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PATENT POLICIES OF GOVERNMENT DEPARTMENTS AND AGENCIES—1960

CONFERENCE

ON

FEDERAL PATENT POLICIES

Senator RUSSELL B. LONG, Chairman,

SUBCOMMITTEE ON MONOPOLY

OF THE

SELECT COMMITTEE ON SMALL BUSINESS

UNITED STATES SENATE

AND

Vice Admiral H. G. RICKOVER

UNITED STATES NAVY

HELD ON

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FOREWORD

For almost 2 years the Subcommittee on Monopoly of the Senate Committee on Small Business has been studying the patent policies of the departments and agencies of the Federal Government and the effect of these policies on our Nation's scientific and economic progress and on the competitive, free enterprise system. Our study culminated in 3 full days of hearings on December 8, 9, and 10, 1959.

Our efforts have revealed that the present patent policies of many of our Government departments and agencies, especially the Department of Defense, have the following effects:

1. The policy of giving away to private firms the patent rights to Government-financed inventions and discoveries tends to erect walls between scientists and to prevent a free interchange of information.

This tends to retard our scientific advance and undermines the very security of our country. The reason rests on the fundamental fact that the diffusion of scientific knowledge throughout our society is a prerequisite for scientific and economic progress and a rise in general productivity.

2. With the present distribution of research facilities in industries, the granting of exclusive commercial rights to private firms doing Government-financed research is giving a major advantage to the larger firms, thus accelerating the pace of economic concentration.

One of the chief arguments advanced for the policy of giving away patent monopolies on publicly financed inventions and discoveries is that if exclusive commercial rights are not given to the contractor, firms would be reluctant to take contracts, scientists would have no incentives to invent and the cost of the contracts to the Government would increase.

To seek further testimony on the validity of these arguments, Adm. Hyman G. Rickover was invited to describe his contract experiences with the Defense and Navy Departments, both of which allow the contractors to retain patent rights, and with the Atomic Energy Commission, which is required by law to take title to all inventions resulting from Government-financed research.

It would not be an overstatement to say that Admiral Rickover, because of his unique and wide experience, has quietly and effectively laid these arguments to rest.

RUSSELL B. LONG,
Chairman, Monopoly Subcommittee,
Select Committee on Small Business, U.S. Senate.

JUNE 6, 1960.

PATENT POLICIES OF GOVERNMENT DEPARTMENTS AND AGENCIES, 1960

Subject: Conference of Senator Russell B. Long, chairman, Subcommittee on Monopoly, Senate Small Business Committee, with Vice Adm. H. G. Rickover, U.S. Navy.
Place: Office of Senator Long.
Time: Friday, April 8, 1960, 9 a.m.
Present: Senator Russell B. Long; Vice Adm. H. G. Rickover; Benjamin Gordon, economist, Senate Small Business Committee; Robert Hunter, admimistrative assistant to Senator Long; Richard Daschbach, research assistant to Senator Long.

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

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

Second, I have no prepared statement.

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

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

Over the years I have frequently wondered whether in this modern industrial age patents are as important for industrial organizations as would appear from the statements made by patent lawyers. It may be that the patent lawyers are overemphasizing the present-day value of patents. It is quite possible our industry would not be hurt very much if we restricted the items that are patentable. I believe the important factor for an industrial organization is the know-how developed by it—the trade secrets and the techniques; these are not patentable qualities. They are something that are inherent in a company, in its methods, in its management; the kind of machine

tools it has, how it uses these tools, and so on. Where the facilities are owned by the company itself, and where the know-how is its own, the Government shouldn't publish that information. When these conditions obtain, it is possible we have gone too far in makiug the information public.

Up to the advent of the Atomic Energy Commission in 1946 and the Space Agency in 1958 most research and development consisted essentially of adaptations to existing technology. That is, an industrial organization would be called upon by the Government to take an item it had already developed over a period of many years and change it to a new or improved item for military application. On that basis there was considerable justification for the entrepreneur to maintain his background patent rights; he was merely adding a small novelty to an already existing item. But with the coming of atomic and space science, we have an entirely different situation; we are now dealing with equipment that has never before been used. In fact, most of it was never even conceived of. Consequently, nearly all the money for developing the complete item comes from the Government. I believe in the atomic energy field about 92 percent of the money being spent on research and development is supplied by the Government. It is for this reason I consider the existing patent provisions in the Atomic Energy Act and in the Space Agency Act fair and valid. Where the Government bears all or nearly all of the cost, where the facilities belong to the Government, and where the Government bears all the risk, the people should own the patents. The American people are spending their money for the research and development; therefore, the patents should belong to them.

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

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

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

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

What do you think of this statement?

Admiral RICKOVER. It's a good, ringing Fourth of July speech, Senator Long. It reminds me of an incident that occurred in one of the German States about 150 years ago. As part of a thoroughgoing reform of the judicial system, it was proposed to abolish torture as a means of obtaining confessions from persons accused of crime. A

venerable jurist bitterly opposed this on the grounds that, since torture had been used for more than a thousand years, it must be good. Apparently, this man believed that anything that has existed for a long time must be good.

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

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

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

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

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

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

Admiral RICKOVER. Yes, sir. They develop many ideas and skills from this Government-financed work; also, their people are being

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

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

Admiral RICKOVER. No, sir; I know of no such cases. They are nearly all cost-plus type contracts and the fees are about the same throughout the Government. Nor do I agree with the statement frequently made that unless there is such a patent provision, their employees will not work assiduously. I have never seen anything of the sort. A man who has an idea in his mind, if he is worth his salt, will want to get it out. He will fight all obstacles to get it out; it really makes no difference to the scientist or engineer one way or another because the company gets to own the patent rights anyway. Now, the companies apparently take a different stand toward the Government than they do to their own employees. Their own employees must sign an agreement providing that the company takes title to the patents they develop. Apparently, the companies desire better treatment from the U.S. Government than they accord their own employees.

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

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

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

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

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

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

Senator LONG. As a matter of fact, isn't it true that when most doctors develop a new procedure for operations, they are anxious to

go to a medical society meeting and explain their new procedure so that other doctors might find it advantageous for humanity?

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

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

It may interest you to know that 90 percent of patents for peaceful applications in the atomic energy field are developed by 10 to 11 of the AEC contractors. There have been only three cases where contractors have objected to the AEC patent provisions. These objections were based on the fact that the language of the contract was too all-inclusive; tbat the language took in more than was required for the actual performance of the contract. These three cases were not important ones. The AEC, I understand, intends to recommend changing the language.

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

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

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

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

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

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

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

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

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

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

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

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

Admiral RICKOVER. I believe we should reevaluate our patent policies in the light of the present situation—where we are faced with an implacable foe who uses every means to achieve decisive military strength as fast as possible. It is important in this critical stage in our history to reconsider the patent policies and procedures from the

standpoint of whether they are aiding or impeding our national progress. Today, there is no essential difference between military and civilian technology. So anything that holds up one, also hurts the other. As I said previously, the patent problem that faces us today was not envisioned by the founders. They lived in a preindustrial society—a society where a patent resulted from the efforts of an individual, not of a large organization.

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

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

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

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

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

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

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

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

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

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

Admiral RICKOVER. Yes, sir. This is similar to the question I am asked about our nuclear submarines—whether we have a morale problem with the sailors because they are submerged for such long periods. I answer that we don't; since there are no psychiatrists aboard these submarines, the sailors haven't found out that there is a problem, so there isn't any. Possibly, if there weren't so many patent lawyers, we wouldn't have so much of a patent problem, either.

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

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

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

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

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

Admiral RICKOVER. Such a provision I consider wrong, sir, because it is tantamount to the taxpayer underwriting somebody to get a

patent which stops the taxpayer himself from using his own resources. Such a situation should not be permitted to occur. It may have been an oversight in the particular contract you mention.

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

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

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

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

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

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

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

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

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

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

Senator LONG. Do you have any questions, Ben?

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

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

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

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

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

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GOVERNMENT PATENT PRACTICES

HEARINGS

BEFORE THE

SUBCOMMITTEE ON
PATENTS, TRADEMARKS, AND COPYRIGHTS

OF THE

COMMITTEE ON THE JUDICIARY
UNITED STATES SENATE

EIGHTY-SIXTH CONGRESS

SECOND SESSION

PURSUANT TO S. RES. 240

ON

S. 3156 and S. 3550

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GOVERNMENT PATENT PRACTICES

TUESDAY, MAY 17, 1960

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

The subcommittee met, pursuant to call, at 10:45 a.m., in room 2228, New Senate Office Building, Senator Joseph O. O'Mahoney presiding.

Present: Senators O'Mahoney (presiding) and Hart.

Also present: Robert L. Wright, chief counsel, Patents, Trademarks, and Copyrights Subcommittee; John C. Stedman, associate counsel; Hershel F. Clesner, assistant counsel; Clarence M. Dinkins, assistant counsel, and George S. Green, professional staff member Senate Judiciary Committee, and Richard M. Gibbons, of the staff of Senator Wiley.

Senator O'MAHONEY. The subcommittee has before it this morning two bills, one, S. 3156, which I introduced last March to provide for the protection of the interests of the United States in basic research with respect to patent rights arising from research conducted under projects financed by the United States. This bill may appear in the record.

(S. 3156 follows:)

[S. 3156, 86th Cong., 2d sess.]

A BILL To provide for the protection of the interests of the United States in basic research with respect to patent rights arising from research conducted under projects financed by the United States

Whereas the National Science Foundation has statutory responsibility for the promotion and coordination of all basic research financed by the Federal Government; and

Whereas said Foundation has not yet determined the extent of the possible adverse impact on such research of patent provisions in various research contracts which reserve to the research contractor or grantee the right to exclude the Government or members of the public from the practice, in competition with the said contractor or grantee and his commercial licensees, of the inventions produced by such Government financed research: Now, therefore,

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) no contract or agreement entered into by any department or agency of the United States with any contractor or grantee for the conduct of research by such contractor or grantee may contain any provision by reason of which such contractor or grantee would acquire the right to exclude the United States or any department or agency thereof or other members of the public from practicing, in competition with the said constractor or grantee or any licensee of such contractor or grantee, any invention produced under that contract or grant, unless a determination has been made in compliance with subsection (b) on the question whether the inclusion of that provision in such contract or agreement would adversely affect the basic research program of the United States.

(b) Before any provision of the kind described in subsection (a) may be inserted in any such contract or agreement, the proposed contract containing such provision shall be submitted to the National Science Foundation for consideration by the Director thereof. If the Director determines that the inclusion of that provision will not adversely affect the basic research program of the United States, he shall at the earliest practicable time advise the department or agency primarily responsible for the proposed contract to that effect in writing. Before making such a determination the Director shall obtain from the Attorney General an opinion as to the probable effect of that provision upon competition in the field of technology to which the contract relates and transmit a copy of that opinion to the responsible department or agency. If the Director determines that the inclusion of such provision in that contract or agreement may adversely affect the basic research program of the United States, he shall state his reasons therefor in a written report made at the earliest practicable time to the department or agency primarily responsible for the proposed contract.

(c) The requirements of this Act shall not apply with respect to any contract or agreement which does not contemplate providing technical information or data for the benefit of any other person, institution, or organization engaged in research for or on behalf of the United States or any department or agency thereof under any contract or grant.

Senator O'MAHONEY. The other bill is one which I introduced yesterday. It has not yet been printed.

Mr. GREEN. The number is S. 3550.

Senator O'MAHONEY. S. 3550, a bill to establish a national policy for the acquisition and disposition of patents upon invention made chiefly through the expenditure of public funds.

I hand these to the reporter.

(S. 3550 follows:)

[S. 3550, 86th Cong., 2d sess.]

A BILL To establish a national policy for the acquisition and disposition of patents upon inventions made chiefly through the expenditure of public funds

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the United States shall have exclusive right and title to any invention made by any person in the performance of any obligation arising from any contract or lease executed or grant made by or on behalf of the United States.

Notwithstanding any law, custom, usage, or practice to the contrary, no invention resulting from a research contract or grant financed by the United States shall be patented other than in the name of the United States and no patent resulting from such a contract or grant shall be issued, assigned or otherwise transferred to any person, corporation, or association as compensation under any such contract or grant.

Senator O'MAHONEY. This committee has conducted extensive investigations during the past several months, and it has discovered the fact that there is no uniform policy among the agencies of the United States with respect to the patents which are the result of research and grants for which the Government of the United States is spending billions of dollars. We have therefore decided to raise this matter in public.

Our first witness this morning will be called by Mr. Wright, counsel for the committee, who will open the hearing.

Mr. WRIGHT. What this hearing is about was aptly put by the Comptroller General of the United States when he said in effect that the question Congress should resolve is whether the Government should take title to patents issued for inventions developed under its research contracts, or whether a royalty-free license to use these inventions is sufficient to protect the Government's interest.

In 1947, after exhaustive investigation, the Attorney General recommended that the Government should obtain title to substantially all of the inventions produced by Government research contracts.

In 1956 the then Attorney General pointed out that retention of title taken out on such inventions by Government contractors might produce an undesirable concentration of economic power.

In 1958 this subcommittee began an investigation of Government patent practices to find out whether the agencies handling research contracts had followed or ignored the Attorney General's recommendation.

This investigation is still continuing, and what we have found to date is set out in a series of published reports as to the practices of particular agencies.

These reports show that the Government agencies carrying on scientific research are presently pursuing contradictory patent policies even when they are working with the same contractor in the same research field. These reports produced an accurate account of the experience of these agencies in dealing with patents in the last 10 years. And each report was submitted to the agency before its publicaiton for the agency's comments and corrections.

For that reason, we are not going to spend time at this hearing in developing these matters already established in these reports. We are going to try to find out here why it is that some of these agencies take title to patents while others take only a license to use patents where the Government's interest in the patented inventions appear to be the same in both cases.

Our first witness will be Mr. Robert F. Keller, the General Counsel of the General Accounting Office. That Office reviews the Government's contracts to see that the Government gets what it pays for, and its interest in this matter needs no further explanation. Ordinarily if the Government buys something, it gets title. In the case of purchases of services which result in patents, it would normally get title to the patents.

What we are inquiring about here is whether there are circumstances under which the Government's interest is adequately protected without title, and if so, exactly what those circumstances are, in concrete terms.

After Mr. Keller we hope to hear from Dr. Waterman, who is the Director of the National Science Foundation. This is the agency that Congress established in 1950 to promote and to coordinate basic scientific research. Basic research is research which offers no immediate profit, and has traditionally been a responsibility of nonprofit institutions. The Foundation was established because Congress was persuaded that these institutions, principally the universities and the colleges, did not have funds adequate to meet this country's demands for basic research, nor did they have the authority needed to channel the Government's funds that were available for such research into the areas of greatest public benefit.

Congress said in the enabling act that the Foundation should annually report to the Congress, and I will here quote from the act itself:

> Information as to the acquisition and disposition by the Foundation of any patents or patent rights.

The act also provides that the Foundation shall make such annual recommendations to Congress as it deems appropriate. But the Foundation has never reported the acquisition of any patents, nor has it made any recommendation as to patent policy.

Our published report on the Foundation discloses what we thought was an extraordinary indifference by the Foundation to the impact that patent clauses may have on the objectives of basic research contracts.

S. 3156, recently introduced by Senator O'Mahoney, is a bill intended to correct this indifference, and we have, of course, sought Dr. Waterman's views as to this matter.

Dr. Waterman will be followed by representatives of the Department of Health, Education, and Welfare, which currently invests more public money in research than any of the Federal agencies, except the Department of Defense, the Atomic Energy Commission, and the National Aeronautics and Space Administration. HEW generally pursues a policy of making the results of its research freely available to the public through the publication or dedication of its inventions. However, HEW has recently made exceptions to that policy in favor of a small group of private contractors who insisted upon commercial patent rights for themselves, as a condition of undertaking research related to cancer-chemotherapy.

Why there is not a uniform patent policy even with respect to the research contractors employed by this one agency is, of course, one of the matters that will be touched upon.

HEW will be followed by representatives of the Veterans' Administration, which is also engaged in medical research, but VA's general patent practices are quite different from the general policy of HEW. The views of the VA representatives will be sought as to why that agency chooses, as a matter of general policy, to leave to private contractors the public dissemination of the benefits of its medical research.

Although VA apparently has the same kind of obligation that HEW has, to make the benefits of its medical research freely available to the general public, VA does not take title to patents or otherwise dedicate its inventions to the public.

The next agency considered will be the Tennessee Valley Authority, which does no contract research, and which takes title to all inventions resulting from its research.

Unlike most Government agencies, however, TVA does maintain accurate information as to the use made of all of the inventions produced by its scientific research expenditures. One of the arguments frequently made against Government ownership to the title of an invention is that under such conditions the invention is seldom used. TVA's experience has been largely ignored by the congressional committees which have considered this problem.

We therefore thought it advisable to give the Chairman of TVA an opportunity to present at this hearing data as to the use of Government inventions which has so far been rather generally overlooked.

We intend, of course, to see that all other interested agencies have an opportunity to express their views before these hearings are closed. However, what I have outlined is all that we hope to accomplish in the present 1½-day schedule.

Senator O'MAHONEY. Will you call the first witness?

Mr. WRIGHT. Mr. Keller.

STATEMENT OF ROBERT F. KELLER, GENERAL COUNSEL, GENERAL ACCOUNTING OFFICE; ACCOMPANIED BY WAYNE SMITH, ATTORNEY, OFFICE OF THE GENERAL COUNSEL

Senator O'MAHONEY. Mr. Keller, let the Chair say before you begin your testimony that the public should not overlook the fact that we are engaged in a cold war with Soviet Russia. The events at the summit this week indicate clearly the challenge that is presented to us. In the research of scientific endeavor, it is most important that the United States should have an absolutely uniform procedure. We cannot afford to drift along as though the whole world belonged to us and can be taken over by contractors and business; we have got to preserve the public interest, which means the interest of us all.

We are very glad, Mr. Keller, to hear from you.

Mr. KELLER. Thank you, Mr. Chairman. I have a prepared statement which I would like to present.

Mr. Chairman, we are very glad to comply with your request to appear before you and present our views with respect to patent policies and practices of the various departments and agencies in contracting for research and development work.

At the outset we wish to make it clear that the General Accounting Office has not made any special studies in the patent area. Quite naturally, in carrying out our regular work we have observed certain practices of the departments and agencies.

As illustrated by the studies made and reports issued by this subcommittee, the patent rights which result from Government research and development contracts are handled in various ways, depending upon legislation governing particular agencies, or established administrative practices. The differences in contracting in this area can be illustrated by the following:

1. The Government has retained the power to determine at its discretion the disposition of all patentable discoveries or inventions which might arise out of the performance of the contract.

2. The Government has asserted title to the inventions subject to a possible waiver of rights in the title back to the contractor.

Senator O'MAHONEY. May I interrupt you there?

The sentence in each of these three paragraphs says "the Government has."

Mr. KELLER. Yes, sir.

Senator O'MAHONEY. Should it not be "the agency has for the Government"?

Mr. KELLER. That is correct, Mr. Chairman.

Senator O'MAHONEY. I would like to have it made clear that in some of these instances, notably those under what you have called administrative practice, the agencies have assumed the right of Congress.

The Constitution gives to Congress the power to pass legislation on the subject of patents, it does not give it to any administrative agencies at all.

You may proceed.

Mr. KELLER. In the general categories we are using here, some are by administrative regulation and some pursuant to law.

3. The Government has reserved to itself complete ownership of any patents which might arise out of the performance of the contract, with a license back to the contractor.

4. The right to obtain and retain title to such patents has been left with the contractor with a reservation in the Government to receive a royalty-free license.

5. The ownership of such patents has been left with the contractor with a reservation in the Government to receive, in addition to a royalty-free license, the power to require the licensing of others.

6. The Government has obtained title to the patent and permits free use thereof with or without issuance of a revocable license.

I wish to add, Mr. Chairman, there may be other variations. We have not made a complete examination of the field.

The question of patent rights under Government contract has received a great deal of study over a period of years.

In 1947 the then Attorney General issued a report that urged full Government ownership of all patents resulting from Government research and development contracts. That report, in summary, urged this policy, with few exceptions, as being in the public interest to assure free availability of the technology to all American industry, not just the immediate contractor; to avoid undue concentration of patents in the hands of a few large corporations, and to prevent possible suppression of the inventions paid for by the public.

The recommendations of the Attorney General in 1947 apparently caused considerable question to be raised, both in and out of the Government.

Senator O'MAHONEY. The Attorney General was Francis Biddle, was he not, in 1947?

Mr. KELLER. I think it was Attorney General Clark, but I would have to verify that, Mr. Chairman.

Senator O'MAHONEY. I was under the impression that Biddle had started this procedure.

Mr. KELLER. I think the study was started in 1943 which culminated in the 1947 report.

In November 1956 a report of the Attorney General under the Defense Production Act considered the recommendations of the prior Attorney General and the opposing views.

The 1956 report attempted factual analysis of the problem as the prerequisite of fair solution. It noted, however, that the complexity and volume of the Government's research needs and the urgency of much defense-related research made analysis extremely difficult. It noted lack of data adequate to indicate the full scope of the problem, particularly with respect to industry's reaction to the differing policies of the important research agencies. It concluded that further careful study of the economic and defense questions presented by the agencies directly responsible was warranted to elicit, if possible, the needed data.

After the 1956 report was issued, the agencies directly concerned formed a study group under the Interagency Task Force for Review of Government Procurement Policies and Procedures. The study group explored many facets of the problem but none of the approaches used resolved the basic complexities of the matter or seemed to afford a means of achieving adequate basis for a solution.

At this point, the group recommended a pilot study by the George Washington University to recommend basic techniques for solution of the problem. It is our understanding that this study has not been completed.

Congress itself has considered the question.

For example, the Atomic Energy Act of 1954 and the policy followed under the National Aeronautics and Space Act of 1958 both generally provide for title to inventions discovered by a contractor to be retained by the Government, rather than the contractor. Your subcommittee has issued a number of reports. Currently, the matter is being considered by the House Committee on Science and Astronautics which has under consideration a bill to amend the patent provisions of the NASA Act of 1958 so as to provide discretionary authority concerning the disposition of patent rights in inventions conceived or first reduced to practice under NASA experimental, developmental and research contracts. Also, the Monopoly Subcommittee of the Senate Select Committee on Small Business has held hearings on the subject.

It is quite evident from the reports on the studies made thus far that there are many divergent views on the subject. The basic problem is whether the Government should take title to patents developed by private concerns under Government-financed research and development contracts, or whether, in the light of present-day circumstances, the Government's interest may be sufficiently protected by retaining a royalty-free license covering all governmental uses. The former is basic policy under the Atomic Energy Act of 1954 and the National Aeronautics and Space Act of 1958. The latter has been the prevailing practice in the administration of research and development contracts entered into by the military agencies.

While, as earlier indicated, we have not made any special studies in the patent area, we have observed certain practices in carrying out our regular work. We have made a recent examination of one of the major defense contractors. The contracts contained the standard clause concerning patents which is prescribed by the Armed Services Procurement Regulation.

In substance, the contractor obtains patent rights but the Government receives a royalty-free license to practice or have practiced any inventions conceived or first actually reduced to practice in the course of performing the contract work. The contractor is required to furnish to the contracting officer information as to each invention disclosed as a result of the contract work, which reasonably appears to be patentable, and to specify whether or not a patent application will be filed.

As a condition of employment, the contractor's employees were required to assign to the contractor any inventions, developments, and discoveries made or conceived during the period of their employment.

As of June 30, 1959, 218——

Senator O'MAHONEY. Mr. Wright, do you have a copy of that clause?

Mr. WRIGHT. I think we have that in our report.

Senator O'MAHONEY. Will you see that it is in the record of these proceedings at this point?[1]

[1] The provision in question was read into the record by Mr. Wright at p. 17, infra.

Mr. WRIGHT. Yes, we can do that.

I would also, if I might, like to ask Mr. Keller a question at this point as to whether or not these contracts he is referring to are cost plus contracts.

Mr. KELLER. The contracts are cost plus.

Mr. WRIGHT. Is there any reason why we shouldn't have the name of the contractor at this point?

Mr. KELLER. Mr. Wright, we are about to make a report to Congress in this case, which will be in a few days, and therefore I would prefer not to do it at this time.

Mr. WRIGHT. What I was interested in is whether or not the salaries of the employees you refer to are in effect paid for by the Government under cost plus provisions.

Mr. KELLER. I would say yes.

Senator O'MAHONEY. May I emphasize what you have just said to make sure that this is your meaning. I am doing this because I want it to be clearly understood as a fact, if it is a fact.

You say:

> As a condition of employment, the contractor's employees were required to assign to the contractor any inventions, developments, and discoveries made or conceived during the period of their employment.

That is the fact; is it not?

Mr. KELLER. That is the fact in this case.

Senator O'MAHONEY. Do you contemplate any reason why the Government should be more lenient than the contractor?

Mr. KELLER. I have to answer it this way, Mr. Chairman. Since we have made a limited study, we do not feel that we are in a position to give you a considered judgment that the Government in all cases should retain patent rights, or conversely, that it should not.

Senator O'MAHONEY. I think the question answers itself.

Thank you, Mr. Keller. You may proceed.

Mr. KELLER. Speaking of the same contractor, as of June 30, 1959, 218 patent disclosures had been made by the employees of the contractor arising from work under Government contracts; 192 disclosures were developed under Air Force contracts, and 26 were developed under other Government contracts.

In connection with the 218 disclosures, 62 patent applications were filed, 2 of which have been granted; 33 applications were approved for filing; 57 disclosures were under evaluation, and 3 were awaiting evaluation. The remaining 62 disclosures were in an inactive status. Two of the disclosures were combined into a single patent application.

We were informed by the patent counsel of the contractor that patent applications are not filed for all inventions that are disclosed. Patent applications are filed for disclosures which have potential commercial benefit, and in some instances patent applications are filed for morale purposes; that is, to provide recognition of the inventor.

We were informed, however, that patent applications are not filed for inventions that only have military applicability. Disclosures in this area are classified as inactive.

Mr. WRIGHT. May I interrupt you there to ask a question?

As I understand you, this was a contract made with one of the military agencies, presumably to develop inventions having military application; was it not?

Mr. KELLER. The particular contracts, Mr. Wright, were not strictly research and development, yet they were not production contracts, they were technical assistance and engineering contracts.

Mr. WRIGHT. I gather for military purposes by one of the defense agencies?

Mr. KELLER. That is correct.

Mr. WRIGHT. And yet you say here that if the invention has a military application, then no patent application is filed at all?

Mr. KELLER. That is correct.

Mr. WRIGHT. And apparently then the only patent applications are filed for commercial uses which are, I suppose, of interest only to the contractor?

Mr. KELLER. The contractor filed for his own use. Of course the Government receives a license to use.

Mr. WRIGHT. What I am getting at is, is it fair to say that the result is that if an invention that has military application is developed, the Government gets no patent rights at all, but if an invention which has commercial possibilities is developed, the Government gets a license to use, which it really has no use for?

Mr. KELLER. I think I could only answer that by saying that apparently the contractor is not interested in obtaining patents which have only military application.

Mr. WRIGHT. I am looking at it from the standpoint of the Government. I take it under this kind of an arrangement all the Government gets is a license to use some of these inventions that they would have no particular use for since it is a commercial usage in any event.

Mr. KELLER. I assume that some of the patents applied for which have commercial value could be used by the Government in connection with other procurements. Under the license the Government would have a right to use the patented discovery.

Mr. WRIGHT. That will come out, I guess, in the next part of your statement.

Will you proceed?

Mr. KELLER. While at the time of our examination no estimate could be made of the value of the patents obtained or applied for as a result of the Government contract work, the contractor classifies inventions as follows:

1. Primary: Relates to a development believed to be sufficiently basic and important to provide a basis for a new industry or an entirely new product line; or one which may have a major effect on the expansion or conversion of an existing industry or product line.

2. Secondary: Relates to a development which is part of an important commercial or patent position—for example, one of several developments relating to a major commercial program or to an active patent licensing program—or which offers the possibility of obtaining enforceable patent protection for a particular product as to which commercial use is definitely predictable.

3. Speculative: Relates to a development which offers the possibility of obtaining patent protection of substantial or broad scope, but whose use or importance is not yet definitely predictable.

4. Marginal: Relates to a development believed to be of minor importance or of marginal patentability, but which still justifies patent consideration for some special reason—the case I pointed out before,

to provide recognition of the inventor or to provide insurance against patenting by competitors.

Senator O'MAHONEY. May I interrupt you again, Mr. Keller?

Mr. KELLER. Yes, sir.

Senator O'MAHONEY. I recognize your desire not to give the name of the contractor or the nature of the work until you report to the Congress. Can you say, however, if the contractor was an individual or a corporation?

Mr. KELLER. A corporation.

Is the corporation represented in the room?

Mr. KELLER. I do not know, sir.

Senator O'MAHONEY. I am not asking you the question, Mr. Keller, I am addressing the audience.

Please rise if the corporation is represented in the room. I want to give an opportunity to that contractor to testify.

The contractor apparently is not represented.

Proceed, Mr. Keller.

Mr. KELLER. Based on the classification I have just read, the contractor rated the 62 disclosures for which applications have been filed and the 33 which were approved for filing as of June 30, 1959, as follows:

Primary	11
Secondary	69
Speculative	13
Marginal	2
Total	95

Mr. WRIGHT. May I ask a question at that point, Mr. Keller?

These 11 primary applications that you have listed there are according to your definitions?

Mr. KELLER. The definitions of the contractor.

Mr. WRIGHT. According to the definition these applications relate to a development believed to be sufficiently basic and important to provide a basis for a new industry or entirely new product line or one which may have a major effect on the expansion or conversion of an existing industry or product line.

Now, if I understood you correctly, you said the patent clause that was applicable there was the standard Armed Forces procurement clause which does, does it not, give to that contractor the right to exclude everyone but the Government from the use of that invention or those inventions, if the applications mature into patents.

Mr. KELLER. I feel quite certain that is correct, Mr. Wright.

Mr. WRIGHT. In that instance you might have a basic development which the Government had paid for but which the contractor could use to exclude others from sharing in the development; is that correct?

Mr. KELLER. I think that is correct. I think the important matter of the tabulation is that out of the total of 95, we have 80 which fall within the category of primary or secondary.

Now what the ultimate outcome will be is speculative, because these are ratings given by the contractor, and future developments can change the course one way or another.

Mr. WRIGHT. I understand. This is just the best guess at the time as to what may eventuate.

Can you tell us the general field that contractor is in?

Mr. KELLER. Technical assistance and engineering.

Mr. WRIGHT. Can you tell us the substance of the engineering beyond that?

Mr. KELLER. I would prefer not to at this time, Mr. Wright.

Mr. WRIGHT. All right.

Senator O'MAHONEY. Mr. Wright, I was going to ask you, is not this clause and this definition clearly an attempt to defeat free enterprise?

Should not such a patent go into the public domain immediately, for the benefit of all the people?

Mr. WRIGHT. I think it is quite clear, isn't it, Mr. Keller, that whatever benefits, commercial benefits, there are to be obtained under those patents are in this instance reserved for this particular contractor; is that not true?

Mr. KELLER. Yes.

Senator O'MAHONEY. The corporate contractor.

Mr. KELLER. The contractor, through a subsidiary corporation, also performed work for one of the military departments under which 22 patent disclosures were made during the period November 1, 1958, to June 30, 1959. The subsidiary also performed work for the National Aeronautics and Space Administration under contracts negotiated for NASA by one of the military departments. These latter contracts contained special provisions under which title to inventions in the space program is retained by NASA, pursuant to the National Aeronautics and Space Act of 1958. We have been informed that the patent rights to the two patent disclosures under the contracts for NASA work are owned by NASA.

Mr. WRIGHT. Do you know why NASA found it necessary to negotiate in this particular instance through one of the military departments instead of its own officers?

Mr. KELLER. In this particular instance, Mr. Wright, I don't know. I do understand that it is not an unusual practice that the Air Force will negotiate a contract for NASA. It may be that they are the main contracting agency working with the contractor.

Mr. WRIGHT. That is what I wanted to get at, is what the circumstances were under which NASA found it desirable to have the military negotiate for it rather than negotiate itself.

Do I understand that where one of the military departments may negotiate the contracts if it is being done by NASA and paid for by NASA funds, then the Defense patent policy is not used but, rather, the policy of the Space Agency?

Mr. KELLER. Yes. Continuing my statement, in cases where work is sponsored and completely financed by the Government, and performed for the express purpose of accomplishing research and development, there are persuasive reasons for urging that, in addition to the right to the free use of any inventions, improvements, or discoveries resulting therefrom, the Government should retain the property rights thereto, including any patents that might be granted therefor. Cf. *United States* v. *Houghton*, D.C. Md., 1927 (20 F. 2d 434 affirmed by the Fourth Circuit Court of Appeals, 1928, 23 F. 2d 386), holding that where an employee of the Public Health Service made a discovery or invention while employed to conduct experiments for the purpose of making it, his invention was the property

of his employer, the United States; and *Ordnance Engineering Corp. v. U.S.* (1929) (68 C. Cls. 301, cert. denied 302 U.S. 708), where the court was of the view that a Government contractor may occupy the same position as a Government employee with respect to rights in an invention made at the Government's direction and expense.

We recognize, however, that persuasive reasons, particularly incentive on the part of the contractor, can also be advanced for allowing the contractor patent rights to inventions, improvements, or discoveries made during the performance of a research and development contract with the Government.

Mr. WRIGHT. May I ask you a question, Mr. Keller?

Mr. KELLER. Yes, sir.

Mr. WRIGHT. You mentioned patent rights as an incentive to the contractor as a persuasive reason for allowing him to retain title. In your judgment would that be a proper incentive where the objective of the contractor is to produce basic research rather than some specific applied concrete development?

Mr. KELLER. I think of it this way, Mr. Wright. At least arguments have been advanced, and very frankly we have not felt we were in a position to completely evaluate them, that if a contractor does not retain patent rights, he in effect has little incentive to go out of his way to do anything more than is just what is required under the contract. How much weight you should give that argument, I cannot judge.

Mr. WRIGHT. I would assume that when it comes to basic as distinguished from applied research, that certainly the objective of the contract would not be the production of inventions in any event, would it?

Mr. KELLER. No, it would not.

Mr. WRIGHT. When you speak of incentive, these cost-plus contracts you are referring to all have a substantial margin of profit that is guaranteed or given to the contractor in addition to reimbursing costs, is it not?

Mr. KELLER. Yes, a fee.

Mr. WRIGHT. I beg your pardon.

Mr. KELLER. The contractor receives a fee.

Mr. WRIGHT. So if you are talking about it in terms of the incentive of the profit on the work, the contractor is assured of it whether he gets patent rights or not?

Mr. KELLER. Certainly profit is an incentive, but patent rights are an additional incentive.

Senator O'MAHONEY. Let the chairman remark, as a member of the Senate in 1949, and as one who has frequently talked with the late Senator Thomas who presented the National Science Foundation bill to the Senate, that when the National Science Foundation was established by law, there was no thought whatsoever of providing an incentive for the contractor. The sole thought was to create the National Science Foundation in the public interest.

You may proceed.

Mr. DINKINS. May I ask Mr. Keller one question?

Senator O'MAHONEY. Yes, Mr. Dinkins.

Mr. DINKINS. On this question of incentive in addition to the cost-plus-fixed-fee arrangement guaranteeing a cost to the contractor, aren't there many advantages he gets?

For example, doesn't he have the benefit of trained employees during the time of this research, and doesn't he acquire technical know-how, so that even if the Government did take title to the patent later on and it was dedicated to the public and several commercial contractors went into commercial use on that patent, wouldn't this first man who had all this lead time and commercial know-how have a distinct advantage over his competitors?

Mr. KELLER. I don't think there is any doubt about that. I think the first man in the field certainly obtains the technical know-how, he obtains the experience, with the result he has a definite advantage over his competitors. Sometimes he doesn't retain that advantage. But initially he does have an advantage, as a result of the research and development work or the so-called pilot production work he has done.

Continuing my statement, we think, however, that there can be little disagreement as to the need for uniformity where contracts are being performed in the same or similar research and development areas.

As pointed out above, the Department of Defense and the National Aeronautics and Space Administration sometimes contract with the same contractor on similar types of research and development work, but with entirely different contract provisions on patent rights. We feel quite certain there are a number of similar instances.

There is a need for the establishment by Congress of basic policies for the determination of patent rights derived from Government research and development programs. Whether the policies should provide for retention by the Government of patent rights, or for the granting of those rights to contractors with royalty-free licenses for Government use or whether more flexible policies should be followed are matters which are for determination by the Congress.

We suggest that in lieu of establishing one uniform policy governing patent rights under research and development contracts, consideration might be given to legislation which would give recognition to the functions and problems peculiar to the activities of individual agencies, as well as the differences in the types of research and development being contracted for by the Government.

Such legislation might appropriately set forth broad general policies, including basic principles, guidelines, and criteria, permitting a measure of flexibility in administration where circumstances so dictate, and might embrace some features of the present administrative practices and methods. We believe such legislation could give full regard to all considerations designed to serve and protect the public interest, the Government, and contractors.

Legislation along these lines would facilitate improved methods and practices for administering and carrying out our extensive research and development programs and bring about a degree of standardization in the handling of patent rights, with substantial benefits to all concerned.

In the chairman's letter to us of May 9, 1960, request was made that we comment on certain specific matters mentioned, as follows:

Should the Government retain property rights, including any patents, technical know-how, and data that may be granted under work sponsored and financed by the Government and performed for the express purpose of accomplishing research and development.

As indicated above, we feel that insofar as patent rights are concerned, there is presented a matter which must be decided by the Congress.

We suggest, however, that in lieu of establishing one uniform policy, consideration might be given to legislation which would give recognition to the functions and problems peculiar to the activities of the individual agencies, as well as the differences in the types of research being contracted for by the Government.

Senator O'MAHONEY. Let me interrupt you there, Mr. Keller.

It has been called to the attention of the Chair that Mr. Richard Gibbons, representing Senator Wiley, is in the room.

Will you not come forward to the desk.

Mr. KELLER. With respect to data, revision 51——

Mr. WRIGHT. Before you go to that, I wanted to ask you about this possibility of a flexible policy.

Did you have in mind by that something similar to the kind of flexibility that is given to the National Science Foundation in its statute?

Mr. KELLER. I think that might be one approach. I have some comments on that particular legislation later on. However, I think the departments and the agencies need more specific guidelines from Congress. When you leave the decision entirely up to the director, the administrator, or the secretary to take into consideration the equities of the Government, the equities of the contractor, and the particular research and development to be carried out, all people don't have the same views, with the result conflicting policies are followed.

Mr. WRIGHT. That is what I was getting at, whether you were suggesting that we have a standard by which the contracting officer would determine that.

Mr. KELLER. In such a case I don't think we would be much better off than now, because there would be differences of opinion. I have in mind that Congress should lay down policies to be applied in different situations, such as in basic research and applied research, and in research and development contracts which are in anticipation of a production contract. To my mind all these things fall in different categories. Yet there should be some flexibility to fit individual cases.

Mr. WRIGHT. Even for a single agency?

Mr. KELLER. That could be, yes.

Mr. WRIGHT. Thank you.

Mr. CLESNER. Mr. Keller, in regard to this flexibility, you said that it should have functions and set up principles and guidelines.

I would like to take you back to where you stated that NASA generally provides for titles to inventions. Isn't it also true that there is a waiver provision there?

Mr. KELLER. There is a waiver provision in the Space Act.

Mr. CLESNER. And doesn't this also provide great flexibility to waive, and also, aren't there set forth in this act principles and guidelines which the agency can follow?

Mr. KELLER. Well, I think that is true. The Administrator of NASA does have authority to waive. In exercising that authority NASA has a rather strict policy.

Mr. CLESNER. Actually, the waiver provision states that any proposal of the waiver must be first referred to the Inventions and Con-

tributions Board, where a record is made or should be made as to the reason of waiver.

Could this be a reason, for in the other instances the contracting officer does not usually have to make a record for the reason that he may waive, or, let's say, merely take a license rather than giving up title?

Mr. KELLER. As I understand it, the Space Agency feels that the conditions under which they can waive are pretty stringent. There is nothing to prevent them from waiving, but they do have to make a record and obtain appropriate recommendations.

However, as you know, the Agency is not satisfied with the patent provisions at the present time, and it is now seeking legislation to give them more flexibility, which, as I understand it, somewhat follows the policy of the Department of Defense.

Mr. CLESNER. From your viewpoint, would it be in the interest of the Government to be able to refer to the purchase record relating to why waiver was granted rather than not?

Mr. KELLER. As a matter of principle on that, I feel that whether it is in the field of patents or in any other field, where a right or an interest of the Government is decided one way or another, I think it should be a matter of record as to why it was decided in that particular way.

Mr. CLESNER. Then actually, if they were to carry out this policy in this light, what we would actually have is a case-by-case determination with a public record?

Mr. KELLER. That is right.

Senator O'MAHONEY. You are not suggesting that Congress should delegate to any agency a legislative power, are you?

Mr. KELLER. No, sir; I am not.

In fact, I am urging that Congress should lay out the guidelines for the agencies to follow. I don't think that Congress could by legislation decide the merits of each individual case that might come up. I think you should establish the policy and the necessary guidelines.

Senator O'MAHONEY. The General Accounting Office, then, is not suggesting that the contractor and head of the agency should have the private power to make these flexible rules?

Mr. KELLER. No, sir. We think that Congress should decide the policy. And the way the present situation is, we don't see how the question is going to be resolved, or that there is going to be any consistency, until Congress does act in the field.

Senator O'MAHONEY. Thank you very much.

Mr. KELLER. With respect to data, revision 51 of section IX, part 2, of the Armed Services Procurement Regulation enunciates the policy of the Department of Defense to require that research and development contractors furnish, as a part of the contract consideration, all data, including proprietary data. This policy to acquire all data resulting directly from the contract work is subject to only two exceptions:

(1) where standard commercial items are to be incorporated into the end item; and

(2) where items developed at private expense and previously sold to the public are to be incorporated into the end item.

By contract provision ordinarily required to be included in all defense research and development contracts, the Government acquires a

royalty-free, nonexclusive, and irrevocable license for "Government purposes" to utilize all data acquired and furnished without limitation except possibly to compensate the contractor for its related administrative costs.

However, it has come to our attention that, insofar as the military departments are concerned, the Government sometimes loses the benefits of competition on follow-on procurement of product development and contractor know-how through the failure to obtain and use drawings, which we would consider data, prepared by the contractor at Government expense.

We found that in some cases drawings required by the terms of the contracts either were not furnished or were unnecessarily delayed or the use of such drawings was prevented because of inadequate records, controls, and procedures regarding the receipt, storage, and issue of drawings for procurement purposes.

In a selective review at the Air Materiel Command, Department of the Air Force, we found that the Government has not been in a position to realize the maximum benefits of competition in many procurements of military items, components, and spare parts because manufacturing drawings were either not available or not readily accessible.

Although only a small percent of the contracts restricted the Government's right to use the drawings for procurement purposes, we found that contracts did not always contain provisions either granting or denying the Government the right to use them. Where the contracts were silent on the right to use drawings, the Air Materiel Command had construed them as not permitting the Government to use the drawings for procurement purposes. The position of the procurement office was contrary to the policy of the Department of Defense and the Department of the Air Force.

We also reviewed the receipt, control, and use of contractor-prepared drawings acquired at Government expense within the Bureau of Aeronautics, the Bureau of Ordnance, and the Bureau of Ships, Department of the Navy.

We found that although Navy contracts contain provisions, where applicable, for the submission by contractors of drawings and technical data for use by the Government in subsequent procurement, there were serious deficiencies in the receipt, control, and use of contractor-furnished drawings. The controls exercised by two Bureaus—Aeronautics and Ordnance—were inadequate to insure that all drawings required to be submitted by contractors are received by the designated storage activities. As a result, these activities are frequently unable to supply copies of drawings for use in subsequent procurement.

A recent examination disclosed that the Department of the Army awarded the contractor a research and development contract in March 1956 for delivery of four pilot model vehicles and one complete set of original drawings and reproducible prints, together with related engineering data, required for production of the vehicle. Under the terms of the contract, the drawings and other data were to be sufficiently complete to permit preparation of Ordnance Corps standard drawings. These drawings were to be delivered in 6 months, or by September 1956. Army contracting officials did not require the contractor to comply with the contract delivery terms and the drawings were not delivered until January 1957.

Ordnance records indicate that the drawings furnished by the contractor were unsuitable because of (1) lack of parts lists; (2) insufficient references to source information; (3) illegibility of reproducible prints; and (4) missing drawings.

Consequently, the drawings could not be used to obtain competition in the initial procurement of production quantities of the vehicles. As a result, the Army negotiated a contract for 500 vehicles on a sole source basis with the contractor that had developed the pilot models of the vehicles.

On the basis of the prices the Army subsequently paid for similar vehicles on competitive procurement, when proper drawings were available, it appears that if it had been possible to secure competition for the initial quantity of 500 vehicles, the cost to the Government for those vehicles would have been lower by about $875,000.

We are awaiting comments from the Department of Defense before submitting a formal report to the Congress on this case.

Mr. WRIGHT. Before you turn to the next question, I wonder if I could ask you a question.

On those contracts that you have just referred to where you had difficulty with the drawings, do they have the armed services procurement standard patent clause in them?

Mr. KELLER. In these cases I think the patent clauses are standard.

Mr. WRIGHT. I would like to call your attention to this provision of the standard clause, the provision which says, with respect to the Government's royalty-free license to use the inventions produced that—

> no license granted herein shall convey any right to the Government to manufacture, have manufactured, or use any subject invention for the purpose of providing services or supplies to the general public in competition with the contractor or the contractor's commercial licensees in the license field.

Do you feel that this problem would be helped at all by the elimination of that provision in the contract. It apparently is intended to make sure that the contractor has exclusive commercial rights not only in the invention, and I should suppose he may also have a feeling that those commercial rights ought to be broad enough to include the technical data produced in connection with the invention?

Mr. KELLER. Mr. Wright, are you applying that question to this particular example I am talking about?

Mr. WRIGHT. Yes, whether or not you feel you would have had the same difficulty if you had not had in the contract that kind of clause which assures commercial right to the contractor?

Mr. KELLER. To answer that question you almost have to decide whether there was any motive in the mind of the contractor in not furnishing drawings so he could get the following procurement.

Now as it turned out, the drawings were subsequently furnished, with the result that the Government was able to go out and get competition, and the vehicles were obtained from other sources later on. But we felt that if the Government, in this case the Army, had policed their job, exercised their rights under the contract, to see that the drawings and the other necessary data were furnished, then it would have been in a position to get competition on the first production contract, with the result that it looks like the Government could have saved itself three-quarters of a million dollars.

Mr. WRIGHT. I understand that under the proper construction of the contract provisions, the Government was entitled to that data, and entitled to it promptly. But isn't it a fact that this clause that I have just read does at least provide an incentive to the contractor that would not otherwise exist to withhold or at least drag his feet in supplying data which he knows the Government wants so that they can get a competitive bid from somebody else on the same item?

Mr. KELLER. Well, quite naturally, insofar as contractors are concerned, the less competition they have the better off they are. We feel that competition is a very vital thing if the Government is going to get good bargains, and good deals in their procurement operations.

Mr. WRIGHT. It is essential, isn't it, to procure at a reasonable cost?

Mr. KELLER. It is essential, certainly, if we are going to keep our economy within bounds at all.

Continuing my statement, whether under all conceivable circumstances the Government's interest may be sufficiently protected by retaining royalty-free license covering all governmental uses. For example, is the Government's interest sufficiently protected by a royalty-free license to use a patented process built in to a Government-owned production facility which terminates upon sale of the facility to a private owner?

We do not think that under all conceivable circumstances the Government's interest is sufficiently protected by retaining a royalty-free license covering all governmental uses. Even if, as a general policy, Congress should decide that the title to patents should be left with the contractor with the reservation in the Government to receive a royalty-free license, we believe that circumstances in particular cases would warrant the Government's retaining patent rights.

Should there be a uniform Government contracting policy, especially in those areas where different Government agencies are granting contracts which are carried on in similar research and development areas?

As indicated previously, we do not think there should be one uniform policy governing patent rights under research and development contracts. Some flexibility is desirable. However, we are of the opinion that there can be little disagreement as to the need for uniformity where contracts are being performed in the same research and development areas.

Whether the Department of Defense or the appropriate civilian agency should contract for—

(*a*) basic research projects concerning medical sciences, biology, physics, chemistry, or any other of the basic sciences;

(*b*) research and development contracts concerning projects that also fall within the scope and purpose of a civilian governmental agency.

We have made no studies in this particular area. Assuming definite patent policies are decided by the Congress, we see no apparent need for one particular agency to contract for either basic research projects or research and development projects, assuming the work to be contracted for is a responsibility and a need of the particular agency involved, even though another agency may have a similar responsibility and need. Of course, there is a need for close coordination between the departments and agencies in order to prevent duplication of efforts and costs.

Mr. CLESNER. I would like to ask you in regard to that, Mr. Keller, where the Government, let's say, for example, under the Space Act has set forth a policy, and where another agency, let us say the National Science Foundation, also would give grants or contracts in outer space sciences, which policy or philosophy would you say should be followed?

Mr. KELLER. I am not sure that I understand your question.

Mr. CLESNER. Your statement is, assuming definite patent policies are decided by the Congress, and in regard to space activities, in other words, space research and development work, the Congress has enacted a statute.

Mr. KELLER. Right.

Mr. CLESNER. This covers research and development in the areas of outer space sciences. Also, under the promotion of basic research, the National Science Foundation issues grants and contracts in the area of outer space sciences.

Would you feel that the patent policy dealing with that basic subject should be determined as a policy matter as stated in the Space Agency Act, which is a declaration of Congress?

Mr. KELLER. Your question points up the need for Congress to lay out the criteria.

I hestitate to say, when in the same area, that the National Science Foundation should, regardless of the circumstances, follow the policy of the National Aeronautics and Space Administration. You could bring still another agency in, because the National Science Foundation, the Department of Defense, and the Space Agency may all be working in the same area.

Mr. CLESNER. But, again, the Department of Defense does not have any congressional guidelines?

Mr. KELLER. That is correct, sir.

Mr. CLESNER. Whereas the Space Agency does, and this is of rather recent date.

Mr. KELLER. I feel that your question points up one of the real problems, and the need of Congress to settle it.

Senator O'MAHONEY. Your testimoney is based upon the function of the General Accounting Office, which is to examine contracts to see that the Government's money is well expended. You cannot go beyond that except as a personal opinion in giving answers with respect to the general outline of this problem?

Mr. KELLER. That is the way we feel, sir; yes.

Senator O'MAHONEY. You may proceed.

Mr. KELLER. Should the Government attempt to recapture research and development expenditures by charging a royalty for a license to use Government-owned patents?

We have not made the necessary studies to reach an informed judgment on this question, and therefore we are not able to comment on it.

We believe, however, that any answer to the question would have to take into consideration the necessary administrative procedure which would be required, as well as the public interest.

If I may just explain what we mean by that, if the Government gets into the business of evaluating patents, selling patents, I think that the administrative procedure which would have to be set up would be quite complex and quite cumbersome. And I think Congress should give it a lot of thought before it enters that particular field.

I also think there is a very basic question that must be decided by the Congress in the event that approach should be considered, and that is whether the Government itself, in taking into consideration, as I state here, the public interest, should be in the business of selling patent rights even though Government funds may have been used in research and development contracts which resulted in the patents.

Mr. WRIGHT. Is there, in your opinion, Mr. Keller, any agency now in existence which could perform that function? Is there an available administrative setup at all which could do that?

Mr. KELLER. Mr. Wright, I would have to think about that one a little bit.

Of course, the General Services Administration has overall housekeeping duties, or perhaps this is an area that the National Science Foundation should handle.

Mr. WRIGHT. The right to buy and sell patents, to acquire patents—I am wondering whether you feel that before any statute was enacted saying that the Government should collect royalties on inventions of its own, it would be necessary to create some administrative agency that doesn't now exist to put such a provision into effect.

Mr. KELLER. You mean as distinguished from having the individual departments carry out the policy laid down by Congress?

Mr. WRIGHT. Yes; whether in your judgment there are existing agencies in the Government that could carry out that policy if Congress declares it?

Mr. KELLER. I suppose each of the individual departments could carry out the work if Congress laid down the guidelines to follow.

Mr. STEDMAN. Mr. Keller, you indicate some hesitancy about the Government engaging in licensing or selling patent rights, including refusing licenses, presumably, in some situations.

Would you distinguish between those situations in which the Government engaged in such practices directly by administering licenses, or refusing to license its own patents, and all situations which might be considered an indirect act of the same sort where it refrains from taking rights and patents that it could have taken from private contractors and then simply leaves the right at the discretion of the contractors themselves?

Mr. KELLER. The question of the committee is: Should the Government attempt to capture research and development costs by charging a royalty for a license to use Government-owned patents?

I think as a general proposition, where the Government has the right to grant licenses, a royalty is not usually charged. In other words, maybe it is done for dissemination of information to encourage business generally or to prevent monopolies from taking place.

Mr. STEDMAN. The point I was trying to emphasize is whether, to the extent that the Government does not take title to patents that it could take title to but leaves these patents in private hands, whether it isn't doing exactly this in an indirect manner by simply saying, "We won't license or refuse license ourselves, but we will leave the right to private individuals to do this as they see fit"?

Mr. KELLER. Well, they are certainly not recovering their research and development cost by that policy nor is the public interest being considered.

Senator O'MAHONEY. It should not be overlooked in considering this question that a patent, according to the Constitution, is a limited monopoly, it is an exclusive right for a limited period, to use the words of the Constitution. Therefore, a royalty is a method which the holder of a patent uses to gain income. It is perfectly obvious that if the Government owns a patent and can charge a royalty, it would be a means of recouping part of the expenditure made.

