big company's engineering departments on detailed design work; or independently on simple gadgets which he can sell and produce with his limited income or go to work on routine testing in a Government laboratory. The creative mind is too scarce and valuable an article to be wasted in this type of work. It is fed by inspiration and appreciation, not by routine reason or work.

(5) *Carl T. Mack,* of the American Patent Law Association (pp. 25–28), said that the association was in agreement with the general principles of the bill. He described the present situation as one in which the Government solicited inventions for its use, whether patented or not, and then, after using the invention, employed all its defensive power to resist payment to the inventor of the compensation for use contemplated by the patent laws. In order for the Government to play fair with inventors, he felt it should provide some nontechnical system for rewarding those whose ideas were adopted and used.

(6) *T. Hayward Brown,* Department of Justice (pp. 28–34), favored the legislation, and advocated including the National Inventors Council as one place to communicate ideas.

(7) *Fritz G. Lanham*, representing the National Patent Council (pp. 37–40), warned against any legislation which might weaken our patent system. He said that the bill was not restricted to discoveries useful in national defense, but would deal with discoveries of every character and kind. He felt that this might conflict with the administration of laws entrusted to the Patent Office.

c. Action taken

A committee print was drafted on May 24, 1952, which amended H.R. 7316. No action was taken during the 82d Congress.

2. H.R. 639, JANUARY 5, 1955 (MR. CELLER); H.R. 2383, JANUARY 17, 1955 (MR. CRUMPACKER); AND S. 2157, JANUARY 9, 1959 (MR. CAPEHART)—84TH CONGRESS

a. Provisions

H.R. 639 was similar to H.R. 7316, 82d Congress, discussed supra. The procedure and pertinent factors to consider in making an award were as follows:

> SEC. 7. (a) In any proceeding under this Act, the applicant shall bear the burden of establishing by probative proof the disclosure of the invention in question by the inventor directly or indirectly to a defense agency and the use of such invention by a defense agency in consequence of such disclosure, except that—
>
> (1) in the case of a patented invention, proof of the issuance of a patent thereon shall constitute proof of disclosure of such invention to a defense agency; and
>
> (2) in the case of an invention described in a patent application which has been duly filed and has been placed under secrecy pursuant to any provision of law, proof of access to such application by any officer or employee of any defense agency shall constitute proof of disclosure of such invention to such agency.
>
> (b) In any proceeding under this Act, the respondent defense agency or agencies shall be entitled to assert any legal or equitable defense which could be asserted by the United States in any suit brought by the applicant against the United States for judicial relief on account of the use of the invention in question by the United States, except that—
>
> (1) the worth of such invention shall be measured by its contribution to the needs of national defense, and not by the advance it makes in the field to which it pertains;
>
> (2) the validity of any patent issued to the inventor for such invention shall be presumed in the absence of competent proof of the invalidity of such patent; and
>
> (3) proof that the disclosure made by the inventor to any defense agency was sufficiently specific to permit the making or practicing of such invention shall constitute proof of the actual reduction of such invention to practice.

H.R. 2383 was similar to H.R. 639, in that it would establish the board within the Department of Defense and in the composition and qualifications of the members of the board. H.R. 2383 provided that approval by Congress shall be deemed to have been granted upon the expiration of the first period of 6 months of continuous session.

Section 7 of H.R. 2383 differed from H.R. 639. It provided:

> SEC. 7. (a) In any proceeding under this Act, the contributor shall bear the burden of establishing the communication of the contribution in question, except that the submission of a contribution to the National Inventors Council and by that council to a defense agency shall constitute proof of communication.
>
> * * * * * * *[39]
>
> (e) A contributor shall not be barred from eligibility for an award on the ground that he has given the Government a license under his invention either with or without receipt of cash consideration or by virtue of the fact that the Government claims an equitable license under his invention.

S. 2157 was similar to H.R. 2383.

b. Hearings and significant testimony on H.R. 639 and H.R. 2383, House of Representatives

Hearings were held before subcommittee No. 3 of the House Committee on the Judiciary on H.R. 639 and H.R. 2383 on May 24 and June 13, 1955.

(1) *Representative Celler* (pp. 7–8) presented a statement describing the need for compensating inventors for inventions relating to national defense. He said:

> The bill proposes the establishment within the Department of Defense of an awards board, consisting of persons from civil life, adequately qualified to judge and evaluate the contributions made by the inventor. The board would be authorized to recommend awards in any amount, and the Secretary of Defense would be authorized to pay the award if it did not exceed $75,000.

Under Mr. Celler's bill (H.R. 639) the inventor entitled to an award could not, after accepting an award, maintain an action for patent infringement against the Government for the use of the same invention. And to be eligible for an award, the inventor must have communicated his idea to the Government and the invention must have been adopted and used.

(2) *John C. Green,* National Inventors Council, Department of Commerce (pp. 8–13), again described the need for the awards and stated that many inventors were quite bitter at not receiving any compensation or credit for their defense ideas.

(3) *Fritz Lanham,* representing the National Patent Council (pp. 13–23), appeared before the committee to oppose the bills which, he said, "would seriously threaten impairment and finally perhaps destruction of our fundamental patent system."

[39] There is no equivalent to subsec. (b) of H.R. 639.

Mr. Lanham believed that the already existing National Inventors Council, properly amended from the standpoint of awards, would protect us in inventions for national defense and not do violence to our fundamental patent system. He believed that to determine whether a contribution was "novel, original, etc.," would require an inspection of Patent Office records, and that if the contribution contained these requirements, it would be eligible for a patent.

(4) *Ray M. Harris*, patent adviser, Office of Assistant Secretary of Defense for Supply and Logistics (pp. 23–30), told how either paying off a patentee or entering into a contract with the inventor runs into difficulties. If the Department of Defense is to pay off a patentee, it insists that the patent be valid, and its attorneys apply all legal defenses. It may not wish to enter into a contract with the inventor because he might not be the type of person the Department could work with or he might have a classified item the Defense Department would like to develop itself. Under H.R. 2383, a payment could be made to inventors whether or not they had a patent and even though the patent was invalid; and if the patent were valid the inventor still might prefer to accept the award rather than wait until the Department of Defense had applied all its defenses to contesting the patent. "Quite often an inventor is dead before he gets his money."

Mr. Harris did not believe the proposal would threaten the patent system since nobody is denied his right to apply for a patent, and he has the option to seek compensation either under the patent law or from the awards board. In answer to objections, Mr. Harris stated that he did not believe patent attorneys would suffer by passage of the law, since it would give them the additional task of presenting claims to the awards board. He believed the only serious objection was that the awards board would be authorizing payment of money where there was no property right. This brings up the question of "inventive contribution." Mr. Harris defined "inventive contribution" as that kind of subject matter for which you could get a patent, if it were patentable.

(5) *M. A. Sterner*, an inventor (pp. 35–64), presented bitter testimony to the committee concerning the treatment of inventors, especially by the Department of Defense. He accused the Department of Defense of modifying the invention and then taking it away. He said:

> Now, they have a right to take, but they do not have a legal right to take without compensation. But they do.

Mr. Sterner presented cases where the Government had used inventions and then refused to pay. He said:

> The United States can no longer afford to refuse payment to inventors and leave great inventions to haphazard chance. We no longer have the lead over Europe and Russia in invention. Inventor's incentive is crushed, and too many inventors die in poverty or as suicides even today (like the brilliant Tesla and Armstrong).