Mr. KELLER. That is correct, sir.

Continuing my statement.

Whether or not the patent provisions incorporated in contracts and arrangements executed by the NSF comply with the congressional intent expressed in 42 U.S.C. 1871(a), to the effect that inventions produced by NSF expenditures should be disposed of in a manner calculated to protect the public interest and the equities of the grantee or contractor, 42 U.S.C. 187(a) provides:

> Each contract or other arrangement executed pursuant to this chapter which relates to scientific research shall contain provisions governing the disposition of inventions produced thereunder in a manner calculated to protect the public interest and the equities of the individual or organization with which the contract or other arrangement is executed: *Provided, however,* That nothing in this chapter shall be construed to authorize the Foundation to enter into any contractual or other arrangement inconsistent with any provision of law affecting the issuance or use of patents.

A review of the legislative history leading to the enactment of the National Science Foundation Act of 1950 discloses that the matter of patent rights was the subject of great concern in both Houses of Congress finally resulting in compromise and agreement on the provisions of section 12 of the act (42 U.S.C. 1871). During the course of these deliberations it was proposed in the Senate that a uniform policy should be established governing all agencies of the Government engaged in scientific research and a formula for such policy was set out in S. 1850, 79th Congress.

A general feeling developed among those interested in the legislation, however, that a bill establishing the Foundation was not the proper vehicle for fixing a uniform policy for all agencies, and that the patent provisions proposed in later bills and finally agreed upon represented a simple and a more realistic manner of dealing with the problem than the more elaborate provisions proposed in S. 1850. See Senate Report 1136, 79th Congress, of the Senate Committee on Military Affairs to accompany S. 1850; House Report 796, 81st Congress, of the House Committee on Interstate and Foreign Commerce, to accompany H.R. 4846, and Senate Report 90, 81st Congress, of the Senate Committee on Labor and Public Welfare, to accompany S. 247.

Senate Report 90 and House Report 796, which accompanied the legislation which became the National Science Foundation Act of 1950, indicate that the patent provisions of the act would allow the Foundation, in making its contractual or other arrangements for scientific research and scholarships, to take into consideration the necessities and equities of each project as it arose and that the contract or other arrangement, such as a grant, would in each case contain provisions governing the disposition of patent rights based on due consideration of the interests of all of the parties concerned, including the public, the particular individuals performing the research, and the institution or other organization sponsoring the particular project.

Senator O'MAHONEY. But is not the interest of the public stated first in the law?

Mr. KELLER. That is correct, sir.

As we understand the policy of the National Science Foundation, all patent rights arising out of contract or grant work are made the responsibility of the grantee or the contractor, with reasonable notice to the foundation of any foreign or domestic patent applications or any inventions claimed, subject to an irrevocable, nonexclusive, nontransferable, and royalty-free license to the Government to use such inventions. (See 45 CFR, pt. 620, secs. 620.9 and 620.10.)

We do not know the factors taken into consideration by the Foundation in adopting this policy. However, we think that the Congress intended that the Foundation decide as to patent rights on an individual case basis, after taking into consideration the interest of all the parties concerned, including the public, the particular individuals performing the research and the institution or other organization sponsoring the project, rather than the adoption of one policy governing the patent rights in all contracts or grants.

Senator O'MAHONEY. Mr. Keller, I think that you are giving undue weight to the second statement in the law. The provision is:

Each contract or other arrangement executed pursuant to this chapter which relates to scientific research shall contain provisions governing the disposition of inventions produced thereunder in a manner calculated to protect the public interest.

That is clear.

Mr. KELLER. Yes.

Senator O'MAHONEY (continuing):

And the equities of the industry or organization with which the contract or other arrangement is executed.

The question now arises, what is an equity?

You are giving too much definition to that. You are giving too broad a scope to that word "equities." Equity law is clear. The individual who claims an equity must prove it.

Mr. KELLER. Our position is this, Mr. Chairman. We do not think that the National Science Foundation should have adopted a general policy to be followed in all grants and research, but should consider each project and contract or grant to be made on an individual case basis weighing the equities, the public interest, and the other elements prescribed in the law in each case.

Senator O'MAHONEY. Well, in the case which we first gave here, in which the contractor set up the several different definitions and categories, on page 5 of your letter you say—

* * * primarily relates to a development believed to be sufficiently basic and important to provide a basis for a new industry or an entirely new product line.

Now, certainly the conception that the patent would provide for a new industry is not by any stretch of the imagination an equity, it is just the prediction of the contractor as to what is good for him. Do you not agree with me on that?

Mr. KELLER. That is right, in the particular case. I am sure the contractor was thinking of the contractor, not of the Government.

Senator O'MAHONEY. It ought to be clearly understood that under the National Science Foundation law the individual must show an

equity, a real one, not an imaginary one. And you have described contracts in which the so-called equity would be clearly imaginary.

Mr. Keller, speaking for myself and the committee, I want to thank you for your presentation. But there are others around the table who may want to ask you some questions.

Senator Hart, any questions?

Senator HART. Only to inquire whether this George Washington study that you referred to would be available to the committee when it is completed?

Mr. KELLER. I can't answer that, Senator, because we are not participating in the study.

Senator O'MAHONEY. We have had the George Washington University representative at the previous hearings, and we can have him again.

Senator HART. I think it might be helpful, because it apparently is the most current view academically of the question.

Mr. KELLER. I would assume, Senator, that when the study is complete it will be made available. However, the matter is not in our hands, so we cannot answer the question specifically.

Senator HART. And second, I would hope that Mr. Keller would be in a position to advise the committee as to the specifics of this major defense contractor that remains unidentified, and could particularize the nature of the work to produce these 90-odd——

Mr. KELLER. I would be very glad to do that very shortly, Senator.

Senator O'MAHONEY. That will be when your report is filed, will it not?

Mr. KELLER. Yes, sir.

Senator O'MAHONEY. The Chair has called upon the contractor to identify itself voluntarily. Apparenly the contractor is not represented here this morning. Mr. Gibbons, do you have any questions?

Mr. GIBBONS. No.

Senator O'MAHONEY. Mr. Dinkins?

Mr. DINKINS. I would like to ask Mr. Keller just one question.

Do you see any difference in principle between the Government charging a royalty on patents that it owns and the common practice in industry to charge royalties on patents which they own?

Mr. KELLER. From a strictly business standpoint, I see no difference. The Government is, I think, in a different category than business. Whether it is a good policy for the Government to get in business of that type, I don't know.

Senator O'MAHONEY. Well, the Government is seriously in debt. It needs new income, and if any sources of new income can be found without making the tax burden on the whole people greater than it is, that would be very welcome.

Mr. Wright, do you have any questions?

Mr. WRIGHT. Yes, I do, Senator.

In connection with Senator Hart's question, it is a fact, isn't it, that the interagency committee that was set up to determine what the Government patent policy should be insofar as there is data available has far more extensive data right now than George Washington University will ever develop; isn't that so?

Mr. KELLER. Well, I can't answer that because I am not up to date as to what George Washington University is going into.

As I understand it, the university is to lay out certain criteria for making the study.

Mr. WRIGHT. In other words, that is what I understood from talking to Commissioner Watson, and I want to see if this is your understanding, that all you are going to get from George Washington at this stage is a preliminary analysis about what kind of a study ought to be made rather than one which would provide a basis for congressional legislation.

Mr. KELLER. I think that is correct, Mr. Wright.

Senator HART. I see that it is Mr. Keller's opinion in the report that the interagency group explored many things, but none of the approaches they used resolved the basic complexity or seemed to afford a means of achieving an adequate basis for solution. So if this is the most exhaustive study, then apparently no study is available which specifically recommends to us a solution. Is that correct?

Mr. WRIGHT. I think that is correct.

Mr. KELLER. First you will have the G.W. study and then the interagency study.

Mr. WRIGHT. What I am suggesting, Mr. Keller, is that the impression I gathered from discussing it with Mr. Watson, who is the chairman, you will recall, of that group, is that the large gap in the data of the interagency committee study was the complete lack of information as to what actually had been done with the patents which contractors had retained, what use had been made of them, and that finding that out was a very expensive proposition which the Budget Bureau was not going to put up money for, and, as I understood it, the George Washington University Foundation has not been given the money necessary to provide that data at all.

Is that your understanding?

Mr. KELLER. I have seen a figure on the George Washington contract, and I think it is comparatively small. Certainly you couldn't do any great amount of research with it.

Mr. WRIGHT. So far as the problem depends on getting this data as to use, what has actually happened, what was done with these patents?

We aren't going to get it there, are we?

Mr. KELLER. Certainly not from the George Washington study based on the amount of money they are going to spend.

Mr. WRIGHT. I wanted to be sure I understood correctly what you are saying about the policy of the National Science Foundation. You refer to the fact that if the Foundation had adopted a policy, that is, this policy of delegating to the contractor or the grantee the disposition of patent rights—is that what you are saying?

And as I understand it, you say that is a policy which is not one in your judgment which would be justified under the terms of the statute; is that correct?

Mr. KELLER. In reading the statute and in the committee reports which accompanied the legislation, it seems clear that Congress said to the director, "Please look at these on a case-by-case basis, taking into consideration these factors, and then make your decision."

That is a little different than just adopting one policy.

Mr. WRIGHT. It is quite different, isn't it?

Mr. KELLER. To my mind it is.

Mr. WRIGHT. I gather you believe that the Foundation itself should make the determination on a case-by-case basis, and it should not dele-

gate to the contractor at all the disposition of the patent rights; is that correct?

Mr. KELLER. That is correct.

Now, if I may clarify myself. The Foundation might consider an individual case and then for good and valid reasons grant the right to the contractor or the grantee to dispose of the patent rights.

Senator O'MAHONEY. If he has any equity.

Mr. KELLER. The law says that the equity should be taken into consideration.

Senator O'MAHONEY. Well, he must have equity.

Mr. KELLER. That is correct; yes, sir.

Senator O'MAHONEY. That is only natural.

Mr. KELLER. What I am pointing out, Mr. Chairman, is that it seems to us that Congress intended for the Foundation to decide on a case-by-case basis.

Senator O'MAHONEY. Regarding equity?

Mr. KELLER. That is correct.

Senator O'MAHONEY. Professor Stedman.

Mr. STEDMAN. Mr. Keller, there have been several references throughout the testimony to situations in which Government contracts require the furnishing of data, of information concerning patent rights to the Government, to the governmental agency, and also references to situations in which patent rights have been granted or have been left to the contractor, notwithstanding that he has been presumably adequately compensated for doing the research job that he was employed to do. And my question is, under these circumstances, does the General Accounting Office look into either of these situations to see whether the Government has in fact received a good contract and has received adequate performance under that contract?

Mr. KELLER. We cannot look into each contract let by the Government. We couldn't conceivably do that with the number of people we have.

Senator O'MAHONEY. I will ask you, Mr. Keller, if the General Accounting Office has a policy with respect to cost plus contracts.

Mr. KELLER. Generally, the General Accounting Office does not favor cost plus contracts, but we do recognize that they can be justified, and maybe they are the proper contract when you get into an area where there is no cost experience, there is nothing on which to base any kind of a fixed price.

Senator O'MAHONEY. Well, in this field you have generally found cost plus contracts, have you not?

Mr. KELLER. I think that is generally true in research and development, not 100 percent, but as a general rule you will find cost contracts.

Mr. STEDMAN. Have you had any occasion at all to examine into the actual value of these supposed extra incentives that may come about through leaving patent rights with the contractor in these situations where the contractor has already been compensated on a cost plus basis?

Mr. KELLER. No, sir; we have not.

Mr. STEDMAN. Would you under these circumstances think it appropriate for the General Accounting Office, although you indicate that you have not explored the patent policies and practices of the various

agencies, be appropriate for the General Accounting Office to do so, in view of the very controversial issues that arise as to whether the Government is in fact getting a quid pro quo for what it is paying to the contractor in these circumstances, and do you have the reviewing authority to make such an inquiry?

Mr. KELLER. Well, I think if the committee so desired, we could do some limited examination. We would have to go back 2 or 3 years where a contractor in performing research and development work obtained patent rights and see what resulted. I think that would be the only way it could be approached.

Mr. STEDMAN. But it would be possible and also within your authority to do so?

Mr. KELLER. Our authority is quite broad. In addition, it is our policy to obtain information which is requested by congressional committees. We could run into a problem where the contractor's records might not be available to us.

Mr. STEDMAN. One other question that is connected somewhat with the question I was raising. You indicated, in connection with this major contractor who has not been identified, that is discussed on pages 4 and 6, I believe, that there were also contracts at that time entered into to a lesser extent with the Space Agency by the same contractor, and the Space Agency is operating under a different patent policy from the Defense Department.

Do you have any information to indicate that under the circumstances the contractor does not charge more? Because I assume both are cost-plus contracts; is that right?

Mr. KELLER. Even in a cost-plus contract you might see a variation in the fee, depending upon what the contractor is going to obtain in the performance of the contract.

Mr. STEDMAN. Is there any indication that that particular contractor did a poorer job or actually was charging the Government more in some direct or indirect manner in the Space Agency case than in the Defense Department case?

Mr. KELLER. Offhand, I cannot answer that.

I do understand that the contractor was not too happy about taking the patent provisions under the Space Agency contract.

Mr. STEDMAN. He would like to have had the patent rights under the Space Agency contract just as he did under the Defense contract?

Mr. KELLER. That is right.

Mr. STEDMAN. I think that is understandable. But you don't have anything to indicate that he actually dragged his feet or simply didn't give the Government value received for its contract?

Mr. KELLER. No, I have nothing along that line.

Mr. STEDMAN. Just one more question.

On page 11 in the last paragraph you answer the question that was submitted to you:

> Would you not think that under all conceivable circumstances the Government's interest is sufficiently protected by retaining a royalty-free license covering all governmental uses?

I suppose the word "Government" there could mean any one of three things. It could mean either the interest of the particular agency that was entering into the contract, or it could mean the Government operations generally in terms of carrying on Government functions,

or it could mean the Government in the sense of the broad public interest.

In which of these three ways are you using the term there?

Mr. KELLER. We are thinking of strict governmental uses, such as obtaining rights or licenses for use in other procurements.

Mr. STEDMAN. For governmental purposes?

Mr. KELLER. That is right—not for dedication.

Mr. STEDMAN. It is conceivable there might be some broad general public interest that the Government was legitimately entitled to and obligated to promote which might enter into this?

Mr. KELLER. I think that is entirely correct. I think there undoubtedly are and will continue to be cases where the public interest would warrant the Government obtaining all patent rights and all data for dedication to the public.

Mr. STEDMAN. There is probably not time at this hearing to do so, but would you be in a position to indicate to this committee fairly specific situations in which you feel that the Government, using it in a broader term, interest would be protected merely by receiving a royalty-free license, and specific instances in which you feel that it would not?

Mr. KELLER. I think we could furnish a couple of examples.

I think offhand the Government may wish to develop a particular machine for a particular purpose and conceivably there would be no use anywhere among the general public for that particular machine.

Perhaps in such a case the Government's right to use would be sufficient.

Mr. STEDMAN. But in this situation the patent presumably would be of no value to the contractor?

Mr. KELLER. Probably not.

Mr. STEDMAN. And you have already indicated that in these situations at least one contractor and maybe others don't even bother to get the patents?

Mr. KELLER. In the one case we were talking about, that is true.

Senator O'MAHONEY. Mr. Clesner.

Mr. CLESNER. Mr. Keller, this goes back to the Senator's point of public interest and the equity itself of the grantee or contractor regarding the National Science Foundation Act.

The subcommittee submitted to you a contract dealing with weather modification. And in this instance, if the invention were to be forthcoming, the contractor has all the rights, commercial rights to the invention; in other words, if any instrument were devised which would modify weather, as to the commercial market, or the commercial potentialities, it would be entirely the right of the contractor.

Now, my query there is, how do you weigh the public interest there versus the equities of the contractor or grantee?

Mr. KELLER. I think, Mr. Clesner, it is difficult to answer that question without knowing all of the factors that would go into making up this particular contract. On its face it would seem like studies in weather modification are certainly something for the benefit of the public as a whole. In this particular contract I wonder if the National Science Foundation was not following the general policy as distinguished from weighing the equities and the interest, because

the contract terms used do seem to carry out the announced policy of the Foundation.

Senator O'MAHONEY. In this contract, if the contractor were willing to make the research without fee or profit, that would be certainly an equitable consideration. And that is a question for us to pass on, and really it is beyond the scope of the witness.

Mr. Green, do you have any questions?

Mr. GREEN. Just one, Senator.

Assuming that a contract is completely financed by the U.S. Government, and on a cost plus basis, could you give me an example of what would be an equity which would justify the giving of patents to the contractor?

Mr. KELLER. There again I think it is the point which has been raised by many witnesses before congressional committees, the incentive on the part of the contractor to develop a process that would have a value to the contractor.

Mr. GREEN. He is being paid for that, isn't he?

Mr. KELLER. Yes, pay is one incentive.

But I have stated that we do not feel that we had made the necessary studies to really take a firm position on this, although we feel that Congress should, because we think it is in the interest of the Government to do so.

Mr. GREEN. On the one hand, if he did the contract without a fee, then there might be a possible equity or payment of some sort in the form of a patent?

Mr. KELLER. That would certainly be an equity. There is another type of equity.

As I understand it, in the case of the National Science Foundation a grant often is in effect a supplement to the work already done or already underway by the institution itself.

Mr. GREEN. If the contract itself provides for a fee for him, it is hard to conceive of some other equity that would justify the delivery of the patent, if he has already made his money out of the contract.

Mr. KELLER. It is a matter of opinion.

Mr. GREEN. I think that is all.

Senator O'MAHONEY. Thank you.

Mr. Keller, the committee is very much indebted to you. This morning has been a very interesting one. I think we have all gained knowledge and information from your testimony, and we are very grateful.

The committee, when it recesses, will recess until 2:30, when Dr. Allen Waterman of the National Science Foundation will be the witness. In the meantime, if any of the persons present desire to apply to be heard, Mr. Haaser, clerk of the committee, will be glad to receive their application.

The committee is now adjourned until 2:30.

(Whereupon, at 12:30 p.m., the committee adjourned until 2:30 p.m., the same day.)

AFTERNOON SESSION

Senator O'MAHONEY. The committee will come to order. Is Dr. Waterman present?

Mr. WATERMAN. Yes, sir.

Senator O'MAHONEY. Thank you very much, Doctor. Will you be good enough to come forward.

Doctor, you have a prepared statement?

Mr. WATERMAN. Yes, sir.

Senator O'MAHONEY. Have you extra copies?

Mr. WATERMAN. I believe so, yes.

Senator O'MAHONEY. It may be that there will be some demand for them.

Mr. WATERMAN. I will be very glad to supply them, Mr. Chairman.

Senator O'MAHONEY. Doctor, the question involved here is a question of interpretation of the National Science Foundation Act, and I think as an opener it might be well for me to read into the record something from the report of the committees which recommended this legislation to Congress.

My friend, the late Senator Thomas of Utah, who was a member of the faculty of the University of Utah, on March 3, 1949, filed Calendar Report No. 74. It was on the calendar as No. 74, but it was Report No. 90 of the Committee on Labor and Public Welfare.

In this report there was the following paragraph on patent rights:

> Section 11: This section provides that each contract or other arrangement executed pursuant to the act which relates to scientific research shall contain provisions governing the disposition of inventions produced thereunder in a manner calculated to protect the public interest and the equities of the individual or organization with which the contract or other arrangement is executed.

Let me stop there for a moment to say that equities, of course, must be found. If there are no equities, there is no provision. "Equities," of course, in law has a pretty definite meaning.

Now, going back:

> But the Foundation may not by any contractual or other arrangement alter or modify any provision of law affecting the issuance or use of patents. This section prohibits officers and employees of the Foundation from acquiring, retaining, or transferring any rights under the patent laws of the United States or otherwise in any invention which such officer or employee may make or produce in connection with the performance of his assigned activities and which is directly related to the subject matter thereof.

That was the Senate report. The House report followed. This report, which is Report No. 796 of the House of Representatives, 81st Congress, 1st session, was filed by Mr. Chrysler, on June 14, 1949. Like the Senate committee report, it has an explanation of the various sections. This was contained in section 12, which is described as follows:

> Section 12, patent rights: By subsection (a) it is provided that each contract or other arrangement executed pursuant to the act which relates to scientific research shall contain provisions governing the disposition of inventions produced thereunder in a manner calculated to protect the public interest and the equity of the individual or organization with which the contract or other arrangement is executed. This provision allows the Foundation in making its contractual or other arrangements for research and scholarship to take into consideration the necessities and the equities of each project as it arises. Subsection (a) fnrther provides that nothing contained in this act shall be construed to authorize the Foundation to enter into any contractual or other arrangement inconsistent with any provision of law affecting the issuance or the use of patents.

Then comes the report of the conference at which the conferees of both Houses met and came to an agreement on the contents of the bill.

This report, House Report No. 1958, was submitted by Congressman Priest from the conference committee on April 26, 1950.

It contains the language upon which the two Houses agreed. On page 6 of this report is to be found the following:

Patent rights, section 12(a): "Each contract or other arrangement executed pursuant to this Act which relates to scientific research shall contain provisions governing the disposition of inventions produced thereunder in a manner calculated to protect the public interest and the equities of the individual or organlization with which the contract or other arrangement is executed: *Provided, however,* That nothing in this Act shall be construed to authorize the Foundation to enter into any contractual or other arraugement inconsistent with any provision of law affecting the issuance or use of the patents.

"(b) No officer or employee of the Foundation shall acquire, retain, or transfer any rights under the patent laws of the United States or otherwise in any invention which he may make or product in connection with performing his assigned activities and which is directly related to the subject matter thereof: *Provided, however,* That this subsection shall not he construed to prevent any officer or employee of the Foundation from executing any application for patent on any such invention for the purpose of assigning the same to Government or its nominee in accordance with such rules and regulations as the Director may establish."

Now, in addition to that, I would like to call attention to the fact that section 3(a)(c) of the act provided for an annual report by the Foundation giving the Congress.

Information as to the acquisition and disposition by the Foundation of any patents and patent rights.

Although it has nothing to do with your testimony, Doctor, I should like to call on Mr. Green, who is one of the attorneys of the Judiciary Committee, to state what has been the practice in the Judiciary Committee with respect to Army practices dealing with invention by Army officers and employees.

Mr. GREEN. Well, we have had, Senator, in the 84th Congress and the 85th Congress and one bill in this Congress which authorized an award of $100,000 in each instance. To one person by the name of Arthur Friedman in the 84th Congress for an invention that he made which was a secret invention and was classified as such. Apparently, it was a very successful invention that aided in the prosecution of World War II.

On the basis that he could get no rights to that patent, the Judiciary Committee approved and the President signed an act giving him a $100,000 award for the invention.

Again, in the 85th Congress, in a similar situation, an award was made to Capt. Laurence Safford of the Navy for an invention that he made which also aided in the prosecution of World War II.

There is presently before the committee another bill of the same nature which I believe you are going over at the present time. In all cases, you were the chairman of the subcommittee.

Senator O'MAHONEY. In other words, it is the practice of the Department of Defense and of the Judiciary Committee, through the Patents Subcommittee, to recognize that employees of the Army have no patent rights. They work for the Army. Their inventions are important and they sometimes receive awards for these, but they have no right to apply for a patent?

Mr. GREEN. That is correct, because under those particular circumstances, due to the nature of the invention, it was highly necessary for the national defense and for that purpose was a secret invention.

Yet, the Government recognized the work that the particular inventor had done and his contribution.

Senator O'MAHONEY. Thank you very much, Mr. Green. I do this at this time because in this morning's testimony we learned that in research in defense the Army seeks to maintain a procedure of granting patent rights to contractors, but in respect to their employees the Army has always followed this policy of recognizing that the employees have no rights.

Mr. Green is called to another committee meeting later in the day and that was the reason for my asking him this question.

Mr. Wright, you may proceed with the testimony of Dr. Waterman.

Mr. WRIGHT. Doctor, I think we would appreciate it if you would just proceed with your statement; and, if we could interrupt you at the points where we think questions are pertinent, I think that would be the most helpful way to consider your statement.

Mr. WATERMAN. Thank you, Mr. Wright.

STATEMENT OF ALAN T. WATERMAN, IN BEHALF OF NATIONAL SCIENCE FOUNDATION, ACCOMPANIED BY WILLIAM J. HOFF, GENERAL COUNSEL, AND CHARLES B. RUTTENBERG, DEPUTY GENERAL COUNSEL

Mr. Chairman and members of the committee, first, may I introduce Mr. Hoff, the General Counsel, on my left; and Mr. Ruttenberg, who is Deputy General Counsel of the National Science Foundation.

In view of your introduction, Mr. Chairman, perhaps I might read the provision in our act with respect to the patents to which the background legislation referred.

Senator O'MAHONEY. Very well.

Mr. WATERMAN. If you would like to have me do that, I will quote this in the course of my statement. This is section 12 of the National Science Foundation Act.

We appreciate the opportunity to appear before you today to discuss the policy of the National Science Foundation with respect to patents developed through the course of Foundation-supported scientific activities and the possible impact of Government patent policies on the dissemination of scientific information. That this is an exceedingly complex area is evidenced by the extent to which the matter of Government patent policy has been the subject of previous consideration both within and outside the Federal Establishment.

If I may, I would like to first discuss the policies of the National Science Foundation as they relate to scientific activities supported by the Foundation, and which were considered briefly in a preliminary report of your subcommittee issued in 1959 pursuant to Senate Resolution 236. As pointed out in that report, the statutory basis for the establishment of the Foundation's patent policies is contained in section 12 of the National Science Foundation Act of 1950. Subsection (b) of section 12 relates to the production of inventions by officers or employees of the Foundation in connection with the performance of their assigned duties.

Since we do not conduct any research ourselves—and that is a statutory requirement—there has not been occasion for an officer or employee of the Foundation to acquire any patent rights to inventions

produced in connection with his Foundation responsibilities. I therefore believe it would be appropriate to eliminate subsection (b) from further discussion.

Subsection (a) of section 12, to which I have referred and which was the subject of the chairman's introduction, states as follows:

> Each contract or other arrangement executed pursuant to this act which relates to scientific research shall contain provisions governing the disposition of inventions produced thereunder in a manner calculated to protect the public interest and the equities of the individual or organization with which the contract or other arrangement is executed: *Provided, however,* That nothing in this act shall be construed to authorize the Foundation to enter into any contractual or other arrangement inconsistent with any provision of law affecting the issuance or use of patents.

As you can see, this gives the Foundation wide discretion with respect to the establishment of its patent policies.

We have thought a great deal about the matter of patents on inventions arising out of research or fellowship activities receiving support from the National Science Foundation. On the one hand, the public interest must be protected. On the other hand, when an organization or individual has spent a number of years working in a particular field of research it does not appear appropriate that, because of what may be a relatively small grant of funds from the Foundation to assist in further research in that field, the Foundation should insist that the Government receive all the fruits of those years of effort.

The vast majority of the Foundation's research support is provided through grants to nonprofit institutions, primarily those of an educational nature. The Foundation rarely supports research by profit-making organizations, and if it does, as it has in about eight cases, it does so by contract rather than through the grant mechanism.

In the vast majority of cases, the amount of money provided by the Foundation is substantially less than the funds actually needed to carry out the research. The institution brings to the research its facilities, the know-how of its scientific staff and its wide experience with research administration, and also its background of scholars in other fields which impinge on the problem immediately before them.

Under such circumstances, it would appear that, even if the Government should retain some rights to inventions developed during the course of such research, those rights should probably not include entire ownership of the patent. We, of course, do secure a royalty-free, nonexclusive license, for the use of the invention for governmental purposes.

Senator O'MAHONEY. May I at this point, Doctor, ask you to state what has been the amount, the total amount, of the grants that you have made in the term of your existence as a Foundation?

Mr. WATERMAN. I believe I refer to that later in this statement—$436 million all told, I believe, Mr. Chairman.

Senator O'MAHONEY. You are aware, of course, that the amount of money spent by other agencies in public research is vastly more than that?

Mr. WATERMAN. Yes, indeed.

Senator O'MAHONEY. You have published a booklet on the Federal Funds for Science, have you not?

Mr. WATERMAN. This is an annual publication, Mr. Chairman.

Senator O'MAHONEY. Yes.

Mr. WATERMAN. We have our ninth edition in preparation.

Senator O'MAHONEY. I have before me the book No. 8 which covers the Federal research and development budget for fiscal years 1958, 1959, and 1960.

Mr. WATERMAN. Yes, sir.

Senator O'MAHONEY. Now, that shows that in many other departments and agencies of the Government large amounts of money have been expended.

Mr. WATERMAN. Yes, sir.

Senator O'MAHONEY. Do you know what the total may be?

Mr. WATERMAN. The total as of now, total research and development funds by the Federal Government by the latest estimate is $8.4 billion.

Senator O'MAHONEY. Sometimes in reviewing the funds of the various agencies we get confused between appropriations and obligated funds and actual expenditures.

My information is that the three Departments of Defense—Air Force, Navy, and Army—together in the last 10 years have actually expended $23 billion. Do you know anything about that?

Mr. WATERMAN. We list in this annual report obligations and expenditures separately. I don't recall this figure, but we could easily give you that total, if you like.

Senator O'MAHONEY. Table 22 in your booklet for 1958, 1959, and 1960, on the top line gives the total for all agencies in the years 1947, 1948, 1949, 1950, and 1951, 1952, 1953, 1954, 1955, 1956, and 1957.

These figures run as follows:

1947, $619.4 million; 1948, $776.6 million; 1949, $938.1 million; 1950, $973.2 million; 1951, $1,481.9 million; 1952, $1,887.3 million; 1953, $1,900.1 million; 1954, $1,744.0 million; 1955, $2,044.6 million; 1956, $2,419.3 million; 1957, $2,724.4 million.

And so it goes, making a grand total during the last 20 years, as I recall, exceeding $35 billion of the public funds.

Pardon me, you may proceed.

Mr. WATERMAN. No doubt, the figures are correct, Mr. Chairman. I just don't recall them. I do want to call attention to the fact that this is all research and development, and that in the Foundation's program we are restricted in general to basic research support, which is quite a different thing, since it does not, in general, include end items.

Senator O'MAHONEY. Oh, yes, I understand that. You may proceed.

Mr. WATERMAN. Our mission is the support of basic scientific research, not engineering development. Basic research, as you know, is aimed at wider knowledge of the subject being studied without the particular goal of practical application. It results in the publication in recognized mathematical, scientific or engineering journals of an article describing the work and conclusions drawn from it. It forms the basis for the recognition by the scientific community of the importance of the work, and the originality and soundness of it, that motivates the basic research worker and not its practical use. He is, therefore, not looking for patents but to a full discussion of the research information developed.

In order to emphasize this point I would just like to tell you a little about the psychology of the scientific worker in this field.

He is trained from the minute he determines to be a scientist in the graduate school by his teachers that the one thing he must do is to look to discover something original, something new, and which must be sound in conception and execution of the plan. His reputation depends on this. His promotion as a scientists depends on this.

Now, he dare not under these conditions lose what the scientists calls the integrity of research. By this is meant in the first place that the work is sound. Second, that he gives credit to any individual who has done any work bearing on the field of the research.

He must do that in connection with any report he makes; and he must give credit to any other scientists for any device that he uses or ideas that he got from some other scientist. Now you see how this comes about.

Note that his work must be original. In order to be original, he must know what everyone else is doing, or he cannot know whether his work is original or not.

Suppose one of you and I were both in the same field of research. We must communicate freely. If we don't, we can't be sure each of us is original. So the whole goal of a scientist then is to communicate with his fellows everything he does as fast as he can in order that he can be sure they will do the same by him.

That is the only way he can guarantee that his work is original and new. I assure you that if he slips up on giving credit to a person who has done work in the same field or slips up on communication with someone who is in the same field, ignores another's work and claims for himself, he is immediately ostracized. In effect he commits suicide as a scientist.

This point of view is very important here, because you can see that his aim is to communicate what he does as rapidly as possible.

Now, in his career as a scientist he is looking to get ahead, and he wants to come out before anyone else, of course, with his original work. So he tries to communicate as rapidly as possible; his safeguard is the speed with which he can get results, you see, and above all not trying to hold them back.

If he holds them back, someone may beat him. This has a bearing on the patent question, because his mind is not on that sort of thing. He doesn't want to protect anything. He wants to get it out. Furthermore, everyone is in the same boat.

So this philosophy you can count on as being an essential characteristic of people in basic research. It differs very much from a person in applied research and development, say, in industry, where it is much to his advantage and to his firm to get out patents. This is quite an important point; and it is not an easy one for a person to see who has not been in research.

Mr. WRIGHT. Dr. Waterman, I would like to ask you a question in that connection. In view of this complete lack of interest that you have just described on the part of the basic scientific research workers in patent rights, I wondered why it is that all of the Foundation's basic research contracts provide for the retention of patent rights by the research contractor or grantee?

Mr. WATERMAN. The reason here is—it seems to me—that if they were required to report this to the Government, there would be a tendency then for the Government to hold the information until a

patent is claimed, and the researcher would be prevented or delayed then from spreading the idea.

Of course, I was giving you the general picture in basic research, and I am quite willing to to state that there are occasional cases where something emerges as a patent on the side, and in that case the plan is, of course, if they choose, to file on it. The use is usually quite limited in that case because there are not many people engaged in this scientific research in the same field who would have use for the device.

We do feel that in view of the equity—and I think that is the right word—of the institution, it is fair to allow them to file the application and let us know.

Mr. WRIGHT. If I understand you correctly, Doctor, the aim of the basic research contract is not to produce a concrete application or a patentable invention at all. In view of what you say, isn't it true that the extent that you incorporate in a basic research contract a provision which holds out the promise of reward to the researcher through patent rights, that you thereby divert him to some extent or may give him an incentive somewhat opposed to the purpose of the contract, itself, to produce an increase in general knowledge rather than to produce a specific application?

Mr. WATERMAN. I think the reasoning is there. We faced this question earlier in the Foundation, and it seemed to us according to the statute that we did have to make a statement about patents in the grants and the contracts that we made.

So this is fulfilling a requirement, you might say.

Mr. WRIGHT. You read the statute as requiring you to leave some patent rights or make some provision for patent rights in your contractors?

Mr. WATERMAN. I think it was necessary to put something like that in or we would be questioned by Congress as to why we didn't, since this patent question is something that we should make people understand. We do have a policy.

Mr. WRIGHT. Perhaps I misunderstood the language of the statute you read and the congressional reports that Senator O'Mahoney read.

But I thought it was quite clear from both the reports and the language of the statute, itself, that the Foundation was charged with the responsibility for making an individual study and determination of what the impact of patent rights would be on each contract, and then taking appropriate action which might include either no patent rights for the contractor, or perhaps title in the Government, depending upon the examination of the individual situation.

You don't understand, do you, that that language ever compels you to leave with a research contractor specific patent rights?

Mr. WATERMAN. Well, let me quote—my answer applied to the statement here:

> Each contract or other arrangement executed pursuant to this act, which relates to scientific research, shall contain provisions governing the disposition of inventions produced thereunder.

It seems to me that this calls for our making a statement of what it is we plan to do with respect to patents. That is why that provision is there.

Does that answer your question?

Senator O'MAHONEY. You haven't finished the sentence, Doctor.

Mr. WATERMAN. Oh, yes.

Senator O'MAHONEY (reading):

Shall contain provisions governing the disposition of any invention produced thereunder.

Mr. WATERMAN. Yes.

Senator O'MAHONEY (reading):

In a manner calculated to protect the public interest.

Mr. WATERMAN. Yes, sir.

Senator O'MAHONEY. That is the first.

And then, second, it says:

And the equities of the individual or organization with which the contract or other arrangement is executed.

Now since the equities of the individual or organization are bound to vary, each such contract must be different. But you make them all alike.

Mr. WATERMAN. You understand, Mr. Chairman, that the vast majority of our contracts, we make some 13,000, have involved no patents; we have only received assignments of patents for 3. That is only 1 out of 4,000. So we are talking about an extremely minor percent.

These grants or contracts are given to institutions with long experience in the scientific field. They have had vast experience in the areas where this occurs, and so have the men particularly concerned with research.

Therefore, their background is very considerable over the years. Besides that universities have available as few other institutions do people in neighboring fields that they can call on and this is not necessarily written in the grant. The point is that they have great experience to draw on.

Senator O'MAHONEY. The committee understands the difference between grants to nonprofit institutions and contracts with other organizations. But we are talking now about the grants. Let us say so.

Mr. WATERMAN. Yes.

Senator O'MAHONEY. Since the employees in such a case are not interested in patents, Mr. Wright's question is:

Why do you hold out to them the incentive that they may get a patent?

Mr. WATERMAN. I thought I answered that by saying I thought we were required to state what the patent provisions were by law.

Senator O'MAHONEY. I don't construe the statute that way at all. You have the discretion to measure the equities between A and B and C, and not to deal with them on a general basis.

Mr. WATERMAN. May I ask Mr. Hoff to answer this question further?

Mr. HOFF. I might just say that what Dr. Waterman has been referring to is what we ordinarily do, taking into account the type of grant and the type of research work that is involved.

Now, this is stated in our National Science Foundation publication, "Grants for Scientific Research."

Senator O'MAHONEY. I am asking you to answer what is stated in the law.

Mr. HOFF. I am talking of that, sir.

Senator O'MAHONEY. It is stated in the law that you must take into consideration the equities of the particular individual and the particular organization with which the contract or other arrangement is executed.

Mr. HOFF. I have that in mind, sir. I am coming to it.

Senator O'MAHONEY. Doesn't that bear——

Mr. HOFF. May I come to that? I am trying to explain.

Senator O'MAHONEY. Surely.

Mr. HOFF. In our general publication on this, our statement on patents and inventions is, forgetting an introductory paragraph—well, I will read the whole thing.

Patents and inventions: The results, by way of inventions or discovery, traceable to public funds made available through Foundation grants, should be used in a manner best to serve the public interest.

Ordinarily, disposition of patent and other rights in any inventions or discoveries made or conceived during the research shall be the responsibility of the grantee.

Now, that ordinarily does not mean always. For instance——

Senator O'MAHONEY. But that is not the contract, sir.

Mr. HOFF. This is a statement of practice.

Senator O'MAHONEY. I know, but the contract rides above that.

Mr. HOFF. Of course, it does, and what I am trying to get to is how we vary this in individual grants when the occasion arises.

What I am saying is, I first was trying to give our statement of policy, which is that ordinarily we believe the equity is going to rest with the institution, and on giving an individual grant that would be reflected in the provision in that grant.

However, when we feel the equity does not so lie, we change the provision.

For instance, in some grants that we have made under a new experimental program for the development of prototype laboratory equipment, where we have been giving grants not to profit organizations but to universities who are engaged in teaching in the field, we have required, among other things, that in arranging for manufacture of any patented article that they come up with, that they be certain to secure the widest possible distribution at the lowest price; and that any income received from that will be held for disposition in accordance with the wishes of the Government, namely, of the Foundation.

So it is clear that we do not have an ironclad uniform provision and certainly intend to watch any grants where it would appear as though the equity were with the Government.

What Dr. Waterman was trying to describe was the great preponderance of all our grants where we come in with some assistance somewhere in a long continuum of research. Somewhere in a man's lifework our grant may give him enough money to hire a couple of assistants. Our grant may give him money for a little equipment.

This is only a very small part of what he has put into it, what he is putting into it, and what he will. Under those circumstances, and also bearing in mind the very remote possibility of patents, it has been our policy—and we may be wrong—but it has been our considered policy that the equities lie with allowing the institution which has really funded all this over the years and which has brought the people

together, to secure the patent rights, reserving to the Government the royalty-free license.

I hope that answers the question.

Senator O'MAHONEY. I may have misunderstood you, but I certainly have the impression that Dr. Waterman's testimony was, in response to the question of Mr. Wright, that the same clause is in the contract.

(At this point in the proceedings, Senator Hart left the hearing room.)

Mr. HOFF. In most contracts. As I have tried to explain, the great preponderance of our grants fall in this area where we feel this is the correct clause. But this is not something that is in every one. We have made a few deviations.

Mr. WRIGHT. I would like to ask you a question, as a lawyer, Mr. Hoff, and simply as a matter of statutory construction.

I don't see how you read the language of the act as authorizing you or the Foundation to determine what you call an ordinary or general policy applied to, as you say it does, the vast majority of your contracts.

The statute on its face seems to quite plainly lay upon the Foundation the obligation of an individual case-by-case analysis of each contract or grant with respect to patent rights before it determines what disposition is made of those rights.

Now, correct me if I am wrong, but, as I understand it, what you have set out here, when you said—

> Ordinarily, disposition of patents and other rights on inventions or discoveries made or conceived during the research shall be the responsibility of the grantee—

Is precisely what you put in 90 percent of your research contracts, whether you are dealing with a grantee, an educational institution or a contractor who may be a private corporation; am I wrong about that?

Mr. HOFF. Let me put it this way. Ninety-nine point something—point fairly high, I believe—of all our grants and contracts are with educational institutions. We have had, I think, something like 8 contracts out of 13,000, 8 contracts with profit institutions, out of something like 13,000 grants.

Mr. WRIGHT. Let' s take one at a time.

Those with the educational institutions, you do in at least 90 percent, or let's say probably 99 percent, of those contracts delegate to the institution the responsibility for determining what shall be done with the patent rights, is that not correct?

Mr. HOFF. That is correct.

Mr. WRIGHT. And where do you read in the statute any provision which authorizes you to make that kind of a delegation?

Mr. HOFF. That kind of a delegation is made on the basis of each individual grant. The provision, whether that or a modified one, is in the individual grant instrument. It is not a general provision.

Mr. WRIGHT. I understood you to say that you have a boilerplate provision, if I may use the expression, which says that the responsibility for any patents or inventions that may result lies with the grantee or the contractor, as the case may be.

This is not a provision that you vary from contract to contract but is a provision which in those very words and in precisely the same

words appears in more than 90 percent of the grants of contracts you have let; is that wrong?

Mr. HOFF. I would only disagree in that this is put into each grant on the basis of the determination as to the nature of that grant.

Mr. WRIGHT. This is what you have done. Are you now telling me that that hasn't been done pursuant to any general policy? If it has, I don't understand what this statement in your pamphlet means.

Mr. HOFF. That is correct.

Mr. WRIGHT. That this is not a statement of general policy?

Mr. HOFF. That is correct.

Mr. WRIGHT. I don't understand what it is, because it says:

> Ordinarily, disposition of patents and other rights in any inventions or discoveries made or conceived during the research shall be the responsibility of the grantee.

That, I think, is a statement of policy.

Mr. HOFF. Let me put it this way. Out of the experience in dealing with these thousands of grants, it has become very clear to us that ordinarily—and "ordinarily" meaning looking at the facts in each individual case—the equities fall along this general pattern of some support somewhere along in somebody's general work.

That is the reason that the standard clause—of course, it is a standard clause. We wouldn't want to write a different one saying the same thing in 12,000 contracts.

Mr. WRIGHT. Can you tell us in how many instances you have written a clause under which the title to the patent produced was to be retained by the Foundation for the Government?

Mr. HOFF. In a few cases we have reserved certain rights beyond the royalty-free license to the Government.

Mr. WRIGHT. How many?

Mr. HOFF. I don't know. I think in this particular program that I mentioned a minute ago. I think there have been about 30 grants.

Mr. WRIGHT. Out of how many that you have made altogether?

Mr. HOFF. In that program? All of them?

Mr. WRIGHT. I say 30 out of how many?

Mr. HOFF. I don't know whether there are others. This is a particular program.

Mr. WATERMAN. A special program.

Mr. WRIGHT. What is the particular program you are referring to?

Mr. HOFF. This is the program referred to before of grants to universities to try to develop prototype laboratory teaching equipment for scientists.

Now, the reason there is that this is not something that has been the life concern of the individuals. We are not merely giving a little assist, although some universities have done a good deal of work on it, we are purposely stimulating the effort.

Also, this is something which is looking forward toward practical development. It is not looking toward a scientific fact. It is looking toward the development of hardware, if you will. So this is where we think that the equities are entirely different.

Mr. WRIGHT. What you are talking about now, I take it, is a program directed toward a specific application which you would not call basic research?

Mr. HOFF. That is right. It is a basic research tool, if you want to call it that, a teaching tool.

Mr. WRIGHT. I gather it is basic research with some immediate or near future application in view?

Mr. HOFF. It has specific application, certainly.

Mr. WRIGHT. And you are saying that where you have the specific applications, then you do reserve titles to the Government in this program?

Mr. HOFF. We don't generally make grants for specific applications. I would have to answer that on each individual case.

Mr. WRIGHT. I understood you to say that what distinguishes this educational appliance—or whatever it is—device program from your other grants, is that here you do contemplate specific applications.

Mr. HOFF. That is correct.

Mr. WRIGHT. And you say where you contemplate the specific applications, you then reserve title in the Government?

Mr. HOFF. I didn't want to answer that categorically.

Mr. WRIGHT. In this instance you have.

Mr. HOFF. I would say, in any case where there is a specific application contemplated, we would look at it with an extra careful look, to be sure that the Government should not have some greater patent rights.

Mr. WRIGHT. Are there any other instances where you believe—what other criteria have you applied, if any, which resulted in a modification of this standard clause of yours so that the Government would have greater rights than a royalty-free license?

Mr. WATERMAN. I don't think of any, Mr. Chairman. There are some which are designed to give information to the Science Foundation to solve problems of its own which, however, are not in this area of producing things that are patentable; but, rather, research into methods and procedures and summaries and surveys and conclusions drawn from them. I think that is correct.

May I return, Mr. Wright, to your original question, just to add one more thing?

Mr. WRIGHT. Sure.

Mr. WATERMAN. You were asking about why we have this clause in practically all our grants.

Mr. WRIGHT. Yes.

Mr. WATERMAN. One reason is because—and this is a fairly easy question to answer to a person who has been in academic research—these grants resemble each other very strongly in respect to the experience of the group in the university, as we learn in the process of appraising the grant. Incidentally we make a high selection here; only about one in three can we activate.

In that process of selection it always appears—the experience of the group—as an important factor. So the equity is there in substantially all of them, you see.

Now, in addition, one more thing. One might ask the question: Why do we put any patent clause in at all under those circumstances?

The answer is: Because this basic research is research into the unknown. You can't be sure of what you are going to find. You can't be certain that the investigator can tell you in advance how he is going to go about it.

So on the off chance, which occasionally happens, that something comes up that is patentable: it pays to tell them under those circumstances what the outcome would be.

Mr. WRIGHT. And your practice is to provide that in the off chance that a useful patent develops out of those intended to be pure research, that the contractor receives the benefit, rather than the Government?

Mr. WATERMAN. That is correct, and that he knows what to do. This is an educational institution.

Senator O'MAHONEY. Mr. Wright, may I ask a question there?

Mr. WRIGHT. I am sorry, sir.

Senator O'MAHONEY. That is quite all right. I have listened with a great deal of attention to what you both have said, and, frankly, you will pardon me if I say that I think you have both talked all around the question and avoided the issue.

It is clear that you use the same "boilerplate" clause in all these contracts, and yet the contracts go to organizations, nonprofit organizations probably, the employees of which are schooled and trained to have no interest in patents.

Yet you delegate to the nonprofit organization the power that Congress gave to you, and there is no phrase or sentence in the law which gives you the power to make the delegation.

Mr. WATERMAN. Except that there is this matter of equity, Mr. Chairman, which we——

Senator O'MAHONEY. Oh, no, equity varies from case to case. You cannot use a general equity for all individuals.

Mr. WATERMAN. I thought we tried to explain, Mr. Chairman, that we did make exceptions to this, but that in the vast——

Senator O'MAHONEY. How many exceptions?

Mr. WATERMAN. As Mr. Hoff was saying——

Senator O'MAHONEY. Dr. Waterman, I ask you to produce for the committee one contract showing an exception.

Mr. WATERMAN. Well, the exceptions are the ones where we——

Senator O'MAHONEY. Produce one contract showing an exception.

Mr. WATERMAN. As we said, there were three cases where a patent has been granted, only three.

Senator O'MAHONEY. Did you report to Congress?

Mr. HOFF. It will be in the next annual report. It just came in.

Mr. WATERMAN. It just came in. We will have it in our next annual report. We had none until this year.

Senator O'MAHONEY. Did you have any for any previous year?

Mr. WATERMAN. No, sir.

Senator O'MAHONEY. Was this the same phrase in this contract?

Mr. WATERMAN. Exactly.

Senator O'MAHONEY. That makes it clear. We can't agree, at least I can't agree, with your interpretation of this plain language of the congressional act.

Mr. WATERMAN. I just don't understand that, Mr. Chairman, because I thought the clause that you called attention to a minute ago stated that the Government had to take into account the equities of the institution, and we went to some pains to say we think in these cases the institution does have an equity. I am not a lawyer.

Senator O'MAHONEY. It says—

shall contain provisions governing the disposition of inventions produced thereunder in a manner calculated to protect the public interest and the equities—

plural—

of the individual or organization with which the contract or other arrangement is executed.

That recognized that the equities are necessarily different between every individual and every organization. You make no difference. You just grant the delegated power of patents because you have no regard for patents.

(At this point in the proceedings, Senator Hart enters the hearing room.)

Senator O'MAHONEY. We say to you—I say to you—that the Constitution gave to Congress the power to issue, to make these patent laws. It did not give it to any contractor, whether they be nonprofit——

Mr. WATERMAN. Yes. Let me try again, Mr. Chairman.

What I have tried to say was—and it would be readily apparent to a person who is very familiar with academic institutions and their research—that in this respect science departments and academic departments, in general, have this in common.

One could try one individual case after another and find them absolutely alike in this respect: that there is just an outside chance there might be a patent, but that the purpose is not a patent, in general. That is the first point.

The second is that the institution has a longstanding experience in the field, and a longstanding competence. All the Government is doing is coming in at one point of time and giving a little needed assistance so that they can get on with their work.

You see, the Foundation is not interested——

Senator O'MAHONEY. But, Doctor, you have painfully explained that the research in these institutions has no regard for patents. They can't have any regard for patents, because their desire is to communicate everything immediately.

Mr. WATERMAN. Yes.

Senator O'MAHONEY. (continuing). To all their associates. They have no interest in patents.

Yet you write in the boilerplate clause to give them an interest in patents. It just doesn't make sense, scientific sense nor legal sense.

Mr. WATERMAN. Our statement is "ordinarily," Mr. Chairman. What I am saying was we don't have to look at each individual case to formulate a general policy, but within the general policy we should make exceptions where we see they need to occur, and that is what we are trying to say we have done.

Senator O'MAHONEY. Your general policy, then, is to give these people who don't like patents the right to get patents?

Mr. WATERMAN. On the off-chance that one may arise.

Senator O'MAHONEY. And you make the exception of a few cases?

Mr. WATERMAN. On the off-chance that one may arise.

Senator O'MAHONEY. That is amusing, Doctor, if you will pardon me for saying so.

Mr. WATERMAN. Well, three grants out of 13,000 sounds like an off-chance.

Senator O'MAHONEY. Let's abandon this debate. We are getting nowhere. The interpretation will be clear to the members of the committee.

You may proceed.

Mr. WATERMAN. The Foundation rarely supports research by profitmaking organizations, and if it does, as it has in about eight cases, it does so by contract rather than through the grant mechanism.

In the vast majority of cases, the amount of money provided by the Foundation is substantially less than the funds actually needed to carry out research. The institution brings research——

Senator HART. Mr. Chairman, may I inquire of the doctor where you are now reading?

Mr. WATERMAN. Yes, sir. Page 3. I am on the third sentence, page 3.

Mr. WRIGHT. I think, Doctor, you had covered that.

Mr. WATERMAN. I had forgotten where I had finished—whether I had finished that paragraph.

Mr. WRIGHT. I think, when I interrupted you, you were down to the bottom of the page, the third line from the bottom of page 3.

Mr. WATERMAN. Yes, you are quite right.

Furthermore, basic research is concerned primarily with the study of natural phenomena and the ascertainment of natural laws and principles. The prospects of patents arising from such research which have commercial value, therefore, are very limited.

This is borne out by our experience today. Since its inception up to the present time the National Science Foundation has made over 13,000 grants for suport of scientific activities. The estimated total dollar amount of grants through fiscal year 1960 is approximately $436 million. In addition, the Foundation has awarded approximately 13,000 fellowships to individuals for scientific study or work.

During that time we have been informed that only three patents have been obtained on inventions developed in connection with scientific activities supported by the Foundation. Two of these patented inventions arose during research conducted by the Midwestern Universities Research Association under a grant from the Foundation and the third was developed in connection wtih research supported by the foundation at Brigham Young University.

We, of course, have received royalty-free licenses to use these inventions for governmental purposes.

All three of the patents have been assigned to the Research Corp., a nonprofit organization which distributes its net income to colleges and universities as grants-in-aid of fundamental research. Under its arrangements with educational institutions, the Research Corp. acquires from the institution inventions which may have commercial prospects. The Research Corp. bears all costs incidental to patent processing and licensing of such inventions. Income from patent royalties is divided among the institution, the inventor, and the Research Corp.

The institution's share is, of course, devoted to research and education purposes. The corporation's share, after deduction of expenses, is applied to sponsoring further basic scientific research.

Institutions such as Harvard, Yale, the Massachusetts Institute of Technology, the University of Pennsylvania, New York University,

and other leading institutions of higher learning have utilized the services of the Research Corp.

In fiscal year 1958, the Research Corp. awarded colleges and universities about $1.2 million as grants-in-aid of fundamental research. In point of fact, therefore, the bulk of any income received from patents developed during the course of research supported by the National Science Foundation generally would go back into scientific research or be used for other educational purposes. Since the Foundation was established, we have been notified, in addition, of 13 other applications for patents. Two of these applications have since been abandoned.