(6) *E. Burke Wilford* (pp. 64–67) suggested three things: (1) that inventions be screened in the National Inventors Council and directed properly; (2) that the Defense Department employ persons in the patent department who are sympathetic to new ideas and who don't

just discourage the inventor—and that the inventor be hired as a consultant if the Department gives the research and development of the inventor's contribution to someone else; and most important, (3) there must be a way of compensating within the patent law, and also outside of the patent law, for inventive contributions which are of great service.

(7) *Edwin H. Arnold*, chairman of the committee on patents of the National Association of Manufacturers (pp. 68–69), opposed the passage of either H.R. 639 or H.R. 2383. He praised the patent system as a great incentive to invention. About the Defense Department he said:

> The only reason the patent incentive is not now working equally well for defense is that the Government officials concerned cancel out the incentive of the patent law by the way they treat inventors whose improvements are, or could be, useful for defense purposes. These inventors are usually relegated to the Court of Claims for testing their claims which in most cases is equivalent to a flat refusal of consideration.
>
> The real cure for the situation is a complete change of attitude in the Defense Department as to the treatment of inventors of improvements for defense.

Mr. Arnold mentioned four ways to encourage invention, other than the change of attitude referred to above:

> 1. When one department of the Government duly grants a patent, let the other Government departments treat it as valid in accordance with the presumption now expressly stated in the law, instead of spending tax money immediately to reexamine the question.
>
> 2. Provide quick and simple procedure in district courts for determining the value of Government defense use.
>
> 3. Let there be no statute of limitation as to Government use (which is often necessarily secret for long periods in some cases).
>
> 4. Remit Patent Office fees as to any applications for patent on inventions forwarded to the armed services by the National Inventors Council.

(8) *James Rankin Tod*, patent adviser, British joint services mission (pp. 73–82), described the Royal Commission in England. A claimant makes an application, it is examined, and if the Royal Commission decides an award should be given, it asks the Treasury to make one. If the conclusion is negative, i. e., that no award is justified, the claimant can ask for permission to appeal. The question of allowing or not allowing appeal is discretionary in the Crown.

(9) *Representative Crumpacker* (pp. 82–86) discussed the need for legislation rewarding inventors. He said:

> In summary, the need is for providing a supplementary system for compensating inventors. I think it is very well pointed up by the testimony we had at our last session, that only 1 out of 100 inventors who produced ideas or contributions that were actually used in the defense effort in World War II received any compensation, and the fact that the patent system did not provide any compensation for

the 99 who received nothing I think is enough eloquent testimony of the need for some supplementary system. Inventions for military purposes which have no civilian market which can be exploited, and the limitations of Government procurement procedures which in most instances bar any such inventions from compensation because of rules and regulations and acts of Congress, it seems to me provide an adequate basis for this legislation.

c. Action taken on H.R. 2383, House of Representatives

Report No. 1432 from the House Committee on the Judiciary, on July 26, 1955, reported favorably on H.R. 2383, with an amendment. The only major difference in the committee substitute bill was that the committee amendment placed authority to determine awards in the National Inventors Council (Department of Commerce) rather than set up a separate Awards Board within the Department of Defense. The committee, in conferring jurisdiction on the National Inventors Council, did so for the reason that the council is an established, functioning body which, without too much difficulty, can be equipped to handle the subject matter of this legislation. An Awards Board, on the other hand, would have to be newly created. It felt that the National Inventors Council consisted of persons qualified to judge and evaluate contributions.

The committee stressed the fact that the bill provided an award for an inventive contribution whether or not the contribution is "patented, unpatented, or unpatentable, or whether or not original with the contributor, new or if not amounting to an invention." The term "invention," which was contained in the earlier bill, was broadened to "inventive contributions" to emphasize the double standard intended, namely, (1) the contribution must be of an inventive nature, but not necessarily patentable, and (2) it must be a contribution to national defense.

H.R. 2383 passed the House with the amendment on July 30, 1955, and was referred to the Senate.

d. Hearings and significant testimony on H.R. 2383 and S. 2157, Senate

Hearings were held before the Subcommittee on Patents of the Senate Committee on the Judiciary, June 7, 1956. Testimony of witnesses was as follows:

(1) *Representative Crumpacker* (pp. 7–26) testified in favor of the bill. He felt that the patent system was inadequate when it came to compensation of inventors whose inventions were used by defense agencies. His reasons were: (1) The Department of Defense and other Government agencies have ruled that the invention must be reduced to final form, i.e., that it be a working item, before compensation can be paid to the inventor, whereas many inventions involve such complexity and expense that the individual inventor is unable to produce the final working model himself. (2) Many inventions for defense have no commercial application. (3) The Army, Navy, or Air Force is the only possible customer. There was some discussion of whether the contributor (the communicator of the idea) or the inventor should receive the award.

(2) *M. A. Sterner*, inventor (pp. 27–37), testified in favor of the bills, telling of the need for some stimulation to the inventor. He believed that the inventor, not the contributor, should receive the award.

(3) *William R. Ballard*, adviser to the committee on patents, National Association of Manufacturers (pp. 37–48), stated the policy of the NAM. He said:

> The U.S. Government should recognize the importance of adequate incentives to those who contribute inventions of other technical information used in the national defense. To this end the Secretary of Defense should be authorized and encouraged to pay fair and reasonable compensation for any lawful disclosure to the Department of Defense of any useful invention or other technical information that is, as a result of such disclosure, used or caused to be used for defense purposes by the Department of Defense.

(4) *E. Burke Wilford*, inventor, representing the Convertible Aircraft Pioneers (pp. 47–50), testified in favor of the bill. He suggested the following changes or additions: (1) that the words "natural person" be changed to "natural persons," since there might be two inventors; (2) permit a degree of retroactiveness, at least as to things that are now under development; and (3) that an appeal to the National Inventors Council be permitted where the Defense Department does not treat the inventor properly.

(5) *Richard Whiting*, chairman, committee on patent legislation, American Patent Law Association (pp. 50–52), opposed passage of the bill. Some reasons for his opposition were:

> (1) With respect to inventions which are the subjects of valid patents, the legislation does not seem to take adequate cognizance of the Court of Claims procedure and seek to expedite it, but rather, it seems to supplement that system with a secondary type of system relying on rewards as a sort of grace rather than legal right, and with duplication by the Department of Defense of the provinces of both the Patent Office and the Court of Claims.
>
> I may be mistaken, but my impression of this bill is that its primary purpose is to pay money to the owners of bad patents.
>
> (2) With respect to unpatentable ideas, the legislation does not adequately deal with the subject because it is confined to the treatment of contributions within the scope of the fields contemplated by the Patent Office, namely, any art, machine, manufacture, composition of matter, or any new and useful improvement thereof, without regard to any concepts not falling within these patentable categories, of which there may be many that have made valuable contributions to the national defense.
>
> (3) The legislation is very loosely drawn, and its interpretation is in many instances most obscure.

However, Mr. Whiting felt that there was much to be done in the field of providing adequate reimbursement by the Defense Department to inventors or other contributors for those ideas that are genuinely worthwhile.

(6) *Fritz G. Lanham,* representing the National Patent Council (pp. 53–57), opposed the bill because "they would have a damaging effect upon our national economy; and, in the second place, they involve a wrong approach to such problem as may exist." He felt that boards and commissions such as the one proposed weakened the patent system.

(7) *John C. Green,* director, Office of Technical Services, Department of Commerce (pp. 58–62), felt that when the Department of Defense used an invention, it should pay for it. He did not feel that inventors should be "rewarded," but should be paid and that the policy of the Defense Department should be changed to make the latter more willing and generous in its payments.

(8) *Ray M. Harris,* patent adviser, Office of Assistant Secretary of Defense for Supply and Logistics (pp. 62–80), testified in favor of the bill. He felt that it did not conflict with the Patent Office.

Neither H.R. 2383 nor S. 2157 was reported out by the subcommittee prior to adjournment.

3. H.R. 103, JANUARY 3, 1957 (MR. CELLER)—85TH CONGRESS

a. Provisions

H.R. 103 was identical to H.R. 2383 which passed the House in the 84th Congress. It would authorize the National Inventors Council within the Department of Commerce to recommend to the Secretary the making of awards for meritorious inventions substantially contributing to the national defense. No awards should be paid in any amount exceeding $50,000 until such award has been transmitted and approved by the Congress. Approval shall be deemed to have been granted upon the expiration of the first period of 6 months of continuous session of the Congress following its transmittal for approval, if there has been no concurrent resolution passed during such period disapproving the award.

b. Action taken on H.R. 103

H.R. 103 was reported out favorably by the House Committee on the Judiciary on February 21, 1957 (H. Rept. No. 148). In its statement, the committee summarized the problems as follows:

> The present awards systems in Government are inadequate and complex. They mainly affect Government employees and do not specifically provide for contributions of an inventive nature. Accordingly, an inventor must look solely to the obtaining of a patent and rely upon his patent rights to enforce a claim against the Government, should his invention be adopted and used.
>
> There is one field in particular in which the patent laws do not serve to assure a proper award to the inventor. This is the field of inventions relating to national defense. In many instances, this contribution is not of a type which can be patented. * * * Or it is not the type which, even if patented, can assure any adequate commercial return to the inventor. * * * Even when the invention is patentable, many inventors cannot afford to go through the long process

> of obtaining a patent and then prosecuting a claim for patent infringement against the Government. * * * As a result, there is little incentive for them to invent for purposes of national defense.

4. OTHER BILLS

Other bills introduced, similar to those discussed above, were: In the 83d Congress: S. 27, January 7, 1953 (Mr. McCarran); H.R. 392, January 3, 1953 (Mr. Celler); and H.R. 5889, June 23, 1953 (Mr. Crumpacker).[40] In the 85th Congress: H.R. 8420, June 27, 1957 (Mr. Nimtz); S. 1074, February 7, 1957 (Mr. Capehart); and S. 3721, April 29, 1958 (Messrs. Saltonstall and Capehart).

II. NATIONAL SCIENCE FOUNDATION

A. BACKGROUND

Toward the end of World War II, the Nation's leaders, having observed the significant contributions of science and technology in the field of military science, turned their attention to the tremendous potentialities of scientific research in a peacetime economy. The result was a series of reports, studies and legislation, in which there was remarkable unanimity in the view that a greatly enlarged nationwide program of research and development in the basic and applied sciences, generously supported by the Federal Government, was highly important to the future prosperity and security of the United States.

The importance of increased emphasis on research and development had been stressed in the 1938 report to the National Resources Committee.[41]

Three subsequent reports called for legislation to establish a National Science Foundation:

(1) The Subcommittee on War Mobilization Report No. 5 [42] investigated the wartime mobilization of scientific personnel and facilities and called for continuing a high level of research in the postwar period.

(2) Dr. Vannevar Bush's report [43] pointed out the great need for scientists and the necessity for attracting youthful talent into the sciences. In calling for the creation of a permanent overall Federal agency for the support of science, Dr. Bush warned:

> Without scientific progress the national health would deteriorate; without scientific progress we could not hope for improvement in our standard of living or for an increased number of jobs for our citizens; and without scientific progress we could not have maintained our liberties against tyranny.

(3) The Steelman report [44] declared that the security and prosperity of the United States depended upon the rapid extension of scientific knowledge. It felt that this extension was so important that it could

[40] Also, in title 3 of Public Law 763 (68 Stat. 1105), which was passed by the 83d Congress, there was provision for Government employees' inventive awards, but it did not reach non-Government employees.
[41] National Resources Committee, Research—A National Resource. vol. I (November 1938).
[42] Subcommittee on War Mobilization, report to the Committee on Military Affairs, U.S. Senate. "The Government's Wartime Research and Development, 1940-44." January 23 (pt. I), July 23 (pt. II), 1945.
[43] Vannevar Bush. "Science: The Endless Frontier." A report to the President (July 5, 1945).
[44] John R. Steelman, chairman, The President's Scientific Research Board. "Science and Public Policy, A Report to the President," vols. I-V (Aug. 27, 1957).

reasonably be said to be a major factor in national survival. Like the Bush report, it recommended that a National Science Foundation be created to promote scientific research and development.

B. SYNOPSIS OF THE LEGISLATION

In the 79th Congress, a number of bills were introduced to establish a National Science Foundation. Both the House and Senate held hearings, but only the Senate reported out a compromise bill (S. 1850). The Senate passed S. 1850, but the House took no action and all bills died at the end of the second session.

In the 80th Congress, 1st session, S. 526 was introduced in the Senate, reported out and passed. Many bills were introduced in the House, and hearings were held. H.R. 4102 was reported out. The House passed S. 526 in lieu of H.R. 4102. S. 526 died as the result of a pocket veto. In the second session, S. 2385 and H.R. 6007 were introduced. Hearings were held by the House, and H.R. 6007 was reported out. S. 2385 was also reported out and passed by the Senate, but the bill failed to reach the House floor. Thus, no actual legislation on the subject materialized during the 80th Congress.

In the 81st Congress, S. 247 was introduced in the Senate, reported out and passed. Many bills were introduced in the House, hearings were held, and H.R. 4846 was reported out. The House passed S. 247 in lieu of H.R. 4846; and S. 247, creating the National Science Foundation, became Public Law 507 on May 10, 1950.

The 83d Congress brought forth an amendment (S. 977) which became Public Law 223, August 8, 1953.

There follows a detailed analysis of the legislation proposed to create the National Science Foundation.

C. 79TH CONGRESS

1. IMPORTANT BILLS INTRODUCED—SENATE

a. S. 1285, July 19, 1945 (Mr. Magnuson)

(1) Direction. Powers were to be vested in a Board of nine members (no compensation) appointed by the President on a basis of demonstrated capacity for the job and not on an ex officio basis. A Director ($15,000 a year) was to be appointed by the Board.

(2) Functions. The Foundation was directed to promote a national policy for scientific research and scientific education. It set up a Board of National Defense, a Division of Medical Research, and a Division of Physical Sciences. It authorized the Foundation to support scientific research through contracts, grants, or other forms of assistance. The Foundation might acquire, but not operate, any scientific or technical facilities of its own.

(3) Information and inventions. It set up a Division of Publications and Scientific Collaboration and authorized the Foundation to publish and disseminate information of scientific value, consistent with requirements of national security. The Foundation, like other Government agencies, was left with full power to negotiate such patent arrangements with research contractors as particular situations might require in the public interest.