Our policy had been to require notice to the Foundation at the time the patent, if any, was received, and for the royalty-free, nonexclusive license also to be granted at that time. We changed this policy last year, however, so that the Government receives its license and the Foundation is notified at the time of application for the patent.

At one time the Foundation reserved the right to determine disposition of any foreign patent rights accruing in connection with foundation-supported activities. It had been thought that U.S. Government ownership of the foreign rights would place the United States in a better position to bargain with foreign governments with respect to the right of the United States to use inventions made by foreigners and patented in foreign countries or in the United States.

We found, upon inquiry of other Federal agencies, however, that in no case was there any interest in the retention of such rights by the Federal Government, one reason probably being the cost of prosecuting the foreign application.

Furthermore, we understand that under the various NATO status of forces agreements and similar agreements between the United States and foreign countries, the respective governments receive access to foreign inventions by way of patent exchange clauses.

The Foundation's present policy with respect to foreign patent rights is now the same as with respect to domestic rights: namely, that the Government receives a nonexclusive, royalty-free license to use the invention for governmental purposes.

We understand that several efforts were made to encourage industry to underwrite the cost of obtaining foreign patents on U.S. Government-owned inventions in exchange for a royalty-free, nonexclusive license under the foreign patents.

These efforts were unsuccessful undoubtedly because the industrial organizations would have had no protection for the investment of the funds required to obtain foreign patents in the absence of a grant of an exclusive license from the U.S. Government.

Senator O'MAHONEY. May I interrupt, Doctor?

Mr. WATERMAN. Yes, sir.

Senator O'MAHONEY. To ask you whether it has ever occurred to you that it might be a good policy to require the retention of the title by the Government and the dedication of any royalty that might be received to the payment of the national debt?

Mr. WATERMAN. We have always thought of this, Mr. Chairman, as such a very small fraction of what we do that I should think the question of materiality might arise there.

If we tried to look into this too thoroughly, then we might spend more money doing it than the royalties would involve.

Senator O'MAHONEY. This committee is considering not only the National Science Foundation, but all the rest of the agencies.

Mr. WATERMAN. Yes.

Senator O'MAHONEY. And among them all, with the number of patents that are developed, there would be a considerable income to the Government if it had a right to charge a royalty on its government-owned patents.

Mr. WATERMAN. On any patent matters for devices that were worked out for public use; yes.

Senator O'MAHONEY. And, of course, the Government is now seriously in debt, and the public has to pay over $9 billion a year for interest on the national debt. So we are dealing with a very broad problem.

Mr. WATERMAN. Yes. Well, of course, this would mean considerable revenue if these devices were all worked out for public use, if the Government had some mechanism for doing this. I can't say that I am a specialist on this general question, Mr. Chairman, except I do know that this is a question that has vexed the Government for years and years. There have been arguments on both sides.

Insofar as the National Science Foundation is concerned, this is a very minor problem, you see.

Senator O'MAHONEY. Would you object to having the Congress make the law in such a manner as to make you a judge in this whole patent field?

Mr. WATERMAN. I think, Mr. Chairman, we at present——

Senator O'MAHONEY. I mean in the patent field involving research and development.

Mr. WATERMAN. I understand. This would completely change the character of our organization in a very important respect, Mr. Chairman, because our business is basic research and education in the sciences, and not development.

Senator O'MAHONEY. You could go on with your basic research. This would just be an additional duty.

Mr. WATERMAN. Yes, but I mean we have no employees who have made any specialty of applied research and development at the present time.

We would certainly have to, if this were done, take on a large staff of people who knew applied research and development.

Senator O'MAHONEY. It may be that it would not be altogether wise, but it may be wise and it may be necessary to establish a uniform policy for all agencies involved in research, applied and basic.

Mr. WATERMAN. I should think, if one were considering this broad question, the right approach would be to assign such responsibility to an agency that already had interests in applied research and development, so they would have a staff completely familiar with the problem, and avoid taking on a new kind of responsibility.

Senator O'MAHONEY. Well, for 20 years various agencies have been dealing with the matter. They have staffs that are supposed to be familiar with it, but there is no uniformity.

Mr. WATERMAN. You see my point. It would take us far afield from our present assignment.

Senator O'MAHONEY. Oh, I do.

Mr. WATERMAN. Perhaps an agency with a closer contact here would be a better way of doing it.

Senator O'MAHONEY. You may proceed.

Mr. HOFF. I might just add something to that. I think any effort to have any single agency pass on proposed grants and contracts by the whole Government would produce——

Senator O'MAHONEY. That is not the suggestion.

Mr. HOFF. I misunderstood the suggestion then. I think the general idea of trying to work toward uniform policies of the Government——

Senator O'MAHONEY. With respect to patents.

Mr. HOFF. Yes, with respect to patents, is certainly something we would be happy to be part of.

Senator O'MAHONEY. That is an encouraging word.

Proceed, Doctor.

Mr. WATERMAN. We can make a contribution to this in the field of science, Mr. Chairman.

I have mentioned the general approach that we have taken with respect to inventions arising out of Foundation-supported scientific activities. It has been based in large measure upon three considerations.

1. The substantial contribution of the organizations involved.

2. The fact, in the vast majority of cases, that the grantees are educational institutions whose policy is to make scientific information freely available and whose income is devoted to research or educational purposes.

3. The fact that the purpose of basic research is the ascertainment and dissemination of new knowledge, and that patentable inventions would therefore be infrequent and rarely of commercial value.

This approach, however, is far from inflexible and we would not hesitate to make different arrangements where particular circumstances appear to warrant it, as, for example, where it may appear that the contribution of the grantee or contractee has been very minor or where the public interest requires it, as in the case of an invention affecting the public welfare or which may result in very large sums of money being received.

Mr. WRIGHT. Excuse me, Doctor, but may I ask you:

What do you regard as an invention affecting the public welfare that falls within that category?

Mr. WATERMAN. Oh, there are many. Anything related to public health, anything related to agriculture, anything related to power, ways of producing power, nutrition, transportation, communication—any of these general things.

Mr. WRIGHT. Thank you.

Mr. STEDMAN. Have any of your contracts related to these fields in the sense that they might relate to some developments that could be used in these areas?

Mr. WATERMAN. Usually, not at all directly. It is true that many ideas that affect public welfare come out of basic research, but history shows that in the first place the finding has to be verified by other scientists and that takes usually a few years to make sure it is right.

Second, somebody has to take it in hand who has a different motive, in general, from the basic research scientist—someone who wants to do something with it.

Now, commonly, this can take place in Government laboratories or in industry where their goals are practical.

Mr. STEDMAN. Have you in these 13,000 grants and scholarships given consideration to this aspect of it?

Mr. WATERMAN. Oh, yes.

Mr. STEDMAN. Deciding whether to allow any patents that might result to be retained?

Mr. WATERMAN. Yes; Mr. Hoff mentioned one which is concerned with the ideas for the improvement of equipment used in science instruction. However, even here it is the ideas that we are after.

But if equipment comes out of it, this might be in the public interest in education and science, so we did deal differently with it.

Mr. STEDMAN. And, so far as I understand it, you have had only about 30 cases; is that right?

Mr. WATERMAN. That is right, yes, in that particular program. But in all we watch this point.

Mr. WRIGHT. As I understand it, Mr. Hoff—and I may have misunderstood you before—the fact is, is it not, that even in those special cases where you are dealing with what you regard as the possibility of a public welfare invention, that even in those cases you did not reserve title to the invention for the Government, did you?

Mr. HOFF. No. We put restrictions on how the patent would be used, in effect, by requiring the widest dissemination at a price that would make it possible to get the greatest distribution, and retention over the use of the funds, directing the use of the funds.

Mr. WRIGHT. But all that the Government got for itself was a royalty-free license to use for governmental purposes; isn't that so?

Mr. HOFF. That, plus the use of the funds accruing from it in the public interest.

Mr. WATERMAN. This is not one of the fields I mentioned, Mr. Wright, but it is a little narrower than those. But that is an illustration of the point.

Mr. WRIGHT. Yes, I understood that, but if I understand you or Mr. Hoff correctly, there are no other contracts or grants you have made which have public welfare considerations as to the nature of the inventions which have led you to have the Government retain title.

In fact, as I understand you, you have never made a contract or a grant where you thought there was a public welfare consideration sufficiently important to justify retention of title in the Government.

Mr. WATERMAN. The interest is too remote, I think. Perhaps this would be a good illustration. As we all know, the way in which plants utilize sunlight is a very important thing to be able to understand, because if we understood it, we might do likewise or perhaps even do better.

So the study of photosynthesis is a very important basic scientific study, and we have made a number of grants related to that. But in none of them does anyone see yet a possibility of any application coming in because we don't fully understand it yet.

But that is an area, you see, of great public interest, if we could do it.

Mr. WRIGHT. Yes, it is. Isn't it true that the only way to be sure that these accidental, unanticipated developments do not result in some private monopoly for a research contractor or grantee is to have title in the U.S. Government? Isn't that the only assurance we have that when and if an accidental concrete application arises out of one of your basic research contracts, that the Government is protected against its having financed a private monopoly?

Mr. WATERMAN. That is a question on which I don't regard myself as an expert. I would say this: What is important is full public use and availability at a reasonable price. The important thing to get is use.

Mr. WRIGHT. Yes. I put the question to you:

How can you assure general public use where the contractor is entitled to exclusive commercial rights, title or rights, which permit him to exclude other citizens from practicing the invention, other citizens, members of the public?

I am not talking about the Government, itself.

Mr. WATERMAN. I am really not prepared to argue the case except if there is a public demand for it, then there is a great incentive to produce it.

Mr. WRIGHT. I understand there is a great incentive; if the man who developed it is sitting there with a patent, he will determine what other private citizens produce it and at what royalties; will he not?

Mr. WATERMAN. As a matter of fact, history shows that out of basic research there usually does not come just one patent, but quite a number. In other words, there are a number of ways of accomplishing the practical result which is pointed to in the basic research.

So, usually, what comes out of this is quite a variety of ways in which the thing can be done, and the ingenuity of people working on applied research and development is such that they often come out with a number of ways in which this can be achieved.

Mr. WRIGHT. At the time you make a contract, either you or the contractor hasn't the faintest notion as to what may ultimately come out, has he?

Mr. WATERMAN. No.

Senator O'MAHONEY. May I at this point read a sentence or two from Dr. Vannevar Bush. His final report is entitled "Science, the Endless Frontier." This was quoted by Senator Thomas in his report to the Senate, Report No. 90, submitted in 1949.

Says Dr. Bush:

> Future progress will be most striking in those highly complex fields, electronics, aerodynamics, chemistry, which are based directly upon the foundation of modern science. In the next generation technological advance and basic scientific discovery will be inseparable. A nation which borrows its basic knowledge will be hopelessly handicapped in the race for invention. The other world powers, we know, intend to foster scientific research in the future.

This, Dr. Waterman, is the reason why I pledge the public interest first. I know Dr. Vannevar Bush very well, and had many conferences with him at the time that the Science Foundation Act was passed. I know without any reservation that he was for the public interest. He was able to see into the future. He knew, as many of our people don't know now, that we were about to be involved in a great economic race, as well as an arms race, with Soviet Russia.

These are fields in which the public interest is dominant, and we should be sure, it seems to me, that patent rights are not given away lightly.

They must be based upon equities, not upon equity defined in a general statement.

You may proceed.

Mr. WATERMAN. May I say, Mr. Chairman, I served with Dr. Bush during the war and talked with him many times of this, and also with Senator Thomas.

Another point to keep in mind on this subject, I believe, is that when one raises the patent question, one is apt to think in concrete, specific terms of a particular item. I have been heard from many times on the importance of the basic research for this country and as to the need for emphasis there.

I want to point out that basic research accomplishes something else which most people don't realize. These are in the published papers that come out in basic research. These are the ground materials that our best engineers use in keeping our developments up to date. This is an unsung performance.

It isn't usually realized. But engineers have a tough problem to tackle. They have to go back and look up all that has been done in research, and they pick up little items from one man, little items from another. Just a significant statement or a piece of data, information about a material or something about a process which has succeeded, little incidentals in the basic research which were not the main purpose; but that background of information available to our engineers is what keeps our engineers up to date, as well as the striking things which come out which everyone sees.

In other words, to keep our development modern, our engineers have to have this background, this stockpile as it is sometimes called, of the latest information from basic research so that they can fill in what they want to do in little details, in little ways, which makes all the difference between a product which succeeds and one which does not, even though there is no striking single thing like a transistor that highlights it.

That is another consideration to keep in mind.

Continuing with my statement, Mr. Chairman——

Senator HART. Mr. Chairman, if I may inquire, I acknowledge not having read Bush; I was struck by his clause:

> The nation which borrows its basic research,

What is your comment responsive to that? Is that what he has in mind as to borrowing?

Mr. WATERMAN. What he had in mind there was that in the history of this country, as was pointed out by de Tocqueville in his excellent commentaries on the United States, that in the past century and to a considerable extent in the present century we got our training abroad for our scientists.

The work which we did was not quite up to theirs, and we looked to them for getting the striking results in basic science. Then we used them in a marvelous fashion. We were skilled in the use of information. But we didn't get the information first-hand from our own people. We weren't up to it.

This situation has changed beginning about the 1920's, and now we are really leading in the field of basic research. But we could do so much better if we could give the right degree of support to the really competent people we have, and keep our stockpile growing instead of just keeping it going at a minimum.

The situation has changed in that respect. But Dr. Bush is quite right in pointing out that this has been a difficulty in the past, and by proper attention to basic research in our own country, we believe that this approach is in keeping with the legislative intent of section 12 of our act.

As you know, there was considerable discussion of this provision before it was enacted. Dr. Vannevar Bush, whose report "Science, the Endless Frontier," substantially led to the creation of the National Science Foundation, said, in testifying on the patent provisions of the proposed legislation, and this appears in the recent study of the subcommittee entitled "Government Assistance to Invention and Research: A Legislative History":

> 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.

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.

I have mentioned from time to time that we deal primarily with nonprofit institutions, primarily educational in nature. We have had a few research contracts with profit organizations, actually a total of eight since the Foundation was first established. We provide support for profit organizations in this area only where circumstances are unusual, in that the competence of the organization is such that it is particularly qualified to do the research in question.

So far I have discussed the attitude of the Foundation with respect to patentable inventions which may arise out of activities supported by the Foundation. Your subcommittee has raised problems of broader scope, however, in connection with the introduction of S. 3156, and I would now like to address myself to discussion of this broader problem.

As you have pointed out, the Foundation has responsibility for fostering the interchange of scientific information among scientists

in the United States and foreign countries and for providing or arranging for the provision of services leading to a more effective dissemination of scientific information.

Therefore, if, in fact, a substantial problem exists with respect to the availability of information developed during the course of Government-supported research and development activities, we believe it would be appropriate for the Foundation to attempt to develop recommendations to alleviate this situation.

We are not yet certain that this is a major area of difficulty. We are presently actively reviewing the scientific information activities of the various Federal agencies and from time to time have issued bulletins describing their activities in this area. As part of the review we inquire about the agency's policy regarding the reporting and dissemination of scientific and technological information resulting from its research and development work.

We believe that as these studies proceed we will be able to understand the nature of the major problems which may exist within the Federal establishment with respect to the dissemination of scientific information, including data to be received under the Government's research and development contracts.

We have not yet had occasion to complete our review of the activities of the Department of Defense or of the National Aeronautics and Space Administration, both of which, of course, have extensive research and development activities. We hope we will have a clearer picture once these studies have been completed.

Let me say that we have a sincere concern with protecting the public interest and that we do not take our responsibilities in this area lightly. We are certain that if, in fact, a general governmentwide scientific information problem exists in connection with federally supported research and development activities, a general policy of retention by the Government of title to inventions developed during the course of such research would alleviate the situation.

It may be that the problem, if any, is one of administration. As you know from your review of the National Science Foundation's research contracts, we utilize a rights-to-data clause which allows the Federal Government to make full use of information developed during the research. We understand that other Federal agencies use a similar data clause. Perhaps the difficulty, if any, may be with respect to enforcement of the Government's contractual rights arising under this kind of provision. In point of fact, if all patent rights are retained by the Government, the flow of scientific information may be impeded more than if it retains only a license.

Mr. WRIGHT. May I interrupt you there, Doctor?

I was wondering if you can tell us in what manner you visualize that the flow of scientific information may be impeded where the Government retains title to a patent.

Mr. WATERMAN. I think delay may be one of the chief reasons. The question is, if the Government takes title to a patent, then will it develop this rapidly enough? There is a delay that ensues. And the information underlying this patent would better be distributed, disseminated rather widely.

Do you wish to speak to that, Mr. Hoff?

Mr. HOFF. This is something on which we certainly have no certain view. I think there are always the possibilities that if the Government

is going to have a patent and there is nothing in it for the contractor, and I am not talking about educational institutions now, I am talking in a commercial-type venture, then, it seems to me, it is quite possible in some cases that the interest of the company would not be in trying to put its finding into form and employment as soon as possible.

It is a question of having the knowledge, not leaning over forward to get the knowledge into everybody's hands, let me put it that way. That is the type of thing which might occur, but, as I say, we have not reached any conclusion on this.

Mr. WRIGHT. Mr. Hoff, isn't this reasonably clear, that if what you are interested in is maximum and prompt dissemination of the information, you would certainly, rather than having title rights in the contractor, either provide for a Government title or for dedication or publication of the invention?

Isn't that the most rapid way to get the data circulated, rather than retaining patent rights in the hands of the contractor?

Mr. HOFF. Perhaps.

Mr. WRIGHT. Wouldn't you draw that conclusion on the basis of your experience to date?

Mr. HOFF. No; I wouldn't say that I knew that, because I think there is the very real question that if a person developing the information is going to get no particular benefit out of it, he will probably not break his back in trying to report it.

Mr. WRIGHT. I thought we were talking here about researchers whose principal interest was the publication and public appreciation of what they were doing, rather than the acquisition of patent rights.

Mr. HOFF. I am sorry, Mr. Wright, I think this was commenting on the broader aspects of potential policies in the Government, in general, and therefore the preponderance of it is on the development and applied side.

Mr. WRIGHT. Insofar as basic research is concerned, you don't have any doubt, do you, on the basis of your own experience, that the publication or dedication or Government title would promote it better than retention of the title by the contractor?

Mr. HOFF. I have no reason to believe it would make any difference in the case of educational institutions, because each man is trying to publish as fast as he can; and I really have no view that it would speed it up one bit.

Mr. WATERMAN. If he has that philosophy and is allowed to spread the information, then the other gets to be a debatable point; what happens next?

Mr. WRIGHT. You are aware of the fact, I presume, that a patent application is itself a matter that is normally kept secret within the Office. Patent applications are not normally a means of broadcasting the data that is in the application; isn't that so?

Mr. HOFF. But, generally speaking, I think the material is probably published long before—in most cases it isn't a question of when an application is filed. It is a question of how soon the man can break into print in a scientific journal.

Senator O'MAHONEY. Mr. Hoff, if you had been present this morning and if you had heard the lawyer for the General Accounting Office testify, you would have heard his statement of cases in which he discovered by the examination of the actual contracts how they have

absolutely refrained from giving the Government the information that is in their possession, how they have tried to hold a patent discovery for their own benefit and not to share it.

Now, let us not think of the Government holding a patent as another contractor. Let us think of the Government as activated by the public interest, and making it possible for these patents to become useful to small business, to others besides the contractors who are involved.

The method we are now adopting is one which contrives to concentrate the benefit. What we are talking about is a method that will dispense the benefit to the public in general.

I think I will ask Mr. Hasser to get three copies of Mr. Keller's testimony this morning and give a copy to each of the witnesses today.

You may proceed.

Mr. WATERMAN. Once we have ascertained the dimensions of any problem which may exist with respect to the dissemination of scientific information developed in connection with Government-supported research activities, we would be able to consider what action might be appropriate.

If the problem appears to be of a major nature, we believe an appropriate step might be for the National Science Foundation to establish a special committee, composed of eminent scientists and nonscientists, to make a careful study of the problem and to formulate recommendations for action.

I do not claim to be a patent expert, but it seems to me that flexibility with respect to disposition of Government patent rights is highly important and that no rigid rule should be established for all agencies.

As I tried to point out, our own agency deals with one particular facet of this, the basic research side, and that we feel we understand rather well, although it is not an easy thing to explain.

Factors such as whether or not the public health, safety, or welfare are involved, or whether the Government has been the sole or prime developer of the field of technology involved, or whether there are other equities affecting the situation should be taken into account in determining what action should be taken with respect to inventions developed during the research.

If, in fact, the Government decides to retain title in a particular case, it may be desirable that the agency have the right to issue an exclusive license in order to assure the development of the invention.

S. 3156 is apparently aimed at promoting the full dissemination and utilization of scientific information and with this objective we fully concur. We believe, however, that it raises some major questions including formidable administrative problems. According to information we have received, it is estimated that the Department of Defense alone may have presently active approximately 25,000 contracts and grants for scientific research activities.

As the bill is presently drawn, the Foundation would have to review each of these contracts and grants. While, of course, there may be considerations other than dissemination of scientific information involved in the decision as to whether or not patent rights arising out of federally supported research activities should generally be retained

by the U.S. Government, these considerations were not referred to in the statement issued in connection with the introduction of the bill on March 10, and I will, therefore, confine my remarks on the bill to the matter of whether or not it would aid the flow of scientific information.

As I said a little while ago, we are not certain that this is a major problem. It would seem that if the problem does appear to be significant, the solution would not lie with Foundation review of the Government's research and development contracts, but that it could better be obtained through recommendations by the Foundation looking toward the adoption of general policies.

Since, under the terms of S. 3156, each agency would be free to accept or reject the recommendations of the Foundation, recommendations of a general governmentwide nature might be more effective and, in addition, avoid a great administrative burden. The committee to which I referred earlier would be particularly useful in this regard.

I have discussed these matters at some length, Mr. Chairman, because I believe they raise major issues. I would like to say, before I conclude, that we agree with the statement of the Comptroller General of the United States, contained in a recent letter to the chairman of the House Committee on the Judiciary, in which the Comptroller General suggested that—

> in lieu of establishing one uniform policy, consideration might be given to legislation which would give recognition to the functions and problems peculiar to the activities of individual agencies, as well as the differences in the types of research and development being contracted for by the Government. Such legislation might appropriately set forth broad general policies, including basic principles, guidelines, and criteria, permitting a measure of flexibility in administration where circumstances so dictate, and might embrace some features of the present administrative practices and methods.

That concludes my statement, Mr. Chairman. We will be happy to answer any questions you may have.

Senator O'MAHONEY. Thank you very much, Dr. Waterman.

Senator Hart, have you any questions?

Senator HART. No.

Senator O'MAHONEY. Mr. Dinkins?

Mr. DINKINS. I have just one question, Senator, I would like to ask Dr. Waterman.

Can you tell me just where basic research ends and applied research begins?

Mr. WATERMAN. I don't know whether anyone can answer that question specifically. This is a troublesome gray area. What can be said is that there are kinds of research that everyone admits are basic. There is no question about it. There are other kinds of research where there is no question they are applied. And in between, one shades into the other.

Actually, our definition in the Foundation is based really on the type of individual and the motivation of the person doing it. If he is primarily interested in making some new discovery, no matter what, and there are many of that category, then we would call it basic. If his primary concern is to find something useful of some sort, then this is applied.

Now, you understand, on that definition there could be two individuals working on the same project by title. One would do it from the basic research approach of trying to discover anything that may turn up, and the other has an eye to something useful that may turn up. So their results might be quite different.

But, you understand, the title could be the same. Sometimes people object to this defintion, saying that it would require a psychiatrist to find out what man's motives are. My answer to that is, if one can't understand without a psychiatrist what his motives are, it probably is basic research.

Senator O'MAHONEY. Mr. Gibbons?

Mr. GIBBONS. No question.

Senator O'MAHONEY. Mr. Wright?

Mr. WRIGHT. I think Mr. Clesner would like to ask questions about the specific contract.

Senator O'MAHONEY. Very well, Mr. Clesner.

Mr. CLESNER. I would like to refer to your instrumentation grants for laboratory equipment, and your grant for the oceanography vessel, of which a good amount of the equipment there will be in instrumentation. In the latter instance, there is no reservation or right or license that the instruments developed there would be available to all.

However, the knowledge of what the instrument is made up of, how it is constructed, would be available.

The designs, plans, and drawings; but as to the instruments themselves, there is no license provision to assure that they would be available to all.

Mr. WATERMAN. Of course, we consider this oceanographic vessel as a tool to accomplish basic research, and we expect that the vessel will be outfitted with the most recent instruments in existence to fulfill the mission of the vessel and therefore be of use to the scientists.

So, generally speaking, as to what one does in the vessel—you don't start from scratch and try to devise new instruments, but you try to take regulation instruments and install them on the vessel for the best possible use.

The purpose is not really to develop new instruments. It is to outfit the vessel with the best instruments we have, and then go on.

Now, admittedly, when you get a scientist at work with such an instrument, he may make modifications to help him do his work better. But that would hardly be a new instrument.

This is like buying a car—when you want to design the car to fulfill a particular purpose and you just want to outfit it with the things that are available to make it do the job.

Mr. CLESNER. This may be true, but it still may be patentable subject matter.

Mr. WATERMAN. That is possible, I suppose. We would not expect if we want to get the vessel fast that we would have time to do that.

Mr. CLESNER. Now with regard to the contracts which we have here, you have stated factors such as public health and safety, if they are involved, should be a major consideration. You have granted several contracts for weather modification, for example.

Now years ago, back about 1900, the Department of Agriculture, through its Weather Bureau, when the Weather Bureau was in the Department, gave Mr. Fessenden a contract. The Bureau allowed

him to keep the patent rights to any inventions which may be developed for wireless telegraphy relating to meteorology. The House in a report stated that they felt, under that type of contract, that it would be preferred that patents developed should be dedicated to the use of the public.

Now, isn't this sort of a statement or expression of the Congress in this area?

Mr. WATERMAN. It sounds that way. I am not familiar with that case. There is this difference in weather modification. I just would like to remind you that the reason why this came to the Foundation was because of the considered opinion, I believe on the part of the Congress and on the part of the former President's Weather Control Committee, that the whole subject of weather modification was really in the basic research stage.

We didn't understand enough about how the weather could be modified to do anything about it.

Therefore, the Foundation was asked to carry on research aimed at this solution. Now as we have looked at it, we find that the subject is very strongly in the basic research stage. The country has done enought with attempts at applied work which have not been particularly successful, and we will not make any great advances until we understand the process of how nature produces rain and snow.

So that, you see, our grants are designed with that in mind and so are our contracts.

Mr. CLESNER. Let's get back to this point.

Mr. WATERMAN. I am getting to your point right now. I wanted to give that background.

We, therefore, have made contracts, we have made a few with profit organizations because of the experience and capability of their groups and some of their men. But these are also designed really to understand the phenomenon better.

We don't expect them to come out with anything which will be directly useful in weather modification.

Mr. CLESNER. You started with the premise that basic research doesn't lead to new inventions and yet Lawrence with the cyclotron accelerator, Fermi, Szilard, et al., with the atomic reactor, Kapitsa in low temperature cryogenics, have all come up with patentable subject matters on their inventions.

To go further, Bloch in paramagnetic resonance and Ipatieff in catalytic reactions and also compositions; and when they get a patent in this area, it is a much more powerful weapon economically than one if it is in applied research.

Mr. WATERMAN. I know all these that you gave and I can tell you about how they came about. In this particular case, though, of weather modification, we haven't come anywhere near reaching that stage. This is still in the state of infancy almost.

What we are trying to do is to develop experimental instruments to be used in basic research for a better understanding. The time has not come where one can say: "Here is a device which can do something about modifying the weather."

Now when Lawrence made his cyclotron discovery, he had already shown what it could do. He had a machine right there and in further

development of this he could work out his patented ideas. No such instrument as that has been proposed yet for weather modification.

Mr. CLESNER. This might be true to the overall problem, but how about the instruments for their particular use?

Mr. WATERMAN. That is just it. There is no way that anyone can see at the moment whereby a particular instrument is going to help anybody to forecast the weather or to produce weather modification.

These are instruments for research on how we can do it, but they are not solutions. You see, that is the difference. In other words, they are not commercial items because no one will be able to use them except a few people who are competent to do this research.

We are aware of this problem, of course, because this is one field we are paying careful attention to. But that is our present feeling with respect to it.

Mr. CLESNER. You have the contract here with Itek Corp. to develop information and electronic storage and retrieval equipment. Now in that area, let us say if they came up with an invention, the commercial applications of this or the effect, the economic effect, could well carry a very broad impact. In other words, it could carry to our corporations, Government agencies, and libraries, any area that covers literature.

Mr. WATERMAN. If it got to the point that something was commercially usable. I think Dr. Atkinson, who is head of our office concerned with this subject and who is responsible for this particular contract, is here, if you would like to have him speak to this point.

Mr. CLESNER. Our basic thought is this: If it does happen that something becomes usable, you have already granted away the title.

In other words, the title is in the hands of the grantee to use the invention and to prevent others from using it in any manner he may deem.

Mr. WATERMAN. Yes. Your question is a good general one, I know, but all I can answer is we do look at this aspect, and when we make or grant a contract like this, we have to look at the probability of anything coming out of it which is useful.

This depends on the nature of the project and how they are working at it. I believe Dr. Atkinson would tell you that we don't really expect that the project is nearly far enough along to produce any device of the sort that you mentioned.

He can speak for himself, if you want to have him.

Mr. CLESNER. Not at the moment for I am trying to move the examination along as quickly as possible.

Also in the area of contracts which you have let in the area of astronomical observatories which call for new devices, there is nothing in the contracts, themselves, to assure that they would be available to all.

Mr. WATERMAN. We have two large astronomical contracts, and they are fairly straightforward in pursuing the objective which is to make telescopes of large power and refinement.

There, I believe, in the one case, the case of Associated Universities, Inc., I believe there they have arranged with the Research Corp. to take care of such things along the manner I outlined.

The contract for the other one is in its final stages of negotiation. We would expect a similar provision there or would insist that a

similar provision would be put into it. So we think that this would adequately safeguard the public interest.

This is hardly a commercial item, but, still, there might be something coming along; I mean it wouldn't be of widespread use, but something might come along.

If so, we would protect it by this device of getting Research Corp. to file the patent, be assigned the patent, and then any royalties that come out would be used back again for education and nonprofit use.

Mr. CLESNER. But the discretion would then be vested in Research Corp. and not in National Science Foundation.

Mr. WATERMAN. But they would guarantee to use it for the best interest of national science. They don't, of course, take it all, but they have to pay their costs out of it. Again, the Government has the use of it as before.

Mr. CLESNER. We also note that in the list that you submitted to us of patent applications pending, some of them dealt with subjects which have possible commercial application.

We don't know what would be the effect of the patents of these high pressure presses that you list. However, it is possible that that would have significant commercial use, too.

Mr. WATERMAN. This is another one which has been assigned to Research Corp. We, of course, had our eye on this one, too, for the reason you have stated. There's one application in, I understand.

Mr. STEDMAN. Along the lines of the recent discussion, you had indicated in your testimony that you had roughly 13,000 grant contracts and about 13,000 fellowship contracts, and I believe you said in talking about this area that you had been informed to date of about three patents that had been issued, and roughly 13 applications.

Mr. WATERMAN. Yes.

Mr. STEDMAN. Are you satisfied that this is all of the patentable or patented research that has come out of these 26,000 contracts?

Mr. WATERMAN. We can't be sure, of course, but we would think this is probably right.

Mr. STEDMAN. Do you have any procedure for following up in the case of these contracts? I am thinking of this in connection with your public welfare criteria that you talked about before.

Do you have a procedure for following up on it to find out, in fact, exactly what is happening under these contracts?

Mr. WATERMAN. We require fiscal reports every 6 months from all these grants and contracts, and annual reports about what was done.

Also, we have had the requirement, you see, that they do inform us where patent has been issued. We have not examined each one in detail for this, but considering the nature of the problem, it seems reasonable that about that number might be expected, and that is about all.

Mr. STEDMAN. This is during the period of the contract or does it extend to the continuation of their work after the contract has been completed?

Mr. WATERMAN. No, this extends just for the duration of the contract.

Mr. STEDMAN. So that if they actually perfected something and filed an application, say, 6 months later, you would only know about it if they took the occasion, voluntarily, to inform you about it?

Mr. WATERMAN. Yes, that would be true. But, even so, they could be said to violate the agreement if it occurred under the grant and we learned of it.

Senator O'MAHONEY. Any other questions?

Mr. WRIGHT. I would like to ask just one final question.

Senator O'MAHONEY. Very well.

Mr. WRIGHT. With reference to these approximately 25,000 contracts or grants for scientific research activities that you say are presently active in the Defense Department alone, which I understand you say would be too much of a burden for you to examine to determine what the disposition of patent rights should be, you do know, as a fact, now, do you not, that in substantially all of the inventions arising out of those Department of Defense contracts the title is being retained by the contractor?

Mr. WATERMAN. I believe that is their policy, yes.

Mr. WRIGHT. And don't you regard it as desirable that somebody should examine those contracts to determine whether or not that is or is not a desirable result in view of the particular field of science that is involved in the contract?

Mr. WATERMAN. I should think that a logical position for the Pentagon to take would be to require each agency to defend its own policy, whatever this may be.

Mr. WRIGHT. You know, do you not, as of now, that the Defense Department doesn't suggest that it has any other policy than simply to give the title to the contractor regardless of what the particular subject matter of the contract may be?

Mr. WATERMAN. Yes.

Mr. WRIGHT. Do you think that is a desirable condition to have continue with respect to contracts which may involve your field of basic research?

Mr. WATERMAN. Well, as I say, I am not enough of an expert in patent matters to be able to answer that question. I do observe that over the years there have been advocates of both sides, and I should think that the logical position is for Defense to reach a definite, considered conclusion here and then justify this to the Government. That would seem the logical way out.

Mr. WRIGHT. Don't you think, Dr. Waterman, that it is basically unsound for any department or agency of government to assume authority voluntarily without a grant of law?

Mr. WATERMAN. As you put the question, I should think there is only one answer.

Senator O'MAHONEY. The only answer is "Yes"?

Mr. WATERMAN. The agency has to follow the law; surely.

Senator O'MAHONEY. That is what we are dealing with. We have throughout the Government agencies which follow the policy that has no foundation in law. This committee is endeavoring to find out what the lawful way of doing this ought to be.

Mr. WATERMAN. I think that my testimony would indicate that we think we have thought this through and we think in our case——

Senator O'MAHONEY. Yes, and I think your testimony also showed with respect to S. 3126, or whatever the number is, that you are ready to appoint a committee to see what you can contribute in a new view of the whole matter.

Mr. WATERMAN. This we are approaching, you see, from the standpoint of adequate dissemination of information about these matters, and we are in the process now of collecting——

Senator O'MAHONEY. And for the protection of the public interest.

Mr. WATERMAN. What I have tried to say was that we are approaching this by trying to secure information from the other agencies as to what their public policies were in making known what they were doing with respect to patents, and that this is the question that we really are examining. If there seems to be a serious problem with respect to dissemination of scientific information, we would then consider the appointment of the committee I mentioned earlier.

Senator O'MAHONEY. So far as our testimony has gone now, it seems clear that all the agencies pay more attention to what they call the equities of the individual, of the contractor, than they do to the public interest; and the public interest is never more important than it is now when free enterprise is losing ground daily in the competition with big business, and when the Government of the United States is involved in a great contest with Soviet Russia. So I want to extend to you an invitation to pursue this matter a little further and see what you can find that will be helpful to the public interest.

Mr. WATERMAN. This, of course, we will do.

Senator O'MAHONEY. By way of suggestion for legislation.

Mr. WATERMAN. This, of course, we will be very happy to do and keep you informed as to the result of the survey.

Senator O'MAHONEY. Thank you. We are very grateful for your testimony.

When the committee adjourns this afternoon, it will adjourn to 10:30 a.m., Wednesday morning. Mr. Bert Vogel, Chairman of the Board of the Tennessee Valley Authority, and Dr. R. E. Stewart, of the Veterans' Administration, are expected to be present, as well as Mr. Parker Banta, General Counsel, Department of Health, Education, and Welfare, representing Secretary Flemming.

Mr. Banta will be called first.

The committee now stands adjourned until tomorrow morning at 10:30.

(Whereupon, at 4:30 p.m., the hearing was recessed, to reconvene at 10:30 a.m., Wednesday, May 18, 1960.)

GOVERNMENT PATENT PRACTICES

WEDNESDAY, MAY 18, 1960

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

The subcommittee met, pursuant to recess, at 10:40 a.m., in room 2228, New Senate Office Building, Senator Joseph C. O'Mahoney presiding.

Present: Senators O'Mahoney and Hart.

Also present: Senator Russell B. Long.

Staff members present: Robert L. Wright, chief counsel, Patents, Trademarks and Copyrights Subcommittee; Herschel F. Clesner, assistant counsel; Clarence M. Dinkins, assistant counsel; George S. Green, professional staff member, and Richard M. Gibbons, of the staff of Senator Wiley.

Senator HART. The committee will be in order.

The chairman, Senator O'Mahoney, as we left last night explained that he might be delayed this morning, in which case, after a few minutes waiting, he suggested we proceed. He will join us.

As was announced at the conclusion of the hearing last night, the first witness for today is the general counsel of the Department of Health, Education, and Welfare, who is representing the Secretary of the Department.

Mr. Banta, if there are others, they may join you.

STATEMENT OF PARKE BANTA, GENERAL COUNSEL, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE; ACCOMPANIED BY ARTHUR H. BISSELL, OFFICE OF THE SURGEON GENERAL, AND MANUEL B. HILLER, OFFICE OF GENERAL COUNSEL, DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

Mr. BANTA. On my right is Mr. Arthur H. Bissell who is on the administrative staff of the Surgeon General, and Mr. Manuel B. Hiller, who is in the office of the General Counsel.

Senator HART. We welcome you all.

I understand that you do have a prepared statement.

Mr. BANTA. Merely an introductory statement. The Secretary asked me to tell you, Mr. Chairman, that he is sorry of his inability to respond in person to your May 9 letter, and asked me if I wouldn't represent him on this occasion.

I am sure you are aware that the Department of Health, Education, and Welfare has over the last 2 years supplied the committee with a great deal of information relating to its patent policies and its prac-

tices under them. Much of this information has been reproduced in the preliminary report rendered by this committee pursuant to Senate Resolution 53.

The statements previously furnished to the committee point out that the departmental patent policy is developed by a Department's patent board, composed of representatives of the various operating agencies of the Department, which board is adviser to the Secretary.

Because the activities of the Department in the field of research and development contracting are of more or less recent origin and our experience under contracts is more or less limited at this time and is not susceptible to accurate or significant appraisal. The bulk of the Department's research lies in the field of medical research sponsored by the Public Health Service. This research is largely accomplished by a substantial number of grant programs in which grants appropriately conditioned are made to public and nonprofit agencies and individual members of the scientific community. And of course we do to a lesser degree contract for research.

Consistent with the Department's statutory responsibility for the dissemination of information and making public the results of research, it is the basic policy of the Department that the results of Department-financed research should be made widely, promptly and freely available to other research workers and to the general public. This availability can usually be provided by dedication of a Government-owned invention to the public by dedication or publication.

Copies of the pertinent regulations and the patent policy statement of the Secretary have been furnished to the committee, and are found in the appendix to your preliminary report which I have just mentioned, on pages 19 to 28.

You will note two exceptions to the basic policy. In the grant and contract areas we have permitted grants to or contracts with nonprofit institutions to provide for the retention by the institutions of invention rights for disposition by them in accordance with the institutions established policies and procedures where it is found that the invention will be made available without unreasonable restrictions or excessive royalties.

Of course, in every such case the Department reserves for the Government an irrevocable royalty-free nonexclusive license.

The second exception is in the field of cancer chemotherapy industrial research contracts, and is permitted only because of the peculiar exigencies of this program, and in order that the industrial resources may be brought to bear with a minimum delay in exploring exhaustively and rapidly the potentialities of chemical compounds in the control and treatment of cancer.

Under the exception set out in the Department's regulations, and more particularly set out in a policy statement by the Secretary, copies of which have been furnished to the committee, the rights to inventions resulting from cancer chemotherapy industrial research contracts are left to the contractors subject to (1) the usual Government license and to (2) the right reserved in the Department to nullify a contractor's patent rights which he may have obtained if the invention is not made available in sufficient quantities to meet the public need or at a reasonable price or of a quality which is adequate.

To indicate our limited experience, it is pointed out that during the fiscal years 1958 and 1959, the Public Health Service entered into a

total of 227 research and development contracts, nine of which were cancer chemotherapy industrial research contracts which permitted the contractors to obtain invention rights pursuant to this exception. The others had the standard patent right reservation clause contained in them.

This I believe summarizes the basic features of the Department's patent policy to the extent of our contract activities in the field.

Senator HART. May I inquire with respect to the comments you made on the grant for cancer research, what were the conditions which, if not met, would move the Department to—was it nullify or revoke?

Mr. BANTA. No—with respect to the grants?

Senator HART. Having made the grant and an invention having developed in the study, I understood you to say that the Department permits the commercial manufacturer to retain a patent.

Mr. BANTA. This is not a commercial manufacturer; this would be the nonprofit institution where the exception is that if the institution's patent policies are found upon investigation by the head of the agency to be such as to assure that the invention would be made available to the general public without exorbitant cost, and in the same fashion which he, the Surgeon General, would himself, if he retained ownership of the invention, then the grant agreement would permit the institution to retain the title.

Senator HART. It was these latter conditions that I was trying to get cleared in my mind.

You said that if the price was reasonable and the standard of quality—there was a reference to that——

Mr. BANTA. What those conditions were?

Well, of course, Senator Hart, you may be confusing that with grants to the institution. I dealt in my answer with the conditions upon which we permit institutions, nonprofit institutions, to retain the title. You may be thinking of the statement concerning contracts where we reserved the right to cancel the contractor's property right in the invention if we find——

Senator HART. It is this latter thing.

Mr. BANTA. Nullify the contract, if we find that the invention is not available in sufficient quantities, or if the price is unreasonable, or if the quality is inadequate.

Senator HART. Now, I understood your statement to say that this was done very seldom. Now, are there any instances, though it has been done seldom, where you have had to make a finding that one of these conditions has not been met?

Mr. BANTA. No, Senator; this is a very new program with us.

Senator HART. I must explain that this is a very new subject to me; hence some of my questions.

Mr. BANTA. There have been no inventions reported under our cancer chemotherapy industrial research program to which this relates.

Senator HART. Thank you.

Mr. Wright?

Mr. WRIGHT. I would like to have Mr. Dinkins proceed.

Senator HART. Mr. Dinkins.

Mr. DINKINS. Before examining Mr. Banta, I would like to offer for the record a copy of our report on the patent practices of the Department of Health, Education, and Welfare.

Senator HART. It will be received and given an appropriate number.

(Report on patent practices referred to appears in the appendix as exhibit No. 2.)

Mr. DINKINS. Except for the appendix.

Senator HART. The document is the committee print, 86th Congress, 1st session. It will be received, except for the appendix.

Mr. WRIGHT. In that connection, we neglected to offer a report on the patent practices of the National Science Foundation.

Senator HART. Yes.

In connection with the witness heard yesterday, there will be received and made a part of the record the document entitled "Patent Practices of the National Science Foundation."

(The report referred to appears in the appendix as exhibit No. 1.)

Mr. BANTA. It is this document, Mr. Chairman, if I may, to which I referred in my statement and which I summarized, and especially the appendix—I assumed that it would be a part of the report, and I am at a loss to know why the appendix.

Senator HART. I assume the appendix was omitted because of the printing—in view of Mr. Banta's comment the entire report with appendix will be printed as a part of this record.

(The report referred to appears in the appendix as exhibit No. 2.)

Mr. BANTA. I appreciate that, Mr. Chairman.

Mr. DINKINS. Mr. Banta, as I read the statutes relating to your agency, the Surgeon General has very broad powers to engage in general research work, to make contracts and grants with universities and hospitals and other nonprofit institutions. You also have specific authority to engage in cancer research work on a cost or other basis.

The statute also provides, as you previously stated, for the collection and dissemination of information that has been developed in order to properly protect the public interest.

Now, is that a correct statement of the general statutory situation?

Mr. BANTA. I think it is, Mr. Dinkins; yes, sir.

Mr. DINKINS. Mr. Banta, I do not notice anywhere in the statutes any specific reference to patents or inventions or any reference to the type of provisions which you must insert in your contracts regarding the title to inventions and patents. I infer from that that the powers of your agency are very broad in the preparation and execution of your research contracts, bearing in mind that you must protect the public interest at all times; is that a fair statement?

Mr. BANTA. I think it is.

There is no mention of patents or patent policy in the statute, and certainly it is agreed that the power of the Surgeon General under the statute is very broad.

Mr. DINKINS. Then you have followed up these statutory provisions by various departmental regulations and procedures?

Mr. BANTA. Yes, sir.

Mr. DINKINS. Mr. Banta, I have figures here for fiscal years 1959 and 1960 which show that the National Institutes of Health for fiscal 1959 were granted in round figures for general research $28 million, and for fiscal 1960 in round figures $45 million, and the National Cancer Institutes for fiscal 1959 were granted $75 million, and for fiscal 1960, $91 million, making a total for these 2 fiscal years of $241 million in round figures.

Is that consistent with your recollection of the appropriations for those 2 years?

Mr. BANTA. Mr. Dinkins, I have no independent recollection of the amounts appropriated. Mr. Bissell here to my right has before him the Department appropriation bill, or a report that accompanied it. And he may read you the figures.

Mr. DINKINS. Will you assume for the purpose of my question that these figures are correct, and if you find them in error, will you let us know?

Mr. BANTA. Yes.[1]

Mr. DINKINS. How long has the Cancer Institute been receiving a specific appropriation for cancer research?

Mr. BANTA. Well, since its institution, since the establishment of the Cancer Institute which I believe was in 1937.

Mr. DINKINS. Can you give me any kind of rough estimate as to the total appropriation for research work during those years for both the Cancer Institute and the National Institutes of Health?

Mr. BANTA. To put you right, Mr. Dinkins, the Cancer Institute is one of the National Institutes of Health. I am unable to give you the total amount appropriated, I know it has increased very substantially in the last 2 or 3 fiscal years. I think it could have been said that 5 years ago, 6 years ago, the total expenditures for cancer chemotherapy——

Mr. DINKINS. That is what I meant.

Mr. BANTA. Would have probably been less than a million dollars. And it is at least 20 times as much now.

Mr. DINKINS. Now, Mr. Banta, in engaging in this research work, would you explain briefly how that is channeled to these various constitutent agencies?

For example, you have the Cancer Institute that channels out so much on the cancer program, you have the National Institutes of Health that channels out so much in these grants and research and development contracts. Can you give us a brief picture as to how that money is spent?

Mr. BANTA. Well, actually, most of this money is expended by grants to colleges and universities for basic research.

Mr. DINKINS. Would you say that an estimate of somewhere around 85 percent, to these colleges and universities?

Mr. BANTA. No, more than that.

Actually, of the appropriation in 1959, about 99.7 percent of the research grant money went to colleges and universities and other nonprofit institutions.

Mr. DINKINS. Under the conditions which you outlined in your preliminary statement?

Mr. BANTA. Yes.

Mr. DINKINS. Now, how about the research work that is conducted by the National Institutes of Health themselves?

Mr. BANTA. Mr. Dinkins, the National Institutes of Health are the seven Institutes of Health; the Cancer Institute is one of them. And if it is a grant for cancer research, it must first be recommended by a council provided for in the law which studies the application and makes recommendations to the Surgeon General as to whether or not the grant project is one that has real merit. And the Surgeon Gen-

[1] Subsequently Mr. Banta supplied the subcommittee with information as to the appropriations. The chairman directed the material be placed in the appendix as exhibit 3.

eral can't make the grant without the approval of the Council. If it is in the mental health field, it goes before the National Institute of Mental Health. Then there is a council that screens all applications for grant to that Institute and, if it is the Heart Institute, there is a council that screens all the applications for that Institute.

Money is granted on the basis of the recommendations of a council which screens every application in advance and makes the recommendations.

Mr. DINKINS. Now, irrespective of these grants and research contracts to colleges and universities, does not the National Institutes of Health do some research of their own with their employees?

Mr. BANTA. Yes.

Mr. DINKINS. That is what I want a picture of.

Mr. BANTA. In 1959, in that area they expended about—this is not exact—they expended about 15 percent of their total appropriation for research for intramural research at the installation at Bethesda.

That really leaves three-tenths of 1 percent of the total research grant funds, Mr. Dinkons, that is granted to profitmaking institutions, amounting in all to only a little over $500,000.

Mr. DINKINS. Now, outside of the research and development contracts which you have in the cancer chemotherapy field, what other research and development contracts do you have?

We have mentioned the colleges, universities, and hospitals, the grants there, and then the cancer chemotherapy contracts, and then the research that is done by the employees of the National Institutes themselves. Now I was trying to find out if there is an area that we have missed, where there were some research and development contracts that you may have with others than those we have mentioned.

Mr. BANTA. I will let Mr. Bissell answer that question.

Mr. BISSELL. Some examples would be water pollution, air pollution, better instrumentation and hospital administration.

Mr. DINKINS. Do you have any in the more general field of medicine, such as mental health?

Mr. BISSELL. No. There have been, as far as I know, no contracts for drug synthesis, if that is what you are talking about. Now, we have various types of supply contracts and things that relate to and support research. And of course a lot of money goes into all kinds of things that are necessary to conduct research.

But I take it you are not particularly interested in things that are akin to procurement and supplies.

Mr. DINKINS. No; what I was interested in was in finding out if you had any other contracts in the medical field comparable to the cancer chemotherapy contracts.

Mr. BISSELL. I don't think there are yet.

Mr. DINKINS. We have come down now and reduced this to three-tenths of 1 percent, so we don't have much left.

Mr. BANTA. That is grant money.

Mr. DINKINS. That has nothing to do with the cancer chemotherapy costs?

Mr. BANTA. No; that is grant money—the way I understood your question, Mr. Dinkins, was that you asked for a breakdown of the Public Health Service grant money in these areas.

Now, the money which is expended in the cancer chemotherapy contract area is money which the Congress earmarked in effect for this

specific purpose in its appropriation to the National Cancer Institute. Keep in mind, that is one of the Institutes of Health. But that appropriation, I believe, being a part of the total appropriation to NIH, was $75 million in 1959. Of this total, there was perhaps $30 million of it earmarked for the cancer chemotherapy program. And of that, about $18 million is used in the cancer chemotherapy contract program, so I understand. And that doesn't very well relate percentagewise to our grant money as such, that is over and above, and is not included in percentage figures given you.

Mr. DINKINS. Now, these appropriation figures which I read a while ago show that the National Cancer Institute for fiscal 1959 received $75 million, and for fiscal 1960, $90 million.

Mr. BANTA. That is right.

Mr. DINKINS. Now, how much of that money has been spent——

Mr. BANTA. Mr. Dinkins, all of that money that was appropriated to the National Cancer Institute for grant purposes is included in the percentages that I gave you. So you split out of that appropriation the amount that went into the cancer chemotherapy program as an earmarked amount for that purpose. That is why it hasn't related itself very well to answering your question relating to grants.

Mr. DINKINS. Wasn't this money in these two appropriations I spoke of specifically earmarked to the cancer chemotherapy program?

Mr. BANTA. No; not the $75 million. That was earmarked for the Cancer Institute, one of the National Institutes of Health.

Mr. DINKINS. So that only part of that actually went into these research and development contracts with private concerns?

Mr. BANTA. That is right. And the other went into the grants. And I concluded it was the grant money, you asked about when you asked the percentage expended by colleges, universities, and so forth, when I gave you the breakdown a while ago.

Mr. DINKINS. Can you give me some approximate figures as to how much has gone into these cancer chemotherapy contracts?

Mr. BANTA. About $18 million of this last appropriation, so I understand.

Mr. DINKINS. During the last year about $18 million?

Mr. BANTA. Yes.

Mr. DINKINS. Now, Mr. Banta, I would like to talk to you a little bit about your regulations relating to patents. I would like to discuss briefly first this standard clause 20. I think that appears in our report on either page 45 or 46—it is on page 45.

Under this standard clause 20, as I understand it, it gives the Surgeon General complete control over the inventions and patent developments in any of the contracts in which this clause is used; is that correct?

Mr. BANTA. Yes.

Mr. DINKINS. Can you tell me whether that standard clause 20 is now being used in any of these cancer chemotherapy contracts that you have mentioned?

Senator O'MAHONEY (presiding). Will you read the clause in the record at this point?

Mr. DINKINS. This is on page 45 of our report:

Whenever any invention, improvement, or discovery (whether or not patentable) is made or conceived or for the first time actually or constructively reduced to practice, by the contractor or its employees, in the course of, in connection

with, or under the terms of this contract, the contractor shall immediately give the contracting officer written notice thereof, and shall promptly thereafter furnish the contracting officer with complete information thereon; and the Surgeon General shall have the sole and exclusive power to determine whether or not and where a patent application shall be filed, and to determine the disposition of all rights in such invention, improvement, or discovery, including title to and rights under any patent application or patent that may issue thereon. The determination of the Surgeon General on all these matters shall be accepted as final and the provisions of the clause of this contract entitled "Disputes" shall not apply; and the contractor agrees that it will, and warrants that all of its employees who may be the inventors will, execute all documents and do all things necessary or proper to the effectuation of such determination * * *.

Now, my question, Mr. Banta, is whether that clause 20, without any limitations or modifications, is now being used in any of the cancer chemotherapy contracts which you mentioned?

Mr. BANTA. It is only in the first few contracts in the table on page 10.

Mr. DINKINS. Wouldn't you agree that that is a pretty good clause to protect the public interest?

Mr. BANTA. We thought it was.