It set up a Division of Scientific Personnel and Education to grant scholarships and fellowships in the mathematical, physical, and biological sciences. Persons who received such scholarships and fellowships were to be enrolled in a National Science Reserve and be available for call by the Government for scientific and technical work in times of national emergency.

b. S. 1297, July 23, 1945 (Messrs. Kilgore, Johnson, and Pepper)

(1) Direction. Powers were to be vested in a Director ($15,000 a year) appointed by the President. A National Science Board, consisting of eight Government officials plus eight public members appointed by the President were to act in an advisory capacity.

(2) Functions. The Foundation was directed to survey and study all Government-financed research and development activities, and to send to the President and to the agencies concerned recommendations for such changes as appeared desirable.

It set up a Research Committee for National Defense (20 percent of the funds); a Research Committee for Health and the Medical Sciences (20 percent of the funds); and authorized research in the national interest, including research in basic sciences, natural resources, methods and processes beneficial to small business, and peacetime uses for wartime facilities. It directed the Foundation to use existing facilities of Federal, State, and local governments, educational institutions, research foundations, and private industrial organizations. At least 50 percent of the funds were to be spent in nonprofit educational institutions. New facilities might be acquired, but not be operated, by the Foundation itself. All research was to be done under contract only.

(3) Information and inventions. The Foundation was directed to make available to the public full data on all significant findings. Also, by means of publications, abstracts, library services and the like, it was to promote a widespread distribution of information useful in research. It authorized the Defense Committee to classify information when necessary for national security.

As to patents, it provided that any invention, discovery, or finding resulting from a research project financed in whole or in part by the Federal Government shall be the property of the United States. The Director, acting on behalf of the Federal Government, shall patent without fee all significant inventions or discoveries resulting from research and development projects. Any invention, discovery, or patent which is or may become the property of the United States shall be licensed by the Foundation nonexclusively and free of royalty to persons desiring to use it, upon proper application in accordance with procedures established by the Foundation, except that a license may be denied or revoked upon a finding by the Department of Justice that the license will promote monopoly or restraint of trade. That Department, upon request by the Director, shall intervene in behalf of any licensee of the Foundation in any infringement litigation brought against him growing out of the issuance of the license.

c. Working draft of S. 1297 (amendment in the nature of a substitute), intended to be proposed by Mr. Kilgore and Mr. Magnuson

(1) Direction. Powers vested in a Director, appointed by the President. A National Science Board shall act in an advisory capacity.

(2) Functions. Director authorized to finance research and development activities, grant scholarships, and recommend desirable changes to the President to promote science and technology.

(3) Information and inventions. Director to make available full data on all inventions, discoveries, and significant findings arising out of Government-financed research.

As to patents, the Government agencies would not have the authority to adjust patent policies to the equities of a particular situation, but all Government agencies would be required to acquire full patent rights to all discoveries resulting from research financed in whole or in part by the Government.

d. S. 1850, February 27, 1946 (Messrs. Kilgore, Magnuson, Johnson, Pepper, Fulbright, Saltonstall, Thomas (Utah), and Ferguson)—reported out of committee

(1) Direction. Powers vested in an Administrator, who would consult with scientific committees and a National Science Board.

(2) Functions. Major functions would be the support of research and development by financing development activities by public and private organizations; by awarding scholarships and fellowships in any field of science; and by coordinating governmental research.

(3) Information and inventions. Widest dissemination of ideas and information was provided for by (1) providing for freedom of discussion and publication by persons engaged in research; (2) requiring Government contractors engaged in research or development to make full reports of all discoveries; (3) making significant scientific and technical information available to the public; and (4) exchanging of scientific and technical information with other nations.

As to patents, S. 1850 required that any invention produced in the course of federally financed research and development be freely dedicated to the public. The Government would receive the patent rights to its contracted research, and only in cases where the contractor had made a substantial independent contribution to the invention could the Government agree to leave the patent rights with the contractor.

e. Comparison of foregoing bills

Both versions of S. 1297 and S. 1850 differed from S. 1285 in that they (1) vested power in a Director rather than a Board; (2) contemplated somewhat more active research and control; and (3) made specific provisions for Government ownership of resulting inventions and patents.

f. Related bills

H.R. 1248, July 9, 1948 (Mr. Fulbright)—to be discussed in following section.
S. 825, April 4, 1950 (Mr. Byrd).
H.R. 3440, June 11, 1945 (Mr. May).

2. HEARINGS AND SIGNIFICANT TESTIMONY—SENATE

a. In general

Although almost unanimous approval was given the legislation, several points were disputed. The two most important of these were the form of organization and the patent policy.

As to the form of organization, both the Magnuson and the Kilgore bills advocated the creation of the Foundation as an independent agency of the Government. The Magnuson bill (S. 1285) vested the powers of the Foundation in a board of nine men selected by the President on the basis of their demonstrated capacity for th work of the Foundation and without regard to political affiliations. The Kilgore bill (S. 1297) vested the powers of the Foundation in a single director with an advisory board made up largely of Government officials.

As to patent policy, the Magnuson bill left the Foundation free to work out patent arrangements with its research contractors, in terms of the public interest, as the facts of particular cases required. Under the Kilgore bill, all Government agencies acquired full patent rights to all discoveries resulting from research financed in whole or in part by the Government.

Another point brought out in the hearings was the relationship of the Foundation to other agencies. There was some fear expressed that the Foundation might interfere with or replace or control research programs of existing organizations, both public and private.

The exemption of part-time advisory personnel from certain provisions of the Criminal Code was another recommendation advanced in the hearings. The Magnuson bill provided a formula to make it possible to serve as an adviser to the Foundation and still operate in a private capacity, with certain limitations.

A point that was repeated by most of the scientists was the importance of allowing the scientist complete freedom of choice in the conducting of his research. Also, they declared that science was greatly hampered by useless security restrictions. They all warned of the danger of not encouraging youthful talent to pursue careers in science and recommended scholarships and fellowships. They all agreed that the United States needed to place increased emphasis on basic research.

Whether or not the social sciences should be included in the research supported by the Foundation was another question raised in the hearings.

The Senate hearings were held by a subcommittee of the Committee on Military Affairs, from October 1945 to March 1956.

b. Specific witnesses

(1) *Senator Harley Kilgore* (pp. 1–9) in his opening statement declared:

> I should like to call your attention to the fact that this revised version of S. 1297 embodies the major provisions recommended in the President's message of September 6, 1945, in Dr. Bush's report to the President,[45] and in the previously published reports of the Subcommittee on War Mobilization. These include:
>
> (*a*) The establishment of a single agency to provide substantial Federal support for scientific research and development.
>
> (*b*) Specific provisions for the support of research essential to national defense.
>
> (*c*) Specific provisions for the support of research in health and the medical sciences.
>
> (*d*) Provision for a program of fundamental research in all basic sciences.
>
> (*e*) Provision for a program of fellowship and scholarships necessary to assure an ample supply of well-trained scientific personnel.
>
> (*f*) Assurance of freedom of research activity and reporting of research findings without restraint, except as necessary for national security.

Senator Kilgore pointed out the difference between S. 1285 and S. 1297 in regard to organization and patents. Neither of the bills included the social sciences, and both provided that recipients of Foundation scholarships and fellowships should be enrolled in a National Science Reserve, subject to call by the Federal Government in times of emergency.