Mr. DINKINS. Can you say why it is not being used in these current contracts?

Mr. BANTA. Well, I didn't participate in any of the negotiations of any of these contracts, and I don't know that I could tell you why it wasn't used, except that it was thought by those who did negotiate the contracts and those who were familiar with what was being contracted for that this was perhaps not altogether fair and equitable to the other contracting party.

Senator O'MAHONEY. Why not?

Mr. BANTA. Well, that question I guess to be accurately answered, Senator, would have to be answered by the people who know something of the amount of money that had probably gone into the thing contracted for by the organization. In other words, I think the contention of the industry that is involved in most of these contracts referred to was that they had already done a very considerable amount of research in preparing their compounds which were to be tested, for example, in making animal tests for its efficacy or value in, let us say, the cure or control of cancer. And for the Government to reserve full and complete title would be overlooking entirely the amount of investment which the industry already had in the product.

There were probably other factors which were taken into account, for example, diversion of staff and facilities from research efforts in other fields which the contracting company might have thought would be more promising than the cancer chemotherapy field. As I said, not having participated in any of the negotiations, I am unable to answer more fully.

Senator O'MAHONEY. What does the contractor get out of the contract? What does the industry get out of the contract?

Mr. BANTA. Probably information only——

Senator O'MAHONEY. What amount of money does the contractor get?

Mr. BANTA. It is a cost reimbursement only, no profit; there is no profit or fee in it.

Senator O'MAHONEY. I beg your pardon?

Mr. BANTA. A cost reimbursement only, no profit or fee being allowed.

Senator O'MAHONEY. And how is the cost figured?

Mr. BANTA. Well, that is a detail I would be glad to have Mr. Hiller explain if he can.

Mr. HILLER. The cost reimbursement contracts are predicated so far as cost principles are concerned, upon the Armed Services Procurement Regulations which are adopted and incorporated into the contracts by reference. This relates only to the measure or the allowability of the costs.

Senator O'MAHONEY. The Chair is moved to say that he knows of no subject in the realm of public health in which the Congress, in making appropriations for this purpose, is more interested than research for the cure of cancer.

The Chair reminds the witnesses that in the investigations of the Subcommittee on Antitrust and Monopoly, it was clearly discovered that the drug industry has not been very careful in the prices which are charged to the ill people of the United States for the drugs that are invented or said to have been invented. The people of the United States who are ill have been exploited by the drug industry which has made tremendous profit out of that industry.

Now I understand that your contractors do not make profits. But I can say without reservation that the assumption of most of the Members of Congress is that the money which is appropriated for research on cancer is expended in the public interest, not in the interest of industry. The records of this committee indicate that the Department of Health, Education, and Welfare has followed the practice of dedicating patents and discoveries to the public. Is that not so?

Mr. BANTA. That is right subject to the exceptions mentioned at the onset of my testimony.

Senator O'MAHONEY. That, I think, is certainly a proper approach in connection with health. Public health is more important than anything else in this particular field. And it seems to me that the Department of Health would do well to reexamine this rule and make certain that the contractors are not being favored above the public. That would be in accordance with your policy, and knowing Secretary Flemming as I do, I am quite certain that he would put the public health above any other consideration.

You may proceed with your questions, Mr. Dinkins.

Mr. DINKINS. Mr. Banta, I have a date here, December 1957, for that clause 20, but I am not sure whether that was the beginning of that clause or not. Can you pinpoint the date of clause 20 any better than December 30, 1957?

Mr. BANTA. That, I think, is the correct date.

Mr. DINKINS. Now, Mr. Banta, as shown on pages 42 and 43 of our report, you issued other regulations pertaining to research contracts which were in use between September 9, 1957, and July 31, 1958. And if I understand these regulations correctly as they apply to these cancer chemotherapy contracts, they give you the option of preparing a contract in which you give title to any discoveries and patents to the contractor subject to what was known as march-in rights by the Surgeon General. And if I understand what is meant by march-in rights, it means that so long as the contractor, if he perfects some invention and gets it patented, so long as he, in the judgment of the

Surgeon General, is manufacturing and selling that in sufficient quantities and of a proper quality and at a reasonable price, he may continue without interruption. But if the Surgeon General finds that he is derelict in any one of those three points, the Surgeon General may step in and take control of the patent and license it to the others.

Now is that a correct statement?

Mr. BANTA. Yes, sir.

Mr. DINKINS. Has that provision ever been—has it ever been necessary to invoke that provision by the Surgeon General?

Mr. BANTA. Not to my knowledge.

Mr. DINKINS. Has any procedure been set up as to how that would be policed if determinations were made as to whether or not that product was made in sufficient quantities and of such quality and at a reasonable price?

How would you go about policing a provision of that sort if it became necessary?

Mr. BANTA. Well, the requirement is, of course, that the Surgeon General be kept advised, and that any inventions be reported. Then, of course, it would be necessary for him to set up whatever machinery might be—whatever administrative machinery might be indicated for policing it. Up to this time no inventions have been reported under these contracts.

Mr. DINKINS. Wouldn't you agree that that is a rather nebulous and complicated arrangement to have to police and enforce?

Mr. BANTA. I don't know just what you mean.

Mr. DINKINS. How would you determine when the manufacturer was making and selling in sufficient quantities, how would you determine whether he was selling at a reasonable price or not?

Mr. BANTA. Well, each one of us might have our different method of doing it. There is a considerable amount of know-how and information available to the Surgeon General and to the Secretary, and complaints usually are heard when prices are too high, just as Senator O'Mahoney suggested that there has been some discovery on that line now in the pharmaceutical industry in certain areas.

I assume that it wouldn't be very long until we would hear that there was a demand for the drug or the product that couldn't be supplied, and that the price was outrageous, and we would promptly look into both of those.

Mr. DINKINS. But you have never had an experience?

Mr. BANTA. We have no inventions reported.

Mr. DINKINS. Mr. Banta, we have just discussed the first modification of clause 20 which gives the title to patents to the contractor with the march-in rights of the Surgeon General.

I would like to discuss the second modification of clause 20 which was adopted in July of 1958.

As I understand this second modification, it still continues to leave title in the contractor to these inventions and still grants a march-in right to the Surgeon General, but you have a very elaborate procedure here. And I would like to read you a very brief summary of what the procedure is before the Surgeon General is permitted to invoke these march-in rights, and I am reading from the bottom of page 9 of our report. It says:

* * * The Surgeon General also may take over any invention and dedicate it to the public or issue nonassignable, nonexclusive licenses, when and if he finds that the contractor has not met the public need, and that the public dedication or additional licensing by the Surgeon General is necessary in the public interest. However, the rights in the Surgeon General may only be exercised after he has been advised by a body of consultants, and has given the contractor notice in writing of the grounds on which he expects to take over control of the invention. The contractor is then given a time specified by the Surgeon General in which to correct the deficiencies relied upon by the Surgeon General.

Upon the expiration of that time, if the contractor has not satisfied the Surgeon General, he is then given notice that at the end of 90 days from such notice the Surgeon General will exercise his rights. Within 20 days after receipt of such notice, the contractor may file a request for a hearing, at which he may be represented by counsel and present testimony in his behalf * * *.

Now, in your opinion, is that a correct summary of this last revision to clause 20 that I speak of?

Mr. BANTA. Yes. It sounds almost like you might have been reading from the regulation itself.

Mr. DINKINS. Well, it was supposed to be an accurate summary of it.

We have a situation here where you start out with clause 20 giving the Surgeon General complete control over this patent situation, and then you have a second modification in which he can march in if he finds that certain conditions prevail.

Now you have another modification with this cumbersome procedure. Can you tell me why this policy, the cancer chemotherapy program, constantly appears to be modified in favor of the contractor as against the Surgeon General?

Mr. BANTA. That is a rather violent assumption to say what you have just read favors the contractor. I don't agree that it does. So I wouldn't answer your question on that basis.

I can tell you some of the reasons why it is modified, why it has been modified.

You know, it takes two people to make a contract. And if you have had experience with negotiating contracts, you know that you find yourself sometimes giving as well as taking or you don't get any contracts at all. And in this case we wanted the work done. We were looking after the public interest in no small way. We wanted to get the work done if we could get it done. And the people we were contracting the work with, are said to have taken the question that the power reserved in the Surgeon General ought not to be in the hands of one man who might act arbitrarily and take away a property right without evidence that a product wasn't reasonably priced or that the quality wasn't good or the quantity wasn't there. They wanted to be heard on that subject.

And the Congress often provides just such procedure so that people can be heard so that the administrator can't arbitrarily take away the rights of individuals.

Senator O'MAHONEY. May I interrupt you, Mr. Banta?

You have made a very interesting statement if I understand it correctly, Mr. Banta. You have told the committee that without this clause, of which Mr. Dinkins is speaking, you might not be able to get a contract.

Do you want the committee to understand that the contractors in such number hold out against research for cancer until they get a procedure which they want? Do you mean that?

Mr. BANTA. No.

Senator O'MAHONEY. Do you mean that you are held to a particular course by the contractor?

Mr. BANTA. No.

Senator O'MAHONEY. What did you mean by that statement?

I will ask the reporter to read his statement.

(The answer referred to, as recorded, was read by the reporter.)

Senator O'MAHONEY. "Or you don't get any contracts."

Give us an example of that.

Mr. BANTA. It may be my statement in that regard was too strong, Senator.

Senator O'MAHONEY. Your statement is too strong?

Mr. BANTA. That portion of it from which the implication may be drawn that except on the terms of the other party we don't get any contract. The implication that the contracting parties would insist upon the particular modification is not what I had intended should be implied from my answer to Mr. Dinkins.

My information is that the program was not moving, that they were not getting applications for money or applications for contracts, and the people who were responsible for the chemotherapy program themselves elected to sit down with the Department Patent Board and develop this modification of our patent policy, believing that it was fair to whomsoever they might approach for a contract as well as one that would protect——

Senator O'MAHONEY. Can you give us a case in which this provision has been utilized by a contractor?

Mr. BANTA. Oh, yes. I think the document which has been offered in evidence by Mr. Dinkins at page 10 lists quite a number of cases; in fact, all of the cases mentioned in my opening statement are listed on page 10, grouped according to the different patent clauses they contain.

Senator O'MAHONEY. Are these tables that appear on page 10 the ones to which you now refer?

Mr. BANTA. Yes, that is a list of the contracts, naming the contractor and the contract number and the data when they were executed.

Senator O'MAHONEY. Pardon me, Mr. Banta.

Senator Russell Long from Louisiana has just arrived. He has been busy in the Finance Committee. And I am sure you will be glad to let him interrupt you now so that he can conserve the time.

Senator, we will be glad to hear from you.

Senator Long is chairman of the Subcommittee on Monopoly of the Small Business Committee. And he has also held some very valuable hearings on this subject with which we are dealing.

(Statement of the Honorable Russell B. Long, a U.S. Senator from the State of Louisiana, commences on p. 90.)

AFTERNOON SESSION [1]

Senator HART (presiding). The committee will be in order.

There have been several delays, for which we apologize, not delays but interruptions. But again we ask Mr. Banta and his associates to

[1] By direction of the chairman the testimony of the representatives of the Department of Health, Education, and Welfare during the afternoon session was ordered printed at this point in the record.

return. And I am sure that the committee will see that the record will reflect no interruptions, so that there will be continuity of pages.

STATEMENT OF PARKE BANTA, GENERAL COUNSEL, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, ACCOMPANIED BY ARTHUR H. BISSELL, OFFICE OF THE SURGEON GENERAL, PUBLIC HEALTH SERVICE, AND MANUEL B. HILLER, OFFICE OF GENERAL COUNSEL, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE—Resumed

Senator HART. You may resume your questioning, Mr. Dinkins.

Mr. DINKINS. Mr. Banta, when you were last on the stand I believe you were talking about these cancer chemotherapy contracts, and some reference has been made to a table on page 10 of our report.

Mr. BANTA. Yes.

Mr. DINKINS. Would you be good enough to turn to page 10, please, sir. Do you have a copy of our report before you?

Mr. BANTA. Yes; I have a copy before me.

Mr. DINKINS. Now, I believe earlier in your testimony you said that to date you only had 12 research contracts in this field with drug companies; is that correct?

Mr. BANTA. I think that is correct.

You will recall that I pointed out in my earlier statement that our experience is considerably limited in this field, because we had executed during 1958 and 1959 about 12 chemotherapy contracts with industrial concerns, with the alternate chemotherapy patent provisions in 9 of those contracts.

Mr. DINKINS. Let me interrupt you there, if I may, for a second.

When you talk about having chemotherapy terms in there, you mean the 1957 revisions or the 1958 revisions?

Mr. BANTA. No, I mean the second exception.

You see, in my statement I had pointed out that we had an exception to our basic policy with respect to the cancer chemotherapy industrial research contract, and that we had in fiscal 1958 and 1959 executed only nine contracts subject to that exception.

Mr. DINKINS. Let me ask you this question. As I understand it, there are two exceptions and not one, I mean to your standard clause 20. You have your standard clause 20, which gives the Surgeon General the right to control the patent entirely, and then you have your amendments made in 1957 which give the Surgeon General the first set of march-in rights, and then you have your 1958 revisions which give the Surgeon General a different type of march-in rights.

Now when you are talking about special provisions in the cancer chemotherapy program, I would like for you to point out specifically whether you are talking about the use of clause 20 or whether you are talking about your 1957 revisions or your 1958 revisions.

Mr. BANTA. When you say 1957 revision of clause 20, it still remains clause 20.

Mr. DINKINS. Well, it remains clause 20 unless it is eliminated in the contract.

Mr. BANTA. It is not eliminated in the contract.

I described specifically the two exceptions to the basic policy. One was where we permitted the institutions whose patent policies are such

as to give assurance to the Surgeon General, or the head of the agency, that an invention would be available to the public as though it had belonged to the United States or the Public Health Service.

And the other exception was the one that relates to our cancer chemotherapy research contract program.

And those are the only two exceptions to the basic policy.

Mr. DINKINS. When you are speaking of basic policy, now, are you referring to the language in clause 20, as the basic policy on patents?

Mr. BANTA. The basic policy is set out in the appendix of your report, which you put in the record, and it includes more than the one clause.

Mr. DINKINS. Doesn't clause 20 relate specifically to this patent problem that we are discussing?

Mr. BANTA. Yes. Clause 20, though, relates to contracts.

Mr. DINKINS. What is that? Clause 20 relates to a clause that is included in contracts.

Mr. BANTA. Our basic patent policy is really to be found in the reservation to the Government of all patentable rights or the right to dispose of them; it is to be found in our grant program which was long underway before we had any contract authority at all.

Mr. DINKINS. I would like to have this crystal clear. I understand that you began with this standard clause 20 which gives the Surgeon General full rights in patent matters.

Then in connection with the cancer chemotherapy program, in 1957 HEW issued some special rules and regulations saying that these applied to the cancer chemotherapy program.

Under the 1957 program, the Surgeon General had march-in rights if the contractor with a patent violated any one of three conditions, if he didn't have proper supply, proper price or proper quality.

Mr. BANTA. That is only partially right. The adoption of the cancer chemotherapy industrial contract policy of September 1957, actually preceded the amendment to the regulation of November 26, 1957, which was the basis for clause 20.

Mr. DINKINS. And then you came out in 1958 with another set of regulations designed specifically to cover research contracts in the cancer chemotherapy program in which the Surgeon General still had march-in rights, but the procedural formula he had to go through to exercise these rights was much more complicated than it had been under the 1957 program. Now, if I am in error in any way in my statement, I wish you would correct me.

Mr. BANTA. You are right, except the question arises as to whether it is much more complicated. I would have some reservations about it being much more complicated.

Mr. DINKINS. I don't want to argue that question, but——

Mr. BANTA. Very well; you have stated correctly what the amendments are.

Mr. DINKINS. But you have caused me to want to ask you this question.

If you were a drug manufacturer negotiating with HEW for a cancer research program—you are a drug manufacturer now—would you prefer to have the standard clause 20 in your contract, or would you prefer to operate under the 1958 program?

Mr. BANTA. You mean with the clause 20 amended?

Mr. DINKINS. Would you prefer to have clause 20 by itself or would you prefer to have terms consistent with your 1958 program?

Mr. BANTA. I don't know what you call our 1958 program.

Mr. DINKINS. Wait a minute; let's get that straight. I mean the 1958 program as announced by HEW and publicized all over the country as the program for the cancer chemotherapy operation.

Mr. BANTA. What you really mean is the revision of the regulations which modify clause 20 to the extent that it limited the Surgeon General's power to march in without first giving notice.

Mr. DINKINS. That is precisely what I mean.

Mr. BANTA. Yes. Well, of course I would prefer to have the one which required the Surgeon General to give notice.

Mr. DINKINS. Now let's refer back to page 10 of this report again. You have listed down here all of your cancer chemotherapy contracts at the time this information was furnished. Now I would like to know how many contracts have been entered into since this statement was furnished, if you can tell me.

Mr. BANTA (aside to Mr. Bissell). Do you know how many?

Mr. BISSELL. Two.

Mr. BANTA. Two. Could you give me the names of the two companies with which those contracts were made?

Mr. BISSELL. I believe it is Wyeth and Bristol. We will correct that if that is not correct.

Mr. DINKINS. May I ask whether the patent right provisions in those two later contracts, contain your 1958 revision, or what do they contain on patent rights?

Mr. BANTA. No doubt they contain the latest revision of our policy provisions.

Mr. DINKINS. That raises a nice question.

Since you came out with your 1958 policy and that was highly publicized, no doubt all of the drug companies are quite familiar with the terms of your 1958 policy, so doesn't that mean that from here on out you could never hope to secure another cancer contract on less favorable terms to the drug manufacturer than your 1958 program provides for?

Mr. BANTA. Likely so. We would not be able to modify our policy, except in the usual fashion of publication of a revision of a regulation.

Mr. DINKINS. I wasn't criticizing the publication; I was just trying to bring out the fact that if the knowledge became known to all the drug manufacturers of your more liberal 1958 policy, it seems to me perfectly obvious that no one would want to take a contract with less favorable terms than those.

Mr. BANTA. I am sure they wouldn't, and we wouldn't offer them one with less favorable terms.

Mr. DINKINS. Let me ask you another question, going back to page 10 of this report.

These contracts that you have listed down here, according to the table, contain various patent terms, some your standard clause and some under the 1957 policy and some under the 1958 policy.

Mr. BANTA. That is right.

Mr. DINKINS. Now, I understand that the Upjohn contract, which is the last one shown on that page, has been revised to take in your 1958 policy terms.

Now my question is: How many, if any, of the remaining contracts here have also been revised to incorporate your 1958 terms?

Mr. BANTA. That is the only one that is revised to incorporate the later policy. All the others, including the Upjohn, are completely consistent with the policy of the Department.

Mr. DINKINS. I am sorry, I don't quite understand you.

Mr. BANTA. I say, the Upjohn is the only one that was revised by a supplement, because it was updated to conform with our policy at a time when they got an additional amount of money and an additional contract. And now all these contracts are consistent with the policy and contain the clauses indicated in your several headings.

The first group contains the standard clause, the next group contains the clause based upon the 1957 amendments to policy, and the next the 1958 amendments to policy.

Mr. DINKINS. The status quo remains the same as is shown in this table?

Mr. BANTA. Yes; it does.

Mr. DINKINS. I understand that when Congress first started appropriating substantial sums of money to the Cancer Institute for cancer research purposes, you had about a 2-year lag in between the appropriations and the time when you were able to get your contracts in order.

If that statement is correct, would you care to comment on it and explain it?

Mr. BANTA. You don't have reference to when they first began to appropriate money to the Cancer Institute, do you, Mr. Dinkins?

Do you have reference to the time when they first began to appropriate money to the Cancer Institute, or when they first authorized—gave us contract authority?

Mr. DINKINS. I am not sure, except I understood that there was a point just a few years ago when Congress had appropriated a certain amount of money to HEW to engage in cancer research work, and for about 2 years HEW was not able to spend that money. And I ask you if that was correct, what is the explanation?

Mr. BANTA. Well, actually, Congress has been appropriating money to the Cancer Institute for cancer research ever since the Institute was created in 1937. But it was in 1955, I think, that we first obtained from the Congress contract authority, up to that date it had all been grant authority. So we first obtained contract authority in 1955, and I think—and I will correct the record if I am wrong about this—also, I think the first industrial drug research contract that we entered into was in 1957.

Mr. DINKINS. Now, that is a 2-year lag in there. That is the one that I had in mind. But you had the contract authority beginning with 1955. And it took you about 2 years to get your machinery in order, is that it?

Mr. BANTA. Well, there is some question about whether that was it or not. I assume we would have gotten the machinery in order if we had had applications for contracts. I don't think we had any applications, but I am not sure of that.

Mr. DINKINS. You know, that raises a question that I am very much interested in.

Suppose Congress gives you a certain amount of money and tells you to go and spend it in cancer research contracts. Do you start advertising for contracts and looking around the country for contractors, drug companies, chemical companies, or anyone else who might be equipped to go into this research work?

What is your potential market as far as contractors are concerned to engage in cancer research work, how many people have you got to deal with?

I don't expect a precise figure, but I would like for you to let me know whether we are talking about two or three hundred or two or three thousand. I am talking now about chemical companies or drug companies competent to go into a cancer research program.

Mr. BANTA. I have no actual idea about how many would be interested or competent, and you might find people interested that the Government may think ought not to be interested. But I don't really know how many competent concerns there are in this area.

Let me ask if the Surgeon General's staff member knows.

Mr. BISSELL. I would guess that there are not more than 50 private companies. Now, this includes the drug companies and some of the chemical companies. Fifty may be low. But it is not a large number, because of the standards that we necessarily set.

Mr. DINKINS. Now, are you taking into consideration large, medium, and small-sized companies scattered all over the country?

Mr. BISSELL. That would be interested and willing and able as far as we know.

Mr. DINKINS. Now, let's run that down a little bit more.

You couldn't tell whether they would be interested or not until you contacted them and started negotiating with them, could you?

Mr. BANTA. Well, when you give publicity to the fact that there is some contract authority and some money around, you sometimes find out that people are interested. We certainly have takers for the grants, Mr. Dinkins.

Mr. DINKINS. I can appreciate that. But you don't just sit at your desk in Washington and wait for these contractors to come begging for contracts, do you?

Mr. BANTA. I assume not.

Mr. BISSELL. May I answer that?

Those in charge of the program on cancer chemotherapy, I think, were quite familiar with the research resources of the country, and had been dealing with them in other fields for many years. So that at the time it became necessary to know what drug houses, what chemical firms, would have any experience in this field and be interested, I am quite sure that we had very complete lists of the possibilities.

Mr. DINKINS. I would like to explore this a little further.

Now, you take these 14 contracts that you have now—I am confining my remarks just to the cancer chemotherapy program—you have 14 contracts that have been executed in the past 5 years. Although you have had plenty of money to spend during these 5 years, you have only had 14 contracts. Now, I don't pretend to be an authority on drug companies, but as I look over this list down here of Armour & Co. and Squibb and Upjohn and Abbott Laboratories, Charles Pfizer and Schering, Parke-Davis & Co., they all sound to me like some of

the largest and oldest and perhaps best-equipped drug companies in the country.

Now, is that a fact?

Mr. BANTA. I suspect they are.

Mr. DINKINS. Now, what has happened to all the medium- and small-sized drug companies? Aren't they interested in these contracts?

Mr. BANTA. I do not know, sir.

Mr. DINKINS. Have you made any effort to find out?

Mr. BANTA. Most of these people, I understand, do not have the scientists, the facilities, and the necessary information to deal with them.

Mr. DINKINS. Let's run that down, Mr. Banta, just a step further.

All companies in this country are not as big as General Motors and United States Steel and American Telephone & Telegraph. But here you are, now, an important Government agency with plenty of money, are you bound to deal only with these largest and top drug manufacturers over the country?

Can't you get a medium or small one, if he hasn't enough money, aren't you allowed to advance him money for proper equipment? Under your contracts don't you advance money to go out and hire scientific employees, skilled employees?

Mr. BANTA. No.

Mr. DINKINS. What do you do in your cost reimbursable contracts?

Mr. BANTA. We don't direct what he does or how he does it, he demonstrates when he makes an application for money in the grant field or in the contract field what his capability is. I think that is what he does. And there is an advisory council that screens applications of these people.

And frankly, Mr. Dinkins, I am not familiar with the scientific community enough to say that there are a lot of drug houses other than these listed here who would be interested in these contracts, or possessed with competent personnel and suitable facilities to carry them out. I think the National Institutes of Health, under its management and under the present and former Surgeon General, have done a very excellent job in the field of medical research, and that they know where the facilities and scientists are. There has been no criticism that I know of, on this score and I think in this instance we are talking about people who are honorable people, both in Government and out of Government, and we think that the policy is sound—although you may not agree. I think we can say that we would have no objection at all to having the policy laid out by the Congress, to tell us what they think we could live with and what we could work with. But we think also that we haven't given away anything contrary to the public interest; we have reserved the right to "march-in" upon certain conditions in all of these contracts, as well as our grants, we have reserved this right for the Government.

Mr. DINKINS. Mr. Banta, you speak of the march-in rights. Your march-in rights under your 1958 program were covered this morning, and you recall that before the Surgeon General can move he has to be advised by a body of consultants and that he has to give 90 days' notice, and then if the contractor wants to dispute it he can have a hearing.

Now, isn't it quite possible that if one of these drug manufacturers was to come upon a great cancer discovery tomorrow, either a cancer cure or a cancer preventive, and the Surgeon General, for reasons best known to himself, wanted to use these march-in rights, isn't it a fact that that drug manufacturer under your 1958 provisions could conceivably stall those proceedings off for perhaps 2 or 3 years?

Mr. BANTA. That is very doubtful. There are two or three reasons for that——

Mr. DINKINS. The Surgeon General must be first advised by a body of consultants, he gives 90 days notice, and then you have a hearing, you don't know how long they are going to last, and then you may have a judicial review of the whole procedure.

Mr. BANTA. You may conceivably have, Mr. Dinkins. But I think it would be unlikely that there would be any situation where the delays of the law would be effective to protect such a contractor. The public pressures would be terrific if word should get about that there had been a scientific breakthrough that a cure for cancer had been discovered or that a drug or material that would control cancer had been discovered, or a preventive had been discovered—I don't think anybody could resist the pressure that we would have, or that they would be confronted with if they sought to delay getting such material out quite promptly.

Mr. DINKINS. Now, Mr. Banta, I don't expect you as general counsel for HEW to be familiar with all these details, but I am still not satisfied with an answer to this question, and I hope one of your able advisors will give it to me. That is why, this cancer chemotherapy program having been in existence now, active existence, for 5 years, you still have only 14 contracts with people who presumably are among the larger drug manufacturers over the country, and we don't have any information as to how far HEW has gone to search out other manufacturers to see if they could get them into the picture.

Mr. HILLER. Perhaps I may speak to that question, Mr. Dinkins.

I think the question can only be answered in consideration of the entire scientific background in which this whole problem is found.

In the first place, the scientists at NIH have indicated to us that the amount and capacity of scientific facilities and know-how in the entire country is quite limited, that the kind of scientific, technical know-how, the kind of facilities that are needed to go into the kind of research activity for the production of a drug as a cure for cancer, is very limited, that very few companies maintain scientific staffs and maintain facilities which they are willing to devote to this kind of a program, which is at its very inception at this time, and for which the possibilites of success are relatively very small.

Under these circumstances, unlike other fields of research and development, we are told that private industry does not have the facilities that they can divert—and the limited facilities which they do have they are not likely to divert—to a field of research endeavor from which there is not very great likelihood of immediate success.

Now, in this background, it becomes understandable why there are so relatively few companies who have contracts for drug development research with the Department of Health, Education, and Welfare.

Another factor is that at this moment the scientific strides that have been made in this field are not particularly in the field of drug

development, but they relate to many other aspects, they relate to methodology of doing certain types of screening and testing and clinical trials, all of which are necessary basic elements that have to be perfected before you can get into the development of drugs for cures.

Mr. DINKINS. By the way, let me ask you one question before I forget it.

Have any patentable inventions arisen to date out of any of these cancer chemotherapy contracts?

Mr. HILLER. None.

Mr. DINKINS. Now, the statement you made just a moment ago—and I appreciate it—does that mean, then, that HEW is by necessity forced to deal only with these 14 manufacturers, the drug manufacturers with whom you have these cancer research contracts?

Mr. HILLER. I would choose not to say that we are forced to deal only with these. The circumstances are merely such that these are—or perhaps these and some others are the only ones who have the facilities available, who have the scientific know-how and the personnel, all of which they are willing to divert from other, perhaps more compensable and more productive types of research, into the field of cancer inquiry.

Mr. DINKINS. Now, if you continue to pursue this policy, of pouring this Government money into these large drug manufacturers, wouldn't the end result be to make the strong grow stronger and the weak weaker? Aren't you going to eliminate all the medium sized and smaller manufacturers?

Mr. HILLER. Well, sir, we don't like to think that we operate with blinders, that we are completely ignorant of the economic results of actions which we take which are motivated by scientific objectives. This might possibly be the result, I am in no position to say.

But certainly we believe that we have retained adequate controls in the sense that if these patent rights are so exercised as to create monopolies that reflect adversely upon the public welfare, or upon the availability of the drug cure, such as it may be, why then the Surgeon general would have the right to exercise the march-in clause. So that in this regard we do not believe that by our contract provisions we have left to the contractor such complete control over the patents as to put him in a monopoly position, because we do believe we have retained a safeguard against a monopolistic type of utilization of those patent rights.

Mr. DINKINS. Let me ask you another question.

Suppose you start negotiating with either the medium sized or the small drug company or chemical company. He comes to you and talks to you about the possibility of one of these contracts. And you perhaps send a man out to inspect his plant and his employees, equipment, and so on. And you find that the has about half the proper amount of equipment, and perhaps half the amount of scientific help. If you still want to give him a contract, don't you have authority under the law, and the money, to advance him, to make allowances for him to buy any equipment and take on additional employees if they are necessary to perform that contract?

Mr. HILLER. I believe that to a limited extent that we can undertake contracts the terms of which would permit the contractor to

employ personnel and perhaps to acquire specific needed equipment for the research contract project. I have serious doubt, however, that we could conceive of having authority for financing construction facilities contracts.

Mr. DINKINS. Doesn't the appropriation say you can contract on a cost or other basis?

Mr. HILLER. Yes, sir. But we don't believe that the authorization that is so contained in our appropriation act would extend so far as to authorize us, for example, to enter into a cost reimbursement type contract with a drug firm which never had any research laboratory and to authorize us to commit that contract to call for the construction of a new laboratory by this contractor, and then reimburse him for it.

Mr. DINKINS. Don't you have a provision in your contracts that you do advance money for equipment, that that belongs to the Government?

Mr. HILLER. That is correct, we do. But this is only incidental equipment necessary for this particular project, and I think that the kind of incidental equipment that might be needed to carry out the particular scope of the work should be distinguished from what the armed services would call a facilities construction contract.

Mr. DINKINS. Can you give me any approximation as to how many drug or chemical companies that HEW has contacted in the last 5 years beyond the 14 with whom you have contracts to determine whether or not they might be available?

Mr. HILLER. Mr. Bissell may be able to answer that, sir.

Mr. BISSELL. I think we may have to supply it, but let me say this in general.

Our scientists are, through their scientific communities and their scientific interest, well acquainted with the scientists and the drug houses and the chemical firms throughout the country, and anywhere there has been a spark of interest and ability, I am quite sure that we have approached them and asked whether they wished to pursue this and whether there is any possibility of enlisting them.

The only limitation on us is the contract limitation on the amount of dollars that we can spend, and we have, I am sure, tried to spend up to this amount.

Mr. DINKINS. Let me ask one more question, Mr. Banta, and I think I am just about through.

Would it be a fair statement for me to say that your cancer chemotherapy policy, your 1958 policy, was changed because of pressure brought upon HEW by these large drug companies that we speak of?

Mr. BANTA. I don't think that is altogether the case. I have no knowledge of them actually bringing pressure to bear.

I do think, as Mr. Bissell has indicated, that there surely was little or no interest in the contracts. In view of the acquaintanceship that the Department's staff of scientists has with all or most of the competent scientists in the country, I think they may well have whether or not anybody had any interest in contracts. It may have taken some negotiation on the part of scientists with scientists to stimulate interest, but I am not aware of any pressure put on us in the strict sense of that term to modify our policy.

There was, however, no interest manifested in this contracting field, let me say, from 1955 to 1957, at least none that culminated in a contract.

Mr. DINKINS. Who from your agency was in charge of contacting the drug companies at the time these negotiations were going on on these patent policies?

Mr. BANTA. Somebody at the National Institutes of Health; I would assume someone connected with the National Cancer Institute in this one. And I suspect more than one. I have no real knowledge of that.

Mr. DINKINS. We have an excerpt from a letter in our report on page 8 that I think came from your Mr. Rourke, and I quote in part from this letter. He says:

> * * * those involved in negotiating drug development contracts on behalf of the Government reported to the Department Patents Board that industry was not participating to an extent needed to meet the demands of the program, apparently due to industry concern that the "march-in" rights reserved to the Surgeon General might be exercised arbitrarily and without due regard to the real public need.

Now, doesn't that indicate that industry did come down here and complain to HEW about those march-in rights and insist that something more generous be given to them?

Mr. BANTA. Of course, when you say "something more generous," maybe it was a little more generous. But to repeat what Mr. Hiller said, we kept a close rein on any patent rights that might develop, notwithstanding the amendment of our policy. Moreover, Mr. Rourke's letter or memorandum from which you have read indicates a concern on the part of industry that "march-in" rights might be exercised arbitrarily. As I have said Mr. Dinkins I did not participate in any contract negotiations nor in any meetings of the Department's Patents Board which considered and advised about the patent policy changes. I do not, however, see in any of the changes any failure to reasonably protect the public interest.

Now, if our scientific people came to the Patent Board and said, "We don't find anybody interested, we might do it if we did a little relaxing," if that was the situation, there would be some excuse for relaxing so long as the Patent Board did what they actually did, namely make it clear that we would not relax to the point where the patent rights, if an invention is discovered, will go unconditionally to industry. The policy was modified without doing that.

I think a great many people in the Department participated in these discussions with the Department's Patents Board and probably with the Secretary and the Secretary's representatives. Out of these discussions grew the amendment which changed the march-in provisions from that of authorizing the Surgeon General to just take over to one where he would give notice that he was taking over and for what reason and give the person the opportunity to comply with the demands of the Surgeon General with respect to quality, price and quantity, and so on.

I think there were a great many persons who participated in those discussions. I was not one of them, however.

Mr. DINKINS. Do you know of any drug manufacturers that have refused to sign one of these contracts until they were given your 1958 provisions?

Mr. BANTA. No, I don't. I don't know whether any of them ever manifested any interest or not, I don't know of anyone who refused to do it. I think this was all done before any contracts were presented to anyone.

Mr. DINKINS. Do you think HEW, without suggestions or advice from industry, just voluntarily revised their 1957 program?

Mr. BANTA. I don't like to be defensive, that is, put in the spot of defending either our policy, or defending the contracting parties representing industry if the Congress thinks these are the wrong people to contract with or if this is the wrong way to do it, I am sure Mr. Secretary and others in the Department would welcome statutory guidance.

But so far as I know, there was no pressure put on anyone in the strict sense of that term. And while I don't like to have it implied that something wrong was done in revising our policy I am unable to say it was unnecessary to do so in the light of our experience before it was done. There was no interest in our ocntracts under the existing policies.

And of course you as a lawyer know that it takes two people to make a contract. So that what I expect was going on is that we were trying to find the way to interest people in doing this job without giving away any governmental rights, without retaining sufficient control to protect the public interest. I suspect that is what was being done.

Mr. DINKINS. Do you imply by that statement that if these 14 manufacturers had refused to sign a contract with HEW that you would be whipped, you would have nowhere else to turn to make other contracts?

Mr. BANTA. I must assume we had no place to turn, we had this contract authority for 2 years and didn't get a contract.

Mr. DINKINS. So beyond these 14 you don't know of anywhere else to look?

Mr. BANTA. We didn't have a contract even with these 14 for the first 2 years.

Mr. HILLER. Mr. Chairman, may I suggest this for the clarity of the record. I think we should not overlook the fact that even in this cancer chemotherapy area in all contracts the Government reserves an irrevocable, nonexclusive, royalty-free license for all governmental use. So that obtains under any circumstances in every contract.

And I think that perhaps in order to keep the perspective in focus it ought to be borne in mind that of the figure that was mentioned this morning, I belive it was some $18 million, which this year has been obligated or expended in the cancer chemotherapy program, that a considerable portion of that—and I am unable to say at this time how much—but a considerable portion of that amount of money did not go into drug development or research and development contracts, those that were related in one way or another to the cancer chemotherapy program.

So, for example, we might have contracts for services, for supplies, for mice, which are obtained by NIH for the purposes of testing, or other animal procurement. It is in order to keep the perspective here that I suggest that we equate the relationship of the amount of money that has already been invested so far in these 14 contracts

try. While we have no direct information on this contingency, your subcommittee may wish to explore it before advocating a single standard patent clause for all Government agencies.

The Comptroller General, in his statement of March 10, 1960, which is quoted in the chairman's letter, suggests two alternatives: The Government taking title to patents (as, for example, in our so-called short-form patent clause) or retaining a royalty free license covering all governmental uses. We believe that the latter alternative is undoubtedly a minimum requirement of any patent clause which any reasonable contractor would gladly grant. As a practical matter, our other forms of patent clauses have provided a number of other alternatives which perhaps lie between or even beyond the alternatives suggested by the Comptroller General. These variations are in terms of giving the Government, for example, access to background patents covered by the "contractor's patent rights" in the long-form patent clause; the right to designate others who shall receive royalty free licenses for manufacture of devices even for nongovernmental use; the power to require such licenses to be revoked; and the extension of the right to designate licensees not only to "subject inventions" made under the research contract but also to background patents under "contractor's patent rights."

We further feel that the nature of the patent rights which are required by the Government partially depend, as your subcommittee has implied, upon the respective legal responsibilities of the various agencies. Our interest in providing prosthetic devices not only for veterans but in seeing that all disabled may benefit from prosthetics research may be very different from the responsibilities of some agencies to develop better devices for their own immediate functions.

QUESTION (5A): EFFECTS OF PATENT CLAUSES ON RESEARCH GOALS

The entire policy of the Veterans' Administration's research program, particularly in prosthetics, has been to encourage voluntary nonprofit efforts in humanitarian fields and to make available the results, so that not only veterans but all others may benefit. In general, exchange of information and freedom from secrecy and other restrictions have been sought. A wide-scale exchange of information among the developing laboratories and complete freedom to publish have been features of the policy.

Patents have been sought only for protection of the interests not only of the Government but of all disabled. All concerned agreed that mere publication of a major patentable invention would not protect against issuance of a patent to some "outsider" who filed a patent application within a year of publication. Such an individual might obtain a valid patent entitling him to exclude the Government because he filed in good faith as a result of independent invention before the date of publication. Even if he filed fraudulently, generally the Government would have no easy way of proving the fraud.

The typical patent clauses have required that the contractor either file an application promptly himself or submit the necessary documents to the Government to permit it to file promptly after first public use of publication. The patent policy has not tended to hamper prompt publication of the results of the research and development program. As a matter of fact, during the prosecution of a number

development contracts in any field other than cancer. As the President of one of the largest pharmaceutical houses in the country told me, and I am delighted to quote him: "We were caught off guard on this cancer thing. Several companies like Pfizer jumped in and grabbed contracts."

You were discussing whether it was a grab or a difficult negotiation.

In any event, this spokesman went on:

"The rest of us had to take contracts because we couldn't justify a refusal of Government money to our stockholders. But we are drawing the line now."

And for record purposes, that is Francis Boyer, the president of Smith, Kline & French, not a small drug house.

Now, may I ask, following that up, what has been your experience with these drug manufacturers in negotiating for psychiatric drug research, which is one of the things that come off this line that this fellow talks about?

Mr. BANTA. I don't know that we have any contracts or that we are engaged in psychiatric drug research with any of these profitmaking organizations.

I will ask our man from the Surgeon General's office. I think most of that is done through grants to the colleges, universities, and nonprofit organizations.

Mr. BISSELL. Let me say this. In the light of the experience we have had with the cancer chemotherapy program, we decided, oh, 18 months or 2 years ago, that we would not get into more contracts and new fields like this unless we were absolutely forced to do it.

Senator HART. You mean you have had so much trouble with the manufacturers in the one field?

Mr. BISSELL. No; just because we realized that it posed problems——

Senator HART. And one of the problems is what patent rights they will insist on?

Mr. BISSELL. One of the problems is what the patent rights should be; yes. And we decided to avoid this——

Senator HART. If they undertook a sitdown strike, then they would have won it; is that right? Or you don't even want to discuss it with them now?

Mr. BISSELL. There are many other problems. The administration of the contract leads to—there is a great deal more difficulty in the administration of contracts than in grants sometimes.

Senator HART. It is pretty evident that there is a great deal of difficulty in this thing, from the exchange we have heard.

Mr. BISSELL. As a matter of fact, we have decided to try to avoid the use of psychopharmacology contracts and other contracts as long as we could and try to do the job by grants. Recently there have been some indications that maybe some areas we cannot handle through grants.

There have been some negotiations—I don't know how far they have gone—which may lead toward large-scale pharmaceutical contracts. The only psychopharmacology contracts that I know that have been made are two very small things that are really in the nature of supply contracts. There may be others. But as of the present time, I believe that our effort is still to do the job by grants if we possibly can.

There has been no thought of going to the Department Patents Board or asking for a new policy that would extend the cancer chemo-

the availability on a royalty-free basis not only for governmental purposes but for nongovernment use.

When the contractor has no possible interest in a patent including yielding even the possibility of uses outside the field of prosthetic devices or sensory aids, he is understandably reluctant to divert from interesting research studies at the time and energy that would be necessary to prepare a disclosure in sufficient detail to allow determination of patentability. He is thus likely to overlook patentable ideas or to decide on the basis of only partial data that a device is not patentable, whereas a careful study might disclose elements to which good claims could be drawn. We, therefore, suggest that, both in our own patent clauses and perhaps in the final drafting of S. 3156, some provision might be made to allow the contractor to retain rights to patents for commercial uses in areas completely unrelated to the subject work of the contract for customers other than the Government or its departments and agencies. Even this modest incentive will not deprive the Government of any right to inventions contemplated under the contract, yet may stimulate the contractor to take the trouble to prepare disclosures and ultimately to prosecute patent applications more vigorously in accordance with his responsibilities to protect the Government's direct interests.

(Preliminary report of the Subcommittee on Patents, Trademarks, and Copyrights referred to appears in the appendix as exhibit No. 6.)

Senator HART. Dr. Stewart, thank you very much. The attachments which are part of your statement will be made a part of the record in full.

(The attachments referred to appear in the appendix. Addendum to statement before Subcommittee on Patents, Trademarks, and Copyrights of the Committee on the Judiciary, U.S. Senate, by Dr. Robert E. Stewart, representing the Veterans' Administration, appears as exhibit No. 7, and statement on "Medical Research" [in the Veterans' Administration] appears as exhibit No. 8.)

Mr. CLESNER. Your original statute states that the results of your investigations and your prosthetics research program are to be made available to private or public institutions and agencies and to individuals in order that the unique investigative materials and research data in the possession of the Government may result in improved prosthetic appliances for all disabled people or persons.

Dr. STEWART. That is right.

Mr. CLESNER. In other words, anything that results from your program is not merely for governmental use or purpose?

Dr. STEWART. No, sir, it is available—we are required to make it available to the general public.

Mr. CLESNER. Now, it has been suggested by many people that in many instances it is sufficient for Government agencies in contracting if they merely accept a license to manufacture and use for governmental purposes. Would this be sufficient for the VA to carry out its mandate?

Dr. STEWART. In this particular program, our method of providing prosthetic appliances such as artificial limbs to patients is to utilize the private limb shops throughout the country. There are about 265 such shops; they are all small business organizations who supply limbs.

Mr. BANTA. Well, it is just in our broad authority to contract. We put this clause in a contract merely as a part of our agreement that that is what we will do.

Mr. WRIGHT. Doesn't it occur to you that where the problem is—if there is a problem—of providing administrative procedure for the purpose of protecting drug manufacturers or anyone else from arbitrary action by the Surgeon General, that that is a matter for Congress to consider rather than something to be done by the contracting officers?

Mr. BANTA. Well, I would say the first premise is "Yes," that you are exactly right about it. But in the absence of Congress having done it, the administrative or the executive branch, clothed with authority and under direction to make contracts——

Mr. WRIGHT. If you thought that this kind of procedural protection was necessary for an effective program, it would have been perfectly appropriate for you, would it not, to have come to Congress with your problem and said, "We don't think we can do the research job unless procedural protection of this kind can be established," and it would be for the Congress to decide whether or not you should have that kind of protection and what the precise nature of the protection would be. Wouldn't that be the correct way to do it if you want to satisfy Congress that you are pursuing the right policy?

Mr. BANTA. That would be one way.

Mr. HILLER. If I may speak to that, Mr. Wright, I think it has long been considered within administrative responsibility and authority for a Government agency which undertakes to negotiate a contract to negotiate the terms of that contract, including any such procedures as may be necessary for the handling of the problems which arise during the performance of the contract.

So, for example, a disputes clause in the contract, which provides for an appeal to the head of the agency or to an Armed Services Board of Contract Appeals is historic in contracts today made by the Government. And yet the procedure which we have established would do no more than to regulate the procedure to be followed in the exercise of a right under the contract and provided for by the contract.

Mr. WRIGHT. Now, what you are referring to are procedures that are in existence which are established by express congressional authority?

Mr. HILLER. Pardon me?

Mr. WRIGHT. I say, those procedures which you are referring to are procedures which are established subject to express congressional authority?

Mr. HILLER. I think they are inherent in the authority given to the other agencies to negotiate contracts and terms.

Mr. WRIGHT. You think that the authority to make contracts carries with it the authority to prescribe whatever procedural regulations you think may be necessary to protect one party from arbitrary action by the Government?

Mr. HILLER. In a sense, I think so; in the terms of the contract.

Mr. WRIGHT. You need no sanction from Congress to do that.

That is all.

Senator HART. Mr. Clesner.

Mr. CLESNER. No questions.

QUESTION (3): ACTUAL USE OF PATENT RIGHTS

The question of use of inventions arising out of research has been discussed on pages 5 to 7 of the subcommittee preliminary report, "Patent Practices of the Veterans' Administration." The widespread improvement in artificial arms since World War II has been beneficial to both veterans and civilians. The prosthetic armamentarium available for prescription includes many components arising from the research program. Some of these were patent, though others, reaching the market without formal patent procedures, entered the public domain through publication when that method seemed to protect adequately the interests of the Government and the disabled.

Incidentally, it is encouraging that, with the growing stock of fundamental information available and the basic designs of mechanisms worked out under the Government-sponsored research program, manufacturers of components and hardware are now beginning to introduce small improvements and new models at their own expense. This trend frees Government support for work on fundamental problems which have not yet attracted commercial interest in the extremely small artificial limb industry. Under such circumstances, the role of the Government-sponsored artificial limb research program is merely to evaluate such new devices developed by the commercial manufacturer at his own expense if the improvement seems to be of general interest. Such evaluations primarily protect the Veterans' Administration in entering such items on supply contracts but secondarily protect the general amputee population against widespread use of an unsatisfactory device. The commercial manufacturers have been very cooperative about submitting such models for evaluation purposes and in accepting the results.

A wide-scale field study of both specific devices for arm amputees and the overall amputee management program was made in both Veterans' Administration and private clinic teams, many of the latter being set up primarily as a result of this evaluation program. A comparison of elbow locks, for example, showed a dramatic increase in the use of elbow locks controlled from shoulder harness, arising from the artificial limb research program, compared with the previous practice which often required above-elbow amputees to operate the elbow lock manually.

A very large number of the other devices which have reached clinical usefulness represent either devices or techniques from the artificial limb program. Some, like the terminal devices developed by Col. Maurice J. Fletcher and others, of the Army Prosthetics Research Laboratory, and patented in their names by the Army, are available on a royalty-free basis to civilians as well as to veterans. Though developed in the cooperative Government artificial limb program, these patents are controlled by the Army rather than by the Veterans' Administration.

Other devices are not patented because they represent improvements or reduction to practical usefulness of ideas originally disclosed in very old and long-expired patents. The suction socket, for example, was patented in 1863, but never attained clinical use in this country until it was further refined and the anatomical basis for fitting it to the individual amputee was developed through the University of California and others in the artificial limb program with the cooperation

hasten the day even by one, or when we could say with confidence that there shall be no more cancer deaths, I and the public find great difficulty in understanding why the very hard rule of general business conduct has to be applied in negotiation with HEW, looking to making available that skill and that knowledge in pursuit of a cure.

I don't quarrel with business, and I have had association with some which would battle the right to the last knuckle for the best handhold they can get on a patent deal, but I would hope that that would not be my attitude if I were battling against making available a cure for cancer.

This is the underlying concern.

Mr. BANTA. I would completely agree with you. And we have all along the line in a grant research, which, of course, far exceeds in activity and dollars anything we do under contracts—we have insisted on reserving to the Government the rights to inventions.

And we think we have done a pretty good job doing it. But, of course, in a government such as we have, where the exigencies of the situation being what they are, with a policy of defense such as I heard described by Senator Long, it was altogether natural that you will have somebody say to you, or you will hear that somebody has said, "Why don't you do what Defense is doing—who don't you do what some other agency is doing?"

And it is not for me to point my hand at Defense. I don't know what the exigencies of their situation are. All we know is that we are not dealing with electric-light bulbs or machines or anything of that sort of thing; we are dealing with those things like medical discoveries which we hope will redound to the public good, and, therefore, we do keep our hands, as a matter of policy, on the rights to the discoveries to the extent that the public cannot be exploited.

Now, if we haven't done that very well, then we are subject to such criticism as those who differ with us in judgment may make. But our judgment is, though it may be bad, still we have kept our hands on the reins, and we can call upon anyone with whom we have contracted or to whom we have granted funds for the right to use the product and exercise the rights.

Senator HART. Notwithstanding my earlier comment, I am not unsympathetic with the problems of those charged with the management responsibilities of the pharmaceutical firms. What are their responsibilities? I contribute capital, and I expect a return on it.

Maybe reaching for the best handhold, and you think that holding off for another few years you can get a better handhold—maybe that is what you would conceive to be your management responsibility. But it isn't the production of light bulbs, or even tanks.

Mr. BANTA. No.

Senator HART. And if there is this dilemma, then it looks very likely that it is the kind that can be resolved only by the decision of the public instrument governing. And maybe that is the only way that dilemma will be resolved for the investor in the company, the management of the company, and the public.

Thank you very much.

(EDITOR'S NOTE.—The following statement of Senator Russell B. Long was presented during the morning session.)

Senator O'MAHONEY. Senator Long, we will be very happy to hear from you.

Mr. VOGEL. That is a rather broad question for me to answer. But on the basis of our experience I cannot see any real basic difference, no.

If an industry can make a better product, at lower cost, it seems to me that it gains a better competitive position, and that, after all, is to the advantage of the buyer, who is the most important man to be concerned in this matter.

Senator O'MAHONEY. The committee is very grateful, Mr. Vogel, for your appearance today. You are now free to depart and catch your plane.

Mr. VOGEL. Thank you, sir.

Senator O'MAHONEY. Mr. Banta, will you be good enough to come back at 2:30 this afternoon.

Mr. BANTA. Yes, sir.

(EDITOR'S NOTE.—The resumption of testimony by Mr. Parke Banta and associates is printed immediately following his statement during the morning session.)

(EDITOR'S NOTE.—The following statement was preceded by the testimony of Mr. Parke Banta and associates at the commencement of the afternoon session.)

Senator HART. The remaining witness is Dr. R. E. Stewart, of the Veterans' Administration, representing Mr. Sumner G. Whittier, Administrator.

STATEMENT OF DR. ROBERT E. STEWART, DIRECTOR, PROSTHETIC AND SENSORY AIDS SERVICE, DEPARTMENT OF MEDICINE AND SURGERY, VETERANS' ADMINISTRATION; ACCOMPANIED BY EUGENE F. MURPHY, CHIEF, RESEARCH AND DEVELOPMENT DIVISION, PROSTHETIC AND SENSORY AIDS SERVICE, AND GRAHAM MOSELEY, SPECIAL ASSISTANT TO ASSISTANT CHIEF MEDICAL DIRECTOR FOR RESEARCH AND EDUCATION IN MEDICINE

Senator HART. Dr. Stewart, may I make the same apology to you?

Dr. STEWART. Thank you, Mr. Chairman.

I have two gentlemen with me.

Senator HART. Will you please identify them?

Dr. STEWART. On my right is Dr. Eugene F. Murphy, the Chief of the Research and Development Division, Prosthetic and Sensory Aids Service, and Mr. Graham Moseley, who is a special assistant in the medical research program.

Mr. Chairman, I have a prepared statement which is designed to respond to the specific questions asked in the chairman's letter of May 9, 1960. If it pleases the committee, I will be happy to read it.

Senator HART. You may proceed.

Dr. STEWART. It is a pleasure to have the opportunity to explain the Veterans' Administration's program on research and development, particularly in the field of prosthetic and sensory aids. I shall attempt both to answer the questions raised by the subcommittee and to make some additional comments on our thinking on possible changes in our patent policy. I shall also take this opportunity to bring our previous reports up to date and to clarify a few areas of misunderstanding in

That matter was voted on on the Senate floor, and it was defeated even though the issues were not as sharply defined as I would liked to have seen them. Congress voted that where the Government pays for the research the Government gets the patent rights.

Many firms stated that if they were doing research at the taxpayers' expense they would let the subcontractor keep the patent rights, but if they were doing it with their own money they insisted that they get the patent rights.

I discussed this matter with an outstanding businessman—I would rather not name his name—of one of the large corporations, and his position can be summarized this way: He said, "If you want to be fair about it, the fellow that pays for the research ought to have the rights." It is just that simple.

In the field of defense, we are paying $6 billion a year, with 20 companies getting most of that money. They are then in a position to hoard this information from their competitors. There is every financial incentive for them to do that, notwithstanding the fact that rules and regulations are supposed to work the other way around. The Defense Department sends some of their men to the various plants to police—and my guess is that those are not the most anxious policemen—supposedly to make sure that technical information is not buried. Testimony from small business witnesses, a number of them, reveals that they cannot get an opportunity in a number of instances even to get a look at what they are trying to bid on.

Isn't it a ridiculous situation when the Government is trying to negotiate a contract on a competitive basis, and a small firm who wants to bid cannot even get a look at a model or get adequate information so he can determine whether he can manufacture an item more cheaply?

We found a small firm trying to maintain certain aircraft equipment. He believes that if he could get technical data and parts he could underbid General Electric 4 to 1, but General Electric claimed that they have proprietary rights and cannot sell him any of the parts that he needs to repair General Electric equipment—even though his cost is far below theirs. Competition is thus eliminated by the larger firm claiming proprietary rights, and these are rights achieved on cost-plus contracts, cost plus fixed fees, guaranteed profit.

Some firms say they would not be interested in Government work, unless they were sure that they could keep all the patent rights. General Electric according to newspaper accounts was apparently ready to lead a big-business sit-down strike if the Government insisted on protecting itself from monopoly and from high prices and from gouging and from a "fencing-in" process that often occurs at Government expense, that is, paying money for somebody to do additional research on every possible inferior alternative to prevent someone from getting around his patent. And the purpose of that, of course, is that if this one firm gets a patent, if someone else wants to manufacture a similar product, even by using an inferior method, he would not be able to do that because even that method would have been patented too. I believe you will find that in some cases our money is being spent that way.

To find inferior ways to solve a problem that has already been adequately solved is certainly a waste of money.

bility, it appears they did go to somewhat of an absurd extreme in taking out a patent on this. I cited it because of that fact.

Senator O'MAHONEY. Mr. Clesner.

Mr. CLESNER. I would like to request that the committee report on the patent practices of the TVA go into the record, because reference has been continually made to it, and the statement contains supplemental material to the report, and it could only——

Senator O'MAHONEY. Do you wish to enter the whole report?

Mr. CLESNER. I leave that to the discretion of the Chair.

Senator O'MAHONEY. It is an extensive report. And we want to give evidence to the public that we are careful in spending money.

On the advice of the chief counsel, we will enter the report in the record.

(Report referred to appears in the appendix as exhibit No. 5.)

Mr. CLESNER. Mr. Vogel, in regard to your licenses, I would like to bring out the reporting features regarding use to supplement what Senator Long has asked you—in other words, how you keep contact with the use of the inventions made by TVA?

Mr. VOGEL. I think I will let the man who is responsible for most of these contracts, who has it as a daily job, answer. Mr. Walthall, please.

Mr. WALTHALL. Our contracts with these fertilizer producers all require that they submit a report to us annually saying how many months during the preceding 12 they had used a TVA invention. We do not ask them to report tonnages or profit or anything, just whether they used the invention or not.

Mr. CLESNER. Regarding another facet Senator Long raised in his statement as to how you make technical information available, how do you do that?

Mr. WALTHALL. We do that by articles written by our employees for trade journals, by direct contacts through conferences with representatives of industry and other technicians at our plant and laboratories. We work through State universities, county agents, and all groups who reach either the industry or the users of the product.

Mr. CLESNER. As to your exclusive license that you granted to the Mica Manufacturing Co., do you believe that such a right in the TVA, the ability to grant such a license, is very beneficial to take inventions off the shelf and put them to use?

Mr. WALTHALL. This particular case occurred before I was associated with the Tennessee Valley Authority, but I am sure that it was a justifiable measure. This was a device, as I understand, that industry was a little bit doubtful of, but we had great confidence in. And an exclusive license for a limited period provided a means of getting the invention used so that its value could be established.

Mr. CLESNER. You appeared to be successful, for at least two others have taken licenses out since that time.

Mr. WALTHALL. I think the decision has been justified.

Mr. CLESNER. I have only one other area that I would like to explore with you for a moment. That is the difference of the title that vests with a TVA patent as contrasted to that of a Department of Defense.

Your statute gives anyone the right to sue TVA for an infringement in the equity side of the District Court of the United States, and it also grants TVA the right to enforce patents if it so desires.

for the Government unless they could keep the patent rights. And yet it looks as if every time we get in trouble we send for the president of General Electric to come down here and organize our defense for us. And if we want to get some secret report about defense, we send for the president of General Electric, who sits with some board and issues a report that is so secret that even you and I cannot read it half the time. This company is reluctant to perform research for the Government unless they could be guaranteed a profit and guaranteed all the patent rights in addition to that. Yet we know that any competitor would give his eyeteeth for the opportunity to do research for the Government.

Some people have told us that small business needs these patent rights. And I would like to make a comparison.

Small business could perhaps have developed the aerosol bomb on contract for the Government. It happens that the Government developed it itself. There must be 500 companies manufacturing aerosol, everything from shaving cream to furniture polish, bug bombs, insecticides, everything under the sun, hundreds upon hundreds of companies using that product.

Now, what would be better: that a single company should grow from a small one to a giant, charging outrageously high prices on Government research to develop aerosol, or would it be better that 500 or 600 or perhaps a thousand little fellows would be in a position to manufacture commodities and sell them at a cheap price to the public?

Senator O'MAHONEY. Senator, you have raised one of the most important questions now before this Congress.

The collapse of the summit conference at Paris last night makes it clear to us that everybody in the United States is directly concerned with the economic progress of this country. The heads of great companies like the General Electric and heads of small companies are dutybound if they want to preserve this country to come forward with everything that they know to protect the economic stability of the United States on a free enterprise basis.

Free enterprise does not mean freedom from regulation by government. Free enterprise means the freedom of every man or every group to go into a line of business without monopoly restrictions on the part of big companies.

Soviet Russia, in my judgment, will not begin a nuclear war, because it knows the U–2 has proven to the world that we can penetrate to the very center of Russia with an airplane, and an airplane can drop bombs as well as take pictures. So Russia is not going to start a war. It is waging an economic war against us. And unless we in the United States are willing to combine together as patriotic citizens of this country to build up free enterprise, we are going to have a hard time in the days before us.

I feel very grateful to you for what you have done with your Small Business Committee on Monopoly.

Senator LONG. Thank you, Mr. Chairman.

If I might just add a few additional words—I do not want to keep the committee too long on this matter—this policy started at a time when the Government was spending only about three or four hundred million dollars a year on research and development for private con-

Senator HART. Before we do, I want to raise a delicate subject.

Senator O'MAHONEY. This is a delicate subject.

Senator HART. It is a delicate aspect of a delicate subject.

On page 2, the top part of your statement, you say:

> To be realistic, there are instances where TVA's contributions may be so limited that our claiming the full benefit would be inequitable.

Do we understand this to be a suggestion that you would have the committee understand that a mandatory requirement of complete license back to the Government—not license back—but complete title to any patent developed under any grant or contract would be too sweeping?

Mr. VOGEL. Well, I am getting a little out of the field of application to my own organization here, Senator.

As I have indicated, we have done very little patentable research on a contract basis. But certainly if we were paying for the research we would feel that we would have a right to the products thereof.

Senator HART. But the committee now understands, then, that TVA itself, and in your experience elsewhere, you have no—and are not able to advise us—specific cases where you feel that it would be inequitable for the Government to require the title to any development?

Mr. VOGEL. No, I don't think I could, Senator; it would be something of a very insignificant character, I would think, if that were true.

Senator HART. Thank you.

Senator O'MAHONEY. Why did you put this reference in your statement, then, Mr. Vogel?

Mr. VOGEL. Well, only because there are things which are similar to this football charging device that could be of such a limited value that we wouldn't feel that there would be any need for the Government to hold an interest in this. I say these are very rare cases.

Senator O'MAHONEY. Your statement deals not with the value of the patent but with the value of the contribution from TVA.

Mr. VOGEL. With its applicability to the public need, I would say, rather, Senator.

Senator O'MAHONEY. And then your sentence read as follows:

> In such cases, TVA may choose not to exercise its full rights.

Can you give us any example at all?

Mr. VOGEL. Well, I have given you this example of a football charging machine, which is a little absurd; it carries it to a very extreme degree.

Maybe Mr. Walthall can help me on another example.

Senator O'MAHONEY. Mr. Walthall, the next sentence was:

> This is determined in individual situations—

which is plural, not singular.

Mr. VOGEL. That is true.

Senator O'MAHONEY. Indicating that there have been several such occasions.

Mr. VOGEL. There have been. I have indicated that there were some five or six such cases. And I can refer you to a list of the cases, where the rights have reverted to the employee himself in order that the invention could be made available for use by the public.

Senator O'MAHONEY. Where does that appear?

Patent lawyers, I think, object more strongly than any other group to the Government protecting its own interests. If they can stir up 6 billion dollars' worth of unnecessary patent work, they undoubtedly make a lot of fees out of it. So I guess if I were a patent lawyer I would want to be handling all the patent cases I could, involving all this fantastic amount of research every year.

But I really do not think that the public interest is at all parallel to the patent lawyer's interest in this type of litigation.

Senator O'MAHONEY. Well, Senator, I have here the report of the National Science Foundation, the eighth volume, for fiscal years 1958, 1959, and 1960, on "Federal Funds for Science."

In table 21 the total for the agencies in 1957 was $2,856.3 million. Of this the Department of Agriculture spent $97 million; the Department of Commerce, $19.8 million; the Department of Defense in all its branches spent $2,910.3 million; the Department of Health, Education, and Welfare, which is represented before us this morning, spent $143.5 million; and the Department of Interior spent $42.3 million. Then there were other agencies, including the Atomic Energy Commission, the Manhattan Engineer District, National Advisory Committee for Aeronautics, the National Science Foundation, and the Office of Scientific Research and Development.

Senator LONG. Mr. Chairman, might I also point out to you that for research and development in the Department of Defense alone for this year the figure will be $5,950,125,000, which is being spent subject to the policy that I am criticizing here.

Now, there is no doubt in my mind that somewhere in the administration pressure is being put on to urge these persons who have responsibility to testify for a policy that yields all these patent rights.

The reason I say this is that Tom Clark sent us a report recommending in the strongest possible terms that which your bill would do, in effect saying that if the Government pays for the research the right should belong to all the people, and the public and consumers shouldn't be required to pay high monopolistic costs as a result of research done at their expense in the first instance.

Mr. Brownell in 1956 sent us a report that took the same point of view, but I must say that it is much milder, in tone.

Then in 1959 we asked Mr. Bicks to testify before our committee, but he was unavailable. He can come in and spend all day testifying on a bill saying that a little farm cooperative can't buy a dairy, but if you have got something that involves 6 billion dollars' worth of patent rights, he is not available.

Senator O'MAHONEY. Senator Long, I am advised that Chairman Vogel of the Tennessee Valley Authority, who is here in the room, having been called by the committee, has to catch a plane. Would you mind if I asked you to sit at the desk while he testifies?

Senator LONG. All right, sir.

Senator O'MAHONEY. Thank you very much, Senator.

Mr. Banta, may I request you to yield again to Mr. Vogel?

Mr. BANTA. Yes, indeed; you may, Senator.

(EDITOR'S NOTE.—The testimony of Herbert D. Vogel commences on p. 97. The conclusion of the statement of Senator Russell B. Long follows:)

Senator LONG. It should be pointed out that whenever Congress has spoken on this problem, it has always adopted a policy that when

Now, inasmuch as we are not in the commercial production of fertilizer—and I would like to emphasize strongly that we are not—we must reach these objectives through the fertilizer industry by making our findings available to the largest possible number of manufacturers. We inform the industry of our research and developments through technical publications and trade journals, press releases, conferences, demonstrations, and the like. We answer a large number of direct requests for information each year, by means of correspondence with members of the industry.

Industry representatives are encouraged to visit our fertilizer laboratories and plants at Muscle Shoals, Ala., to examine work in progress and to consult with our scientists and engineers.

For example, during fiscal year 1959 over 900 persons having a technical interest in our fertilizer research and development visited our plants. We answered almost 1,600 direct inquiries in this field during 1959. Pilot plant demonstrations attract hundreds of visitors. And I may add, not only from every State in the Union, but from foreign countries and from our new States, Hawaii and Alaska.

At the same time and as we are working with industry on process development, we engage in educational programs to introduce new fertilizer and fertilizer practices to the farmer who in time may be expected to demand these new products from private suppliers. And this demonstration program has in turn proved a great stimulus to the fertilizer industry. As soon as the industry is able to make a new fertilizer, make it on a productive basis, then we try to get out of that particular production and develop another new type of fertilizer.

As I have said, TVA makes the patents available to industry under royalty-free, nonexclusive licenses. Fertilizer manufacturers have equal opportunity to receive such licenses, and no individual or firm may preempt any TVA invention for competitive advantage or for price control.

And I might state here parenthetically that this has resulted in a benefit to equipment manufacturers who have thus been provided with a wider market for their tools and machinery. The fact that TVA patents can be used but not controlled has not kept industry from seeking and obtaining licenses. Some 160 different firms have received over 200 licenses. TVA patents on devices and processes for manufacturing high-analysis granular fertilizer from conventional materials have been licensed for use by 109 fertilizer and equipment manufacturers. About two-thirds of the granular fertilizer made each year in this country is manufactured under a TVA license.

Since World War II, fertilizer consumption in this country has more than doubled. The average analysis has increased from 21.7 percent to 30.2 percent available plant food. Thus the American farmer gets a better return from his fertilizer dollar than he would if fertilizer materials and methods had not changed.

I have submitted to the clerk of this committee, along with a letter addressed to the chairman, a copy of this statement as I have given it, and in addition, I have provided a supplement to the preliminary report of the Subcommittee on Patents, Trademarks, and Copyrights of the Committee on the Judiciary of the Senate, which was published by the 85th Congress, 2d session, and entitled "Patent Practices of the Tennessee Valley Authority." There is nothing in this material

then he proceeded to go back where he came from as patent lawyer for the Electric Auto-Lite Co.

About the one thing you can say for Mr. Falvey is that he is consistent; he is looking out for Auto-Lite Co. no matter what side of the table he is sitting on.

That is the type of pressure that we are getting to continue this policy of giving away patent rights.

Senator O'MAHONEY. Will you bring Mr. Falvey the next time he comes?

Senator LONG. What I had to say about General Electric seemed to stir them up. I thought I was rehashing old information, and I got an eight-page letter from them. It seems to me that if it took all those pages to defend themselves, they must be guilty.

Senator O'MAHONEY. You are speaking now for the bar association?

Senator LONG. No; I am speaking of the General Electric Co.

I am not trying to change the workmen's compensation law down in Louisiana. The State legislature, I am sure, is competent to look into that matter.

It is natural that the patent lawyers would want all these patent rights where they could handle them and work with them.

Let us face it. If these patent rights are truly available then everybody can compete, and whoever can give the best price is in position to get the business. Because of the experience that all of them gain, they are in a better position to bid against one another and compete, all of which, I think, is in the public interest.

Mr. Chairman, thank you for the opportunity to testify. I think in some respects it is completely unnecessary, with all the fine work you have done in this field through the years. I have to conclude that there is not much I can add to what you know.

Senator O'MAHONEY. Thank you, Mr. Long. Your cooperation is very important.

This afternoon the committee will hear Mr. Banta for the conclusion of his testimony, and Dr. R. E. Stewart, speaking for Mr. Sumner Whittier, Administrator of the Veterans' Administration.

We will be glad to have you here if you care to come, Senator Long, and cooperate with the committee.

The session is now in recess until 2:30 this afternoon.

(Whereupon, at 12:35 p.m., the committee recessed, to reconvene at 2:30 p.m., the same day.)

(EDITOR'S NOTE.—The statement and testimony of Mr. Herbert D. Vogel presented during the morning session follows.)

Senator O'MAHONEY. Mr. Vogel, will you come forward.

STATEMENT OF HERBERT D. VOGEL, CHAIRMAN OF THE BOARD, TENNESSEE VALLEY AUTHORITY; ACCOMPANIED BY J. H. WALTHALL, CHEMICAL RESEARCH AND FERTILIZER DEVELOPMENT STAFF; DUANE DUNLAP, ASSISTANT GENERAL COUNSEL; MARGUERITE OWEN, AND JUNE MARTIN

Mr. VOGEL. Mr. Chairman, members of the committee, I wish to assure you of my great pleasure at this opportunity to appear before you for the Senate Subcommittee on Patents, Trademarks, and Copy-

rights, in order to tell you something about the Tennessee Valley's patent policy and its result.

I have here with me on this occasion, on my right, Mr. Jack Walthall, who is with our Chemical Research and Fertilizer Development Staff, and on my left, Mr. Duane Dunlap, who is Assistant General Counsel.

I also have here as observers from our Washington office, Miss Marguerite Owen, who is in charge of that office, and Miss June Martin.

Senator O'MAHONEY. Will you give me those names again?

You may proceed.

Mr. VOGEL. The patent policies which are followed by the Federal Government, I would like to assure you at the outset, are of extreme importance to all of us, as of course they are to every American citizen. And the Tennessee Valley Authority is glad to aid the subcommittee in any way that it can in the study of this matter.

I shall not take your time in a discussion of procedural details, but some information on our experience in the handling of patents, we believe, may be helpful.

Our basic patent policy is contained, of course, in the Tennessee Valley Authority Act of 1933. Section 5 (i) of that act provides that the TVA has the exclusive right to any employment-related invention or discovery and to patents thereon made by any TVA employee or by any other employees of the executive branch of Government who may be giving formal assistance to TVA.

The act further provides that patents held by TVA may be licensed.

The TVA Board, in elaborating on this congressional policy to apply it to specific situations, went one step further in the matter of rights to discoveries. The Board decided that if the findings of TVA employees rightfully belong to the Government, it is reasonable to require that the inventions of consultants, cooperating institutions, and other contractors arising out of their work for TVA should also belong to the Government. That is what our policy provides.

To put it more simply and more directly, our patent policy is this: Inventions discovered through the expenditure of public funds belong to the public, and benefits therefrom should not accrue primarily to limited private interests.

To be realistic, we recognize that the public interest in some discoveries may be so small that the expense of prosecuting a patent application or of administering licenses is unwarranted.

Further, TVA's contribution in some instances may be so limited that our claiming the full benefit would be inequitable. In such cases, TVA may choose not to exercise its full rights. This is determined in individual situations, of which there have been a few.

I think it is unnecessary to emphasize that an unused patent is of no value to anyone. If the public is to benefit, a discovery must be given wide practical application. To assure the widest use of its inventions, TVA grants royalty-free, nonexclusive licenses to manufacturers. We do not hold patents for the exclusive benefit of TVA or to derive income from them. We hold them for public benefit.

If it appears that in specific cases the public interest can best be served through the charge of a royalty or the granting of an exclusive license for a limited time, our policy so permits. We have granted only

six exclusive licenses, of which five were to TVA employee-inventors for discoveries in which we had little or no interest or investment. Among these was a patent taken by an employee on a charging machine to be used in football practice. We determined we had very little need for that; since the employee had worked on this on his spare time, we let him make such use of it as he desired.

The other case involved a 5-year exclusive license to a private firm to encourage it to begin using a process that otherwise might have failed of acceptance. In this instance very little interest in the process was expressed by commercial interests. One concern did indicate a desire to develop the process, however, and in order to get the development before the public, we granted the interested company a 5-year exclusive license.

With this brief description of the TVA patent policy, I would like now to turn to the situation in which it is applied.

We do a great deal of what may be defined as scientific research and development, but not all of it by any means is patent related. For example, we conduct research in the agricultural sciences, in biological sciences, and in social sciences, much of it under contract, in which no patentable discoveries are likely to be made.

Many of these contracts are, of course, with our large universities and similar organizations.

Since 1942 our patent-related research and development has been confined essentially to chemistry and chemical engineering and more particularly to the field of fertilizer.

Mr. Walthall, whom I have introduced to you, is a leader in the field of chemical research, a distinguished chemist, and he has a very able staff working with him in these matters.

Now, this fertilizer research and development has been performed by TVA employees exclusively. We have acquired all patent rights to the inventions and discoveries that have resulted. TVA has not conducted any patent-related fertilizer research by contract with or grants to outside persons, institutions, or firms, nor have we had any other research arrangements in recent years which could be expected to lead to patentable inventions or discoveries. However, the fact that we have not had to apply our patent policy with regard to research contracts in no way lessens the need for or the wisdom of the policy, in my estimation.

The proof of any policy is in its application.

In conclusion, I would like to cite a few examples of the public benefits that have come of our research and development and our patent policies.

TVA has been issued 163 patents, the greater part of them in the field of chemistry and chemical engineering, minerals, and metallurgy. To restrict this discussion, I would like to use the fertilizer program as an example of the reaction of private concerns to the use of publicly financed research and publicly owned patents.

The ultimate objective of TVA fertilizer research and development is the improvement and conservation of the Nation's soil resources. It helps the American farmer to follow improved soil fertility practices by making available to him better fertilizers at less cost. And we assist in giving him methods whereby he can improve the soil fertility and obtain fertilization cheaper.

the Federal Government pays, the patent rights belong to the Government just as they do in the TVA. The law requires such a policy. But there seems to be pressure somewhere to push a contrary policy of giving away billions of dollars of patent rights. The Justice Department under both Roosevelt and Truman adopted a very strong position against this type of giveaway. Some testimony about the pressures to give away patent rights during the war is to be found on pages 332 and 333 of the hearings of the Special Committee on Atomic Energy in the Senate, 79th Congress, where witnesses discuss why the Defense Department conceded these rights to these large concerns.

Now, it is hard for me to believe that Mr. Bicks, who is our Assistant Attorney General for Antitrust, could at heart want to send down the pusillanimous letter he sent us, saying that while it would appear that what Mr. Brownell had said about Government patent policy had a lot of merit, and while what Mr. Clark had to say about it—that when the Federal Government pays for this research it keeps the patent rights—that while it would appear that that makes a lot of logic, that you have to consider all sorts of circumstances, and therefore he couldn't arrive at a conclusion on this subject. My guess is that if he were not being told by someone to testify against such a policy, he would certainly be forthright and strongly for it.

The Atomic Energy Commission sent a witness to the House Space Committee who stated that the atomic energy policy seems to work fine in the Atomic Energy Commission, but he would be the last man to say it would work well somewhere else.

I asked Admiral Rickover to discuss it, and he gave a very forthright statement which will be published soon. I believe he is one of the most forthright witnesses that we have from the executive branch. He gave a most clear and forthright statement that the Atomic Energy policy is the sort of thing that we ought to have for the whole Government. It helps to disseminate new information for there is no incentive to keep it secret.

The Defense Department brought Mr. Falvey down here for 5 months to testify for the Supply and Logistics Branch, Department of Defense, as Deputy Assistant Secretary of Defense. He testified before us that in the expenditures of $6 billion on research, it was of no concern to the Defense Department what happened to the public as consumers; that as long as the Government had the right to manufacture a product with a license, as long as they could get the weapons for defense, it was of no concern to them that the 180 million taxpayers who were paying his salary at that moment were going to have to pay high prices as consumers to support monopolies created with Federal money.

Let us look at Mr. Falvey's background. He came to us from the Electric Auto-Lite Co. He was their patent lawyer. He was in charge of negotiating with the Government, and getting plus contracts for Electric Auto-Lite Co. He was a Deputy Assistant Secretary of Defense for 5 months. During this time he let Mr. Johnson go from the Air Force over to the NASA, and then he proceeded to try to put the DOD policy into effect in NASA in violation of the law. He was trying to get the law changed so he could give away NASA patent rights. It looked as if Mr. Falvey spent all the valuable time he could give us in giving away these patent rights. And

that indicates any policy changes. However, the statement does serve to elaborate a bit on the data which was originally submitted.

I am also submitting to the committee a list of abstracts of patents assigned to the Tennessee Valley Authority, beginning in 1943 and continuing to the present.

Now, I think it might be of interest, if you have a copy of this before you, to turn to page 13, and note that reference is made to a continuous ammoniator. I pick this out somewhat at random, because it is a very simple device. As you will see it described it is simple device, a kind of mousetrap, as one of my predecessors on the board called it. It is something that even a small manufacturer can put into operation very inexpensively, and it has resulted in many small firms getting into this business of producing fertilizers, creating competition and getting the prices to the farmer reduced.

It is widely used in the fertilizer industry. There have been 111 licenses issued on this particular piece of equipment.

Senator O'MAHONEY. Mr. Vogel, you have submitted a very excellent argument in support of one of the bills that is now before the committee. I thank you for your statement.

Your letter and the other material will be made a part of the record.

(Letter and attachments referred to appear in the appendix as exhibit No. 4.)

Senator O'MAHONEY. Are there any questions which any other members want to address to Mr. Vogel?

Senator LONG. You mentioned all these other people who asked for a fertilizer license. Do you have any information as to how many are actually using the licenses?

Mr. VOGEL. Yes, we do. I will submit it for the record.

Senator LONG. If you will put it in this record, I will get a copy from the committee when it is available.

Mr. VOGEL. Some information is contained in our annual report, Senator.

Senator LONG. If you can just provide us a copy of that——

Mr. VOGEL. I will be glad to provide the information.

(This material was subsequently supplied the subcommittee by Mr. Vogel and ordered inserted at this point in the record by the chairman.)

The following examples have been furnished by TVA to indicate the current use by industry of major processes and equipment developed through TVA fertilizer production research.

1. Patent No. 2,528,514, "Method for Manufacture of Superphosphate." Twenty-nine firms have been granted licenses and process is being used in approximately 33 plants.

2. Patent No. 2,729,554 and Patent No. 2,741,545, "Process and Apparatus for Ammoniation of Superphosphate." Ninety firms have been granted licenses and the process and apparatus are being used in approximately 145 plants.

3. Application Serial No. 624,177, "Production of Liquid Fertilizers." Twenty-six firms have been granted licenses and the process is being used in approximately 40 plants.

4. Application Serial No. 740,982, "Process for Preparing Stable Liquid Fertilizer." Twenty-two firms have been granted licenses and the process is being used in approximately 37 plants.

Senator LONG. Thank you, Mr. Chairman.

Senator O'MAHONEY. Mr. Wright.

Mr. WRIGHT. I think Mr. Clesner has some questions.

tractors. Now we are spending, well, a total of $8 billion for the Government as a whole.

Whenever Congress has voted on a patent policy, Congress has voted that if the Government pays, the Government should protect its interest just as every corporation protects itself, to make sure that it gets what it pays for. If a private firm pays for research, it gets the rights. It can charge license fees and get its money back that way or it can make the product generally available to the public and let the public benefit from the lower cost of these commodities.

I don't know whether you have the time to go into it, Mr. Chairman. But it might be interesting to find out if the Douglas Corp., for example, in trying to make a missile, knows what Lockheed knows about solid fuel, and it might be interesting to know whether Lockheed knows what Douglas knows about metals.

But all this argument about small business on these patent rights is a matter of whether you are talking about the small business community consisting of thousands upon thousands of firms competing with one another or whether you are talking about one or two, or a small number, as compared with a large number.

Another factor worth considering is this: A corporation like General Electric has around 12,000 patents. A lot of those patents you and I know are not any good. But if the little fellow tries to go into business to compete with them, you can count on them spending a lot of money to support their position and to run a fellow out of business. And if they can't do it any other way, they can do it by suing him on the patents and making him pay out his money in court costs and lawyers' fees. There is no doubt but what patent lawyers will come in. I am a lawyer of sorts and I sympathize with them. Any time we lawyers feel we can make an extra fee, you can count on us. I am a member of the bar in Louisiana, and we have an unusual procedure. Instead of a chap going to a board as he does in most States to get his workmen's compensation, in Louisiana he has to hire a lawyer and give that lawyer 20 percent of it.

Senator O'MAHONEY. I will say for the record that when a client hires you, he hires a lawyer of a good sort.

Senator LONG. Well, I hate to say it, Mr. Chairman, but the client always paid that 20 percent even when I was representing him.

But the point I am getting to, Mr. Chairman, is that every time the Louisiana State Bar Association meets and if anybody raises the point, you can count upon our bar association passing a resolution that we should not change our procedure to conform to that of other States. We lawyers have an interest in that because we are able to generate a lot of unnecessary legal practice out of which we make a 20-percent fee out of everything a person gets on his workmen's compensation.

Now, if you can take this——

Senator O'MAHONEY. Did you ever run into a sitdown strike?

Senator LONG. Sometimes a person may get by without paying a fee. One of these days we will probably conform to the way the rest of the other States do it. But you must recognize that the lawyers have a vested interest in maintaining a situation by which we make the most money.

Mr. VOGEL. It appears on the last page, page 23, of the report of the Senate committee to which I made earlier reference.

Senator O'MAHONEY. We have that.

Mr. VOGEL. You have that; yes, sir.

Senator O'MAHONEY. Let me ask you, Is there any provision of the law governing this discretion?

Mr. VOGEL. Yes, I think there is. I will let Mr. Dunlap respond to that if you will permit it.

Mr. DUNLAP. It is in section 5(i) of the TVA Act, Mr. Chairman. It provides that the corporation may grant such licenses as shall be authorized by the Board, and it can also pay the inventor for his contribution, but that particular part has not been exercised. But the discretion is found in the right here to grant the licenses.

Senator O'MAHONEY. It is clear, however, from your practice, and I assume from the law—I have not read it recently—that your general policy is to put the public service first?

Mr. VOGEL. I would like to emphasize that these exceptions are rare indeed. They are 5 out of 163 patents. And they are cases that have not related specifically to our work or to what we have felt lay within the public domain.

Senator O'MAHONEY. Has the TVA ever been tempted to adopt this policy of letting the contractors obtain the titles to patents?

Mr. VOGEL. No, Senator.

Senator O'MAHONEY. Well, you have testified here—I would like to repeat it, it is on page 4, the middle of page 4:

> As I have said, TVA makes its patents available to industry under royalty-free nonexclusive licenses. Fertilizer manufacturers have equal opportunity to receive such licenses, and no individual or firm may preempt any TVA invention for competitive advantage or for price control.

To that you added the statement that the policy has resulted in increased market for the manufacturers of tool and equipment. In other words, your testimony is that your policy is of great benefit to the public?

Mr. VOGEL. We are convinced that it is, sir.

Senator O'MAHONEY. Thank you very much, Mr. Vogel.

Senator LONG. Mr. Chairman, here is the statute that the TVA is controlled by. There is a provision that the patent rights will belong to the Government if an employee discovers something. The language reads this way:

> That any invention or discovery made by virtue of and incidental to such service by an employee of the Government of the United States serving under this section, or by any employee of the corporation, together with any patents which may be granted thereon, shall be the sole and exclusive property of the Corporation.

Now, if it is decided that this was not made by virtue of such service, this football machine was made not by virtue of a man's employment, and it was not incidental to his employment, it was something he did after hours on his own time, and it had no connection with his work, then under this act these rights would not belong to TVA, but if it was in connection with his work or if it was incidental to his work that he did this, for example, the fertilizer project, or things of that nature, then it would belong to the Government.

Mr. VOGEL. In this case, in acting in accordance with what I am sure the Board of Directors at that time believed to be their responsi-

survey in 1958 showed that there were 200 similar clinic teams outside the Veterans' Administration, to serve primarily the civilian disabled.

QUESTION (2): PATENT RIGHTS

The various types of patent clauses used in the Veterans' Administration's research program in prosthetic and sensory aids are listed in detail in the appendix to this subcommittee's "Preliminary Report on the Patent Practices of the Veterans Administration," in 1959. The so-called short form patent clause, by an unfortunate clerical error on our part, was listed on page 9 of that report as used by the National Academy of Sciences, Contract VAm–21223. Actually the "modified short form" patent clause on pages 10 and 11 was used by the National Academy of Sciences under Contract VAm–21223, which has now become inactive, as well as under Contract V1005M–1914, which remains active.

A brief description of the history of the various patent clauses may assist your subcommittee. The original work on prosthetic and sensory aids was initiated by the Office of Scientific Research and Development late in World War II, through a prime contract with the National Academy of Sciences, which in turn made subcontracts with Northrop Aircraft, University of California, and a number of other research organizations. It seemed natural at that time to incorporate in the National Academy of Sciences contract a standard OSRD patent clause. The prime contract while under the Office of Scientific Research and Development was OEM cmr–522. It was transferred on October 31, 1945, to the War Department as W–49–007–MD–347, O.I. No. 132–46, and later, on July 1, 1946, to the Veterans' Administration as VAm–21223, retaining the same "modified short form" patent clause. After renewal for many years, the contract was replaced on June 30, 1958, by an essentially similar contract, V1005M–1914, which attempted to consolidate the many amendments which had been made in the original contract.

A "long form" patent clause was developed by the Judge Advocate General's Office of the Army about 1946 at the request of the late Honorable Robert Patterson. As Under Secretary of the Army during World War II, he had actively urged civilians to work in war plants. After the war he was told that about three times as many amputations had resulted from accidents in war plants as from military service. He also felt there was a moral obligation to assure that civilian amputees as well as service-connected amputee veterans should receive the benefits of improvements arising from the then new research program on artificial limbs which the Army had been instrumental in stimulating and supporting.

The "long form" patent clause resulted from a number of conferences and informal discussions involving the Judge Advocate General's Office of the Army, the National Academy of Sciences, the Department of Justice, and the Veterans' Administration. It aims to assure that no royalties will be charged for the use of "subject inventions" made under the contract for use in prosthetic devices for either Government beneficiaries or anyone else. In an unusual concession, compared with most Government contracts, the contractor similarly

Do you believe that such statutory powers as that make your own patent position better?

Mr. WALTHALL. You asked me what I believe. My belief is in the affirmative. However, I would like to emphasize that I am an engineer, and I shouldn't put myself in the position of arguing law, I would rather Mr. Dunlap would respond to that question.

Mr. DUNLAP. Could you repeat the question, sir?

Mr. CLESNER. In your case, in TVA's case, the statute gives you the right to be sued for what you own, and it also gives you the right to sue others for infringement of your patent.

In the case of DOD, they hold that—or rather, the Attorney General doesn't care to enforce the patent rights held by DOD; therefore, they could not give an exclusive license as you did in the case of the Mica Co. and have it enforced. It has been DOD's policy that if they did own a patent that they would give a royalty-free license to anyone, and they could not give an exclusive license. This is also true with other agencies.

But in your instance, the statute grants TVA this type of authority. And the query is, Do you think that this type of authority as to your title gives you a better title, for example, in the case of that exclusive license?

Mr. DUNLAP. I suppose that is true. This, of course, is consistent with TVA's corporate status in which it can be sued and can sue in respect to any matter. And TVA also holds property in its own name, that is, personal property, and that would include patent rights.

Mr. VOGEL. I believe I should observe, however, in this connection, that we have never sued or been sued in this particular matter.

Mr. CLESNER. That is true.

But in your report to the subcommittee it appeared that this aided you in settlement of claims?

Mr. VOGEL. I think there are many advantages in having a corporate status; yes, sir, and I am sure this is of assistance, as I indicated earlier.

Mr. CLESNER. In other words, it gave you negotiating or bargaining power that you wouldn't have had otherwise, at least it appears to be so from your statement to us in the report.

Mr. VOGEL. That is probably true.

Mr. CLESNER. That is all, Mr. Chairman.

Senator O'MAHONEY. Mr. Green.

Mr. GREEN. No questions.

Senator O'MAHONEY. Mr. Dinkins.

Mr. DINKINS. May I ask one question?

Mr. Vogel, I notice at the bottom of page 4 you make this statement:

> The fact that TVA patents can be used but not controlled has not kept industry from seeking and obtaining licenses. Some 160 different firms have received over 200 licenses.

Now, we have had some testimony from members of industry that a nonexclusive license would not be attractive to them, because everybody could make the same thing. And my question to you is this: Do you see any difference in principle between this method of licensing which you have offered and which industry has gladly accepted from that which might exist in other industries making different types of products?

I have found, Mr. Chairman, that it was difficult to get witnesses to testify on this subject. A small business witness comes up and testifies, and he tells us what an outrage the situation is from his point of view, that it is impossible for him to bid where he knows, and he can prove it, that he can give the Government the best price. And then within 3 weeks from Fort Huachuca comes the order that every piece of equipment he had already sold the Government since he has first started selling them has to go through a worldwide inspection, not just what he is turning out now.

I suppose if they had one in that plane shot down in Russia, the Defense Department would send somebody there.

After this very extensive inspection, they find that the small firm's products did meet the standards and that the worldwide inspection was not necessary at all.

We know that most patent rights are going at Federal expense to a handful of companies. And my guess is that added to the $6 billion a year we are spending to develop all these new products, we will wind up in having to pay a million dollars in higher prices which these monopolies can charge us in selling us the products developed at our expense.

Admiral Rickover stated that the AEC had no problem in getting contractors. He said there were too many that wanted these cost-plus contracts.

I would suggest that you consider an amendment to say the Government can give away its patent rights if it is in a position to certify that an agency can't get a qualified contractor to do the job. And my guess is that when you do that, these same companies who are talking about a big business sitdown strike against the Government will be putting on just as much pressure in the future as they are putting on now to get cost-plus contracts, because they know that that is the goose that lays the golden egg for them, and we know it, too.

Mr. Chairman, the Government didn't get itself in this position voluntarily. As you undoubtedly know, the Government used to do its own research, and every time a product was developed 40 or 50 companies would go into the business of making the product. During World War II, however, when the Government had its back to the wall, some of these companies said they did not want to do research unless they were given the patent rights.

Senator O'MAHONEY. Have you instances of that refusal, Senator?

Senator LONG. Mr. Chairman, the change in policy was handled so well that they did not put on the record who these people are. However, either I or you can call some of the people who were here at the time and who testified that a considerable number of major companies were not willing to take research contracts unless they were in a position to keep the patent rights and the proprietary rights for that which they developed at taxpayers' expense.

I believe that we ought to reveal who these people were. And these would probably be the same people you could count on to fight an appropriation for the Government to do the same research for itself.

It wouldn't surprise me if you will find the great General Electric Corp. among those companies which would not perform in wartime

the subcommittee's "Preliminary Report on the Patent Practices of the Veterans' Administration," dated 1959.

Senator HART. I would suggest that it would be desirable, if any reference is made to that committee print, that it be made a part of the record following the prepared statement.

QUESTION (1): EXTENT AND NATURE OF CONTRACTS

Dr. STEWART. The Veterans' Administration conducts a large scale program of medical research, amounting to about $17,344,000 per year, mostly by intra-VA projects in VA hospitals. This program is described in the attached statement on "Medical Research." The Veterans' Administration also spends approximately $1 million annually for research on prosthetic and sensory aids. This latter specialized research, development, and evaluation is carried out predominantly through actual cost reimbursable-type contracts with universities and other research organizations. No grants have been made. There has been a gradual trend toward intra-VA research in prosthetic and sensory aids, partially because of the organization in 1956 of the Veterans' Administration Prosthetics Center in New York and the establishment of a small project on clinical validation of tests on hearing aids by the Veterans' Benefit Office in Washington.

The principal emphasis in both extramural and intramural research on prosthetic and sensory aids has been devoted to the field of artificial limbs, which altogether has required approximately three-quarters of the total effort since the Veterans' Administration began support of work in these fields in 1946. This great emphasis seemed necessary because of the lack of fundamental research in locomotion and on motions of the upper extremity compared with the fundamental knowledge available in other fields and because of the inadequate appliances available at the end of World War II.

Fortunately, fundamental research at universities, particularly at the University of California, and development work there and at a number of other organizations have led to marked improvements in the fate of amputees, both veteran and nonveteran. Through a cooperative program among a number of Government agencies, with the Veterans' Administration by far the largest single contributor, and with correlation by the National Academy of Science—National Research Council, there have been great additions to the stock of fundamental data, improvements in the design of specific artificial limbs for practically all levels of amputation and for combinations of amputations, and especially introduction of rational principles and improved techniques for fitting and alining artificial arms and legs and for harnessing prostheses for the upper extremity.

One of the most significant advances has been the introduction of the clinic team concept, bringing together the physician, the prosthetist (or fitter of artificial limbs), the therapist, the amputee himself, and an administrative specialist. This concept, arising from the early research in the suction socket program, was pioneered through 30 formal clinic teams at key outpatient clinics of the Veterans' Administration. The Veterans' Administration now operates 50 additional informal clinic teams in other outpatient clinics and hospitals, and a

STATEMENT OF HON. RUSSELL B. LONG, A U.S. SENATOR FROM THE STATE OF LOUISIANA

Senator LONG. Thank you very much, Mr. Chairman.

First of all let me say that I do not have a prepared statement. Although my committee [1] conducted about 500 pages of hearings on this subject, I do not think that we uncovered or will uncover anything on the subject which will be as revealing as the hearings of your TNEC that you conducted a considerable number of years ago. Much of the information I find strongly supports the position that was developed by you as chairman of the TNEC Committee. I think we can find all sorts of additional information to prove your findings.

We went into the subject of Government patent policies as a matter of small business interest with the belief that small business, being a competitive field, should have the opportunity to bid and compete with the larger concerns. But the more we looked into it, the more we became convinced that our patent policy above all should have four objectives: (1) It should try to accelerate the rate of scientific achievement; (2) it should encourage the rate of economic growth; (3) it should try to promote and maintain a competitive society; and (4) it should promote social and economic justice.

It was my conclusion, after studying these problems, that to spend $6 billion or more a year of Federal money on research and then give a private company all the patent and proprietary rights resulting from it frustrates these objectives.

Now, in the course of a speech I made on the Senate floor which I believe you were kind enough to read, I referred to some of General Electric's policies, and some of their previous violations of the antitrust laws. I think that shows us and the public how they behave in a monopolistic situation. A Senate committee brought out the facts about the arrangement to control tungsten carbide, which GE was selling at $453 a pound, the cost of manufacture being $8 a pound. That shows how a firm can charge us, once it has a complete or almost complete monopoly in particular lines.

And as you know, Mr. Chairman, this particular company was actually working with Westinghouse to downgrade the quality of light bulbs to make them burn out faster so that they could increase their profits.

The General Electric Co. sent an 8-page letter in defense of themselves, in which they stated that their policy is that none of their employees should communicate with anybody else. So when you contract with these people that want to obtain and keep the patent rights they proceed to tell their scientists and engineers: "Don't talk to this fellow in Lockheed or this contractor over here, because if you do we might not have the opportunity of a patent that might be worth hundreds of billions of dollars to us."

Congress has been through similar issues before. When we were dealing with atomic energy, the administration made every effort to get a bill through that would permit private companies doing research at Government cost to take out and have private patents at the taxpayers' expense.

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[1] Monopoly Subcommittee, Senate Small Business Committee.

authorizes royalty-free licenses under his background "contractor's patent rights" for the manufacture of devices of the type of, or related to, the subject invention, not only for the Government but for others as well. The point of this concession was to permit the manufacture on a royalty-free basis of an artificial limb component which happened to include features which had already been patented by the contractor before his contract began.

It was considered advantageous to the Government to leave to the contractor the naked title to a "subject invention" and to secure for both the Government and nongovernmental users royalty-free use of background patents needed to practice the "subject invention." The contractor has no possibility of gaining royalties from use in prosthetic devices of either the "subject invention" or his own background patents. Further, he yielded to the Government complete control of issuance or revocation of any licenses which might become necessary to protect the public interest.

The "long form" patent clause, exceptionally liberal from the standpoint of concessions made by the contractor, not only to the Government but to others, was originally incorporated in subcontracts under the National Academy of Sciences' prime contract. Acceptance was urged because of the humanitarian nature of the artificial-limb program and a feeling of responsibility to disabled civilians as well as to veterans. The "long form" patent clause in the various subcontracts under the National Academy of Sciences contract VAm–21223 represents, we feel, the "judgment of the contracting officer" on "the disposal of the title to and the rights under any application or patent," and, in accordance with the "modified short form" patent clause of the prime contract, this judgment shall be accepted as final.

When, in the evolution of the prosthetics program, some of the former subcontractors became direct Veterans' Administration contractors and others were added, an effort was made to include the "long form" patent clause in the new direct VA contracts. In some cases, however, the contracting organizations, during the preliminary negotiations, asked for other forms more consistent with their customary policies.

In some cases, the Veterans' Administration has attempted to obtain all rights to discoveries or inventions made during the contract, but has been willing to waive the possibilities of royalty-free licenses for itself and for civilian use under background inventions or "contractor's patent rights" which would have been available under the "long form" patent clause. The "short form" patent clause and modifications to it, pages 9 and 10 of the subcommittee's preliminary report, have been used particularly with universities or other organizations which did not have relevant background patents likely to be infringed by the manufacturer of devices emerging from the prosthetic and sensory aids research program, or, indeed, when the fundamental research to be conducted was relatively unlikely to produce patents. Some universities, unwilling to undertake responsibility for patent searches and prosecution of applications, have asked that these functions be excluded. As a practical matter, no patent applications were ever filed arising from the basic medical research at the University of Chicago and Columbia University, which requested such exclusions.

therapy policy into other areas. We may have to do it someday, but we are not thinking of it now.

Senator HART. It can be concluded from the testimony which has been given at great length in the Antitrust Subcommittee that there is extraordinary skill in these large pharmaceutical manufacturers. And there is some question about how they define "research" and how I would define it.

At any rate, there is a repeated theme that there is extraordinary research that is available. But notwithstanding the need for psychiatric drug development, you have concluded, based upon your experience in the cancer field, that it is not worth your effort at this stage to battle with these manufacturers to make available this research skill in the development of psychiatric drugs; is that right?

Mr. BISSELL. I think you are putting words in my mouth a little bit, Senator.

Senator HART. I am putting it very strongly. But we have had some difficulty in developing clarity in what is already behind some of the questions we have been directed to.

This is the sort of thing that is behind it, this repeated suggestion that this claim for patent right and control was the real stumbling block in your negotiations with these drug manufacturers, and it would seem to me not unreasonable to suspect—not charge—that there is truth in this, in view of the fact that you just now tell me that you have got problems enough—and you are not going after these fellows to try and help America develop a psychiatric drug.

Mr. BISSELL. Senator, may I add I believe we can do the job with grants. Grants have always been the preferred instrument of the Public Health Service and a mechanism that is most acceptable to the scientific community.

We have made contracts only when we felt that grants would not do the job. We regard grants which support the basic research as the best way of getting this sort of work done.

Senator HART. Well, I think I know your answer to this. But to conclude the one page of Mr. Gorman's testimony that is fresh in my mind—and this is on 1671—you would, I take it, not agree with his testimony to us sitting as an Antitrust Committee that:

> I must state to this committee that the pharmaceutical industry has collectively thumbed its nose at the expressed intent of the Congress and the American people in this area.

Mr. BISSELL. I know of no reason to agree with that.

Senator HART. But you would agree that there has been criticism, in the light of what I have just read from this record?

Mr. BISSELL. Yes, there has been criticism.

Senator HART. Mr. Wright?

Mr. WRIGHT. Mr. Banta, I think in your direct statement you have described this procedural protection that you established by regulation for the benefit of the drug manufacturers against arbitrary action by the Surgeon General as somewhat akin to the kind of administrative procedure that Congress prescribes. And I would like to know where you find in your statute, or any statute, the authority which permits you to establish procedures of that kind simply by regulation?

of a large number of members of the artificial limb industry. An important factor in its present success is prescription by a suitably trained orthopedic surgeon and construction by a limbmaker or prosthetist who has been specially trained in the same suction socket school with the surgeon. While the Veterans' Administration, directly or through its contractors, conducted most of the 33 suction socket schools which were held between 1947 and 1955, the civilian disabled population has benefited from this training. Since 1956 these courses have been offered in expanded form by university-level prosthetics education programs.

Many of the ideas which have been developed and disseminated by the Veterans' Administration's Prosthetics Center, although not patented, have been both profoundly useful and highly effective with both civilians and veterans. One example was the refinement of a method of plastic lamination over a wooden artificial limb structure in place of the rawhide covering which was previously conventionally used. A number of groups have played a role in the development of this concept, culminating in the VA Prosthetics Center evaluation on a substantial clinical scale and then presentation by VA Prosthetics Center members of a number of demonstrations at national and regional meetings of the trade association of the limb industry, the Orthopedic Appliance & Limb Manufacturers Association, and its successor, the American Orthotics & Prosthetics Association, which is approaching the status of a scientific society.

In summary, in our opinion, inventions rising out of research carried on by the Veterans' Administration, whether through its own employees in the VA Prosthetics Center or elsewhere, or through contracts made with others, and whether culminating in patents or not, have had very beneficial influences for all disabled.

QUESTION (4): UNIFORM PATENT POLICY

The Veterans' Administration considers that a uniform Government policy with respect to all patents arising from our research contracts or grants might prove to be impractical under present circumstances. We have had considerable difficulty in obtaining adherence to even a few basic types of policies within our own program because of the need for flexibility in conforming as far as practical to various policies of different contractors. We believe that research should be conducted by talented and enthusiastic individuals at institutions which are willing to undertake nonprofit research contracts. In obtaining these two important considerations, we have found that it is impractical to insist rigidly upon a single Veterans' Administration policy which may run contrary to the customary policies of the research institution, at least in the absence of a uniform Government patent policy.

A uniform Government patent policy, rigidly applied, might conceivably force all institutions which wished to do business with the Government to yield to this single policy, but we wonder whether such a policy is wise. Compliance might easily be forced from those institutions most heavily dependent upon Government contracts, but the policy might well drive away from service to Government some of the most valuable and hence potentially most independent institutions which can obtain grants from private donors or contracts from indus-

Senator HART. Mr. Banta, at long last, I think, with all the interruptions, we have concluded. We appreciate very much your kindness. And I apologize for what I am sure is an inconvenience in requiring you to stay over this afternoon, but as you have sensed, the chairman felt under some pressure to permit the out-of-town visitors to get away.

Mr. BANTA. I am completely aware, Senator, that we cannot always control our time just as we might wish. We appreciate the opportunity to appear before this committee and represent the Secretary.

We are glad to make any contribution we can toward a solution of the problem. And we are sympathetic with the work of this committee, you may be sure.

Senator HART. Which problem appears to require the contribution of many people before it is resolved?

Mr. CLESNER. I would like to bring to Mr. Banta's attention before he leaves an article by Francis C. Brown, president of the Schering Corp., which was made as the annual address of the president of the American Pharmaceutical Manufacturers Association in 1958, in which he refers to the cancer chemotherapy program and developments under Government-sponsored research; and also opposing generally such appropriations by the Government, and referring to the patent clauses as something they should fight against. Why I mention this is that you stated that industry had made no expression in regard to this.

Mr. BANTA. No, I am afraid I was misunderstood; not that industry had never made any expression. What I said was that I had never talked to an industry representative myself, and, therefore, had never heard any discussion by an industry representative.

And, Senator Hart, if by any chance you misunderstood, or we misunderstood one another when I said that I had heard no criticism, I did not mean to imply that there hadn't been many times that our policy has been criticized because we were doing what we were doing.

There have been reports that came to me secondhand—I never discussed it with an industry representative—but there were many people that thought we ought to do what other agencies do with respect to the patents. So that we were criticized for reserving the rights that we have. But I have heard no criticism of our policy from the representatives of the public.

Senator HART. I think my question indicated that I was not sure as to exactly the context in which you used that phrase "no criticism." I was reminded that many months ago I listened to some very bitter testimony.

Mr. BANTA. I am sure, from what I have heard from my predecessors and the members of my staff and others in the Department, that there have been many times when somebody, who it was I don't know, expressed the hope that we would relax our patent policy and permit the patent rights to go to our grantees, for example, long before we ever had any contracting authority at all.

Senator HART. Perhaps not wholly in point on the specific area we are reviewing, but basic certainly in my attitude—and I would assume I reflect most of the general public in this—is that if pharmaceutical manufacturers have available skills and the knowledge which would

of the applications it was necessary for the inventors employed by our research contractors to file special affidavits establishing their own invention ahead of the date of the publication of their own report or section within a composite report of the artificial limb program. Thus, the availability of such devices has not been delayed by the patent policies.

The typical patent clauses provide for the right of the Government to reproduce for governmental purposes the reports, drawings, and other technical data developed by the contractor. As a practical matter, serious efforts have been made to give widespread distribution to these data by publications by the contractors themselves, distribution of reports to interested organizations and individuals not only in this country but abroad, and by the subsidy of the magazine Artificial Limbs, published by the National Research Council. University-level prothetics schools were originally organized and completely financed through VA projects, including development of numerous teaching aids and manuals in upper-extremity prosthetics and above-knee prosthetics, and support of the teaching staff during the early operation of the schools. Most of the material taught at these prosthetics schools had been originally developed at research projects. Much of the teaching material also related to fitting and harnessing techniques and to clinic-team-management principles arising from the research program but essentially unpatentable in nature.

Data have been exchanged freely within the technical committees and subcommittees of the National Academy of Sciences-National Research Council, which under Veterans' Administration contract has had the responsibility of correlating the artificial-limb program involving a number of agencies and universities and other laboratories.

QUESTION (5B): SENATE BILL 3156

We readily agree with the intent of S. 3156 insofar as prohibiting exclusion of the U.S. Government, or any department or agency thereof, is concerned. In its present form, however, it would require that some of our patent clauses such as our "long form" would have to be submitted to the National Science Foundation and to the Attorney General before they could be permitted. The "long form" patent clause, leaving naked title in the hands of the contractor, admittedly leaves the contractor the right to exclude unlicensed members of the public from practicing in competition with such a contractor. As a practical matter, no action has ever been taken to exercise such a right, but it was an integral part of the policy suggested by the late Judge Patterson.