The first four witnesses to appear, following Senator Kilgore, were: (2) *Isaiah Bowman*, Johns Hopkins University (pp. 10–24); (3) *Irving Langmuir*, associate director of the laboratory, General Electric Co. (pp. 24–44); (4) *Harlow Shapley*, director, Harvard University Observatory (pp. 47–67); and (5) *C. F. Kettering*, president and general manager, General Motors Research Corp. (pp. 67–78). All four of these believed that the Federal Government should support scientific research, and most wanted a broad program including the social sciences. They all preferred an organization headed by a board rather than by a single administrator. They also stressed the need for freedom in carrying out research. Dr. Langmuir told of the tremendous scientific program in which the Russians were embarking—greater than in any other country.

(6) *Howard A. Meyerhoff*, executive secretary, American Association for the Advancement of Science (pp. 83–93), presented answers to a questionnaire submitted to members of his association. Regarding

[45] Vannevar Bush, op. cit., supra, note 43.

the structure and organization of the National Research Foundation, he reported that there was no unanimity, for reasons too complicated to explain. It was clear that the fear of a "politically controlled" foundation was widespread, and for this reason there was a strong preference for a board composed of scientists, either as provided by the original Magnuson bill (44 percent) or under the National Academy of Sciences as provided by the May bill [46] (26 percent). Only 10 percent wanted a paid director. Sixty-five percent believed that the coordination of research activities among all Government agencies should be a primary function of the new agency. Eighty-six percent thought money should be spent in existing Government laboratories, 70 percent in educational and nonprofit institutions, 41 percent in private industrial laboratories, and 39 percent in new Government laboratories. Forty-three percent thought patents should go to the originator and 23 percent thought they should go to the Government. Seventy-five percent wanted international and national dissemination of information. Sixty-four percent wanted international collaboration.

(7) *Harold D. Smith*, Director of the Bureau of the Budget (pp. 95–112); (8) *Russell Smith*, legislative secretary, National Farmers Union (pp. 120–136); and (9) *Henry A. Wallace*, Secretary of Commerce (pp. 137–159), all supported the Kilgore bill, advocating a single administrator to head the foundation. They also were agreed that the Government should get the patents from research that it supported. They also stressed the importance of wide dissemination of research findings. Mr. Russell Smith declared that:

> The patent laws should be revised with the objective of bringing to the whole population as rapidly as may be possible the fruits of research and ingenuity. All processes, etc., * * * developed by Government research should remain the property of the Government.

(10) *J. C. Hunsaker*, Chairman, National Advisory Committee for Aeronautics (pp. 112–117); and (11) *Lewis G. Hines*, legislative representative of the American Federation of Labor (pp. 117–120), favored the Magnuson bill. They believed that responsibility should rest with a board and not with a single individual. They both believed that patent matters should be determined by existing law, with respective rights determined on the merits of the cases as they arose. Mr. Hines declared that:

> It is the general practice both in the Government and in private industry that patents covering inventions and discoveries shall belong to the agency financing the research.

(12) *R. J. Dearborn*, chairman of the Patent Committee of the National Association of Manufacturers (pp. 169–188), also favored S. 1285, the Magnuson bill. In speaking of the patent policy of federally financed projects, he said:

> Therefore, regardless of time, money, or effort expended by an inventor, or contractor, he could not retain any portion of the rights to his invention in case he had accepted any financial assistance whatsoever from the Government. Inventors and research laboratories might well hesitate to

[46] H.R. 3440. See infra, p. 38.

> conduct research on such terms, and thus the very purpose of the Foundation would be defeated. Especially would this be true of small businesses, since by accepting research funds from the Government they would sacrifice the rights which would enable them to become established and to expand.

(13) Probably the most influential witness was *Vannevar Bush*, director, Office of Scientific Research and Development (pp. 199–227). He told of the great need for scholarships and fellowships to make up for the deficit of scientists in the United States. He called for Government support of basic research. Without Federal funds to support fundamental research, not only would the pace of scientific discovery diminish, but certain fields of basic research (i.e., military and naval) would fail to receive due attention. He expressed preference for the Magnuson bill, favoring the vesting of power in a board, and was of the view that the Foundation should support research wherever it is found, that such research should not be replaced or controlled by the Federal Government.

As for patent policy, he felt that the patent problem was a subject for separate legislation—separable from the main objectives of both bills.

> The approach of the Magnuson bill, therefore, is sound. That bill leaves the Foundation free to work out such patent arrangements with its research contractors as the particular facts of particular cases may require in the public interest.

He objected to the Kilgore bill because he believed it would deny to the Government, especially in the field of research on national defense, the services of many of the most competent industrial organizations in the country. He said:

> There will be occasions, as there have been in the past, where the scientific experience and facilities urgently required for a vital research project can be found only in a commercial organization. Yet such an organization, as trustee for its stockholders, cannot agree to divert a large portion of its time, its skill and its facilities acquired with stockholders' funds, from its own programs to those of the Government if all of the rights to the inventions created by that time, skill, equipment, and investment are to be forfeited.

He did not believe that if a college purchased equipment with Federal funds, that all of its inventions and discoveries after that time should be the property of the Government. He went on to say:

> The extent of the patent rights to which the Government is entitled depends on all the facts of a specific case. In particular, the patent rights which the Government should acquire depend on the relative degree of the Government's contribution to the particular research project as compared with the contribution of the private organization undertaking that project. Government-supported research is a collaborative proposition. The funds furnished by the Government are not the sole ingredient of successful research. The facilities, the funds, the personnel, and the skill furnished

by the research organization are indispensable. The terms on which the research is done, must, therefore, be fair to all participants. No person, organization, or government can insist on an all-or-nothing policy for itself and expect to persuade others to collaborate with it effectively. Under the proposal in S. 1297, however, the Foundation would be compelled to contract for research on an all-or-nothing basis with regard to patents.

He went on to say that the contractors should be assured as to patent rights before entering a binding contract. The suggestion that contractors be paid the full value of facilities, experience, and personnel was not the answer, for it would greatly increase the cost of research and force negotiations on a very intangible basis, since no accurate value could be placed on such factors. Dr. Bush recommended:

> In most cases, as a policy for the Foundation, the usual provisions of Government research contracts under which the contractor grants a royalty-free license in favor of the Government would seem adequate. Such a license should be granted under all patents covering discoveries or inventions made in the course of research financed by the Foundation.
>
> In addition, it is to be expected that, as a matter of policy, the Foundation would require assignment to the Government of the full patent rights to inventions in the fields of particular importance. Thus, for example, most medical research should be done under arrangements which yield to the Government the full patent rights. Of course, too, it is understood that the information resulting from research financed by the Government would be fully disseminated to the public for its use.

(14) *Hon. Robert P. Patterson*, Secretary of War (pp. 227–242), and (15) *Hon. James V. Forrestal*, Secretary of the Navy (pp. 243–249), both favored including a minimum of 20 percent of the funds for national defense. Mr. Patterson believed in consultation and taking the advice of scientists rather than in a strict one-man control. He thought it advisable to provide for patent matters by separate legislation.

(16) *Rear Adm. Harold G. Bowen*, chief of the Office of Research and Invention (pp. 249–255), and(17) *Comdr. R. L. Chappell* (pp. 255–258), described the patent policy adopted by the Navy and praised its success. They testified that the Navy bargained for only a governmental license and left the commercial rights with the concern that did the research work. The employees, too, were allowed the commercial rights to their patents.