We venture to suggest that the effect of such a bill may well be to discourage agencies from using patent clauses which leave any vestige of patent or copyright title in the hands of contractors. This policy may well be desirable in some cases, leading to the equivalent to our "short form" patent clause which is appropriate under certain circumstances. There is, however, we believe, considerable theoretical advantage to the Government in our "long form" patent clause which makes "subcontractor's patent rights" as related to the manufacture of prosthetic devices available under the same terms as the "subject inventions" produced under the contract and which assures

about which we have talked to the total amount involved in the cancer chemotherapy program.

Mr. BANTA. Mr. Chairman, I take for granted, of course, that this committee is more concerned about whether or not we or other agencies of Government have an appropriate patent policy, that you are even more concerned with that than you are the exact manner in which it is administered.

We and I am sure everybody in the Department appreciate the problems that confront this committee and Senator Long's committee and others who are engaged with other committees in collecting facts with respect to this broad business of Government patent policies throughout. Here the Public Health Service and the Department have felt that we are not dealing with anything other than that which is of the utmost importance to the public health.

We have sought, as I think a careful reading of our policy will indicate, to get our job done while at the same time reserving to the Department on behalf of the Government sufficient rights to protect the public interest in any discovery or patentable invention which would be worthwhile. Whether it would be worthwhile or not, we do reserve it or direction over it, in all of our areas; in the basic policy as well as under the two exceptions. The power still rests with the head of the operating agency to take control when it would appear that the public interest would not otherwise be served.

Senator HART. I take it we would all agree that the public interest would be served best by having the most intensive possible research aimed at these basically dangerous conditions.

Mr. BANTA. Indeed we do.

Senator HART. Have you ever heard spokesmen for the pharmaceutical industry express an opinion with respect to the research program with commercial grants such as we have been discussing here?

Mr. BANTA. No, I think I have never heard a represenative of a pharmaceutical house in any discussion of the subject.

Senator HART. Earlier I think I heard the comment made that you were not aware of any criticism of the practices of the Department.

Mr. BANTA. Yes, sir.

Senator HART. I sit on the Antitrust and Monopoly Subcommittee of this Judiciary Committee, and I was remined of some hearings in the early part of this year in which one witness, who is the executive director of the National Commitee Against Mental Illness, expressed some opinions with respect to the lack of wisdom of the U.S. Government in the management of its patents with respect to public health discoveries.

In refreshing my recollection I read you from the record, page 1669, a portion of the testimony of Mr. Gorman, the executive director. He was saying that several years earlier he had testified before both Appropriations Committees of the Congress urging an increase in the amount of moneys appropriated to the Institute for Research, and he told the so-called Kefauver committee earlier this year:

I told the Senate committee—

Speaking of the Senate Appropriations Committee—

in 1958 that the strident speeches of the leaders of the pharmaceutical industry indicated that they would engage in a sitdown strike against any further drug

If we make a device available to a veteran, we procure this device from one of these facilities by means of a national contract with them. So when we make a device, a component, a method, or a technique available to a member of the limb industry, or to the entire limb industry, we automatically make it available to everyone else in the country, because the facilities have it to sell.

Mr. CLESNER. I understand that you have in your patent clauses license rights other than merely the right to manufacture and use for governmental purposes. But my question is: Could you carry out your statutory mandate if you contracted and merely retained a license to the Government to manufacture and use any inventions which might be forthcoming?

Dr. STEWART. I would prefer to have an assignment. Under most of our contracts, we are permitted or can require an assignment of all the rights under the patent, leaving the naked title to the inventor. I think you have to give the inventor some credit for the work that he does. As far as I am concerned, I believe we could better make devices available to the public if we had complete control of the patent.

Mr. CLESNER. Why I asked that is this: If you only retain such a license, the contractor, if he so desires, would have the power to deprive others in the commercial market of the use of the invention; would he not?

This is not your contract clause, this is merely——

Dr. STEWART. This is in case that we would license a manufacturer to make a component——

Mr. CLESNER. No; this is if you contract with a contractor, and in the contract you merely retain a license to manufacture and use the invention throughout the world for governmental purposes—this is not for the commercial market—would you be able to carry out your statutory mandate?

Dr. STEWART. Yes; we can, because, as I said before, when you make a device available to a veteran or to the public, you make it available to the entire amputee population or the disabled population.

Maybe I am misunderstanding your question.

Let Gene Murphy try it here.

Dr. MURPHY. Do I understand, Mr. Clesner, that you are suggesting that if we follow the practices of some agencies of only taking a royalty-free license for the Government but leaving all other rights in the hands of the contractor, you then raise the question: Could we follow out our statutory requirement?

Mr. CLESNER. Yes.

Dr. MURPHY. I think that this would no doubt depend upon your definition of whether governmental use extended that far. Frankly, I wouldn't know, but I would be very skeptical about it.

Mr. CLESNER. Most of these other agencies do not extend Government use for that purpose.

Dr. MURPHY. Most other agencies do not have this requirement we have. However, we have felt that we needed more than merely a royalty-free license for direct governmental use. This had been our point even before the law which you quote was passed originally in 1948. We already had the "long form" patent clause in practice.

Mr. CLESNER. But in effect you could not fulfill your statutory requirement?

Dr. MURPHY. I don't think so.

Mr. CLESNER. Now, in the foreword to the patent practices report on the Veterans' Administration of this subcommittee, the fourth paragraph, it is stated:

> The justification for leaving title with the contractors is that the Government has reserved the right to direct the contractors to issue royalty-free licenses, when and if the VA finds that such licenses are necessary to accomplish the statutory purpose to permit all disabled persons to share in the benefits of a patent discovery. However, the fact that the VA itself has not maintained a complete record of the use made of these inventions and has never had occasion to use its power to compel such licensing, leaves doubt as to whether the VA is in a position to say with confidence that the statutory purpose of making the results of its prosthetics research available to all disabled persons has, in fact, been fully accomplished.

Do you care to comment on that, please?

Dr. STEWART. Yes, I would like to comment on that.

I would like to go back to 1946, for the benefit of the committee. As you may recall, at that time there had been an investigation which severely criticized the limb industry and the Veterans' Administration because good prosthetic devices were not available.

In the 80th Congress, Public Law 729 was passed setting up $1 million a year for research in artificial limbs and related fields. At that time there was a great clamor for us to get devices out immediately so we could get them on the veterans. As a matter of fact, they hardly gave us time to set up a research program.

I will admit that there were probably some shortcuts taken at that time, which we wouldn't do today, in order to get these devices out and get them on the amputees. In so doing there were a few mistakes made. But in making this improvement available to the public, we have tried as much as possible to publish everything that we have done in this prosthetic research program through "Artificial Limbs." This is ascientific publication which goes to all the orthopedic surgeons and all the physiatrists in this country and some abroad, and it goes to all the limb industry in this country.

This is just one publication of many in which we outline techniques and methods of fabrication. Everything new that is developed in this program is eventually covered as soon as we possibly can in this publication.

We have a very good exchange program with Canada. In this particular issue [displaying Autumn, 1957] that you have, there is covered the Canadian hip-disarticulation prosthesis, which we now use in this country routinely on our hip disarticulations. But it was invented and developed in Canada. We freely exchange information. No one has ever received a royalty from this program that I know of, and I don't think anyone ever will.

We can meet our obligation to see that the public gets the benefit of this research partially by the fact that we train people such as our consultants. The fact that we train an orthopedic consultant in this particular field helps to establish a method of getting this to his civilian patients as well as to veterans. It has been our policy, all the way through, to make everything that we have available to the public.

There seems to be a misconception that the way to get prosthetic devices on people is through patents. The patents only permit you to have components which go into the actual fabrication or making of

the total device. What we have done in this research program in a modest way is to improve the component parts: the knee joint, the ankle joint, the feet, the hip joint, the hardware, the elbow joint, the wrist-flexion units, and the other components that go to make up these devices.

One of the goals of this program is to train people that have the responsibility of caring for the patient and applying the concepts that are required and necessary to put a properly fitted device on the patient. That is how we bring these new concepts to the public.

I don't think that the actual holding of a patent has very much to do with whether or not the public is supplied with the best type of device, except that the patent acts as a protection for the Government so that no one else can go in and patent an idea upon which we have conducted research. That is the only reason why we have patents as far as the program is concerned.

Senator HART. The publication to which the doctor has referred will be made a part of the committee's files in order that reference may be made to it.

(The publication referred to will be found in the files of the committee.)

Dr. MURPHY. May I comment in addition, Mr. Clesner?

While we have no complete record, as the foreword to your report points out, as to the use of the patents, we have been so thoroughly familiar with this very small industry and the very few, perhaps seven or eight, manufacturers of devices that have come out of the research program in any way, that we have intimate knowledge of what is going on there. In the last few days I have telephoned all of them to ask whether, in fact, they have ever paid any royalties to anyone else or received any royalties when they themselves formerly had been subcontractors of the National Academy of Sciences.

The invariable answer was "No." Usually they were quite upset at the thought anyone could even believe that there had been any royalties in this program.

Mr. Daulton, of Sierra Engineering Co., for example, a former contractor in the artificial limb program and manufacturer of the Army prothetics research laboratories teminal devices, the Northrop elbow lock, and many other devices from the program, many of them unpatented, said that in the 14 years that he had been in the program he had never heard of any mention of royalty at all. A number of other people have expressed similar thoughts.

I also have called some of the old contractors, many of whom have not even been associated with the program for years. They, too, have never heard of any royalties, they have never collected any themselves, and they had no expectation of collecting any.

Nevertheless, I think it would be desirable to have, and we have plan to set up, a formal, organized way of getting an annual report for the life of that patent from every holder of a patent under this program. Frankly, I have been too much involved in the preparation of a book on artificial limbs which will be published this summer to have the time to do this as yet.

Dr. STEWART. This omission has been a laxity on our part, because this is such a small program. Our problem has been to find someone to manufacture the device, because the demand is so small that many

times it is necessary even to help and assist them with subsidization in tooling up to make one of these devices, or you wouldn't even get it to the market at all, because the demand is too small for it.

Mr. CLESNER. We appreciate that, sir.

We also recognize that it is possible for you to have knowledge of the use of the end product itself and that Dr. Murphy mentioned that he did make a spot check to determine whethere there was a need to invoke license rights retained by the Government. Both of you gentlemen suggested that it would be worth while having more frequent reporting by this means to check if possibly there were some malfeasance, so that you could carry out your function more effectively. This is the purpose of the subcommittee in mentioning this in its foreword of its report.

You state on page 11 that your patent policy has not tended to hamper prompt publication of the results of research and development programs.

Now I take it from this statement that it makes no difference whether or not it is with the "short form" patent contracting clause or with the "long form," in other words, this is a statement which applies to one as well as the other.

Dr. STEWART. That is right.

Mr. CLESNER. My reason for asking was that yesterday we heard from Dr. Waterman, who made the statement that if all patent rights are retained by the Government, the flow of scientific information may be impeded more than if it retains only a license. In view of your experience and statement it doesn't appear that when you use a short form which retains title to the Government and a long form which retains more than the National Science Foundation's simple license, but several licenses, that it impedes the flow or publication of scientific information.

Dr. STEWART. That is right. In this particular field that has been the case, and we have had no problems insofar as patent applications are concerned, whether you include the short form or the long form, until this year, when we had one.

You will notice in our corrected statement that we had to change the formula from the long form to a "modified long form" for the University of California, on which they insisted—and we negotiated 9 months on this before it was finally concluded—and finally when it was apparent that this was the only type of a contract that we could get, it was submitted to the General Counsel and approved. We went ahead with it because we did not want to interrupt the study, which was about to be productive.

But they indicated that this was to bring our patent policies in line with other patent policies which the university had with other agencies and institutions.

Mr. CLESNER. I would also like to note that on page 6 of your statement you state—

> As a practical matter, no patent applications were ever filed arising from basic medical research—

with a list of two universities which requested such exclusions. Why I refer to this is that in this instance you use essentially your "short form" by which the Government takes title because universities themselves do not desire to be bothered with anything in this area.

I would just like to make a point that this policy differs from the policy which we heard yesterday from Dr. Waterman of the National Science Foundation whereby under the grant they automatically leave it to the university to decide whether or not it so desires to keep title.

Dr. MURPHY. Mr. Clesner, we might comment on the fact that neither of those projects was ever really likely to result in a patentable idea. The one at Columbia University was on the study of creatine in the urine of amputees as a possible measure of the atrophy of the muscles of the stump. There is not likely to be anything patentable in such a case.

Mr. CLESNER. We also heard that this is one of the reasons why the National Science Foundation carries out the policies that they do. But the point is that even though this actual research may not, it is possible that it might. It is even possible that a great number of basic and more important inventions may really be discovered as a result of or by serendipity—chance—under your programs.

Therefore it appears under your type of procedure that the Government would be protected if such an event would occur.

Dr. STEWART. That is right.

Dr. MURPHY. May we suggest, sir, that the artificial limb field particularly and the prosthetic and sensory aids in general, is a very specialized little field, and we certainly do not pretend to understand the entire field of science which Dr. Waterman was discussing.

Mr. CLESNER. That is true. But you also referred to your basic medical research. Your basic medical research program is certainly quite broad in scope. But if you recall, the Veterans' Administration has joint programs with NIH, and also in our patent practices report there were several inventions that were cited which deal with a blood oxygenator, and it is quite possible that other inventions along those lines of a broad scope would be forthcoming.

Dr. MURPHY. That is under Mr. Moseley's program.

Mr. CLESNER. We have heard earlier today from the HEW, which also carries out extensive medical research. In practically all instances they take title, except under their cancer chemotherapy program. Do you people think it would wise to have a uniform program that should relate to both HEW and also the VA in relationship to medical research?

Dr. STEWART. I would like to comment on that, and then let Mr. Moseley make some additional comments.

There is quite a difference between the Veterans' Administration medical research program and that carried out by HEW. The great bulk of the total amount of medical research is intramural, insofar as the Veterans' Administration is concerned. The patent policies would be covered, I believe, through the Executive order for Government employees.

Is that correct, Mr. Moseley?

Mr. MOSELEY. Yes. In our VA medical research program, as distinguished from the prosthetics, we have intra-VA research laboratories in approximately 125 or 130 VA hospitals or clinics. We do very little in the way of contracts, and have no grant research.

Mr. CLESNER. Do you have any?

Mr. MOSELEY. We have no contracts for the actual performance of research. We contract for specialized services in support of research which we can obtain more economically and more efficiently from some supporting organization. For example, we have a contract with the National Research Council for statistical followup studies where they have followup units that are more efficient than we could have, and they can do this more efficiently and economically than we can do it with our staffs.

We also, along with six or eight agencies, contribute to the Bio-Sciences Information Exchange, which is a centralized agency concerned with what is going on in biological research. They assist us in compiling our annual report, and we also use them for reference. We get a specialized service from the Department of Agriculture on analysis of pine pollen constituents which they are peculiarly equipped to do from their Forest Products Laboratory in Madison.

We have two or three different relationships with the Bureau of Standards through a transfer of appropriations which is in a sense a contract with a letter of agreement for specialized services that they can perform and we cannot. But we have no actual contracts to do research per se.

Mr. CLESNER. You have such authority?

Mr. MOSELEY. Yes, and for grants. But we have not utilized the grant authority at all.

Now in the past we have had contracts with some medical schools before our own intra-VA program grew to its present stature. And as far back as 1951 and 1952 we were putting over $1.5 million a year into contractor research which was in many respects rather a grant program, but which was done in the format of a contract with the institution, to support specialized fields of research. Those were all cost-reimbursable contracts, and no profit whatever.

Mr. CLESNER. What form did you use in those contracts?

Mr. MOSELEY. Again, it was the short form in most cases, and it retained either the full rights or royalty-free licenses. However, in none of these has there been a patent project, to my knowledge, in any contract that we had.

These again were medical studies, techniques, and not the production of a piece of equipment which normally you would associate with the patent development.

Senator HART. Any further questions?

Mr. WRIGHT. Just one question.

Mr. Green suggested a question to me that I thought should be answered, and that is whether the civilians pay a higher or lower price or the same price for these prosthetic devices that veterans pay?

Dr. STEWART. That I could not answer. We have conducted a number of studies on the cost of prosthetic devices throughout the country. We make national contracts with all the limb manufacturers for procurement of artificial limbs. We have compared the prices which are bid on our contracts against the prices bid on State rehabilitation contracts, and we have found that the amounts vary just a few dollars one way or the other.

Mr. WRIGHT. You have made no comparison which would tell you what individuals have to pay—what I am getting at is whether you are in a position to say at all on the basis of what you have learned

or what you have found about the extent to which, if at all, the possession of these patent rights may have been reflected in the price charged to the ordinary nonveteran purchaser.

Dr. STEWART. Well, I believe we can state that the civilians do not pay essentially more than the Veterans' Administration pays for artificial limbs.

Mr. WRIGHT. Thank you.

Senator HART. Are there any further questions?

(No response.)

Senator HART. I think that even we laymen can testify to the extraordinarily fine reputation you and the Veterans' Administration gained in your pursuit of more effective means of aiding those who were unfortunate enough to lose their limbs to adjust, and after an exposure of 15 minutes to your publication, I am even more impressed.

Dr. STEWART. Thank you, Senator.

Senator HART. This concludes the scheduled testimony for this series of hearings of the committee. And the committee stands adjourned, subject to the call of the chair.

(Whereupon, at 4:35 p.m., the subcommittee adjourned, subject to call of the Chair.)

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FOREWORD

This report was prepared by Herschel Clesner, under the supervision of Robert L. Wright, chief counsel of the Subcommittee on Patents, Trademarks, and Copyrights, as part of the subcommittee's study of the U.S patent system, conducted pursuant to Senate Resolution 236 of the 85th Congress, 2d session. It is the second of a series that will describe the current practices of each of the agencies of the Federal Government engaged in activities which may result in the ownership of patents by the Government or patent licenses to the Government from employees, contractors, or grantees.

This series of reports is based upon material assembled by the subcommittee in response to inquiries first made in the summer of 1957. The object of these inquiries was to determine how Government agencies have been discharging their responsibilities with respect to inventions in which the Government had a substantial financial interest, as the result of its expenditures for scientific research and development. No such inquiry had been made since the investigation some 11 years ago, which culminated in the Attorney General's report and recommendations with respect to Government patent practices and policies, published in 1947. The inquiries were mainly designed to show the extent to which Government agencies have followed or disregarded the recommendations of that report and the reasons underlying the policies presently followed by these agencies.

The recommendations of the 1947 report were summarized in the foreword to the first report in this series, which covered the Tennessee Valley Authority, and will not be repeated here, except to say that it favored the Government taking title to all inventions under research supported by Government funds unless a Government Patent Administrator or the head of a Federal agency directed otherwise in special cases when the Government would be entitled to an irrevocable, royalty-free license. The patent practices of the National Science Foundation reflect a view of Government responsibility for the supervision of inventions produced by the expenditure of Government funds, which is opposed both to the practices of the TVA and to the 1947 recommendation of the Attorney General. As to research contracts and grants, the Attorney General had recommended that the Government should ordinarily take title to all inventions produced in the performance of the contract.

Up to now the Foundation has not thought it necessary to keep itself informed as to patent applications arising out of the research performed by its contractors or grantees. The question as to whether or not an application for a patent should be made for the benefit of the Government is therefore one in which the Foundation has not chosen to take any interest, although the law creating the Foundation clearly contemplated the possibility that Government patents or Government licenses should be obtained (42 U.S.C. 1871A; Executive Order No. 10521, sec. 6).

It seems doubtful that the Foundation's research grantees, most of which are educational institutions without any responsibility for carrying out Federal policy, are in a position to make decisions as to the desirability in the public interest of securing patent protection for federally financed inventions or discoveries. On the other hand, the Foundation, primarily interested as it is in pure, rather than applied research, may well be justified in feeling that none of its energies should be devoted to patent matters. The result is that, in the absence of a Patents Administrator, or some other Federal official, with primary responsibility for the proper exploitation of all inventions and discoveries produced as a result of the use of Government funds, the formulation of Government decisions is being wholly neglected, while the opportunity may be thus created for persons without Government responsibility to act for private interests alone.

As noted in the foreword to the first report, the subcommittee's views as to what the National Science Foundation or any other governmental agency ought to be doing with respect to patents on inventions produced with its funds is reserved for future comment. All that is presented here is a factual summary of the agency's statutory authority in this field, its current practice, and its own viewpoint.

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

JANUARY 2, 1959.

PRELIMINARY REPORT AS TO THE PATENT PRACTICES OF THE NATIONAL SCIENCE FOUNDATION

I. Legal Authority as to Patents

A. LEGISLATIVE

The National Science Foundation was created in 1950 and one of its functions is to—

> develop and encourage the pursuit of a national policy for the promotion of basic research and education in the sciences (42 U.S.C. 1862(1)).

For this purpose the Foundation has been given authority to—

> enter into contracts or other arrangements, or modifications thereof, for the carrying on, by organizations or individuals in the United States and foreign countries, of such basic scientific research activities as the Foundation deems necessary (42 U.S.C. 1870(c)).

The provisions which control the Foundation's patent policies are the following:

> 42 U.S.C. 1871(a).—Each contract or other arrangement executed pursuant to this chapter which relates to scientific research shall contain provisions governing the disposition of inventions produced thereunder in a manner calculated to protect the public interest and the equities of the individual or organization with which the contract or other arrangement is executed: *Provided, however,* That nothing in this chapter shall be construed to authorize the Foundation to enter into any contractual or other arrangement inconsistent with any provision of law effecting the issuance or use of patents.
>
> 42 U.S.C. 1871(b).—No officer or employee of the Foundation shall acquire, retain, or transfer any rights, under the patent laws of the United States or otherwise, in any invention which he may make or produce in connection with performing his assigned activities and which is directly related to the subject matter thereof: *Provided, however,* That this subsection shall not be construed to prevent any officer or employee of the Foundation from executing any application for patent on any invention for the purpose of assigning the same to the Government or its nominee in accordance with such rules and regulations as the Director may establish.

B. EXECUTIVE

Executive Order No. 10521, dated March 17, 1954 (19 F.R. 1499), gives the Foundation advisory powers with respect to research conducted by other Government agencies in the following provisions:

> SEC. 5.—The Foundation, in consultation with educational institutions, the heads of Federal agencies, and the Commissioner of Education of the Department of Health, Education, and Welfare, shall study the effects upon educational institutions of Federal policies and administration of contracts and grants for scientific research and development, and shall recommend policies and procedures which will promote the attainment of general national research objectives and realization of the research needs of Federal agencies while safeguarding the strength and independence of the Nation's institutions of learning.
>
> SEC. 6.—The head of each Federal agency engaged in scientific research shall make certain that effective executive, organizational, and fiscal practices exist to ensure (*a*) that the Foundation is consulted on policies concerning the support of basic research, (*b*) that approved scientific research programs conducted by the agency are reviewed continuously in order to preserve priorities in research efforts and to adjust programs to meet changing conditions without imposing unnecessary added burdens on budgetary and other resources, (*c*) that applied research and development shall be undertaken with sufficient consideration of the underlying basic research and such other factors as relative urgency, project costs, and availability of manpower and facilities, and (*d*) that, subject to considerations of security and applicable law, adequate dissemination shall be made within the Federal Government of reports on the nature and progress of research projects as an aid to the efficiency and economy of the overall Federal scientific research program.

II. PRESENT PRACTICE

A. ADMINISTRATION

The Foundation has no personnel dealing solely with patents and does not know the number or character of the inventions or discoveries produced under the contracts or other arrangements authorized by the above-quoted section 1871(a) of the act creating the Foundation. Its annual reports indicate, however, that its research has resulted in developments which include patentable subject matter.

> To date, the Foundation has not been notified that any such patent has been granted although it has been informed of patent applications by grantees from time to time.[1]

[1] Letter from William Hoff, General Counsel, dated Dec. 10, 1958.

B. TITLE POLICY

1. Employees

As noted above, section 1871(a) provides that no officer or employee of the Foundation may acquire, retain, or transfer any rights, under the patent laws of the United States in connection with performing his assigned activities and which is directly related to the subject matter. The Foundation conducts no research through its own employees. Therefore, no questions have arisen regarding title to employee inventions.

2. Contractors and grantees

The Foundation's research program is carried on mainly through grants to educational institutions and occasionally by research contracts with private concerns. In all instances the Foundation allows the grantee or contractor to retain title to all inventions which are made in the course of performing the assigned research. The grantee or contractor is required to give the U.S. Government a royalty-free, nonexclusive license to use the invention for governmental purposes. The Foundation, as a rule, does not acquire the right, through contract, grant, or other arrangement, to any technical information, know-how, specialized processes, or other proprietary rights that may be developed in connection with that invention. The Foundation has never construed the requirement that its contracts and grants dispose of inventions produced thereunder "in a manner calculated to protect the public interest" as requiring the assignment of title to an invention to the Government or any Government agency. It has thus relied entirely upon its contractors and grantees to determine when a patent application should be made and what use of these inventions may be made by individuals or organizations other than Government agencies.

C. FOREIGN FILING

The Foundation does not reserve the right to apply for foreign patents in any of its grants, contracts, or other arrangements or to require foreign applications by others. It therefore has no information as to such filing, if any, by the grantees, contractors, or the individual inventors.

The Foundation believes that the cost of filing foreign patent applications on any inventions which might result from its support of research would exceed any advantage the Federal Government might obtain.[2]

D. USE BY PARTIES RETAINING TITLE

As noted above the Foundation has not yet been informed that any invention which may have been produced by the expenditure of its funds has resulted in the issuance of a patent. Nor is it presently informed as to what has been done by others with respect to obtaining domestic and foreign patent protection on such inventions or as to the actual use made of such inventions by others.

[2] Letter of Aug. 26, 1958, from Robert Brode, Acting Director, National Science Foundation, to Senator Joseph C. O'Mahoney, chairman of the Senate Judiciary's Subcommittee on Patents, Trademarks, and Copyrights.

III. Agency Viewpoint

The Foundation states that its—

> present patent policy was arrived at after long and careful study, taking into account the needs of the Federal Government and the role of the Foundation with regard to support of basic scientific research. We believe the present Foundation policy to be an appropriate one for the Foundation to follow and that it should be continued.[3]

However, since this preliminary report was brought to the attention of the Foundation, its General Counsel has indicated that the Foundation may abandon its present policy of waiting until a patent issues to obtain a license to use the invention produced with the expenditure of its funds. In the General Counsel's letter of December 10, 1958, he states:

> The Foundation is considering a revision of its patent clause to require the giving of the royalty-free, nonexclusive license to the Government upon *application* for a foreign or domestic patent rather than upon *issue* of the patent as presently required. If and when this revision is put into effect the Foundation will be informed at an earlier point as to the steps being taken by its grantees in connection with patent rights on inventions developed during the course of Foundation-supported research. (Italics supplied.)

[3] Ibid., supra, note 2.

86th Congress
1st Session

COMMITTEE PRINT

PATENT PRACTICES OF THE DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

PRELIMINARY REPORT

OF THE

SUBCOMMITTEE ON
PATENTS, TRADEMARKS, AND COPYRIGHTS

OF THE

COMMITTEE ON THE JUDICIARY
UNITED STATES SENATE
EIGHTY-SIXTH CONGRESS, FIRST SESSION

PURSUANT TO

S. Res. 53

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[1] The late Honorable William Langer, while a member of this committee, died on Nov. 8, 1959.

FOREWORD

Should basic Government patent policy be substantially altered by administrative action taken to accommodate a small group of research contractors? This question is raised by the action of the Surgeon General in virtually abandoning an established policy of patent dedication to the public in favor of a policy advocated by the drug companies cooperating in the cancer chemotherapy research program. Under the new policy the drug companies retain title to patents developed under this Government-financed program, subject to complex and untried provisions for compulsory licensing.

The following report was prepared by Clarence M. Dinkins of the subcommittee staff, under the supervision of Robert L. Wright, chief counsel of the Subcommittee on Patents, Trademarks, and Copyrights, as part of the subcommittee's study of the U.S. patent system, conducted pursuant to Senate Resolution 53 of the 86th Congress, 1st session. It is the seventh of a series dealing with patent practices of the various agencies. Their purpose and scope are more fully described in the forewords of the reports on patent practices of the Tennessee Valley Authority and the National Science Foundation and in the annual report of the subcommittee issued on March 9, 1959.

This report deals with the practices of the Department of Health, Education, and Welfare, an agency which spends more money on research and development than any of the other Government agencies except the National Aeronautical and Space Administration, the Atomic Energy Commission, and the Defense Department. Most of these research expenditures are in the field of public health and they are clearly intended to benefit the public at large. For this reason, HEW has traditionally pursued a policy of freely publishing its research results so as to make them widely available. It has preferred this policy to the alternative of taking out patents in the name of the Government.

However, in exceptional instances, HEW has permitted its research contractors to retain title to inventions developed with the expenditure of its funds. The most recent instance has been in connection with a series of cancer chemotherapy research contracts with leading drug companies. For the purpose of these contracts a special policy was adopted by which the drug companies could retain title to inventions made under the contracts, but the Surgeon General could compel royalty-free licensing when and if the public need for such patented products with respect to supply, quality, or price was not met. However, the participating drug concerns apparently insisted upon a further modification of this policy which established elaborate "procedural safeguards designed to protect the contractor from arbitrary action." Under these procedural provisions the Surgeon General may

not act to compel the issuance of a license until a formal notice has been issued and a hearing had.

Since this program is still too new to have brought any of these provisions into actual use it is difficult to predict what the consequences will be. However, it is clear that these new provisions impose a sharp restriction upon the rights which the Surgeon General has traditionally exercised with respect to inventions arising out of publicly financed research. The provisions also contemplate a form of compulsory licensing which is wholly untried in this country.

If the remedy of compulsory licensing is to be used as a means of insuring that the public interest in inventions produced with public funds is best served, it would seem that the standards under which such licensing may occur should be established by the Congress rather than by contracting officials. Compulsory licensing instead of Government ownership or dedication of patents as a means of making patents generally available for public use is an innovation which raises questions of public policy going far beyond the needs of the Public Health Service. Whether compulsory licensing is desirable, and if it is, what limitations should be imposed upon it appear to be matters which Congress should determine on the basis of the factual information that is now being collected in these preliminary studies.

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

NOVEMBER 30, 1959.

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PRELIMINARY REPORT AS TO THE PATENT PRACTICES OF THE DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

I. Legal Authority as to Patents

The major research and development programs of the Department of Health, Education, and Welfare are conducted by the Public Health Service and administered by the Surgeon General under the supervision and direction of the Secretary of Health, Education, and Welfare. The statutory authority of the Surgeon General includes the following:

42 U.S.C. 241—Research and investigations generally

> The Surgeon General shall conduct in the Service, and encourage, cooperate with, and render assistance to other appropriate public authorities, scientific institutions, and scientists in the conduct of, and promote the coordination of, research, investigations, experiments, demonstrations, and studies relating to the causes, diagnosis, and impairments of man, including water purification, sewage treatment, and pollution of lakes and streams. In carrying out the foregoing the Surgeon General is authorized to:
>
> (a) Collect and make available through publications and other appropriate means, information as to, and the practical application of, such research and other activities;
>
> (b) Make available research facilities of the Service to appropriate public authorities, and to health officials and scientists engaged in special study.
>
> (c) Establish and maintain research fellowships in the Service with such stipends and allowances, including traveling and subsistence expenses, as he may deem necessary to procure the assistance of the most brilliant and promising research fellows from the United States and abroad;
>
> (d) Make grants-in-aid to universities, hospitals, laboratories, and other public or private institutions, and to individuals for such research projects as are recommended by the National Advisory Health Council, or, with respect to cancer, recommended by the National Advisory Cancer Council, or, with respect to mental health, recommended by the National Advisory Mental Health Council, or, with respect to heart diseases, recommended by the National Advisory Heart Council, or, with respect to dental diseases and conditions, recommended by the National Advisory Dental Research Council; and include in the grants for any such project grants of penicillin and other antibiotic compounds for use in such project;

(e) Secure from time to time and for such periods as he deems advisable, the assistance and advice of experts, scholars, and consultants from the United States or abroad;

* * * * *

42 U.S.C. 282—Powers and duties of Surgeon General

In carrying out the purposes of section 241 of this title with respect to cancer the Surgeon General, through the National Cancer Institute and in cooperation with the National Cancer Advisory Council, shall:

(a) *Fosterage of research.* Conduct, assist, and foster researches, investigations, experiments, and studies relating to the cause, prevention, and methods of diagnosis and treatment of cancer;

(b) *Coordination of researches.* Promote the coordination of researches conducted by the Institute and similar researches conducted by other agencies, organizations, and individuals; * * *.

42 U.S.C. 283—Administration of powers by Surgeon General; radium; technical instruction and training; acceptance of gifts; memorials; grants-in-aid

(a) In carrying out the provisions of section 282 of this title all appropriate provisions of section 241 of this article shall be applicable to the authority of the Surgeon General, * * *.

Under Public Law 85–580, approved August 1, 1958, there was appropriated to the National Institutes of Health for general research and services the sum of $28,974,000 and to the National Cancer Institute for grants-in-aid for research and training projects relating to cancer the sum of $75,268,000.

In connection with the appropriation for the National Cancer Institute the language of the statute is as follows:

To enable the Surgeon General, upon the recommendations of the National Advisory Cancer Council, to make grants-in-aid for research and training projects relating to cancer; to cooperate with State health agencies, and other public and private nonprofit institutions, and in the prevention, control, and eradication of cancer by providing consultative services, demonstrations, and grants-in-aid; and to contract on a cost or other basis for supplies and services by negotiation, without regard to section 3709 [1] of the Revised Statutes, in connection with the chemotherapy program, including indemnification of contractor to the extent and subject to the limitations provided in title 10, United States Code, section 2354,[2] except that approval and certification required thereby shall be by the Surgeon General; and to otherwise carry out the provisions of title IV, part A, of the Act; $75,268,000.[3]

[1] Provides, with some exceptions, that Government contracts may be made only after advertising for proposals.

[2] Provides for indemnification of contractors for damages to persons or property arising from direct performance of contracts.

[3] 72 Stat. 469.

In addition to the statutory authority relating to the cancer research programs, there are other comparable provisions for research programs to be conducted by the National Heart Institute and other agencies of the Public Health Service.

Although patents are not specifically mentioned in these statutes, it is clear from the broad grant authority and the contractual powers given to the Surgeon General that many situations are likely to arise involving patent matters. This language has been construed by HEW as giving to the Surgeon General authority to condition grants and to execute necessary contractual provisions so as to protect the interest of the Government and the public in all patents and inventions which spring from these grants and contracts.

II. Present Practice

A. Administration

1. Personnel

The problems involved in the administration of patent matters by HEW are numerous and difficult due to the wide variety of the means used to carry on its research. HEW engages in research through its constituent agencies, by grants to individuals, universities, and other institutions, and by contracts with public and private organizations. In addition, its research programs have been substantially increased in recent years.

Regulations for handling patent matters have been issued and revised from time to time, and the office of the General Counsel of HEW has been available for consultation. The heads of the various constituent agencies in which the invention was made, or which supported the work leading to the invention, and the Department Patents Board, are primarily responsible for patent determinations (45 C.F.R. sects. 6.5, 7.3, 7.4, 8.2 and 8.4 which appear in the appendix, pp. 22–27). The Department's patent officer does not engage in policy determinations and his work, which at present is only part-time, is largely confined to determining which matters should be referred to the Department Patents Board. In November 1957 it was said:

> In the operating units of the Department some staff time is given to matters arising in connection with patent policy and the determination of rights in inventions. This does not, however, involve the preparation of patent applications or the administration of such patents as are obtained, and no full-time position wholly devoted to patent matters exists at this time within the Department[4] (report from HEW to Senator O'Mahoney attached to letter of Nov. 15, 1957).

Since November 15, 1957, with the steady increase in research and development work conducted under the auspices of HEW, some changes have been made in an effort to take care of the increasingly important patent problems which have arisen. The membership of the Department Patents Board has recently been increased from five to seven. Chapter 6–20 entitled "Department Patents Board and

[4] Letter to Hon. Joseph C. O'Mahoney, chairman, Subcommittee on Patents, Trademarks, and Copyrights, Committee on the Judiciary, U.S. Senate, from Mr. Marion B. Folsom, Secretary of Health, Education, and Welfare dated Nov. 15, 1957.

Patents Officers," as revised on April 15, 1959, giving the names and official positions of the members of the Department Patents Board, together with their duties and the duties of the Department patents officer, appears in the appendix at pages 31–33.

In commenting upon these administrative matters, Mr. Edward J. Rourke, acting patents officer of HEW, in a letter dated May 28, 1959, to the Subcommittee on Patents, Trademarks, and Copyrights, had the following to say:

> * * * While it continues true that no full-time position devoted to patents has yet been filed within the Department, a major portion of the time is devoted to patents by one person in the Office of the Surgeon General of the Public Health Service and by another in the Division of Research Grants, National Institutes of Health. From time to time many other persons in the Department are involved in considering particular situations, and the Office of the General Counsel through its several divisions advises operating officials regarding patent matters and the application or implementation of patent regulations, including those applicable to contracts. In other words, the patent aspects of research are considered as they arise at all levels involved in the conduct or support of research. This will largely continue to be true under present plans to improve the staffing arrangements for patent matters.
>
> * * * * *
>
> In recognition of the increasing role that patents administration is assuming in the research programs of the Department, the Secretary has approved the establishment of a full-time position of Department patents officer in the Office of the Secretary. It is expected that this position will be allocated and filled as soon as funds are available.
>
> The Public Health Service—the operating agency within the Department having by far the greatest share of patent actions to handle—has recently allocated and expects soon to fill a full-time position the major duties of which will be to handle patent matters of the Public Health Service.[5]

2. Performance statistics

The following table shows the number of Government-owned patents administered by HEW or its predecessor agency from July 1, 1937, through 1958, with issuance dates:

1938	1	1950	1
1939	2	1951	11
1940	3	1952	6
1941	1	1953	4
1942	1	1954	1
1945	2	1955	0
1947	0	1956	0
1948	0	1957	2
1949	1	1958	2

[5] Letter to Mr. Clarence M. Dinkins, assistant counsel, Senate Subcommittee on Patents, Trademarks, and Copyrights, from Mr. Edward J. Rourke, acting patents officer, Department of Health, Education, and Welfare, dated May 28, 1959.

Patent applications have never been handled by HEW. Until October 1953 the filing and prosecution of patent applications was handled for it by the Department of Justice. In this connection it was said:

> At that time the Department of Justice discontinued its service to other agencies of the Government in the filing and prosecution of patent applications, except upon a fixed-fee basis. Since that time special arrangements have had to be made by this Department whenever it has been decided to seek patent protection upon an invention.[6]

The special arrangements referred to above were of two kinds. The first involved the use of patent attorneys in the Department of the Army. This was done as a matter of accommodation where the invention was of interest to a particular military branch. The other arrangement was by contract with a private patent firm in cases where the nature of the invention or special circumstances made this course advisable.

In regard to the percentage distribution of patent matters as between the various constituent agencies of HEW, the following estimates were made, based upon representative samples covering the period 1950 through 1958:

	Percent
Public Health Service:	
National Institutes of Health	56
Bureau of State Services	17
Bureau of Medical Services	10
Total, PHS	83
Food and Drug Administration	10
Social Security Administration	7
Office of Education	0
Office of Vocational Rehabilitation	0
St. Elizabeths Hospital	0

For the 4 years prior to May 1959 all of these invention reports have come from the Public Health Service.

B. POLICY AS TO RETENTION OF TITLE

As a matter of general policy HEW favors dedication to the public through publication of research activities rather than patenting. It believes the former practice assures greater availability to the public of the invented product and avoids the administrative burden and expense involved in securing a patent. The special circumstances which HEW believes justify it in seeking to obtain patents are (1) cases where patenting is necessary to protect against patent rights being acquired by others and restricted in such manner as to impair or defeat HEW's objectives and (2) cases where the nature of the invention necessitates the maintenance of licensing control to further a health purpose, as in a case involving a narcotic drug. A list of inventions made by employees and grantees of the National Institutes of Health and dedicated to the public for the period of 1953–58 appears in the appendix at page 33. A list of the inventions on which patent applications were filed on behalf of HEW appears in the appendix at page 36.

[6] See note 4 on p. 3.

By regulations issued on December 4, 1957, HEW's general policy as to inventions developed through its resources and activities is stated as follows:

> § 6.1—*General Policy.* Inventions developed through the resources and activities of the Department are a potential source of great value to the public health and welfare. It is the policy of the Department:
>
> (a) To safeguard the public interest in inventions developed by Department employees, contractors and grantees with the aid of public funds and facilities;
>
> (b) To encourage and recognize individual and cooperative achievement in research and investigations; and
>
> (c) To establish a procedure, consistent with pertinent statutes, Executive Orders and general Government regulations, for the determination of rights and obligations relating to the patenting of inventions.
>
> § 6.2—*Publication or patenting of inventions.* It is the general policy of the Department that the results of Department research should be made widely, promptly and freely available to other research workers and to the public. This availability can generally be adequately preserved by the dedication of a Government-owned invention to the public through publication. Determinations to file a domestic patent application on inventions in which the Department has an interest will be made only if the circumstances indicate that this is desirable in the public interest, and if it is practicable to do so. Department determinations not to apply for a domestic patent on employee inventions are subject to review and approval by the Chairman of the Government Patents Board. Except where deemed necessary for protecting the patent claim, the fact that a patent application has been or may be filed will not require any departure from normal policy regarding the dissemination of the results of Department research.
>
> § 6.3—*Government-owned patents; licensing; dedication to the public.* All licenses under patents and pending patent applications for the administration of which the Department is responsible shall be issued by the Secretary. Licenses will be royalty-free, revocable and nonexclusive. Except in unusual cases when determined upon recommendation of the head of the constituent organization that unconditional licensing would be contrary to the public interest, licenses will be issued to all applicants and will contain no limitations or standards relating to the quality of the products to be manufactured, sold, or distributed thereunder. To reduce the need for individual license applications, patents held for unconditional licensing shall be dedicated to the public as may be feasible.[7]

1. By employees

HEW makes employee patent determinations in accordance with the provisions of Executive Order 10096.

[7] These regulations appear in full in the appendix at p. 19.

The procedure for dealing with employee inventions is stated by HEW to be as follows:

> With respect to Department employees, the procedure begins with the report by the employee-inventor to the agency of the Department which employs him. Unless the invention appears to the officer receiving the report (with the concurrence of the Department patents officer) not to be patentable, the report is forwarded with appropriate recommendations to the head of the constituent employing agency who makes in writing the following determinations: (1) whether the invention may be patentable; (2) whether circumstances of invention make the Government entitled to all rights therein; and (3) whether publication in lieu of patenting is adequate to serve the public interest. This determination constitutes the determination of the Department unless it is referred to the Department Patents Board because of questions of consistency with law or Department regulations or policy regarding patents. Notice of the determination is given the employee (unless he has previously agreed to the determination that is made), and if he is aggrieved, he has a right to appeal to the Government Patents Board pursuant to Executive Order 10096.[8]

2. By contractors and grantees

HEW believes that essentially the same basic policy should be applied to its employees as is applied to inventions arising out of research supported by grants or contracts. Thus HEW considers the public interest is in general best served if inventive advances arising from its grants or contracts are made freely available to the Government, to science, to industry, and to the general public. There are certain differences, however, between grants and contracts in the implementing methods and procedures.

a. By contractors.—The patent regulations applicable generally to contracts for research provide that the head of the HEW organization responsible for the contract shall determine the disposition of all inventions "first conceived or actually reduced to practice in the course of the performance of the contract." The reasons for this policy were stated in the following language:

> The Department of Health, Education, and Welfare as a matter of overall policy takes the position that the results of research which are developed with the aid of public funds in the field of its programs should be utilized in a manner which will best serve the public interest. It considers that the public interest will in general be best served if advances resulting therefrom are made freely available to the Government, to science, to industry, and to the general public. * * *
>
> Contracts for research, whether or not with nonprofit organizations, will be required to conform to the same departmental policy, under standard clauses adopted to provide that any invention first conceived or actually reduced to practice in the course of the performance of the contract shall be promptly and fully reported to the head of the constituent

[8] See note 5 on p. 4. The regulations on this subject appear in the appendix at p. 22.

> organization responsible for the contract, for determination by him as to the manner of disposition of all rights in and to such invention, including the right to require assignment of all rights to the United States or dedication to the public. In the exercise of this power the organization head will be guided in general by the policies specified in departmental regulations with respect to grants.[9]

This basic policy is implemented by the Department's standard contract patent clause No. 20 which appears in the appendix, page 45. If, however, the contract is with a nonprofit institution, the contract may provide for leaving the ownership and disposition of the rights in inventions to the contractor if it is determined that the nonprofit institution's policies and procedures are acceptable on the same basis as would be those of a grantee as discussed above, pages 10 to 14. (See HEW Regulations, sec. 8.6(b) in the appendix, p. 27.)

Cancer chemotherapy contracts

On September 9, 1957, HEW adopted a special policy applicable only to cancer chemotherapy contracts with industrial profitmaking companies, and under this policy—intended to obtain extensive industrial cooperation in the synthesis and screening of possible anticancer agents—the cooperating firms are permitted to patent and exploit inventions as long as the products of such inventions are available to meet the public need with respect to supply, quality, and price. Subsequent to the adoption of this policy—

> * * * those involved in negotiating drug development contracts on behalf of the Government reported to the Department Patents Board that industry was not participating to an extent needed to meet the demands of the program, apparently due to industry concern that the "march-in" rights reserved to the Surgeon General might be exercised arbitrarily and without due regard to the real public need. It was on this basis that procedural modifications of the September 1957 policy were approved by the Secretary of Health, Education, and Welfare, July 1958. By this modification, the march-in rights were to be exercised only in accord with specified procedural safeguards designed to protect the contractor from arbitrary action.[10]

The march-in rights referred to above were those rights reserved to the Surgeon General under the special policy adopted in 1957 and applicable only to cancer chemotherapy research contracts with industry. They provided that under certain circumstances the Surgeon General may issue royalty-free licenses when he deems it necessary to assure an adequate supply of the product for health purposes at a reasonable price and of a high quality.[11]

In its latest statement of policy applicable to its cancer chemotherapy industrial research contracts, HEW has added several provisions which restrict procedurally the exercise of the right reserved to the Surgeon General to dedicate the invention or issue licenses on

[9] "HEW Patent Policy Applicable to Research Contracts," dated Sept. 9, 1957. For complete text see the appendix, p. 42.
[10] See note 5 on p. 4.
[11] See paragraph 1(4)(a) of policy statement adopted as of Sept. 9, 1957, which appears in the appendix, p. 43.

a royalty-free basis when deemed to be in the public interest. Under these provisions the Surgeon General must give the contractor at least 90 days' advance notice that he intends to exercise his rights and if the contractor decides to contest this action he has the right to a hearing and to be represented by counsel. The findings of the Surgeon General must be in writing and are final and binding upon the contractor.[12]

A copy of a research and development contract between the Upjohn Co. and HEW was submitted as being typical of cancer chemotherapy research contracts made subsequent to July 31, 1958.[13] Instead of the so-called standard clause 20, preserving to the Surgeon General the right to determine the disposition of inventions arising in the course of the contract work, it contains substitute provisions giving the contractor the right to take title to such inventions.

Upjohn Co. (Contract No. SA-43-ph-1933)

The basic contract was made on January 1, 1958, for the period from January 1 through December 31, 1958, and provided for "the development of techniques for analysis of antitumor beers and extracts" at an estimated cost of $145,000. The original agreement gave the contractor the right to file a patent application in his own name pending the Surgeon General's determination as to ultimate disposition of the patent only when this was deemed necessary to prevent patenting of the invention by others. By a supplement dated December 1, 1958, the period of time for this research project was extended through December 31, 1959, and an additional $505,000 was obligated, bringing the total amount of this contract to $650,000. In addition, this supplement deleted in its entirety the "standard" patent rights provision and substituted a new provision which permitted the contractor to patent such inventions in his own name for the purpose of commercial exploitation.

The principal departures from the procedures provided by standard clause 20 are as follows:

If the contractor decides to patent an invention in this country and abroad, he may obtain title for himself, but this title would be subject to a royalty-free, nonexclusive license for governmental purposes. However, in the case of a domestic patent, the Surgeon General may, if he deems such action necessary to protect the availability of the invention for health purposes in a foreign country, take over all rights in foreign countries to the invention involved. The Surgeon General also may take over any invention and dedicate it to the public or issue nonassignable, nonexclusive licenses when and if he finds the contractor has not met the public need and that the public dedication or additional licensing by the Surgeon General is necessary in the public interest. However, the rights of the Surgeon General may only be exercised after he has been advised by a body of consultants and has given the contractor notice in writing of the grounds on which he expects to take over control of the invention. The contractor is then given a time specified by the Surgeon General in which to correct the deficiencies relied upon by the Surgeon General. Upon the expiration of that time, if the contractor

[12] For complete text of the patent policy announced Aug. 5, 1958, see the appendix. For the restrictive revisions referred to see paragraph B4 a, b, c, thereof.

[13] This is a cost reimbursement contract which is funded for a specified amount, but payments are made to the contractor only on the basis of actual expenditures plus an agreed upon provisional rate to cover overhead.

has not satisfied the Surgeon General, he is then given notice that at the end of 90 days from such notice the Surgeon General will exercise his rights. Within 20 days after receipt of such notice, the contractor may file a request for a hearing at which he may be represented by counsel and present testimony in his behalf. If the contractor does not elect to have a hearing, the Surgeon General will then make his findings; if a hearing is held, findings will subsequently be made by the Surgeon General. In either event, the Surgeon General's conclusions will be final and he may proceed to dedicate or license at the expiration of the time limitations.

While there is no provision for judicial review of the merits of the Surgeon General's decision, the procedural limitations noted above form an obvious basis for judicial intervention if the contractor claims that the Surgeon General acted without complying fully with these procedural requirements. Since no disputes have yet arisen under this provision, the extent to which it may lead to litigation cannot now be estimated. The provision is, in any event, a sharp restriction of the rights which the Surgeon General has traditionally exercised with respect to patents arising out of publicly financed health research.[14]

The following list sets out all of the industrial research contracts of HEW which were in effect as of February 1, 1959, in connection with its cancer chemotherapy program, classified by the form of patent clause used in each:[15]

(1) STANDARD CLAUSE

Contractor	Contract No.	Date
Bristol Laboratories, Inc.	SA-43-ph-1908	Feb. 1, 1958
Do.	SA-43-ph-2411	Sept. 2, 1958
Pitman-Moore Co.	SA-43-ph-1963	Mar. 15, 1958
The Upjohn Co.	SA-43-ph-1933	Jan. 1, 1958

(2) PROVISIONS BASED ON POLICY OF SEPTEMBER 1957

Abbott Laboratories	SA-43-ph-1910	Oct. 15, 1957
Chas. Pfizer & Co., Inc.	SA-43-ph-1926	Jan. 1, 1958
Schering Corp.	SA-43-ph-1929	Do.

(3) PROVISIONS PERMITTING APPLICATION AT CONTRACTOR'S OPTION, OF POLICY OF JULY 31, 1958

E. R. Squibb & Sons	SA-43-ph-2395	June 1, 1958
Parke-Davis & Co.	SA-43-ph-1965	Apr. 1, 1958
Merck & Co., Inc.	SA-43-ph-1886	Jan. 1, 1958
Do.	SA-43-ph-1948	Do.
Armour & Co.	SA-43-ph-1934	Do.

(4) CONTRACT PROVISIONS BASED ON POLICY OF JULY 31, 1958

The Upjohn Co.	Supp. No. 2 to SA-43-ph-1933	Dec. 1, 1958

b. By grantees.—To implement the basic policy as to grantees, about 85 percent of the research grants of the Public Health Service are governed by provisions which reserve to the Surgeon General the right to

[14] For text of substituted provisions of clause 20, see appendix, p. 46.

[15] Letter to Hon. Joseph C. O'Mahoney, chairman, Subcommittee on Patents, Trademarks and Copyrights of the Committee on the Judiciary from Mr. Arthur S. Flemming, Secretary, Department of Health, Education, and Welfare, dated Feb. 13, 1959.

determine on an individual case basis the disposition of rights to inventions developed under the grant.[16] Department regulations set forth four alternative methods available to the head of the constituent agency for disposition of the inventions.[17]

Thus in the majority of research grant situations, upon receipt of an invention report it is reviewed by persons expert in the same field, who submit opinions as to the novelty, utility, and scientific importance of the invention, whether in their opinion publication would suffice to protect the public interest, and whether an invention should be patented. These opinions, together with other facts relating to the development of the invention, form the basis of the determination by the Surgeon General for the particular case. In the majority of the cases reported to date, the Service has determined that full application of the facts would serve to establish priority of the invention and would serve within the year as dedication of the invention to the public. Certain cases in which special arrangements or conditions have been desirable in the public interest are noted later in this report. Each case, however, is considered separately, and the Surgeon General follows the course of action deemed by him to be in the public interest.

Alternative grantee agreements

HEW regulations permit an alternative to the above general policy and procedure. Instead of the rights of disposition being retained by the head of the constituent agency, this alternative permits him to enter into an agreement with a grantee institution under which inventions arising from research grants may be disposed of by the grantee in accordance with its own established policies if they are first approved by the head of the constituent agency as in accord with Department regulations.[18] With respect to the Public Health Service, about 15 percent of the grants are covered by such agreements which, as of May 28, 1959, had been entered into with 19 universities or other nonprofit institutions.[19]

The acceptability to the Public Health Service of a grantee's patent policies and procedures is determined by comparing the grantee institution's formalized policy with the policies and procedures determined acceptable to the Service.[20] In making these agreements by which the Service consents to the administration by the grantee institution of inventions and discoveries arising from PHS support in accordance with its own policies and procedures, the Service offers the following alternatives:

A. Dedication to the public of results of research either by publication or patenting with subsequent dedication of the patents.