(18) *J. R. Oppenheimer*, director, New Mexico Laboratories, Manhattan project (pp. 297–318), stressed the need for freedom in research and described how stifling useless security restrictions can be to science. He read a statement of Dr. Enrico Fermi who believed the work of the Foundation should be carried out by—

> (*a*) leaving extensive freedom of choice in orienting their research to the scientists themselves; (*b*) not hampering the scientists with secrecy restrictions except in such cases as

would be recognized as appropriate by the scientists themselves; (c) trying to make the scientific profession attractive to the young people both in a material way, as, for example, by an extensive program of fellowships, and in a moral way by having them feel that even the most pure scientist fulfills a function of paramount interest to the community.

(19) The only witness to oppose the legislation was *Frank B. Jewett,* President, National Academy of Sciences (pp. 427–447). He did not believe that the Government should interfere with the work of the scientists, and that the traditional channels were adequate for research.

(20) *Karl T. Compton,* president, Massachusetts Institute of Technology (pp. 621–645), told of the great necessity for awarding scholarships and fellowships. He believed that the vesting of authority in a small commission would be both more effective and safer than vesting the final authority in a director. He declared that he preferred S. 1285 because it allowed greater flexibility by the National Research Foundation in handling any patent equities in accordance with requirements of various types of situations which would arise.

(21) *Henry de W. Smyth,* chairman of the Department of Physics, Princeton University (pp. 645–657), and (22) *Harold C. Urey,* University of Chicago (pp. 657–663), told of the great need for research in the fundamental sciences. They told how science needed free exchange of ideas and how it was hampered by security restrictions.

(23) *Howland H. Sargeant,* chief, Division of Patent Administration, Office of the Alien Property Custodian (pp. 675–696), discussed patents. He said:

> Now, I think I would summarize our conclusions rather briefly. (1) We are in complete sympathy with the proposals to create a National Research Foundation. * * *
>
> (2) Our experience in administering patents which have become the property of the U.S. Government leads to the conclusion that it is desirable to define specifically in any legislation that is enacted the broad principles under which the administration of patent rights would be carried on by any agency created to execute a national program for the adequate development of our technical and scientific resources. We believe that will be applicable to such an agency as you are proposing here, as the National Research Foundation.
>
> Our third conclusion is, our own experience leads me to the conclusion that a Government agency will make the most effective use of the patent rights under its control through the adoption of a policy of nonexclusive, royalty-free licensing, which is, in fact, the program the alien property custodian has been carrying on.

(24) *Casper W. Ooms,* Commissioner of Patents (pp. 696–705), also gave his views on patents in the following words:

> I have never been able to understand why the administrative burden of this patent program would be imposed upon the foundation, for obviously the only purpose which the patents procured by the Foundation could serve would be as a policing device to prevent the use of the Foundation's pub-

lished research in an enterprise that might tend to promote violations of the antitrust laws.

The Chairman asked

Under your theory, then, no patents should be sought at all.

Mr. Ooms replied:

That is with the exception of those exceptional cases that are related in the further sections of the current draft of the bill, which provides for an escape clause where there are peculiar facilities that are available only if you do make some such provision. For the general work of the Foundation I think patenting would be a mistake.

He supported the principles of S. 1285.

(25) *Paul A. Porter,* Chairman, Federal Communications Commission (pp. 803–817), preferred a single administrator. On the matter of patents, he said:

It seems to me extremely important that, as this case illustrates, the patentable results of Government research undertaken pursuant to this legislation should not be left to existing patent legislation, which was designed to meet an entirely different type of research situation. Patent provisions should be carefully drawn to meet the particular objectives of Government-sponsored research and especially to insure that delays in the introduction of new technical advances shall not result from multiplicity of patent claims where Government-financed research is involved.

(26) *Philip Murray,* president, CIO, in testimony presented by *Robert K. Lamb,* national legislative representative, United Steelworkers of America, CIO (pp. 857–871), said:

With regard to patents, the CIO believes that where the taxpayers of the country provide funds for scientific research to promote the general welfare, they should certainly retain control over the byproducts of these expenditures. To give private corporations an exclusive monopoly of the results offends American democratic principles.

He was not in favor of board control.

(27) *Bernard M. Baruch* (pp. 907–923) advocated a broad program of research which would cover many fields. As to patents, he said:

I believe that the Foundation should be given the greatest flexibility for an initial period, so its members can experiment with various arrangements which will protect the public interest without defeating initiative and imagination. * * * Where the Government foots the entire cost of an experiment, any patentable results should belong to the public rather than any private interest.

(28) *James B. Conant,* president of Harvard University (pp. 977–990), urged favorable action on S. 1285. He advocated a broad program covering various fields. He favored a board administration and agreed with having a national science reserve.

(29) *I. I. Rabi*, Columbia Radiation Laboratory, Columbia University (pp. 990–1001), favored a board administration. As to patents, he told about the policy of Columbia which lets a man patent what he pleases. However, he added, few of the scientists availed themselves of the privilege. They wanted freedom of discussion above all. He believed the Foundation should follow this example of Columbia. Dr. Rabi was opposed to scientists being part of a reserve to be called in times of need. He felt that this reserve would be "just the beginning in which the scientist will be treated as a tool of the Government rather than a man who is devoting his life to trying to understand the laws of nature and increase our knowledge of nature."

(30) *Morris L. Cooke*, consulting engineer in management, representing the Independent Citizens Committee of the Arts, Sciences, and Professions (pp. 1001–1009), expressed the views for this group. He recommended vesting powers in a director, but that "both the director and the board members be subject to Senate confirmation." As to patents, he said:

> Our organization believes that the patent provisions of the Kilgore bill, S. 1297, should be approved, with specific modifications in relation to existing laws. For myself, * * * whatever of value—patents or anything else—which results from the expenditure of Government funds should become the property of the Government.

(31) *Miscellaneous witnesses*

Representatives of the medical profession and representatives in the fields of zoology, botany, agriculture, etc., presented their views. They all favored establishment of this Foundation, and told how their particular fields could be benefited.

A panel of engineers (pp. 705–730) presented views favoring establishing the National Research Foundation.

Witnesses in the social sciences, political sciences, etc. (pp. 737–801), presented their views favoring inclusion of the social sciences in the National Research Foundation.

Five chemists, technicians, and a director of research (pp. 817–855) all favored a National Research Foundation. Four were in favor of the patent policies of S. 1285, and one in favor of the Government getting the patents.

Other scientists, educators, and industrialists presented their views on the proposed legislation. Scholarships and fellowships were considered by all these witnesses to be of utmost importance. Testimony of high school students who were finalists in the science talent search told how they might benefit from a National Science Foundation.

3. ACTION TAKEN—SENATE

a. Majority report on S. 1850

Senate Report No. 1136 from this committee (Military Affairs) reported out a compromise bill, S. 1850, on April 9, 1946. Important or controversial points were reconciled as follows:

Under S. 1850 the National Science Foundation would be headed by an Administrator, appointed by the President, by and with the advice and consent of the Senate. The Administrator would have

the benefit of an advisory board, also appointed by the President, consisting of experts serving on a part-time basis.

S. 1850 provided for allocation of funds to the several States, on a basis which assured that at least 25 percent of all funds administered by the agency would be distributed among the several States on an equitable geographic basis.