B. Patenting with royalty-free licensing.

C. Patenting with licensing on a royalty basis, provided the royalty is reasonable and coupled with a royalty-free license to the Government with power to sublicense for all governmental purposes.

D. Assignment of ownership rights to a patent management agent who will adhere to the standards established for the grantee.

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[16] See PHS Application for Research Grant form in the appendix, p. 37.
[17] See Regs. sec. 8.2 in the appendix, p. 26.
[18] See sec. 8.1(b) in the appendix, p. 26.
[19] For list of grantees see the appendix, p. 34.
[20] These policies appear under the heading "Invention and Patent Policies Acceptable to the Public Health Service," in the appendix, p. 38.

Before a recommendation is made to the Surgeon General as to whether an institution's policies are acceptable the following information is required from the grantee institution:

1. A statement of the invention and patent policies of the institution, with full information as to organization for handling, reporting procedures, policy as to seeking patents, licensing and royalty practices, use of profits (if any), and reward to inventor (if any).

2. The publication of research results as affected by the invention and patent policies of the institution.

3. The number of patents the institution has obtained in the past 10 years, and the number of licenses issued on each patent. If exclusive licenses have been issued, the number, terms of duration, and full information as to the basis on which such licenses were issued and the safeguards utilized to protect the public interest.

Papers relating to the University of Washington were submitted by HEW as being typical of those received from other grantee institutions. Negotiations between the Public Health Service and the University of Washington began in 1953 and the final agreement between the Surgeon General and the university was executed on October 13, 1954. A copy of this agreement is as follows:

OCTOBER 13, 1954.

MR. NELSON WAHLSTROM,
University of Washington,
Seattle, Wash.

DEAR MR. WAHLSTROM: Replying to your letter of April 10, 1953, I am pleased to advise that it has been determined, pursuant to provisions of section 2(b) of Department Order 110–1, "Inventions Resulting from Research Grants," that the ownership and disposition of all domestic rights in inventions arising under Public Health Service grants and awards made to the university shall be left for administration by the university.

It has been noted in the review of the materials submitted by you that the policy provides for a contract with Research Corp. which acts as patent management agent for the University of Washington on those inventions assigned to them for prosecution. In making my determination, therefore, I have particularly noted that the policies of both the University of Washington and Research Corp. provide for licensing on a royalty basis, and for conformance with normal trade practices insofar as royalties are concerned. I have also taken cognizance of the fact that the University of Washington is opposed to exclusive licenses, and that in the licensing arrangements entered into by the University of Washington and Research Corp. adequate safeguards are inserted to protect the public interest.

This determination is subject to the following understandings and conditions, and upon acceptance will apply to inventions under current grants and awards and to those made while it remains in effect:

(1) The university will make its determinations in accordance with the invention and patent policies as they appear in patent policy of the University of Washington, adopted by the board of regents of the university January 10, 1950, as supplemented by (*a*) your letters of April 10, 1953, and July 26, 1954, addressed to the National Institutes of Health, Division of Research Grants, and (*b*) your patent management agreement with Research Corp.

(2) The university will report to the Public Health Service on each invention which appears to be patentable and which arises under research assisted by grants or awards to the university by the Public Health Service. Such report shall be furnished immediately on the filing of a patent application on any such invention, and the university will furnish to the Public Health Service an annual report showing the disposition of all such inventions.

(3) The university will reserve to the United States in any such patent application and in any patent issued thereunder a nonexclusive, irrevocable, and royalty-free license to make and use, and to sell as provided by law, embodiments of the invention, with power to sublicense, for all governmental purposes.

(4) The university will reserve an option to the Government to file foreign patent applications on any such invention, and will convey to the Government upon demand the rights necessary to enable the Government to prosecute such applications and obtain patents in foreign countries, such option to run for 6 months from the date of the filing of a patent application in the United States. If the Government either fails (*a*) to exercise this option within the period specified, or (*b*) determines within this period not to exercise its rights to an option, the university may dispose of all foreign rights in the invention, subject to the reservation of the United States of a nonexclusive, irrevocable, royalty-free license to make, use and sell as provided by law, embodiments of the invention, with power to sublicense, for all governmental purposes.

Please have two copies of this agreement signed by an official authorized to commit the university in the space indicated below and return one copy to the Division of Research Grants, National Institutes of Health, Bethesda, Md., retaining the other for your files.

Sincerely yours,

LEONARD A. SCHEELE,
Surgeon General.
UNIVERSITY OF WASHINGTON,
By: NELSON WAHLSTROM.

C. FOREIGN FILING

1. Employees' patents

HEW's policy as to foreign patenting is stated as follows:

> This Department does not seek foreign patents. Even in those cases where it is practicable to acquire foreign rights in an invention and public policy in relation to general health objectives would point to the desirability of seeking patent or other protection abroad, the Department has neither statutory authority nor facilities for this type of activity.
>
> In the case of the invention of the antimalarial drug "Primaquine," which was recommended for foreign patent protection, the Department of Commerce arranged for its patenting abroad in a number of countries under an arrangement by which a private drug company handled the actual applications. The Department of Commerce acted at that time under Executive Order 9865 as implemented by administrative orders of the Chairman of the Government Patents Board. There is now no centralized facility for the handling

> of foreign patent applications. The routine determinations and recommendations regarding foreign patenting which we now make are generally unproductive because neither this Department nor any other agency is in a position to take followup action on inventions arising from the research programs of the Department.
>
> There have been two instances of inventions made abroad by an employee or fellow of the Public Health Service working in collaboration with employees of the British Government. In the first of these an arrangement was entered into by which rights to the invention in the United States were assigned to the United States and the foreign rights to the Medical Research Council of Great Britain, patent applications being thereafter filed in the two countries. * * *[21]

The second case involved a request from the Medical Research Council of Great Britain to the Surgeon General for consideration of a patent agreement between the Public Health Service and the Council. This request has now been studied and discussions have been held with the State Department. It is expected that an agreement may be reached sometime this year on terms acceptable to both agencies.

HEW has no information as to the extent to which employee-inventors may have sought or obtained foreign patent rights for themselves.

2. Contractors' and grantees' patents

HEW regulations provide for prompt written notice by contractors and grantees of all inventions and patent applications made by them in the course of their contract work.[22]

Upon the basis of information from its contractors and grantees relating to inventions and patent applications received to date, HEW has no information indicating that any of these contractors and grantees have made applications for patents in foreign countries. In connection with these invention reports, the following statement was made by HEW:

> * * * Since as to both contracts and grants the normal "standard" provision requires a report of invention to the Government and requires the invention to be subject to disposition and control by the Government, we have information in the form of invention reports as to grantees and certainly expect to have from the comparatively smaller and newer research contract program as and when inventions are developed under such contracts. Invention reports from grantees are regularly received and in almost all cases it has been determined to dedicate the invention to public use by full publication * * * Under the standard provisions, therefore, the grantee or contractor has no basis consistent with his agreement with the Department on which to seek a patent for himself. Even in the two exceptional areas where title to an invention may be retained by the grantee or contrac-

[21] See note 4 on p. 3.

[22] (See par. 8.1 entitled "Conditions to be included in research grants" and 8.6 entitled "Contracts for research" contained in HEW's regulations in appendix at p. 26. See also clause 20 of HEW's general provisions entitled "Patent Rights" in the appendix at p. 45.)

tor (by special agreement with the grantee or nonprofit contractor and in cancer chemotherapy research contracts), full reports of invention are required.[23]

D. USE OF PATENTS BY PARTIES RETAINING TITLE

1. Employees

HEW has no information showing the use of patents to which employees have retained title. Employees of HEW have retained title to patents in very few cases, and only in those where Government materials, time or information has not contributed to an invention, or where the Government has insufficient interest in the invention. Under such circumstances HEW does not collect information on inventions of this type.

2. Contractors and grantees

To date there are two instances in which the Surgeon General had been requested to approve, and did approve, a disposition of grantee inventions which involved an assignment or exclusive license. The inventors were Dr. Harry S. Penn, of the University of California and Dr. Russell H. Morgan, of Johns Hopkins University. In both of these cases there was a strong showing of need of substantial additional investment in order to continue research and development to the point of wide utility.

The facts in these cases are briefly as follows:

Dr. Harry S. Penn, University of California

This invention was described as a "synthetic antigen for use in detection of cancer." The invention resulted from research which had been supported by contributions from several sources. Prior to the granting of an exclusive license, the Government had contributed approximately $87,000 from 1949 to 1953. During this period support from non-Federal sources had been approximately $143,000. The grantee institution claimed that it was unable to continue the necessary research work except by accepting an offer from a private drug firm, which was willing to contribute approximately $55,000 for continued research for several years together with the assistance of qualified technicians. This offer of the drug company was conditioned upon its receiving a 5-year exclusive license with a limit of 5 percent of net sales on any royalty charge. This arrangement was approved by the Surgeon General in March 1953, and in April 1958 a license to the Government was received under the pending patent application. In January 1959 the university notified HEW that is was abandoning all of its rights to the invention on conditions that the inventor fulfill his obligations to the Government.

Dr. Russell H. Morgan, Johns Hopkins University

This invention involved low noise amplification and was first reported to the Public Health Service in March 1955. The research work leading to the invention was supported over a period of several years by contributions of approximately one-third by the university and two-thirds by the Public Health Service. The work was directed primarily toward amplification of X-ray fluoroscopic screens. In

[23] See note 5 on p. 4.

November 1955, because of the need for further highly technical development to be undertaken by a private firm and after receiving abundant assurances that vigorous efforts would be devoted to developing the invention, the first priority being given to the field of medicine in public health, the Surgeon General determined that this firm could hold the patents until April 1965. Upon the expiration of this period of exclusivity, the owner of the patent is required to grant licenses on a nonexclusive basis with royalties limited to 6 percent, and the Government is entitled at all times to a nonexclusive, irrevocable royalty-free license, with power to sublicense for governmental purposes.

HEW has no data showing the use which grantees have made of patents which they obtained. No patent has yet been issued to which a contractor has title. In connection with inventions arising out of grants, HEW stated:

> * * * the inventions developed under grants have for the most part also been dedicated by publication or, if covered by agreement with universities, the extent of actual use would be peculiarly the knowledge of the university.[24]

3. Government

HEW has a definite policy of discouraging the acquisition and/or ownership of patents by the Government except (1) in the case of inventions of high potential significance to public health, safety, or welfare when it is deemed advisable to obtain maximum protection against potential rival claims by establishing priority of invention and diligence in reducing to practice, and (2) for reasons of health and safety when it is determined to be advisable to have legal authority to impose restrictive conditions on the use of the patents.

The present policy of HEW strongly leans toward dedication to the public, not only in the case of patented inventions, but also in the case of patentable inventions which were dedicated without making patent applications. The only patentable invention reported to HEW pursuant to a research contract is now in process of being dedicated to the public. As long as this dedication policy is continued, there will be very little need for granting licenses.

A tabulation showing, as of May 1959, all patents owned by HEW under which licenses were granted, giving patent number, dates of issue, subject matter of invention, name and address of licensee, date of license, and the name and status of the inventor appears in the appendix at page —.

Two examples of dedicated inventions which HEW believes may have had extensive commercial use are the following:

> An example of an important invention on which a patent was obtained was that of a "Method of Converting Tomatidine into Δ 16 Allopregnenolone" by a team of research workers at the National Institutes of Health. As soon as report was made of the success obtained in this research effort, numerous inquiries were received concerning the availability of the invention for commercial use. Accordingly, after the patent issued, determination was made to dedicate the patent to the public. Formal dedication was recorded in the Patent

[24] See note 5 on p. 4.

Office, and those who had inquired about licensing were notified of this action which eliminated any need for the issuance of individual licenses.

An example of an unpatented invention made by a Department employee and having substantial commercial utility was the invention in 1953 of the new insecticide "DDVP" by a team of research workers at the Technical Development Laboratories of the Public Health Service Communicable Disease Center. This invention was significant both in the field of agriculture and of public health, and as soon as reports concerning it appeared inquiries were received from a number of commercial organizations. The Department determination was in favor of technical publication, rather than patenting, and press releases were issued for the information of the public as to its potentialities and its availability for use. * * * [25]

No reports have been obtained from any HEW licensee showing the extent of commercial use.

Three examples of licensed patents were submitted as having probable commercial uses. These were:

2,178,010—Nuclear substituted derivatives of the morphine series. "Metropon" licenses to eight drug and chemical companies.

2,234,981—Formaldehyde sulphoxylate derivatives. Licenses to four drug and chemical companies.

2,604,474—"Primaquine." Licenses to five drug and chemical companies. (This highly useful invention was developed under a Public Health Service research grant to Columbia University.) [26]

III. Agency Viewpoint

A. Judgment as to effectiveness of present policy

HEW feels that its present practice regarding patent matters is working reasonably well. In this connection it was stated:

> This Department has reached no conclusions as to whether greater flexibility of authority in the administration of Government-owned patents than now exists would facilitate or impede the realization of its research objectives. If, however, in the administration of more flexible authority the Department should be required to take into consideration objects extraneous to the research objective, the effect would be detrimental. In any event the building up of a system placing emphasis on patenting and the administration of patents would entail the setting up of extensive administrative machinery and personnel.

[25] See note 4 on p. 3.
[26] See note 4 on p. 3.

As has been indicated, the development of policy in this Department has been in the other direction. While the underlying purpose here has been to make fully, freely, and promptly available the fruits of research conducted or financially aided by the Department, with restrictions limited to those involving safety factors, it has fortunately coincided with more economical administration.[27]

B. RECOMMENDATIONS AS TO FUTURE POLICY

None were offered.

[27] See note 4 on p. 3.

APPENDIX

No. 1

MANUAL—GENERAL ADMINISTRATION

Part 6—Patents and Inventions

CHAPTER 6–10

REGULATIONS AND PROCEDURES

6–10–00 Scope
6–10–10 Regulations (from *Federal Register* of 9/14/55 and 12/4/57)

[From *Federal Register*, Title 45, Subtitle A]

PART 6—INVENTIONS AND PATENTS (GENERAL)

Sec.
6.0 Definitions.
6.1 General Policy.
6.2 Publication or patenting of inventions.
6.3 Government-owned patents; licensing; dedication to the public.
6.4 Central records; confidentiality.
6.5 Procedures relating to employee and grantee inventions.
6.6 Issuance of patents on non-fee basis; certification of public interest.

PART 7—EMPLOYEE INVENTIONS

7.0 Who are employees.
7.1 Duty of employees to report inventions.
7.2 Determination as to patentability.
7.3 Determination as to domestic rights.
7.4 Option to acquire foreign rights.
7.5 Determination as to patenting.
7.6 Department review and determination.
7.7 Notice to employee of determination.
7.8 Employee's right of appeal.

PART 8—INVENTIONS RESULTING FROM RESEARCH GRANTS, FELLOWSHIP AWARDS, AND CONTRACTS FOR RESEARCH

8.0 Policy.
8.1 Conditions to be included in research grants.
8.2 Determination as to domestic rights.
8.3 Licenses to the Government.
8.4 Option to acquire foreign rights.
8.5 Fellowships.
8.6 Contracts for research.
8.7 Cancer chemotherapy industrial research contracts.

HEW TN–21 (7/31/58). Supersedes page 1, Chapter 6–10 (TN–15).

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6–10–20 Patent Policy Applicable to Cancer Chemotherapy Industrial Research Contracts

6–10–00 *Scope*

A. This Chapter contains:

1. Department regulations relating to inventions (a) made by Department employees, or (b) resulting from research grants, fellowship awards, or research contracts under programs administered by the Department; and

2. Department patent policy, approved 7/31/58 by the Secretary, establishing the limitations referred to in section 8.7 of the Department regulations for the negotiation of cancer chemotherapy industrial research contracts.

B. The substance of the Department regulations relating to employee inventions is incorporated in a statement for the general information of supervisors and employees which was issued 10/19/56 in HEW General Administration Manual Guide No. 1.

6–10–10 Regulations (from Federal Register of 9/14/55 and 12/4/57)

TITLE 45—PUBLIC WELFARE

SUBTITLE A—DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, GENERAL ADMINISTRATION

PART 6—INVENTIONS AND PATENTS (GENERAL)

PART 7—EMPLOYEE INVENTIONS

PART 8—INVENTIONS RESULTING FROM RESEARCH GRANTS, FELLOWSHIP AWARDS, AND CONTRACTS FOR RESEARCH

The following parts are Department rules and policies relating to inventions which are made by Department employees having a relation to their official duties or with some contribution from the Government or which arise from research or related activities assisted by grants or otherwise under programs administered by the Department.

PART 6—INVENTIONS AND PATENTS (GENERAL)

Sec.

6.0 Definitions.
6.1 General policy.
6.2 Publication or patenting of inventions.
6.3 Government-owned patents; licensing; dedication to the public.
6.4 Central records; confidentiality.
6.5 Procedures relating to employee and grantee inventions.
6.6 Issuance of patents on non-fee basis; certification of public interest.

AUTHORITY: §§ 6.0 to 6.6 issued under Reorg. Plan No. 1 of 1953, 18 F.R. 2053; 3 CFR 1953 Supp. E.O. 10096, 15 F.R. 391; 3 CFR, 1950 Supp.

§ 6.0 *Definitions.* As used in Parts 6, 7, and 8 of this subtitle:

(a) "Department" means the Department of Health, Education, and Welfare.

(b) "Secretary" means the Secretary of Health, Education, and Welfare.

(c) "Head of constituent organization" includes the Surgeon General of the Public Health Service, the Commissioner of Education, Commissioner of Social Security, Commissioner of Food and Drugs,

the Director of Vocational Rehabilitation, and the Superintendent of Saint Elizabeths Hospital.

§ 6.1 *General policy.* Inventions developed through the resources and activities of the Department are a potential resource of great value to the public health and welfare. It is the policy of the Department:

(a) To safeguard the public interest in inventions developed by Department employees, contractors and grantees with the aid of public funds and facilities;

(b) To encourage and recognize individual and cooperative achievement in research and investigations; and

(c) To establish a procedure, consistent with pertinent statutes, Executives orders and general Government regulations, for the determination of rights and obligations relating to the patenting of inventions.

§ 6.2 *Publication or patenting of inventions.* It is the general policy of the Department that the results of Department research should be made widely, promptly and freely available to other research workers and to the public. This availability can generally be adequately preserved by the dedication of a Government-owned invention to the public through publication. Determinations to file a domestic patent application on inventions in which the Department has an interest will be made only if the circumstances indicate that this is desirable in the public interest, and if it is practicable to do so. Department determinations not to apply for a domestic patent on employee inventions are subject to review and approval by the Chairman of the Government Patents Board. Except where deemed necessary for protecting the patent claim, the fact that a patent application has been or may be filed will not require any departure from normal policy regarding the dissemination of the results of Department research.

§ 6.3 *Government-owned patents; licensing; dedication to the public.* All licenses under patents and pending patent applications for the administration of which the Department is responsible shall be issued by the Secretary. Licenses will be royalty-free, revocable and nonexclusive. Except in unusual cases when determined upon recommendation of the head of the constitutent organization that unconditional licensing would be contrary to the public interest, licenses will be issued to all applicants and will contain no limitations or standards relating to the quality of the products to be manufactured, sold, or distributed thereunder. To reduce the need for individual license applications, patents held for unconditional licensing shall be dedicated to the public as may be feasible.

§ 6.4 *Central records; confidentiality.* Central files and records shall be maintained of all inventions, patents, and licenses in which the Department has an interest, together with a record of all licenses issued by the Department under such patents. Invention reports required from employees or others for the purpose of obtaining determinations of ownership, and documents and information obtained for the purpose of prosecuting patent applications shall be confidential and shall be disclosed only as required for official purposes or with the consent of the inventor.

§ 6.5 *Procedures relating to employee and grantee inventions.* The Department Patents Officer, with the approval of the Department Patents Board, and the heads of constitutent organizations within their respective areas of responsibility, are authorized to issue such procedures and bulletins and take such other actions as may be necessary or desirable to supplement the provisions of Parts 7 and 8 of this subtitle.

§ 6.6 *Issuance of patents on non-fee basis; certification of public interest.* For the purpose of an application for a patent to issue under the non-fee provisions of the Patent Code (35 U.S.C. 266), a certification that an invention is used, or is likely to be used, in the public interest may be executed in behalf of the Secretary by the head of the constituent organization having admistrative jurisdiction over the inventor.

PART 7—EMPLOYEE INVENTIONS

Sec.
7.0 Who are employees.
7.1 Duty of employee to report inventions.
7.2 Determination as to patentability.
7.3 Determination as to domestic rights.
7.4 Option to acquire foreign rights.
7.5 Determination as to patenting.
7.6 Department review and determination.
7.7 Notice to employee of determination.
7.8 Employee's right of appeal.

AUTHORITY: §§ 7.0 to 7.8 issued under Reorg. Plan No. 1 of 1953, 18 F.R. 2053; 3 CFR, 1953 Supp. E. O. 10096, 15 F.R. 391; 3 CFR, 1950 Supp.

§ 7.0 *Who are employees.* As used in this part, the term "Government employee" means any officer or employee, civilian or military, except such part-time employees or part-time consultants as may be excluded therefrom by a determination made in writing by the head of the employee's office or constituent organization, pursuant to an exemption approved by the Chairman of the Government Patents Board, that to include him or them would be impracticable or inequitable, giving the reasons therefor. A person shall not be considered to be a part-time employee or part-time consultant for this purpose unless the terms of his employment contemplate that he shall work for less than the minimum number of hours per day, or less than a minimum number of days per week, or less than the minimum number of weeks per year, regularly required of full-time employees of his class.

§ 7.1 *Duty of employee to report inventions.* Any Department employee is required to report promptly to the constituent organization in which he is employed any invention made by him (whether or not jointly with others) which bears any relation to his official duties or which was made in whole or in part during working hours, or with any contribution of Government facilities, equipment, material, funds or information, or of time or services of other Government employees on official duty. Reports of inventions (except for cases as to which it is decided by the appropriate office or constituent organization, with the concurrence of the Department Patents Officer, that it does not appear they are or may be patentable) shall be forwarded through appropriate channels to the head of the office or constituent organization having administrative jurisdiction over the inventor at the time the invention was made. Thereafter they shall

be forwarded with the related administrative recommendations and determinations to the Department Patent Officer.

§ 7.2 *Determination as to patentability.* Upon receiving a report of an employee invention, the head of the appropriate office or constituent organization shall make in writing the decision on behalf of the Department as to whether the results of the research, development, or other activity constitute an invention or inventions which may be patentable.

§ 7.3 *Determination as to domestic rights.* The determination of the ownership of the domestic right, title, and interest in and to an invention which is or may be patentable, made by a Government employee while under the administrative jurisdiction of the Department, shall be made in writing by the head of the appropriate office or constituent organization, in accordance with the provisions of Executive Order 10096 and Government-wide regulations issued thereunder by the Chairman of the Government Patents Board, as follows:

(a) The Government as represented by the Secretary shall obtain the entire domestic 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.

(b) In any case where the contribution of the Government, as measured by any one or more of the criteria set forth in paragraph (a) of this section, to the invention is insufficient equitably to justify a requirement of assignment to the Government of the entire domestic right, title, and interest in and to such invention, or in any case where the Government has insufficient interest in an invention to obtain the entire domestic right, title, and interest therein (although the Government could obtain same under paragraph (a) of this section, the Department, subject to the approval of the Chairman, shall leave title to such invention in the employee, 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, such reservation, in the terms thereof, to appear, where practicable, in any patent, domestic or foreign, which may issue on such invention.

(c) In applying the provisions of paragraphs (a) and (b) of this section to the facts and circumstances relating to the making of any particular invention, it shal be presumed that an invention made by an employee who is employed or assigned (1) to invent or improve or perfect any art, machine, manufacture, or composition of matter, (2) to conduct or perform research, development work, or both, (3) to supervise, direct, coordinate, or review Government financed or conducted research, development work, or both, or (4) to act in a liaison capacity among governmental or nongovernmental agencies or individuals engaged in such work, falls within the provisions of paragraph (a) of this section, and it shall be presumed that any invention made by any other employee falls within the provisions of paragraph (b) of this section. Either presumption may be rebutted by the facts or circumstances attendant upon the conditions under which any particular invention is made and, nothwithstanding the foregoing, shall

not preclude a determination that the invention falls within the provisions of paragraph (d) of this section.

(d) In any case wherein the Government neither (1) obtains the entire domestic right, title and interest in and to an invention pursuant to the provisions of paragraph (a) of this section, nor (2) reserves a nonexclusive, irrevocable, royalty-free license in the invention, with power to grant licenses for all governmental purposes, pursuant to the provisions of paragraph (b) of this section, the Government shall leave the entire right, title and interest in and to the invention in the Government employee, subject to law.

§ 7.4 *Option to acquire foreign rights.* In any case where it is determined that all domestic rights should be assigned to the Government, it shall further be determined, pursuant to Executive Order 9865 and Government-wide regulations issued thereunder, that the Government shall reserve an option to require the assignment of such rights in all or in any specified foreign countires. In case where the inventor is not required to assign the patent rights in any foreign country or countries to the Government, or the Government fails to exercise its option within such period of time as may be provided by regulations issued by the Chairman of the Government Patents Board, any application for a patent which may be filed in such country or countries by the inventor or his assignee shall nevertheless be subject to a nonexclusive, irrevocable, royalty-free license to the Government for all governmental purposes, including the power to issue sublicenses for use in behalf of the Government and/or in furtherance of the foreign policies of the Government.

§ 7.5 *Determination as to patenting.* When the head of the appropriate office, or constituent organization, determines in accordance with the provisions of §§ 7.3 and 7.4 that the Government has rights in a patentable invention:

(a) He shall also determine whether the Department should seek to obtain a domestic patent thereon, or whether it shall be published or other action taken in the public interest, giving his reasons therefor; and

(b) He shall further recommend in writing whether the invention should receive foreign patent protection or be published abroad and, if affirmative, should specify the foreign jurisdictions in which action is recommended, giving reasons therefor, and should indicate, if possible, its immediate or future industrial, commercial, or other value, including particularly its value to public health.

§ 7.6 *Department review and determination.* The determination by the head of an office or constituent organization of the ownership of domestic or foreign rights in an invention by a Department employee shall constitute the decision of the Department unless, upon review, the Department Patents Officer questions the consistency of the determination with applicable law or regulations or with Department policy. Any question, unresolved after consultation with the originating unit, will be submitted by the Department Patents Officer to the Department Patents Board which shall either affirm or reverse the determination or return the same to the head of the constituent organization or office for further action. If the Board proposes to determine, or to approve a determination, that the invention shall be required to be assigned to the Government, it may in its discretion afford the employee an opportunity of a hearing.

§ 7.7 *Notice to employee of determination.* The appropriate office or constituent organization shall notify each employee-inventor in writing, of the Department's determination and of his right of appeal, if any. In the case of determinations made by the Department Patents Board, the notification shall be made by the Department Patents Officer. Notice need not be given if the employee stated in writing that he would agree to the determination of ownership which was in fact made.

§ 7.8 *Employee's right of appeal.* An employee who is aggrieved by a determination of the Department may appeal to the Chairman of the Government Patents Board, pursuant to section 4(d) of Executive Order 10096 and regulations issued thereunder, by filing a written appeal with the Chairman, in quadruplicate, and a copy of the appeal with the Department Patents Officer, within 30 days (or such longer period as the Chairman may, for good cause, fix in any case) after receiving written notice of such determination.

PART 8—INVENTIONS RESULTING FROM RESEARCH GRANTS, FELLOWSHIP AWARDS, AND CONTRACTS FOR RESEARCH

Sec.
8.0 Policy.
8.1 Conditions to be included in research grants.
8.2 Determination of domestic rights.
8.3 Licenses to the Government.
8.4 Option to acquire foreign rights.
8.5 Fellowships.
8.6 Contracts for research.
8.7 Cancer chemotherapy industrial research contracts.

AUTHORITY: §§ 8.0 to 8.7 issued under Reorg. Plan No. 1 of 1953 (18 F.R. 2053; 3 CFR, 1953 Supp., E.O. 9865; 12 F.R. 3907; 3 CFR, 1947 Supp., E.O. 19906, 15 F.R. 391; 3 CFR, 1950 Supp.

§ 8.0 *Policy.* (a) The Department of Health, Education, and Welfare each year is expending large sums in the form of grants for research. These grants are made primarily by the Public Health Service in carrying out its broad responsibility under the Public Health Service Act to promote and coordinate research in the field of health and to make available information concerning such research and its practical application. The scientific and technological advances attributable, in varying degrees to this expenditure of public funds frequently include patentable inventions.

(b) The Department, as a matter of policy, takes the position that the results of research supported by grants of public moneys should be utilized in the manner which would best serve the public interest. It is believed that the public interest will in general be best served if inventive advances resulting therefrom are made freely available to the Government, to science, to industry, and to the general public.

(c) On the other hand, in some cases it may be advisable to permit a utilization of the patent process in order to foster an adequate commercial development to make a new invention widely available. Moreover, it is recognized that inventions frequently arise in the course of research activities which also receive substantial support from other sources, as well as from the Federal grant. It would not be consistent with the cooperative nature of such activities to attribute a particular invention primarily to support received from any one source. In all these cases the Department has a responsibility to see

that the public use of the fruits of the research will not be unduly restricted or denied.

(d) The following conditions have been adopted to govern the treatment of inventions made in these various types of situations. They are designed to afford suitable protection to the public interest while giving appropriate recognition to the legitimate interests of others who have contributed to the invention.

§ 8.1 *Conditions to be included in research grants.* Subject to legislative directives or Executive orders providing otherwise, all grants in aid of research shall provide as a condition that any invention arising out of the activities assisted by the grant shall be promptly and fully reported, and shall provide, as the head of the constituent unit may determine, either.

(a) That the ownership and manner of disposition of all rights in and to such invention shall be subject to determination by the head of the constituent unit responsible for the grant, or

(b) That the ownership and disposition of all domestic rights shall be left for determination by the grantee institution in accordance with the grantee's established policies and procedures, with such modifications as may be agreed upon and specified in the grant, provided the head of the constituent unit finds that these are such as to assure that the invention will be made available without unreasonable restrictions or excessive royalties, and provided the Government shall receive a royalty-free license, with a right to issue sublicenses as provided in § 8.3, under any patent applied for or obtained upon the invention.

(c) Wherever practicable, any arrangement with the grantee pursuant to paragraph (b) of this section shall provide in accordance with Executive Order 9865 that there be reserved to the Government an option, for a period to be prescribed, to file foreign patent applications upon the invention.

§ 8.2 *Determination as to domestic rights.* Rights in any invention not subject to disposition by the grantee pursuant to paragraph (b) of § 8.1 are for determination by the head of the constituent organization as follows:

(a) If he finds that there is adequate assurance that the invention will either be effectively dedicated to the public, or that any patent which may be obtained thereunder will be generally available for royalty-free and nonexclusive licensing, the effectuation of these results may be left to the grantee.

(b) If he finds that the invention will thereby be more adequately and quickly developed for widest use and that there are satisfactory safeguards against unreasonable royalties and repressive practices, the invention may be assigned to a competent organization for development and administration for the term of the patent or such lesser period as may be deemed necessary.

(c) If he finds that the interest of another contributing Government agency is paramount to the interest of the Department of Health, Education, and Welfare, or when otherwise legally required or in the public interest, the invention may be left for disposition by that agency in accordance with its own policy.

(d) In all other cases, he shall require that all domestic rights in the invention shall be assigned to the United States unless he determines that the invention is of such doubtful importance or the Gov-

ernment's equity in the invention is so minor that protective measures, except as provided in § 8.3, are not necessary in the public interest.

§ 8.3 *Licenses to the Government.* Any arrangement or determination as to the disposition of rights in inventions pursuant to § 8.1, § 8.2, § 8.5 or § 8.6 shall require that there be reserved under any patent application or patent thereon, domestic or foreign, a nonexclusive, irrevocable, royalty-free license to the Government with power to sublicense for all governmental purposes.

§ 8.4 *Option to acquire foreign rights.* In any case where it is determined that all domestic rights should be assigned to the Government, there shall be reserved to the Government, pursuant to Executive Order 9865 and Government-wide regulations issued thereunder, an option to require the assignment of all rights in the invention in all or in any specified foreign countries. In any case where the inventor is not required to assign the patent rights in any foreign country or countries to the Government, or the Government fails to exercise its option within such period of time as may be provided by regulations issued by the Chairman of the Government Patents Board, any application for a patent which may be fild in such country or countries by the inventor or his assignee shall nevertheless be subject to a nonexclusive, irrevocable, royalty-free license to the Government for all governmental purposes, including the power to sublicense for all governmental purposes.

§ 8.5 *Fellowships.* In the discretion of the head of the responsible constituent organization, the award of a fellowship to a person not a Government employee may provide for the reporting of any invention made during the term thereof, and for its disposition in accordance with the provisions of paragraph (a) of § 8.1, or for its disposition by the institution at which the research was performed in accordance with its established policies, if applicable to such an invention, which meet the requirements of paragraph (b) of such section.

§ 8.6 *Contracts for research.* (a) Contracts for research, with other than nonprofit institutions, shall provide that any invention first conceived or actually reduced to practice in the course of the performance of the contract shall be promptly and fully reported to the head of the constituent organization responsible for the contract, for determination by him as to the manner of disposition of all rights in and to such invention, including the right to require assignment of all rights to the United States or dedication to the public. In the exercise of this power the organization head will be guided by the policy specified in § 8.2 with respect to grants.

(b) Contracts for research with nonprofit institutions shall contain provisions as in paragraph (a) of this section except that, if it is determined that the institution's policies and procedures are acceptable as meeting the requirements of § 8.1(b) with respect to grants, the contract may provide, with such special stipulations in the contract as may be deemed necessary in the public interest, for leaving the ownership and disposition of all domestic rights for determination by the contracting institution in accordance with such policies and procedures.

§ 8.7 *Cancer chemotherapy industrial research contracts.* Notwithstanding the provisions of § 8.6, the Surgeon General in the negotiation of contracts with other than nonprofit organiaztions for the cancer chemotherapy research program shall be subject only to such

limitations and alternatives as the Secretary may approve for such program.

6-10-20 *Patent Policy Applicable to Cancer Chemotherapy Industrial Research Contracts*

A. *General.*

1. The cancer chemotherapy program of the Public Health Service is an intensified effort, with special appropriations made available under a Congressional directive, to explore exhaustively and rapidly the potentialities of chemical compounds in the control of cancer. Because of the peculiar exigencies of this program and in order that the resources of pharmaceutical and chemical firms may be brought to bear with a minimum of delay, certain exceptions to general Department policy will be permitted in the negotiation of industrial contracts for this program.

2. Industrial research contracts for this program may contain either:

a. the standard patent clauses, reserving to the Surgeon General the right to determine the disposition of inventions arising from the performance of the contract or, in lieu of such right,

b. standard alternative clauses leaving the right to patent and exploit such inventions with the contractor, subject to certain limitations deemed necessary to protect the public's interest in the results of the contracted research.

3. Department policy concerning the negotiation and operation of the alternative clauses:

a. *Contract negotiations:* The alternatives indicated will be made available in the negotiations with all contracting companies without discrimination.

b. *Public interest:* The operation of these alternative clauses will be closely reviewed to assure that the following basic objectives are maintained in the public interest:

(1) The availability of information concerning the results of research and the right, without undue delay, to make disclosures to the extent essential to serve the research need;

(2) The availability for development and use of health purposes, on reasonable terms, of inventions arising from the research contract, whether actual development and production is to be made by the contractor himself or by others; and

(3) Sustained concentration on the anti-cancer objective of all resources mobilized for the purposes of the contract.

c. *Contractor's interests:* The Surgeon General or his representatives shall maintain close consultations with the contractor concerning questions affecting the public need for the products of inventions which are subject to the limitations prescribed in the alternative clauses for the protection of the public interest with respect to their supply, price, and quality. The objective of these consultations shall be to promote a mutual awareness of such matters in order to assure to the contractor (under his right to exploit the invention) an opportunity on his own initiative to take such actions regarding them as he believes would be in his and in the public interest.

B. *Contracts for research—Rights left to contractor.* When the contract is for research (including contracts for product development necessary for purposes of research) to be performed by the company (with or without provision for subcontracting), the contract, as an alternative to the standard patent clauses, may provide for leaving to the contractor the right to patent and exploit any invention conceived or first actually reduced to practice in the course of the performance of the contract subject, however, to the following limitations which are deemed necessary to protect the public interest:

1. *Reporting.* Agreement that the contractor will report promptly to the Surgeon General any such invention and will also report promptly the filing of any domestic or foreign patent application thereon or his election not to file such application. Invention Report shall be required after the conception or first actual reduction to practice of each invention that reasonably appears to be patentable and, in any event, as soon as any evidence of utility has been developed (whether in a health or other field of use).

2. *Disclosure.* Reservation to the Surgeon General of the right to make disclosure of the invention, whenever he deems it in the public interest, after taking into consideration a reasonable opportunity to the contractor to protect such rights as he may have in the invention. The contract may specify that such disclosure shall not in any case, without the consent of the contractor, be made in less than six months from the time the Surgeon General determines the invention was or should have been reported.

3. *License to the Government.* Reservation to the Government of an irrevocable, nonexclusive, royalty-free license to practice or cause to be practiced, by or for the Government throughout the world, each subject invention (whether patented or unpatented) in the manufacture, use or disposition according to law of any article or material or in the use of any method or process.

4. *Failure to meet health needs.*

a. In recognition of the Government's investment and the public interest in the results of contracted research, agreement that whenever, subsequent to the contractor's filing of a patent application for any invention conceived or first actually reduced to practice in the course of the performance of a contract, the Surgeon General, after obtaining and considering the advice of such advisory bodies or consultants as he deems appropriate and competent, has ground to believe that such invention, whether related to a product, process, or otherwise, is as such stage of development that if it were more generaly available it would meet a health need and that the public interest [1] requires the invention to be available for health purposes to others than the contractor and his licensees, he shall so notify the contractor, giving reasons therefore, and request him, within a time specified, to take appropriate steps to meet the public need, which may include the issuance of licenses to additional manufacturers of the contractor's own selection. (Such requests shall be supplementary to such informal consultations between the Surgeon General or his representative and the contractor as have taken place in accordance with the provisions of section A.3c above.)

[1] With respect to supply, quality, or price.

b. If, upon expiration of the time specified, or such extension thereof as approved by the Surgeon General, the Surgeon General finds that the contractor has failed to take appropriate steps adequate to meet the public need, he shall notify the contractor, with reasons therefor, that at the end of 90 days from such notice he will exercise the rights specified below. If within 20 days of receipt of such notice the contractor fails to file a written request for a hearing as provided below, the Surgeon General shall upon expiration of the above 90-day period have the right:

(1) to dedicate to the public all rights in the invention [2] or;

(2) to issue (under or in anticipation of the issuance of any such patent) nonexclusive, royalty-free licenses (for practice of the invention for any health purpose) on a nondiscriminatory basis to all qualified applicants to use, manufacture and sell embodiments of the invention for any health purpose.[3]

c. If, within 20 days of receipt of notice, the contractor files such request for a hearing, the Surgeon General, or a representative or representatives designated by him for this purpose, shall afford the contractor a reasonable opportunity to be heard, to be represented by counsel, to present any pertinent information and argument, and to rebut any other information to be considered in reaching a decision. The findings by the Surgeon General or such representative(s) shall be in writing, shall be based solely on the material presented at the hearing, and shall be final and binding on the contractor. If the Surgeon General's decision based on these findings be that the contractor has not met the public need and that public dedication or additional licensing by the Surgeon General is necessary in the public interest, he may so dedicate or license, effective at the end of the above-provided 90-day period or at the conclusion of the hearing, whichever is later.

5. *Contractor's determination not to patent—Failure to pursue application.* Agreement that in the event the contractor elects, within a period (not to exceed six months after the invention was or should have been reported) specified in the contract, not to file a patent application on the invention, or, having elected to file thereafter fails to file and diligently prosecute a patent application, the Surgeon General, when he deems it necessary in order to protect the availability of the invention for health purposes, shall have the right to require the assignment to the Government of all domestic rights therein except for the reservation of a nonexclusive royalty-free license to the contractor.

6. *Foreign Rights.* Similarly, agreement that if the contractor fails to file, or elects not to file, foreign patent applications which the Surgeon General determines are necessary to protect the availability of the invention for health purposes in other countries, the Surgeon General may require the assignment of the foreign rights.

7. *Renegotiation on new leads.* (Such a provision not mandatory). The contract may provide that if, in the course of the performance of the contract, the contractor identifies any new lead which it wishes to develop at its own expense, without utilization of facilities financed

[2] Such dedication to be effective against the contractor and any persons claiming from him upon filing by the Surgeon General with the Commissioner of Patents of notice of same.
[3] Either one or both of these alternatives shall be specified in the contract.

by the Government, the Surgeon General may, when he deems it consistent with advancement of the research purposes of the Government, renegotiate the application of the patent provisions of the contract to such new lead. Any modification of the terms of the contract shall be upon such consideration (which may be used to reduce the obligation of the Government under the contract) as the Surgeon General may deem equitable under the circumstances, after taking into consideration the extent of the investment of the Government in relation to the probable cost of further development.

C. *Contracting with suppliers for screening and testing only.*

1. When a company furnishes, for controlled screening and testing only, compounds or products not otherwise available to the Service and in which the company has a proprietary interest, the contract may provide that all rights in the compound or product shall remain in the company. It may additionally provide for confidentiality of the results for a limited period after the completion of the screening process and the report of the results by the Service to the supplier. Such period, as to results deemed significant for the research purpose, shall not exceed 12 months.

2. When the screening and testing of compounds obtained from the supplier under such a contract is carried out by an outside laboratory, the contract of the Service with the laboratory will contain provisions to safeguard the rights of the supplier under its contract with the Service.

D. *Invention by Federal Employees.* Inventions made by Federal employees, or by Federal employees jointly with others, are subject to determination under applicable Executive Orders and Department regulations. Appropriate reference to this requirement will be made in connection with contracts with suppliers of chemical compounds for use in research to be conducted by the Service, and contracts for research and development in which Federal employees may in any way participate.

E. *Background patents or rights.* Nothing in this policy statement shall be deemed to limit the authority of the Surgeon General to negotiate for a license or other rights under existing patents or involving the use of patented or unpatented compounds or processes, as he may deem necessary for the effective prosecution of the cancer chemotherapy program.

No. 2

MANUAL—GENERAL ADMINISTRATION

Part 6—Patents and Inventions

CHAPTER 6–20

DEPARTMENT PATENTS BOARD AND PATENTS OFFICES

6–20–10 Organization
20 Assignment of Responsibilities
30 Membership of Department Patent Board and Department Patents Officer

6–20–10 *Organization*

A. The Department Patents Board shall consist of a chairman and six other members of the Department appointed by the Secretary.

B. The Department Patents Officer shall be appointed by the Secretary and shall serve as a member of the Board if so designated by the Secretary. A Deputy Department Patents Officer may likewise be appointed.

6-20-20 *Assignment of Responsibilities*

A. The Department Patents Board shall:

1. Advise and consult with the Secretary and with appropriate Department personnel, including the Department Patents Officer and the Department's representatives on the Government Patents Board, on questions of patent policy affecting the Department.

2. Upon request, consult with and make recommendations to the Secretary, the Department Patents Officer, or the head of an operating agency, regarding the application of patent policies or procedures within the Department, or with respect to specific inventions.

3. In its discretion, after affording opportunity for an informal hearing, hear and determine on behalf of the Department, appeals from determinations relating to the ownership or patenting of employee inventions.

B. The Department Patents Officer shall:

1. Act as executive officer and secretary for the Department Patents Board.

2. Act either as the representative of the Department or as its alternate representative on the Government Patents Board, as designated by the Secretary; act as liaison officer for the Department with the Chairman of that Board and make such reports to him as may be appropriate; except where otherwise provided by the Secretary, represent the Department on any boards and committees and in other matters relating to inventions and patents.

3. Act as liaison officer for the Department with the Department of Justice on matters relating to patent policies and procedures.

4. Receive all determinations made by the heads of operating agency units relating to inventions made by Department employees, referring, if necessary, any such determinations to the Department Patents Board for its review and decision.

5. Receive for transmittal, with his recommendation where appropriate, matters relating to patents requiring consideration or action by the Department Patents Board or the Secretary.

6. Consult and advise, as feasible, with the various operating agency organizations and officers of the Department in the formulation and carrying out of policies and procedures relating to inventions and patents.

7. Be responsible for the maintenance of records concerning Government-owned patents for the administration of which the Department is responsible and for the handling of applications for licenses thereunder.

6-20-30 *Membership Department Patents Board and the Department Patents Officer*

A. The membership of the Department Patents Board shall consist of:

Miss Mary Switzer, *Chairman*, Director, Office of Vocational Rehabilitation

Mr. Homer D. Babbidge, Assistant Commissioner and Director of the Division of Higher Education, Office of Education

Mr. Edward B. Persons, Deputy Director, Division of Personnel Management, Office of Administration

Dr. John D. Porterfield, Deputy Surgeon General, Public Health Service

Mr. Richard L. Seggel, Executive Officer, National Institutes of Health

Mr. Dale S. Thompson, Director, Division of General Services, Office of Administration

Dr. Frank H. Wiley, Chief, Division of Pharmaceutical Chemistry, Food and Drug Administration

B. Department Patents Officer: (vacant).

Deputy Patents Officer: Mr. Edward J. Rourke, Assistant General Counsel, Public Health Division, Office of the General Counsel

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No. 3

NATIONAL INSTITUTES OF HEALTH

Inventions dedicated to the public through publication for the period 1953–58

EMPLOYEE INVENTIONS

Inventor	Title of invention	Journal reference
1953		
Crisp, Laurence R. and Stierli, Harry.	"Automatic Pipette Washing Machine."	Crisp, L. R. and Stierli, H.: Automatic Pipette Washing Machine, *Bib. Tech. Repts.*, U.S. Dept. Commerce, PB 111745.
White, WM. C.	"X-ray Sensitive Glass".	White, W. C.: Some Experiments on the Use of Glass as a Radiation Dosimeter, *Nucleonics*, (Oct.) 1953.
1954		
Steinberg, Daniel	"Split Lyophilization Flask".	Steinberg, D.: Split Lyophilization Flask, *Bib. Tech. Rpts.*, U.S. Dept. Commerce, PB 116937.
Nadel, Eli M.	"Tube-Separatory Funnel and Rocker for Rapid Extraction."	Nadel, E. M.: Tube-Separatory Funnel and Rocker for Rapid Extraction, *Chemist Analyst*, (Mar.) 1954.
Perrine, Theodore T.	"Stopcock With Needle-Valve Control."	Perrine, T. J.: Stopcock With Needle-Valve Control, *Anal. Chem.*, Vol. 28, p. 286, (Feb.) 1956.
Crisp, Laurence R. and Debroske, John M. F.	"Process of Preparation of Tooth Sections for Microscopy.	Crisp, L. R. and Debroske, J. M. F.: Process of Preparation of Tooth Sections for Microscopy, *Bib. Tech. Rpts.*, U.S. Dept. Commerce, PB 111471.
Highhouse, Frederick and Mencken, Calvin.	"Triple Automatic All-Glass Water Still."	Highhouse, F. and Mencken, C.: Triple Automatic All-Glass Water Still, *Rev. of Scien. Instr.*, Vol. 25, No. 10, pp. 1038–1039, (Oct.) 1954.
Gunkel, Ralph D.	"Self-Recording Tangent Screen for Visual Fields."	Gunkel, R. D.: Self-Recording Tangent Screen for Visual Field, *Amer. J. Pphth.*, 1955.

Inventions dedicated to the public through publication for the period 1953–58—Continued

EMPLOYEE INVENTIONS—Continued

Inventor	Title of invention	Journal reference
1955		
Brubach, Howard F.	"Dessicator Cover Remover and Sleeve Wrench."	Brubach, H. F.: Dessicator Cover Remover and Sleeve Wrench, *Science*, Oct. 21, 1955.
Bowman, Robert L.	"Spectrophotogluorometer"	Bowman, R. L.: Spectrophotogluorometer, *Science*, Vol. 122, No. 3167 (July) 1955.
1956		
Pierce, Charles E.	"Liquid-Liquid Continuous Extractor."	Pierce, C. E.: Liquid-Liquid Continuous Extractor, *Anal. Chem.*, Vol. 28, p. 2029 (Dec.) 1956.
Severinghaus, John W.	"Telecor"	Severinghaus, J. W.: Telecor, *Current Res. in Anes. and Analg.* (Apr.) 1957; *Rev. of Scien. Instr.* (Aug.) 1956.
Cole, Kenneth R.	"Bridge Circuit for Temperature Measurement with Semi-Conductors".	Cole, K. R.: Thermistor Thermometer Bridge, Linearity and Sensitivity for a Range of Temperature, *Rev. of Scien. Instr.*, Vol. 28, No. 5, 326-328 (May) 1957.
Noble, Frank W.	"Sonic Valve Catheter-Tip Manometer."	Noble, F. W.: Sonic Valve Catheter Tip Manometer, *Fed. Proc.*, Vol. 15, pp. 136–137, 1956; *Inst. of Radio Engrs. Transaction on Med. Electronics*, PGMR-8 (July) 1957.
1957		
Joram, Philip	"Vacuum Formed Disposable Paraffin Embedding Trays."	Joram, P.: Vacuum Formed Disposable Paraffin Embedding Trays, *U.S. Govt.* Res. Rpts., PB 131397.
Jenkins, Jack C.	"Invertor Rack"	Jenkins, J. C.: Invertor Rack, to be published in *U.S. Govt. Res. Rpts.*, U.S. Dept. Commerce.
Moore, John W.	"A Method for Reduction of Capacitative Currents."	(Final arrangements not completed.)
Moore, John W.	"Automatic Zero Volt Loss Current Meters."	Moore, J. W.: Automatic Zero Volt Loss Current Meters, *Rev. of Scien. Instr.* (to be published).
1958		
Cotlove, Ernest.	"Automatic Chloride Titrator."	Cotlove, E.: Automatic Chloride Titrator, *J. of Lab. & Clin. Med.*, (Mar.) 1958.
Fletcher, Hewitt G., Jr. and Diehl, Harry W.	"A Simplified Preparation of 2-Deoxy-*D*-Ribose."	Fletcher, H.G. and Diehl, H.W.: A Simplified Preparation of 2-Deoxy-*D*-Ribose, *Arch. of Biochem. and Biophy.*, (Dec.) 1955.

GRANTEE INVENTIONS

1954		
Nisselbaum, Jerome S. and Bernfeld, Peter, Tufts University.	"Purification and Isolation of Proteins by Electrophoresis on a Medium Consisting of a Modified Starch Paste."	Nisselbaum, J. S. and Bernfeld, P.: Report of the Sixth Annual Meeting of the Board of Scientific Advisers of the Tufts College Cancer Research & Cancer Control Unit, *Tufts—Cancer Research & Cancer Control Unit, 6th Annual Rpt.*, (Oct.) 1953.
Litsky, Warren, University of Massachusetts.	"Rapid Pasteurization of Fluids by Continuous Passage Through a Stainless Steel Tube Which is Heated by Electrical Resistance."	Litsky, W.: An Apparatus for Establishing the Come-Up Time Process for the Heating and Pasteurization of Fluids, *Tech. Rpts.*, U.S. Dept. Commerce, (Aug.) 1953.
Green, Harold D., Wake Forest College.	"Electromagnetic Flowmeter"	Green, H.D., Denison, A. D., and Spencer, M. P.: Demonstration of Electromagnetic Flowmeter for Unopened Blood Vessels, *Fed. Proc.*, Vol. 13, No. 1, p. 643, 1954.
1955		
McShan, W. H., University of Wisconsin.	"A Simplified Procedure for the Preparation of Pituitary Follicle Stimulating Hormone."	McShan, W. H.: A Simplified Procedure for the Preparation of Pituitary Follicle Stimulating Hormone, *Proc. of Soc. of Exper. Bio. & Med.*, (Apr.) 1954.