The committee rejected the proposal that the social sciences be specifically excluded from support by the new agency, because of the demonstrated interdependence of the physical and social sciences. S. 1850, however, endeavored to assure that all social studies supported by the Foundation would be scientific in character.

S. 1850 established a central register of all inventions, discoveries, patents, etc. Each organization contracting for Government research should make available to the Federal agency all discoveries and inventions produced in the course of the research. It also provided that all inventions in which the Government or any Government agency held any rights, including patent rights, should be made available on a nonexclusive, royalty-free basis. However, the bill provided protection for the commercial rights of private organizations or individuals who had contributed substantially to a particular development partially financed by Federal funds.

As for the report as a whole, Senator Kilgore, as chairman, stressed the following points: the need for legislation, the need for research in basic sciences, the shortage of scientific personnel, the financial support of American science, the scope of basic science to be supported (including social sciences), scholarships and fellowships, national defense, and medical science.

Stressing the need for free communication of information, he said:

> In making available the results of federally financed research, provision must be included not only for publication of scientific data, but also for the availability of patentable discoveries. It seems axiomatic that when the research is fully financed by Federal funds, the results of this research should be made available on a nondiscriminatory basis to all possible users. * * * The bill now being recommended contains no provision for the modification of existing patent laws or the right of any individual or corporation to patent, hold, transfer, or exploit privately developed inventions.

The report took the view that where a private organization had contributed substantially to a particular invention, it might retain such portion of commercial rights as the parties agreed was equitable. The committee recommended minimum safeguards which would assure that the results of discoveries financed by the Government would be made fully and freely available to the public.

b. Minority report

The minority views of Senator Bridges were presented in part II. He said:

> We do not oppose Federal financial aid to those engaged in scientific research but we do oppose Government control and direction of research in the fields of science. Such con-

trol will, we believe, stultify progress in research rather than aid it.

The minority report maintained that too much power would accrue to the Administrator and that the patent system would be jeopardized:

> Obviously, the Administrator, under the provisions of the bill, will become one of the most powerful men in the Government and in the country. The bill proposes to add another large agency to the Government structure. Another large sector of our national economy would come under the centralization, control, and supervision of Washington. Another field of State responsibility—education and learning—would be brought under the domination of the Federal Government. Another huge expenditure of $200 million to $300 million per year would be added to our already dangerously unbalanced budget.
>
> * * * * *
>
> Today our educational institutions are proud of their independence and freedom. If in a few years they become dependent upon funds from the Federal Government (funds over which they have no control) they will not be able to resist the authority for dictation of this czar of science—the Administrator. Only those schools capable of satisfying one man will receive the Federal money.
>
> The extreme lack of flexibility in the provisions of the bill is indicated by the fact that over 65 percent of the funds appropriated are allocated in mutually exclusive classifications, each intended to buy the support of some section of our economy.
>
> Under the guise of protection for Federal money, the bill contains basic reforms in the patent laws which are in conflict with the purpose of the Constitution and that tend to eliminate the private patent system.
>
> Research and development are defined by section 12(a) to cover not only basic and theoretical exploration in science but to extend to the experimental production and testing of models and processes. Thus, the foundation may finance development to the ultimate production.
>
> * * * * *
>
> The summary of the cost of the program indicates the size of the expenditure contemplated and the extreme controls on the use of the appropriated funds. It also illustrates the thinking of those who have operated this Government for many years on an unbalanced budget and placed the citizens of the country under the largest financial debt in history.

Other objections voiced by the minority report included the following: (1) The inventor would suffer under this bill by not enjoying patent privileges; (2) if the bill passes, the Patent Act of 1883's provisions for protection of Federal employees would be in jeopardy; (3) validity of contracts would be impaired; and (4) it might leave a dangerous opening in our security laws.

c. Debates and action in Senate

S. 1850 was debated in the Senate on July 1 and 2, 1946.[47] Senator Kilgore, defending the bill, said that industry was unable to undertake much basic research, since such research could show no direct profit. The United States is a leader in applied research, but he warned against believing that industry could take care of basic research. He declared that the Nation's strength depended on the strength of its scientific resources. He gave examples of efforts that had been wasted and of retarded development because there was no agency such as the one proposed in S. 1850. He said that the Foundation was not a research organization within itself, but would support and initiate research in existing institutions.

In answer to a question by Senator Hart, Senator Kilgore explained that the recipients of scholarships and fellowships would be under no obligation to the Government.

The question of the type of administration came up. Senator H. Alexander Smith preferred a board control. He said that the scientists feel that "they are to be hidebound and governed by someone in Washington who can tell them what the area of their research shall be."

He proposed an amendment substituting "board" for "administrator." This was rejected.

Senator Smith also objected to the State-by-State distribution of funds. He said that the purpose was to support basic research, and that we might not find it in every State. He thought that scattering would cause second- and third-rate results. Senator Kilgore responded that good men were found in the smallest institutions, to which Senator Smith replied that we would not have to subsidize every State and every institution to get those few stars. He presented an amendment to this effect. It was also rejected.

Senator Smith proposed an amendment striking out the entire section 8, which comprised five or six pages of detailed regulations with regard to patents. He proposed substituting a simple section 8, saying that the patent rights in inventions should be disposed of in a manner consistent with the public interest. This amendment was also rejected.

Senator Hart argued against including social sciences. He presented an amendment to this effect, and it was agreed to. He also asked for an amendment striking out giving scholarships and restricting grants to fellowships. This amendment was rejected.

S. 1850 was passed on July 3, 1946, by 48 yeas, 18 nays, and 30 not voting. On July 5, 1946, the bill was referred to the House Committee on Interstate and Foreign Commerce, but due to the impending end of the session was not reported out of committee.

4. H.R. 6448, MAY 15, 1946 (MR. MILLS)

a. Provisions

Important provisions in H.R. 6448 included the following:

(1) Direction. Powers were vested in a board, which would prescribe the powers and duties of a director.

[47] 92 Congressional Record, pp. 8026-8205.

(2) Information and Inventions. Provided that each contract contain its own provisions for disposition of inventions, in a manner calculated to protect the public interest and the equities of the individual or organization with which the contract is executed. "Such objectives might usually be accomplished, within the discretion of the Foundation in particular cases, by making freely available to the public, or, if patented, by freely dedicating to the public, inventions produced in the course of basic or fundamental scientific research * * *"

b. Hearings and significant testimony

Hearings on H.R. 6448 were held before a House subcommittee of the Committee on Interstate and Foreign Commerce, on May 28 and 29, 1946. Testimony included the following:

(1) *Representative Wilbur D. Mills* (pp. 15–24) told of the benefits of the bill. He pointed out four fundamental differences between it and S. 1850. Two of these, he described as follows:

> First, the Kilgore-Magnuson bill vests power in a single Administrator. H.R. 6448 vests all powers of decision in a board of nine members.
>
> The second major difference between the two bills is in the handling of patents. The Kilgore-Magnuson bill contains five pages of complicated and detailed patent provisions that are made applicable to the scientific work of all Government agencies rather than just the Foundation. In general, the policy set forth in that bill is for all Government agencies to obtain title to all inventions made during the course of federally supported research and development except in cases in which detailed findings to the contrary are made by the Government agency concerned. In my opinion those provisions impose an undue administrative burden on Government agencies and fail to recognize that the problems of all agencies conducting scientific activities are not identical. Also, I think that those provisions fail to recognize in an appropriate way the equities of commercial organizations and educational institutions with which the Government does business. On the other hand, H.R. 6448 contains patent provisions that are relatively short and apply only to the work of the Foundation and not to all Government agencies * * *

The Mills bill, he added, stated broad objectives only, to wit, adequate protection of the public interest and the equities of individuals or organizations, with the Foundation given a great deal of discretion in determining how those objectives might best be achieved. It provided that inventions made by employees of the Foundation during the course of their assigned activities, should be dedicated to the public. On this point, Representative Mills added:

> The purpose of such a provision is to give assurance to organizations with which the Foundation does business that they may safely confide the results of their research and development activities to employees of the Foundation without fear that their ideas might become the basis for patent applications by the employee for his personal profit.

The third difference, he continued, is in the provisions with respect to the distribution of funds appropriated to the Foundation. The Kilgore-Magnuson bill prescribed rather strictly the type of distribution allowed, whereas H.R. 6448 gives much greater latitude to the officials of the Foundation in determining which organizations should receive contracts.

The fourth and last major difference between the two bills concerns support of the social sciences. The Kilgore-Magnuson bill provided for initial establishment of a Division of Social Sciences, etc., whereas H.R. 6448 leaves the question to be decided at a later date.

(2) *Hon. Robert P. Patterson*, Secretary of War (pp. 24–31), said in regard to patents:

> I have given careful consideration to the features of H.R. 6448 which deal with patents. I find that since they are not retroactive and apply only to contracts executed in the future, they are satisfactory to the War Department. Insofar as they relate to contracts, they represent current War Department policy and permit a determination of the proper rights to be obtained in each individual case, and maintain the equities of the general public and those of the organization with which the contract is executed.

He approved provisions giving patents to the Government for work completely financed by the Foundation, and making information available to the general public, but giving the patents to the contractor when he has contributed substantially through past or current research activities.

(3) *Edward U. Condon*, Director of the National Bureau of Standards, Department of Commerce (pp. 75–89) read a statement by Henry A. Wallace favoring the provisions of S. 1850. He preferred an administrator to a board, believed the social sciences should be included, and was opposed to allowing private patents on discoveries resulting from research financed by public funds.

(4) *Miscellaneous witnesses*

Most of the witnesses thought that H.R. 6448 was a well-drawn piece of legislation. Those who especially favored the type of administration (a board rather than a director) and the patent provisions of H.R. 6448 as opposed to S. 1850, were—

Dr. C. E. MacQuigg, representing the Engineering College Research Association (pp. 31–33).

W. John Kenney, Assistant Secretary of the Navy (pp. 41–46).

Vannevar Bush, president, Carnegie Institution of Washington, and director of Office of Scientific Research and Development (pp. 47–55).

Homer W. Smith, professor of physiology, New York University College of Medicine (pp. 55–59).

John F. Victory, executive secretary of the National Advisory Committee for Aeronautics (pp. 61–64).

George E. Folk, representing the National Association of Manufacturers (pp. 65–68).

Detlev Bronk, director, Johnson Research Foundation (pp. 68–72).

Rev. J. Hugh O'Donnell, C.S.C., president of Notre Dame University (pp. 89–94).

c. Action

No further legislative action was taken on H.R. 6448 or S. 1850. Thus, all bills on a National Science Foundation died at the end of the session.

D. 80TH CONGRESS, 1ST SESSION

1. IMPORTANT BILLS INTRODUCED—HOUSE OF REPRESENTATIVES

a. H.R. 942, January 14, 1947 (Mr. Celler)

(1) Direction. The organization to be headed by an Administrator appointed by the President.

(2) Information and inventions. Each contract for federally financed research entered into by any Government agency should provide that all data on inventions and patents produced in the course of such research be made available to such agency, which in turn should make such information available to the Administrator. All inventions and patents in which the United States holds any rights should be made available on a nonexclusive and royalty-free basis. Inventions and patents produced in the course of federally financed research should be dedicated to the public, unless retention of invention and patent rights was specifically provided for in the contract with the private organization.

b. H.R. 1815, February 10, 1947 (Mr. Case)

(1) Direction. The organization to be composed of 48 members appointed by the President, who would elect 9 members to form an executive committee. The executive committee would appoint a Director.

(2) Information and inventions. Each contract for federally financed research executed by the Foundation should contain provisions governing disposition of inventions produced thereunder in a manner calculated to protect the public interest and the equities of contractors. Inventions produced by employees of the Foundation should be made freely available to the public.

c. H.R. 1830, February 10, 1947 (Mr. Mills); H.R. 1834, February 10, 1947 (Mr. Priest); H.R. 2027, February 18, 1947 (Mr. Hays)

These bills were identical to H.R. 1815.

d. H.R. 4102, July 8, 1947 (Mr. Wolverton)

This bill was reported out of the House committee, after consideration of the above-mentioned bills. It followed the lines of H.R. 1815 and the identical bills.

(1) Direction. Powers were to be vested in a Board of nine, who would appoint a Director who would be responsible to the Board.

(2) Information and inventions. Each contract should contain provisions, consistent with the laws affecting the issuance or use of patents, governing the disposition of inventions produced thereunder in a manner calculated to protect the public interest.

2. HEARINGS AND SIGNIFICANT TESTIMONY—HOUSE OF REPRESENTATIVES

Hearings were held before the House Committee on Interstate and Foreign Commerce on March 6 and 7, 1947.

a. Specific witnesses

(*1*) *Representative Charles A. Wolverton*, chairman, opened the hearings, pointing out that all groups agreed as to the need for the legislation, and the question to be settled was the matter of the form it should have.

(2) *Representative Emanuel Celler* (pp. 23–27) discussed particulars of his bill. In the administration and organization of the Foundation, H.R. 942 provided that it be headed by a single Administrator appointed by the President with the approval of the Senate, who would be responsible directly to the President and through him to the Congress. As for the inclusion of social sciences, he said that the physical sciences were far more advanced than our ability to organize ourselves socially. As for the distribution of 25 percent of all research funds on the basis of State quotas, he said that States would be able to share effectively in work if, from the beginning, this portion were distributed equally. And, as for the full and free publication of the results of federally financed research he believed that wherever the public put up the money for a research project the results, including patents, should either be freely available to all users or, if controlled, should be controlled by a public agency.

(3) *Hon. Robert P. Patterson*, Secretary of War (pp. 27–36), explained his preference for the four identical bills. As to administration—

> * * * I would give great weight to what the leading scientists familiar with organizations of this type would say would work best * * * By their achievements during the war, they have shown, the leaders of them, a great skill and ability and competency in organization and not just theorists or laboratory people, but a high degree of statesmanship as well.

Concerning patents, he said:

> * * * these bills should not in any way interfere with the existing patent laws. If there is to be legislation on the patent question, it should be entirely apart from the establishment of a National Science Foundation.

(4) *Edmund E. Day*, president of Cornell University, chairman of Intersociety Committee on Science Foundation Legislation (pp. 49–68), spoke for his committee, saying that a National Science Foundation was of utmost importance. Emphasis should be on fundamental research rather than applied science. He advocated administrative freedom, the type of administration which would give the largest measure of discretion. The caliber of men chosen to direct the Foundation would be most important.

In regard to patent provisions, he said that there had to be some assurance that money poured into the early stages of the development