GRANTED INVENTIONS—Continued

Inventor	Title of invention	Journal reference
1955—continued		
Nason, Alvin, Johns Hopkins University.	"Lipid Cofactor for the Enzymatic Reduction of Cytochrome C."	Nason, A.: Lipid Cofactor for the Enzymatic Reduction of Cytochrome C, *Science*, (July) 1955.
Fanta, Paul E. and Stein, Robert A., Illinois Institute of Technology.	"Synthesis with Sodium Nitromalonaldehyde."	Fanta, P. E.: Synthesis with Sodium Nitromalonaldehyde, Ph. D. Thesis, Illinois Institute of Technology, (June) 1955.
1956		
Stefanini, Mario, St. Elizabeths Hospital, Mass.	"Identification of Clot Retraction Promoting Factor in Platelets."	Magalini, S. I. and Stefanini, M.: Clot Retraction Promoting Factor (Retractin) in Platelets and Tissues, *Science*, Vol. 129, pp. 796, 796, 1956.
Price, Charles C., and Ulbright, Tilo L. V., University of Pennsylvania.	"New Compound '4-amino-5-hydroxymethyl-2-methyl-thiopyrimidine.'"	Price, C. C. and Ulbright, T. L. V.: New Compound "4-amino-5-hydrox"-ymethyl-2-methylthiopyrimidine,' *Chem. and Indust.*, (Sept.) 1956.
Robins, Roland K., New Mexico Highlands.	"Synthesis of 4-Amino- and 4-Substituted Aminopyrazolo (3-4-d) Pyrimidines and Several 1-Alkyl Derivatives."	Skipper, H. E., Robins, R. K. and Thomson, J. R.: Inhibition of Experimental Neoplasms by 4-Aminopyrazolo (3-4-d) Pyrimidine, *Proc. Soc. Exper. Bio. & Med.*, Vol. 89, pp. 594–596, 1955.
Burgess, Landry E., Meharry Medical College.	"An Antianemic and Growth Principle Isolated from the Developing Egg of the Grasshopper."	Burgess, L. E., Clark, S. S. and Rolfe, D. T.: Effect of Crystalline Vitamin B_{12} and of a Crystalline Grasshopper Pigment (GHP) on Experimental Anemia in Mice, *Fed. Proc.*, Vol. 15, No. 1, (Mar.) 1956; Burgess, L. E. and Rolfe, D. T.: Comparative Study of Growth-Promoting Activity of a Pteridine in Relationship to Thymidine & Vitamin B_{12}, *Fed. Proc.*, Vol. 14, No. 1, (Mar.) 1955; Burgess, L. E.: A Preliminary Quantitative Study of Pterine Pigment in the Developing Egg of the Grasshopper, *Arch. Bio.*, Vol. 20, No. 2, pp. 347–355, (Feb.) 1949.
Acheson, George A., Kahn, Julius B., and Vick, Robert L., University of Cincinnati.	"Dihydro-ousbain and dihydrodigitoxin have the characteristic effects of cardiac glycosides with a greatly increased safety margin."	Acheson, G. A., Kahn, J. B., and Vick, R. L.: Dehydro-ouabain and dihydrodigitoxin have the characteristic effects of cardiac glycosides with a greatly increased safety margin, *J. Pharm. & Exper. Therap.*, (Nov.) 1956.
1957		
Buswell, A. M., University of Florida.	"Rapid Method for Determining Optimal 'Alum' Dosages in Water Treatment."	Buswell, A. M.: Method for Automatic Control of Coagulant Dosage, *J. Am. Water Works Assn.*, Vol. 50, No. 4, (Apr.) 1958.
Morrison, Martin, Stotz, Elmer H., and Hamilton, Howard B., University of Rochester, U.S. Army (Hamilton).	"Procedure for Isolating the Enzyme, Lactoperoxidase by Ion Exchange Chromatography."	Morrison, M., Stotz, E. H., and Hamilton, H. B.: Procedure for Isolating the Enzyme, Lactoperoxidase by Ion Exchange Chromatography, *J. Bio. Chem.*, (Oct.) 1957.
Bercu, Bernard A., and Diettert, Gerald A., Washington University.	"Disposable Oxygenator"	(Final publication arrangements not completed.)
Geckeler, George D., and Burke, Norman B., Hahnemann Medical College and Hospital of Philadelphia.	"Microphone for low frequency vibrations."	Do.
1958		
Carroll, Donald W., Rollins College.	"5-N-Alyky-5-formyl-Hydantoins and Derivatives."	Henze, H. R., and Carroll, D. W.: 5-N-Alyky-5-formyl-Hydantoins and Derivatives, *J. Am. Chem. Soc.*, Vol. 76, p. 4580, 1954.
Martell, Arthur E., Clark University.	"Synthesis of New Pyridine Aldehydes as Models of Vitamin B_6."	Martell, A. E.: Synthesis of New Pyridine Aldehydes as Models of Vitamin B_6, *Tetrahedron*, (June) 1958.

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No. 4

List of inventions on which patent applications were filed, as of May 1959, on behalf of HEW

Inventor(s)	Type of invention
Drs. Jesse P. Greenstein and Vincent E. Price (employee invention). Pat. Application S.N. 173,474. Filed July 12, 1950. Abandoned Sept. 25, 1952.	"Method of Resolving Racemic Amino Acids."
Drs. Lloyd W. Law and Walter E. Heston (employee invention). Ser. No. 182,084. Filed Aug. 29, 1950. Abandoned Jan. 14, 1953.	"Feed Hopper."
Dr. Milton J. Allen (employee invention). Ser. No. 201,502. Filed Dec. 18, 1950. Rejected Oct. 10, 1952.	"Preparation of Substituted Bis-Aminophenyl Ethylene Glycols."
Dr. Jonathan L. Hartwell (employee invention). Ser. No. 203,240. Filed Dec. 28, 1950. Rejected Aug. 7, 1952.	"Pelatin Derivatives."
Dr. Milton J. Allen (employee invention). Ser. No. 58,632. Issued Jan. 30, 1951—U.S. Pat. No. 2,539,338.	"Preparation of Aminoindase."
Dr. Jonathan L. Hartwell (employee). Ser. No. 223,812. Filed Apr. 30, 1951. Rejected Dec. 1, 1952.	"Quarternary Ammonium Compounds."
Dr. Simon H. Wender (grantee), University of Oklahoma. U.S. Pat. No. 2,557,164. Issued June 19, 1951.	"Method of Isolating Quercitrin from Peanut Hulls."
Dr. Jonathan L. Hartwell (employee). Ser. No. 223,811. Filed Apr. 30, 1951. Rejected Nov. 8, 1952.	"Chemical Compounds."
Dr. Milton J. Allen (employee). U.S. Pat. No. 2,563,806. Issued Aug. 14, 1951.	"Preparation of Substituted Bisaminophenyl Ethylene Glycols."
Dr. Srinivasa Rajagopalan (PHS research fellow), Harvard University. U.S. Pat. No. 2,569,300. Issued Sept. 25, 1951.	"Selective Oxidation of Seroid Alcohols."
Dr. Bernard B. Davis (employee). U.S. Pat. No. 2,571,115. Issued Oct. 16, 1951.	"Isolation of Bacterial Mutants."
Drs. R. C. Elderfield and Eleanor Werble (grantees), Columbia University, New York City. U.S. Pat. No. 2,604,474. Issued July 22, 1952.	"Primaquine."
Dr. Louis J. Pecora (employee). U.S. Pat. No. 2,611,368. Issued Sept. 23, 1952.	"German-Silver Electro-Cardiograph Contact Electrodes."
Drs. Leon Levintow and Jesse P. Greenstein (employees). U.S. Pat. No. 2,616,828. Issued Nov. 4, 1952.	"Method of Enzymatic Resolution of Amino Acids."
Drs. Donald L. Snow and Cyril S. Staub (employees). U.S. Pat. No. 2,649,727. Issued Aug. 25, 1953.	"Chemical Fume Hood."
Dr. Herbert Kahler (employee). U.S. Pat. No. 2,651,236. Issued Sept. 8, 1953.	"Electrically Controlled Thermal Expansion Device."
Dr. Hugh Chaplin, Jr. (employee). Ser. No. 409,904. Filed Feb. 28, 1954. Abandoned Feb. 14, 1955.	"Preservation of Blood."
Dr. Albert E. Sobel (grantee), the Jewish Hospital of Brooklyn. Ser. No. 487,715. Filed Feb. 11, 1955.	"Collagen Chondroitin Sulfate Complexes."
Drs. Wilton R. Earle, Virginia Evans, Mr. Edward L. Schilling, Mr. Jay C. Bryant (employees). Serial No. 506,681. Filed May 6, 1955.	"Fluid Suspension Culture Method for Fixed Tissue Cells."
Dr. Joseph Portnoy (employee). Pat. Application No. 610,046. Filed Sept. 12, 1956.	Process for preparing active fraction of virulent treponema pallidum.
Drs. Ralph Jones, Jr., Charles C. Price, Achintya K. Sen (grantees), University of Pennsylvania. Ser. No. 655,452. Filed Apr. 26, 1957. Rejected Mar. 19, 1958.	"Quinoline-Type Mustards and Process for Producing Same."
Dr. Paul Talalay (employee). U.S. Pat. No. 2,796,382. Issued June 18, 1957.	"Microbiological Transformation of Steroids."
Franz J. Maier (employee). Pat. No. 2,802,391. Granted Aug. 18, 1957.	"Improved Colorimeter."
Franz J. Maier and Ervin Bellack (employees). Pat. Application 693,216. Filed Oct. 29, 1957.	"Method of Using Fluorspar for Fluoridation."
Dr. Max Strumia (grantee), Bryn Mawr Hospital. U.S. Pat. No. 2,845,929. Issued Aug. 5, 1958.	"An Apparatus for the Collection and Cooling of Blood."
Drs. Wilton R. Earle and Frederick Highhouse (employees). U.S. Pat. No. 2,858,036. Issued Oct. 28, 1958.	"Culture Flasks for Use With Plane Surface Substrate Tissue Cultures."
Drs. Everette L. May and Nathan B. Eddy (employees). Ser. No. 771,165. Filed Oct. 31, 1958.	"New Benzomorphans and Preparation Thereof."
Drs. Everette L. May and Nathan B. Eddy (employees). Ser. No. 771,166. Filed Oct. 31, 1958. Preliminary rejection Mar. 16, 1959.	"Improved Analgesic Drugs (Benzomorphans)."

Public Health Service application form for research grants

(Leave Blank) Received Date	Department of HEALTH, EDUCATION, AND WELFARE PUBLIC HEALTH SERVICE NATIONAL INSTITUTE OF HEALTH	(Leave Blank)
Council Assigned	Mail Completed Application to: Division of Research Grants National Institutes of Health Bethesda 14, Md.	Formerly
Action		

APPLICATION FOR RESEARCH GRANT

Date_____

Application is hereby made for a grant in the amount of $_____ (omit cents) for the period from _____ (month) _____ (day) _____ (year) through _____ (month) _____ (day) _____ (year), inclusive

for the purpose of conducting a research project entitled (Limit to 53 typewriter spaces):

TITLE OF PROJECT:

Check One:

☐ NEW PROJECT ☐ SUPPLEMENT TO PHS GRANT NO._____

☐ RENEWAL OF PHS GRANT NO._____ ☐ REVISION OF PHS APPLICATION NO._____

Principal Investigator	Co-Principal Investigator, if any:
Name (First) (Middle) (Last)	Name (First) (Middle) (Last)
Title	Title
Dept.	Dept.
School	School
University or Institution	University or Institution
Street Address	Street Address
City and State	City and State
Name, Title and Address of Financial Officer:	Check to Be Drawn as Follows:

AGREEMENT

It is understood and agreed by the applicant: (1) That funds granted as a result of this request are to be expended for the purposes set forth herein; (2) that the grant may be revoked in whole or part at any time by the Surgeon General of the Public Health Service, provided that a revocation shall not include any amount obligated previous to the effective date of the revocation if such obligations were made solely for the purposes set forth in this application; (3) that all reports of original investigations supported by any grant made as a result of this request shall acknowledge such support; (4) that, if any invention arises or is developed in the course of the work aided by any grant received as a result of this application, the applicant institution will either (a) refer to the Surgeon General for determination, or (b) determine in accordance with its own policies, as formally stipulated in a separate supplementary agreement entered into between the Surgeon General and the grantee institution, whether patent protection on such invention shall be sought and how the rights in the invention, including rights under any patent issued thereon, shall be disposed of and administered, in order to protect the public interest.

NAME OF INSTITUTION _____

ADDRESS _____

CITY AND STATE _____

NAME AND TITLE OF OFFICIAL AUTHORIZED TO SIGN FOR INSTITUTION *(Please Type)* _____

PERSONAL SIGNATURE _____ (use ink)

(This agreement must carry the actual signature of the official whose name appears on the line above.)

PAGE 1

PHS 398 (Rev. 9-57)

Form Approved Budget Bureau No. 68-R249.2

No. 6

Nonprofit Institutions With Which Patent Agreement Has Been Reached

California Institute of Technology, Pasadena, Calif.
Cornell University, Ithaca, N.Y.
Florida State University, Tallahassee, Fla.
Harvard University, 25 Shattuck Street, Boston, Mass.
Iowa State College of Agriculture & Mechanic Arts, Ames, Iowa.
Massachusetts Institute of Technology, Cambridge, Mass.
Michigan State College, East Lansing, Mich.
Mt. Sinai Hospital, 5th Avenue and 100th Street, New York, N.Y.
Northwestern University, 619 Clark Street, Evanston, Ill.
Ohio State University, Columbus, Ohio.
Purdue University, Lafayette, Ind.
Princeton University, Princeton, N.J.
State College of Washington, Pullman, Wash.[1]
Tufts University, Medford, Mass.
University of California, 240 Administration Building, Berkeley, Calif.
University of Illinois, Urbana-Champaign, Ill.
University of Kansas (Lawrence only), Lawrence, Kans.
University of Minnesota, Minneapolis, Minn.
University of Washington, Seattle, Wash.

No. 7

Invention and Patent Policies Acceptable to the Public Health Service

The policy of the Department of Health, Education, and Welfare on Inventions Resulting from Research Grants, Fellowship Awards, and other Research Arrangements, recognizes the cooperative nature of research aided by Public Health Service grants-in-aid. For this reason it offers alternative conditions with respect to the handling of patentable inventions which may arise out of activities assisted by the grant. Either the Surgeon General of the Public Health Service may reserve the right to determine the ownership of the invention and its disposition or such inventions may be administered by the grantee-institution in accordance with its own patent policies and procedures, provided the Surgeon General accepts these as assuring that the invention either will be dedicated to the public or, if patented, will be made available without unreasonable restrictions or excessive royalties.

Policies and procedures outlined below are types which may give such assurance. Institutions which may not as yet have formulated a policy with respect to inventions developed from research financed in part with public funds may find this outline of some assistance in the formulation of their own procedures.

[1] Agreement reached subsequent to the Department's letter of Nov. 15, 1957.

A. DEDICATION TO THE PUBLIC OF RESULTS OF RESEARCH EITHER BY PUBLICATION OR PATENTING WITH SUBSEQUENT DEDICATION OF THE PATENTS

The Surgeon General will accept this policy in any case where it is demonstrated that the grantee-institution has a responsible body or official to see that the policy is effectuated.

As stated in the Department Regulations on grantee inventions, dedication to the public in general seems most appropriate for inventions developed with the assistance of public moneys. Many institutions, particularly insofar as inventions related to health are concerned, also adhere to this principle.

B. PATENTING WITH ROYALTY-FREE LICENSING

A general policy of issuing royalty-free, unconditional, and nonexclusive licenses under patents obtained is equally acceptable. In administering such a policy there may be times when in the judgment of the institution the interests of the public in a particular patent will be best served by (1) conditional licensing, providing standards as to the quality of the product or the qualifications of the manufacturer, or (2) restricted licensing for a limited period to assure the development of the invention to the point of utility and satisfactory quality. Decision as to the necessity for either such arrangement would be that of the grantee-instituion, but prior to accepting the institution policy the Public Health Service would require general assurance that under the institution policy exclusive licenses would be the exception, not the rule and that they would be for a limited period only. In the case of institutions which do issue exclusive licenses, the Public Health Service would further require full information as to the basis on which such licenses are issued and the safeguards utilized to protect the public interest.

C. PATENTING WITH LICENSING ON A ROYALTY BASIS

Licensing as provided in B which provides for royalties in some or even all cases will also be considered acceptable policy. In such case the royalty rates must however be reasonable and a royalty-free license to the Government with power to sublicense for all governmental purposes will be required in all cases.

The Public Health Service realizes that there are conditions at certain institutions which in the estimation of the institution make royalties desirable, if not mandatory, in order to provide reimbursement of the funds spent to secure patents, incentive awards to the inventor, and support of research. When this policy is adopted it is the view of the Service that the royalty charged should not in any case exceed the rate acknowledged as normal trade practice, and that lower rates are more appropriate for licenses issued by public institutions.

The Service believes that profits realized from these royalties should be applied to teaching and research functions except for proportionate costs of administration of institution patent business. In view of the purposes for which Public Health Service grants-in-aid funds are

appropriated, it would be preferable from the Service's point of view that any profits from royalties be used to support additional research. Any policy which makes the inventor the primary recipient of royalties would not be acceptable.

D. ASSIGNMENT OF OWNERSHIP RIGHTS TO A QUALIFIED ORGANIZATION

The Service will not object to policies which provide for the assigning of patent rights to a reputable organization, when the agreement between the institution and that organization gives assurance that administration of the patents will be within the limits indicated above.

General requirements

Before accepting the policies of an institution, the Service would like assurance that they have been formally adopted by appropriate institution officials; that an administrative body has been established, or some responsible official has been designated, to carry out the program; and that the institution's history of operation has been consistent with its promulgated policies.

Principles of ownership

It is assumed that all institutions wishing to administer inventions arising under Public Health Service grants-in-aid have established principles to determine the equities of the inventor, the institution, and the sponsor therein. A number of institution policies with which the Service is familiar provide that under certain conditions the invention may be left to the inventor. The Service would consider the following criteria as satisfactory to determine the equities of the inventor and the institution. (These are the criteria applied by the Federal Government to inventions made by its employees):

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

(*b*) In any case where the contribution of the institution, as measured by any one or more of the criteria set forth in paragraph (*a*) last above, to the invention is insufficient equitably to justify a requirement of assignment to the institution of the entire right, title and interest to such invention, or in any case where the institution has insufficient interest in an invention to obtain entire right, title and interest therein, the institution may leave title to such invention in the employee, *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, such reservation, in the terms thereof, to appear, where practicable, in any patent, domestic or foreign, which may issue on such invention.*

Reports

A report will be required on all patentable inventions as described in the following discussion of special applications of Department Regulations. In addition to the initial invention report, an annual report, for informational purposes, of the disposition of inventions in which it has an interest is requested. It is not proposed to review

the institution's decision as to whether or not patenting is desirable, unless so prescribed by the institution.

Explanation of special applications of Department Regulations on Inventions Resulting from Research Grants, Fellowship Awards, and other Research Arrangements.

Disposition of inventions.—It will be noted in Paragraph 8.1 of Department Regulations that the policy provides that inventions arising under Public Health Service grants-in-aid (and awards) are to be handled (a) by the Surgeon General on a case by case determination, or (b) by the grantee institution in accordance with its established practices and policies, after those policies with such modifications as may be agreed upon have been accepted by the Surgeon General as assuring that the invention will be made available without unresonable restrictions or excessive royalties. Institutions desiring to be considered under (b) should advise the Division of Research Grants. It is understood that institutions which do not take such action wish to continue on the basis of case by case determinations by the Surgeon General.

Responsibility.—It is the primary responsibility of the institution and not of the personnel engaged in work assisted by the grant to comply with Public Health Service patent provisions. The Service does not require the individual to sign a statement of agreement on patent rights[1] since it believes the institution should administer such matters. Accordingly a provision on patentability is contained in the grant-in-aid application blank, which is signed by an official of the grantee institution, and which may or may not be supplemented by a letter of agreement between the Division of Research Grants representing the Surgeon General, and the grantee institution. Grantee institutions are expected, therefore, to take whatever action they deem necessary to enable them to comply with the agreements they make with the Public Health Service relating to patentable inventions.

Reportability of research results as "inventions."—All "inventions" developed with the assistance of Public Health Service grants-in-aid which are or may be patentable must be reported to the Division of Research Grants regardless of whether the grantee institution has the agreement of the Surgeon General to handle inventions in accordance with its own policies or whether an individual determination is to be made by the Surgeon General. The method by which such reporting is insured is at the discretion of the institution. It is not the desire of the Public Health Service to require or encourage investigators to scrutinize research results for minor patentable features. The Service will consider that the institution has discharged its duty in this respect if there are reported those accomplishments which the investigator and the institution think are both patentable and of sufficient importance to justify publication, or are of sufficient importance to justify investigation for patentability by the inventor or local institution if the Public Health Service were not concerned. It is not to be assumed in this connection that progress reports may serve as substitutes for reports of inventions.

[1] This is not true for the research fellowships and certain of the traineeships awarded by the Service, where there is a direct relationship between the Service and the fellow or trainee. In such programs the individual is required to sign a statement on inventions.

No. 8

Patent Policy Applicable to Research Contracts, Department of Health, Education, and Welfare Between September 9, 1957, and July 31, 1958

GENERAL

The Department of Health, Education, and Welfare as a matter of overall policy takes the position that the results of research which are developed with the aid of public funds in the field of its programs should be utilized in a manner which will best serve the public interest. It considers that the public interest will in general be best served if advances resulting therefrom are made freely available to the Government, to science, to industry, and to the general public. Regulations to secure these objectives have been developed and are controlling with respect to research within the Service and under its grant programs.

Contracts for research, whether or not with nonprofit organizations, will be required to conform to the same Departmental policy, under standard clauses adopted to provide that any invention first conceived or actually reduced to practice in the course of the performance of the contract shall be promptly and fully reported to the head of the constituent organization responsible for the contract, for determination by him as to the manner of disposition of all rights in and to such invention, including the right to require assignment of all rights to the United States or dedication to the public. In the exercise of this power the organization head will be guided in general by the policies specified in departmental regulations with respect to grants.

CANCER CHEMOTHERAPY CONTRACTS

The cancer chemotherapy program of the Public Health Service is an intensified effort, with special appropriations made available under a congressional directive, to explore exhaustively and rapidly the potentialities of chemical compounds in the control of cancer. Because of the peculiar exigencies of this program and in order that the resources of pharmaceutical and chemical firms may be brought to bear with a minimum of delay, certain exceptions to general Department policy will be permitted in the negotiation of industrial contracts for this program.

Industrial contracts for this program may contain either (1) the standard patent clause, reserving to the Surgeon General the right to determine the disposition of inventions arising from the performance of the contract, or (2) standard alternative clauses developed to give effect to the following criteria. The alternatives indicated will be made available in the negotiations with all contracting companies without discrimination. The operation of these alternative clauses will be closely reviewed to assure that the following basic objectives are maintained in the public interest:

(1) The availability of information concerning the results of research and the right, without undue delay, to make disclosures to the extent essential to serve the research need;

(2) The availability for development and use for health purposes, on reasonable terms, of inventions arising from the research contract, whether actual development and production is to be made by the contractor himself or by others; and

(3) Sustained concentration on the anticancer objectives of all resources mobilized for the purposes of the contract.

I. Contracts for research

When the contract is for research to be performed by the company (with or without provision for subcontracting), the contract will contain either the standard patent clauses, as indicated under "GENERAL" above, or alternative standard clauses to provide, with respect to any invention conceived or first actually reduced to practice in the course of the performance of the contract, for each of the following:

(1) *Reporting.*—Prompt reporting to the Surgeon General of any such invention and prompt report of the filing of any patent application thereon;[1]

(2) *Disclosure.*—Reservation to the Surgeon General of the right to make disclosure of the invention whenever he deems it in the public interest, after taking into consideration a reasonable opportunity to the contractor (not to exceed 6 months from the time the Surgeon General determines the invention was or should have been reported) to protect such rights as the contractor may have in the invention;[1]

(3) *Government license.*—Reservation to the Government of an irrevocable, nonexclusive, royalty-free license under any patent which may issue thereon for all uses by or for the Government of the United States throughout the world;[2]

(4) (*a*) *Reservation of right to protect the public interest.*—Agreement that if, at any time, after a *minimum period* designated in the contract, but not in any case to exceed 1 year from the issuance of a patent thereon or 3 years from the date of the filing of anplication therefor, whichever is earlier, the Surgeon General shall deem it necessary in order to assure an adequate supply of the product for any health purposes served by the product, at a reasonable price and of high quality, the Surgeon General shall have the right to issue sublicenses (under or in anticipation of the issuance of any such patent) to other pharmaceutical and/or chemical companies to use, manufacture, and sell embodiments of the invention for any health purpose;[3]

(*b*) *Sublicensing by contractor.*—Agreement by the contractor to hold any such patent available for nonexclusive licenses to other pharmaceutical and/or chemical companies on a royalty basis not to exceed normal trade practices;[4]

(*c*) *Renegotiation provision on new leads.*—Provision that if, in the course of the performance of the contract, the contractor identifies any new lead having no apparent significance for health purposes which it wishes to develop at its own expense, without utilization of facilities financed by the Government, and for purposes other than health, the Surgeon General may, when he deems it consistent with advancement of the primary research

[1] This provision mandatory for all contracts.
[2] Provision for a license to the Government is mandatory for all contracts. However, it is permissible to provide that the license shall be for such use by or for the Government in the diagnosis, cure, mitigation, treatment, or prevention of disease in man, including use in research conducted for such purpose.
[3] Inclusion of this provision is mandatory for all contracts.
[4] Inclusion of this provision is desirable but not mandatory. If included, the contract may provide that such sublicenses shall be (1) for all purposes or (2) for all health-related purposes.

purpose, renegotiate the application of the contract to such new lead. Any modification of the terms of the contract shall be upon such consideration (which may be used to reduce the obligation of the Government under the contract) as the Surgeon General may deem equitable under the circumstances, after taking into consideration the extent of the investment of the Government in relation to the probable cost of further development; [5]

(5) *Assignment of domestic rights.*—Agreement that in the event the contractor elects, within a period (not to exceed 6 months after the invention was or should have been reported) specified in the contract, not to file or continue the prosecution of a patent application on the invention, or fails to file and diligently prosecute a patent application, the Surgeon General, when he deems it necessary in order to protect the availability of the invention for health purposes, shall have the right to require the assignment of all domestic rights therein to the Government; and [6]

(6) *Assignment of foreign rights.*—Similarly, agreement that if the contractor fails to file, or elects not to file, foreign patent applications which the Surgeon General determines are necessary to protect the availability of the invention for health purposes in other countries, the Surgeon General may require the assignment of the foreign rights.[6]

II. Contracts with suppliers of chemical compounds for screening and testing only

When a company furnishes, for controlled screening and testing only, unpatented compounds or products in which the company has a proprietary interest, the contract may provide that all rights in the compound or product shall remain in the company. It may additionally provide for confidentiality of the results for a limited period after the completion of the screening process and the report of the results by the Service to the supplier. Such period, as to results deemed significant for the research purpose, shall not exceed 12 months.

When the screening and testing of compounds obtained from the supplier under such a contract is carried out by an outside laboratory, the contract of the Service with the laboratory will contain provisions to safeguard the rights of the supplier under its contract with the Service.

Contracts of this type are permissible only when the screening and testing is of routine and prescribed character, use of the compound under the contract is limited to such screening and testing, and the compound is not otherwise available to the Service. Nothing in this policy statement shall be deemed to limit the authority of the Surgeon General to acquire, by purchase, license or other rights under existing patents as may be necessary for the effective prosecution of this program.

[5] Inclusion of a renegotiation provision is not mandatory.
[6] This provision is mandatory for all contracts.

III. Inventions by Federal employees

Inventions made by Federal employees, or by Federal employees jointly with others, are subject to determination under applicable Executive orders and Department regulations. Appropriate reference to this requirement will be made in connection with contracts with suppliers of chemical compounds for use in research to be conducted by the Service, and contracts for research and development in which Federal employees may in any way participate.

Approved:

EDWARD FOSS WILSON,
Acting Secretary.

Dated: September 9, 1957.

No. 9

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

GENERAL PROVISIONS

December 1957

Clause 20. Patent rights

(a) Whenever any invention, improvement, or discovery (whether or not patentable) is made or conceived or for the first time actually or constructively reduced to practice, by the Contractor or its employees, in the course of, in connection with, or under the terms of this contract, the Contractor shall immediately give the Contracting Officer written notice thereof, and shall promptly thereafter furnish the Contracting Officer with complete information thereon; and the Surgeon General shall have the sole and exclusive power to determine whether or not and where a patent application shall be filed, and to determine the disposition of all rights in such invention, improvement, or discovery, including title to and rights under any patent application or patent that may issue thereon. The determination of the Surgeon General on all these matters shall be accepted as final and the provisions of the Clause of this Contract entitled "DISPUTES" shall not apply; and the Contractor agrees that it will, and warrants that all of its employees who may be the inventors will, execute all documents and do all things necessary or proper to the effectuation of such determination.

(b) Except as otherwise authorized in writing by the Contracting Officer, the Contractor shall obtain patent agreements to effectuate the provisions of this Clause from all persons who perform any part of the work under this Contract, except such clerical and manual labor personnel as will have no access to technical data.

(c) Except as otherwise authorized in writing by the Contracting Officer, the Contractor will insert in each subcontract, having experimental, developmental, or research work as one of its purposes, provisions making this Clause applicable to the subcontractor and its employees.

December 1, 1958

SUPPLEMENTAL AGREEMENT No. 2

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

PUBLIC HEALTH SERVICE

NATIONAL INSTITUTES OF HEALTH

Cost-Reimbursement Contract for Research and Experimental Work

Contractor: The Upjohn Co.
Address: Kalamazoo, Mich.
Place of Performance: Kalamazoo, Mich.
Purpose: To extend period of performance and provide additional funds for expansion of work.
Amount: $505,000.
Appropriation: 7590349, Allot. 92801, Proj. 95, C. Code 20106, Reqn. 202609.
Authority: Public Law 85–580, 85th Congress.

* * * * * * *

Clause 20, Patent Rights, of the General Provisions, hereby is deleted in its entirety and the attached Clause 20 is inserted in lieu thereof.

Unless otherwise amended hereby, all provisions of this contract remain in full force and effect.

No. 10

CLAUSE 20. PATENT RIGHTS

A. *Definition of "Subject Invention".* The term "Subject Invention", as used throughout this Clause, means any invention, improvement, or discovery (whether or not patentable) made or conceived or first actually or constructively reduced to practice by the Contractor or its employees, in the course of, in connection with, or under the provisions of this contract.

B. *Reports of Inventions.* The Contractor shall make a written Invention Report to the Contracting Officer promptly after either (a) the conception or (b) first actual or constructive reduction to practice, but in any event as soon as *any* evidence of utility has been developed (whether in a health or other field of use) of each Subject Invention that reasonably appears to be patentable.

(1) Such Report shall be furnished directly to the Contracting Officer, separate and distinct from and independent of any other requirement under this contract for the submission of reports and whether or not reference to such Subject Invention has been made in any progress or other report furnished to Government technical personnel.

(2) Such Report shall sufficiently describe and identify each Subject Invention, appropriately illustrated by simple sketch or diagram, to permit the invention to be understood and evaluated.

If a patent application is filed promptly by the Contractor in the U.S. Patent Office, a copy of such application furnished promptly to the Contracting Officer shall fully satisfy the reporting requirement, it being understood, however, that the Contractor shall furnish such additional information as the Surgeon General, in his sole discretion, may require for the purpose of making the disclosure provided for in paragraph D hereof.

(3) The Report may, in addition, include a statement by the Contractor specifying whether or not a United States patent application claiming such invention has been or will be filed by or on behalf of the Contractor. If the Contractor specifies that such an application will not be filed (or having specified that it will file, thereafter, notifies the Contracting Officer to the contrary), the Contractor shall promptly inform the Contracting Officer of the date and identity of any known publication of such invention made by or known to the Contractor or, where applicable, of any contemplated publication to be made by or known to the Contractor and shall, in addition, execute such documents as may be necessary or appropriate to comply with the requirements of paragraph E hereinbelow.

(4) Within 6 months from the date the Invention report required by this paragraph was in fact received or should have been received by the Contracting Officer (as determined by the Surgeon General) the Contractor shall notify the Contracting Officer in writing of his election to file or not to file a United States patent application.

C. *Certifications.*

(1) If the Contract continues in effect for more than a year, the Contractor shall submit to the Contracting Officer periodic certifications, not less often than once every 12-month period, commencing with the date of the Contract, stating whether or not any Subject Inventions reasonably believed to be patentable were conceived or first actually or constructively reduced to practice during the preceding 12 months. The Contractor shall, in such certifications,

(a) list any such inventions,

(b) give references, including date, to each written report, if any, previously submitted, and

(c) submit reports and related information as provided in B above if this has not already been done.

(2) Prior to final settlement of this Contract, the Contractor shall furnish to the Contracting Officer a final report listing all such inventions including those listed in prior reports and furnishing the information respecting such inventions required by B above if not previously furnished.

D. *Disclosure.* The Surgeon General shall have the right to publish and make disclosure of any Subject Invention, whenever deemed by him in the public interest, after either

(1) an application for a United States or foreign patent is filed, or

(2) the expiration of 6 months from date the Invention Report, provided in paragraph B of this Clause, was in fact received, or

should have been received by the Contracting Officer (as determined by the Surgeon General), whichever is earlier.

E. *Assignment of Domestic Rights.* The Surgeon General shall have the further right to require, when he deems such action necessary in order to protect the availability of the invention for health purposes, that all domestic rights in any Subject Invention, including all right, title and interest in, to, and under any patent application and patent that may issue thereon (except, however, for the reservation of a non-exclusive, royalty-free license to the Contractor) be assigned to the Government, at any time after the earlier of any one of the following occurrences:

(1) The Contractor gives the Contracting Officer written notice of election not to file, or continue prosecution of, an application for a United States Patent; or

(2) The Contractor having elected to file and having notified the Contracting Officer, in conformance with B(4) above, of such election, fails to file promptly thereafter (as determined by the Surgeon General) an application for a United States patent; or

(3) An application for a United States patent is filed but is not diligently prosecuted (as determined by the Surgeon General).

In addition, the Contractor shall, upon request of the Surgeon General, promptly furnish him with all information relating to the date and identity of any known publication of such invention made by or known to the Contractor or, where applicable, of any contemplated publication to be made by or known to the Contractor.

F. *Assignment of Foreign Rights.* The Surgeon General shall have the further right to require, when he deems such action necessary to protect the availability of the invention for health purposes in another country, or other countries, that all foreign rights in any Subject Invention, including all right, title and interest in, to, and under any patent application and patent that may issue thereon in such country or countries, be assigned to the Government, at any time, and from time to time, after the earlier of any one of the following occurrences:

(1) The Contractor gives the Contracting Officer written notice of election not to file, or continue prosecution of, an application for a patent in such country or countries; or

(2) Upon the expiration of 6 months after the right has accrued in the Surgeon General, under the provisions of paragraph E of this Clause, to require the assignment of domestic rights, application has not been filed by Contractor for patent on Subject Invention in such foreign country or countries; or

(3) Upon the expiration of 9 months after date a corresponding United States application is filed, application has not been filed by Contractor for patent on Subject Invention in such foreign country or countries.

G. *Other Notices and Inspection of Patent Application.* The Contractor shall

(1) give prompt written notice to the Contracting Officer of

(a) date and content of any publication of Subject Invention made prior to the filing of application for United States patent thereon,

(b) date Subject Invention or any embodiment thereof was first in public use or on sale in the United States,

(c) date and content of assignment of any right, title, or interest in Subject Invention, including right, title, or interest in, to, and under any patent application and patent that may issue thereon,

(d) the filing of any application for a United States or foreign patent on Subject Invention,

(e) Contractor's election not to continue prosecution of any United States patent application on Subject Invention not less than 60 days before expiration of the response period, and

(f) issuance of an United States or foreign patent on Subject Invention; and

(2) furnish promptly to the Contracting Officer on request an irrevocable power of attorney to inspect and make copies of each United States patent application covering Subject Invention.

H. *License to Government.* The Contractor shall grant, or cause to be granted, and the Contractor does hereby grant, unto the Government an irrevocable, nonexclusive, royalty-free license or licenses to practice and cause to be practiced, by or for the United States Government throughout the world, each Subject Invention (whether patented or unpatented) in the manufacture, use, or disposition according to law, of any article or material, or in the use of any method or process.

I. *Licensing by Government.*

(1) The Contractor shall grant, or cause to be granted, and the Contractor does hereby grant unto the Government, the right, subject only to the limitations provided for in subparagraph (3) of this paragraph, exercisable at any time or from time to time subsequent to the Contractor's filing of a patent application on any Subject Invention, to dedicate to the public all rights in the invention or to issue (under or in anticipation of the issuance of any patent on the Subject Invention) non-assignable, non-exclusive licenses (for the practice of the invention for any health purpose) and revocable by the Government only, royalty-free without regard to prior license or agreement which may have required payment of royalties, on a non-discriminatory basis to all applicants determined by the Surgeon General in his sole discretion to be qualified, to use, manufacture and sell embodiments of the invention, whether related to a product, process or otherwise, for any health purpose, when and if the Surgeon General finds that the Contractor has not met the public need and that the public dedication or additional licensing by the Surgeon General is necessary in the public interest.

(2) Contractor agrees that any license or other privilege of use issued to any other person under or in anticipation of the issuance of any patent, whether with or without royalty or on an exclusive or non-exclusive basis for the practice of Subject Invention, shall be made only after furnishing notice to such licensee or permitee of the terms of this Clause and shall further be made subject to the provisions hereof.

(3) The right of the Surgeon General to issue the licenses provided for in I(1) above shall be exercisable in conformance with the procedures hereinafter provided and only after:

(a) The Surgeon General has obtained and considered the advice, to the extent, on such terms, and with respect to such matters or issues as he in his sole discretion determines suitable, of such advisory bodies or consultants as he deems appropriate and competent in the particular situation; and

(b) thereafter, the Surgeon General has notified the Contractor, in writing, that he has ground to believe that such invention is at such stage of development that if it were more generally available it would meet a health need and that the public interest, with respect to an adequate supply, a reasonable price consistent with normal trade practices under competitive conditions, or maintenance of quality, requires the invention to be available to others than the Contractor and his licensees and, accordingly, the public interest requires the exercise of the right provided for in I(1) above, stating the reasons therefor. Such notice shall contain a request that the Contractor, within a time specified in such notice, take appropriate steps, which may include the issuance of licenses to additional manufacturers of the contractor's own selection, to meet the public need. If, upon the expiration of the time specified, or such extension thereof as may be approved by the Surgeon General, the Surgeon General finds that the Contractor has failed to take appropriate steps adequate to meet the public need, he shall notify the Contractor, in writing, with reasons therefor, that at the end of 90 days from the date of mailing such notice he will exercise the rights provided for in I(1) above.

If within 20 days of receipt of such notice the Contractor files with the Surgeon General a request, in writing, for a hearing, the Surgeon General, or a representative or representatives designated by him for the purpose, shall promptly afford the Contractor a reasonable opportunity to be heard (at a time and place to be selected by the Surgeon General), to be represented by counsel, to present any pertinent information and argument, and to rebut any other information pertinent to the issues. A copy of the written findings by the Surgeon General or such representative shall be furnished to the Contractor, which findings shall be based solely on the material presented at the hearing, and shall be final and conclusive upon the Contractor. If the Surgeon General's decision, based upon such findings, be that the Contractor has

not met the public need and that dedication and/or additional licensing by the Surgeon General is necessary in the public interest, he may so dedicate or license effective at the end of the above-mentioned 90-day period or at the conclusion of the hearing, whichever is later.

J. *Inventions by Federal Employees.* Notwithstanding any provision contained in this Contract, Subject Inventions made by Federal employees, or by Federal employees jointly with others, shall be submitted for and subject to determinations, procedures, and disposition under and pursuant to the terms of applicable Executive Orders and Department Regulations as in effect on the date of execution of this Contract.

K. *Conclusiveness and Implementation of Determinations by Surgeon General.* Determinations of the Surgeon General on all matters specified in this Clause as being for his determination (or in Executive Orders and/or Department Regulations referred to in paragraph J hereof) shall be accepted as final and the provisions of the Clause of this Contract entitled "Disputes" shall not apply; and the Contractor agrees that it will, and warrants that all its employees who may be the inventors will, execute all documents and do all things necessary or proper to the effectuation of such determinations.

L. *Patent Agreements Between Contractor and Persons Performing Work Under this Contract.* Except as otherwise authorized in writing by the Contracting Officer, the Contractor shall obtain patent agreements to effectuate the provisions of the Clause from all persons who perform any part of the work under this Contract, except such clerical and manual labor personnel as will have no access to technical data.

M. *Subcontract Provisions.* Except as otherwise authorized in writing by the Contracting Officer the Contractor shall insert in each subcontract having experimental, developmental, or research work as one of its purposes, provisions making this Clause applicable to the subcontractor and its employees.

N. *Effective Period of, and Required References to, Provisions of this Clause.* All provisions of this Clause shall survive and extend beyond the termination, expiration, and final payment under this Contract, any extensions or modifications thereof, and such successive contracts as may follow, and continue to be fully effective and enforceable. The exercise of any right or power by the Surgeon General or the Government pursuant to the provisions of this Clause shall in no event and in no manner be deemed as an exclusive election of rights or constitute a waiver of subsequent additional exercise thereof or of any other right or power of the Surgeon General or the Government provided in this Clause or elsewhere in this Contract. Any right, title or interest in or to Subject Invention, or in, to, or under any patent application or patent that may issue thereon, shall be subject to the provisions of this Clause, whether created by contract, assignment, license, or otherwise, and each such instrument shall so provide and include reference to this Clause; and such provision and reference shall further appear, where practicable, in any domestic patent application and patent which may issue on Subject Invention.

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No. 11

Patents owned by HEW under which licenses were granted

Patent No.	Dates of issue	Subject	Name and address of licensee	Date of license	Name and status of inventor
2,207,725	July 16, 1940	Removal of fluorides from drinking water	Victor Chemical Works, Illinois	Feb. 21, 1941	Elias Elvove, PHS employee, NIH.
2,257,111	Sept. 30, 1941	Removing fluorides from drinking water	Leo Moss, Corpus Christi, Tex	Apr. 24, 1952	Do.
2,178,010	Oct. 31, 1939	Nuclear substituted derivatives of the morphine series and methods for their preparation.	Mallinckrodt Chemical Works, 3600 North 2d St., St. Louis, Mo.	May —, 1947	Lyndon Frederick Small and Howard Montgomery Fitch, PHS employees.
2,178,010	do	do	Merck & Co., Inc., Rahway, N.J	do	Do.
2,178,010	do	do	New York Quinine & Chemical Works, 99-117 North 11th St., Brooklyn, N.Y.	do	Do.
2,178,010	do	do	Sharpe & Dohme, Inc., 640 North Broad St., Philadelphia, Pa.	Apr. 10, 1952	Do.
2,178,010	do	do	Parke, Davis & Co., Joseph Campaus St. at the River, Detroit, Mich.	Apr. 18, 1952	Do.
2,178,010	do	do	Wyeth Inc., 1401 Walnut St., Philadelphia, Pa.	do	Do.
2,178,010	do	do	American Home Products Corp., 22 East 40th St., New York, N.Y.	Feb. 24, 1953	Do.
2,178,010	do	do	Parke, Davis & Co	Mar. 12, 1953	Do.
2,178,010	do	do	Sharpe & Dohme, Inc	Mar. 2, 1953	Do.
2,178,010	do	do	Mallinckrodt Chemical Works	Mar. 19, 1953	Do.
2,178,010	do	do	New York Quinine & Chemical Works	Mar. 18, 1953	Do.
2,178,010	do	do	Merck & Co., Inc	May 4, 1953	Do.
2,234,981	Mar. 18, 1941	Formaldehyde sulphoxylate derivative of diphenylsulphides, disulphides, sulphoxides, and sulphones, and methods of production.	Abbott Laboratories, Chicago, Ill	June 18, 1940	Sanford M. Rosenthal and Hugo Bauer, PHS employees, NIH.
2,234,981	do	do	Parke, Davis & Co., Detroit, Mich	Aug. —, 1947	Do.
2,234,981	do	do	E. R. Squibb & Sons, New York, N.Y	Mar. 18, 1948	Do.
2,234,981	do	do	Chemo Puro Manufacturing Corp., 26-32 Skillman Ave., Long Island City, N.Y.	Jan. 15, 1952	Do.
2,280,856	Apr. 28, 1942	Benzene sulphonamidyl compounds of sulphanilamide, salts, and derivatives thereof, and methods of production.	May Chemical Corp., New Jersey	Aug. 17, 1940	Do.
2,531,451	Nov. 28, 1950	Water purification	Leo Moss, Corpus Christi, Tex	Apr. 24, 1952	Franz J. Maier, Division of Dental Health, PHS.
2,531,451	do	do	Robert Roseboom, 5556 Ninth Ave., North, St. Petersburg, Fla.	May 4, 1953	Do.
2,541,056	Feb. 13, 1959	Screening method for blood glucose	Macelester Bicknell Co., 243 Broadway, Cambridge, Mass.	Mar. 30, 1951	Dr. Erich Heftman, PHS employee, NIH.
2,602,252	July 8, 1952	Portable exhibiting device	Charles C. Shinn, 4005 Nicholson St., Hyattsville, Md.	July 29, 1952	Charles C. Shinn, Division of Industrial Hygiene, PHS.
2,602,252	do	do	Vemaline Products Co., Hawthorne, N.J	Oct. 20, 1953	Do.
2,602,252	do	do	Mr. Donald O. Turney, 1065 Santa Cruz, San Pedro, Calif.	July 2, 1954	Do.

2,602,252	----do----	----do----	Mrs. Lempi Matthews, 5155 South Christiana Ave., Chicago, Ill.	Mar. 17, 1955	Do.
2,604,474	July 22, 1952	Process for preparation and manufacture of 6-methoxy-8-(4-amino-1-methylbutylamino-quinoline)—"Primaquine."	Burroughs Wellcome & Co., Tuckahoe, N.Y.	Oct. 3, 1952	Dr. Robert C. Elderfield and Dr. Eleanor Werble (NIH grant to Columbia University).
2,604,474	----do----	----do----	The Wellcome Foundation, Ltd., 183-193 Euston Rd., London N.W. 1, England.	----do----	Do.
2,604,474	----do----	----do----	Abbott Laboratories	Jan. 1, 1953	Do.
2,604,474	----do----	----do----	Winthrop-Stearns, Inc., 1450 Broadway, New York, N.Y.	July 13, 1953	Do.
2,604,474	----do----	----do----	Chemo Puro Manufacturing Corp	Dec. 28, 1954	Do.

EXHIBIT No. 3

(To further clarify the appropriation picture, the following supplemental statement has been furnished by the Service:)

Although most of the components of the Department are increasingly involved in research activities, the great bulk of this research is carried on in PHS. Roughly speaking, $400 million, or more than half of the Service's total expenditures are used to conduct, support, or administer research activities. Most of this research is carried on at NIH, but there is also some important research work at the Bureau of State Service's Communicable Disease Center and at other facilities and stations of the Service.

Significant NIH appropriation data is tabulated below:

Appropriation history of the National Cancer Institute

[In thousands]

Obligations by activities	1955	1956	1957	1958	1959	1960 estimate
Grants:						
Research projects:						
Grants to industry						
Other (private, nonprofit)	$8,160	$9,110	$22,847	$21,059	$27,814	$37,068
Total research projects	8,160	9,110	22,847	21,059	27,814	37,068
Other grants	6,936	7,136	9,825	10,075	12,127	12,867
Total grants	15,096	16,246	32,672	31,134	39,941	49,935
Direct operations:						
Intramural research	5,797	6,523	8,049	9,360	10,729	11,831
Chemotherapy contracts:						
Contracts to industry (pharmaceutical and chemical)			165	4,000	4,500	7,000
Other		900	4,503	8,340	13,642	15,142
Total chemotherapy contracts		900	4,668	12,340	18,142	22,142
Other direct operations	844	1,309	3,043	3,568	6,456	7,349
Total direct operations	6,641	8,732	15,760	25,268	35,327	41,322
Total appropriation	21,737	24,978	48,432	56,402	75,268	91,257

Appropriation history

Year	Total NIH	Cancer	Year	Total NIH	Cancer
1938	$464,000	$400,000	1950	[3] $50,167,000	[4] $14,725,000
1939	515,000	400,000	1951	[5] 47,334,750	[6] 15,086,000
1940	707,000	570,000	1952	[7] 52,477,291	[8] 15,031,750
1941	711,000	570,000	1953	59,030,750	17,887,000
1942	700,000	565,000	1954	71,153,000	20,237,000
1943	1,278,270	534,870	1955	81,268,000	21,737,000
1944	2,555,020	530,000	1956	98,458,000	24,978,000
1945	2,835,000	561,000	1957	183,007,000	48,432,000
1946	3,414,700	548,700	1958	211,183,000	56,402,000
1947	8,125,448	1,870,900	1959	294,383,000	75,268,000
1948	28,876,000	14,500,000	1960	400,000,000	91,257,000
1949	[1] 37,668,000	[2] 14,000,000			

[1] Excludes $10,300,000 for contract authority.
[2] Excludes $8,000,000 for contract authority.
[3] Excludes $15,425,000 for contract authority and $4,925,000 for liquidation cash.
[4] Excludes $6,000,000 for contract authority and $4,175,000 for liquidation cash.
[5] Excludes $12,725,000 for liquidation cash.
[6] Excludes $5,000,000 for liquidation cash.
[7] Excludes $5,198,000 for liquidation cash.
[8] Excludes $4,625,000 for liquidation cash.

NOTE.—"Contract authority" is authority to commit the Government a year in advance. An appropriation is made the following year to liquidate the obligation. "Liquidation cash" is cash appropriated the following year to pay for the contracts made under the contract authority granted in the prior year.

Appropriation history of the National Institutes of Health

[In thousands]

Obligations by activities	1955	1956	1957	1958	1959	1960 estimate
Grants:						
Research projects:						
Grants to industry	$26	$26	$53	$189	$554	$795
Other (private, nonprofit)	33,892	38,262	89,629	97,540	140,900	202,153
Total, research projects	33,918	38,288	89,682	97,729	141,454	202,948
Other grants	20,413	24,977	43,747	49,647	71,085	101,482
Total grants	54,331	63,265	133,429	147,376	212,539	304,430
Direct operations:						
Intramural research	22,641	28,686	34,852	40,275	48,075	52,690
Chemotherapy contracts:						
Contracts to industry (pharmaceutical and chemical)			165	4,000	4,500	7,000
Other		900	4,503	8,340	13,642	15,142
Total, chemotherapy contracts		900	4,668	12,340	18,142	22,142
Other direct operations	4,296	5,607	10,058	11,192	15,627	20,738
Total, direct operations	26,937	35,193	49,578	63,807	81,844	95,570
Total appropriations, NIH	81,268	98,458	183,007	211,183	294,383	400,000

EXHIBIT No. 4

TENNESSEE VALLEY AUTHORITY,
Knoxville, Tenn., May 17, 1960.

Hon. JOSEPH C. O'MAHONEY,
Chairman, Subcommittee on Patents, Trademarks, and Copyrights,
Senate Office Building, Washington, D.C.

DEAR SENATOR O'MAHONEY: I wish to thank you for your kind invitation to attend the hearings of the Senate Subcommittee on Patents, Trademarks, and Copyrights which are scheduled for May 17, 18, and 19. I understand that I have been scheduled to appear at 10:30 on the morning of May 18. I will be accompanied by Mr. John H. Walthall, Director of TVA's Division of Chemical Development, who will be prepared to supplement my testimony in such detail as the subcommittee may desire.

TVA's patent practices have not changed since the publication of your committee's report in 1959 entitled "Patent Practices of the Tennessee Valley Authority." However, we have supplemented and brought up to date some of the statistical data contained in the report. I shall have a copy of this supplement to leave with you.

I shall also leave with your committee a table showing the breakdown of the amounts which TVA has spent for research purposes over the past 10-year period. We have been unable to develop this information for the earlier years due to limitation of time.

TVA has recently prepared an abstract of its patents which were unexpired as of March 1, 1960. This abstract gives a brief description of each patent and identifies any use which is being made of the patent through licenses or other agreements with TVA. I shall also have a copy of this abstract to leave with you.

If we may be of any further assistance, please let us know.

Sincerely yours,

HERBERT D. VOGEL,
Chairman of the Board.

SUPPLEMENTAL INFORMATION TO PRELIMINARY REPORT OF THE SUBCOMMITTEE ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF THE COMMITTEE ON THE JUDICIARY, U.S. SENATE, 85TH CONGRESS, 2D SESSION, ENTITLED "PATENT PRACTICES OF THE TENNESSEE VALLEY AUTHORITY," 1959

The following additional information has become available since the publication of the above report:

1. The following figures may be added to the tabulation on page 3 of the report:

Fiscal year	Applications filed	Patents			
		Issued	Purchased	Expired	Number at year's end
1958	5	1	0	13	78
1959	12	5	0	8	75
1960, to May 11	2	2	0	7	70

2. In the first full paragraph at the top of page 8 the Richmond Mica Corp. of Newport News, Va., may be added to the companies which hold a license to use TVA's patent on wet-ground mica.

3. In the sixth paragraph on page 8 concerning patents Nos. 2,729,554 and 2,741,545, as of May 11, 1960, TVA has issued 90 licenses to use such patents.

4. In the seventh paragraph on page 8, the number of licenses under patent No. 2,528,514 has now increased to 40.

5. The eighth paragraph on page 8 may now be revised to read as follows: 50 licenses have been issued to 27 companies under patent applications serial Nos. 624,177, 740,982, and 819,516 concerning 3 TVA processes for the production of liquid fertilizers (app., p. 17).

6. In the last paragraph on page 8, concentrated superphosphate may be added to the list of processes which TVA has licensed.

7. The following information may be added to the list on pages 11 and 12 (licenses to use continuous ammoniator):

Date of license	Company	Address
Sept. 16, 1958	Robert A. Reichard, Inc.	Allentown, Pa.
Sept. 23, 1958	Robertson Chemical Corp.	Statesville, N.C.
Sept. 30, 1958	Coastal Chemical Corp.	Pascagoula, Miss.
Oct. 16, 1958	Caprock Fertilizer Co.	Littlefield, Tex.
Dec. 4, 1958	Independent Manufacturing Co.	Philadelphia, Pa.
Dec. 8, 1958	Armour Fertilizer Works	Owosso, Mich.
Dec. 23, 1958	Minute Maid Corp.	Dr. Phillips, Fla.
Jan. 15, 1959	Cooperative Fertilizer Service, Inc.	Russellville, Ky.
May 21, 1959	Davison Chemical Co., division of W. R. Grace & Co.	Fort Pierce, Fla.
Aug. 25, 1959	Consumers Fertilizer Co., Inc.	Henderson, Tex.
Sept. 10, 1959	Illini Phosphate Co.	Champaign, Ill.
Apr. 4, 1960	Cotton Producers Association	Cordele, Ga.
May 4, 1960	Midwest Plant Food, Inc.	Napoleon, Ohio.

8. The following information may be added to the first list on page 15 (licenses to use superphosphate mixer):

Date of license	Company	Address
Feb. 19, 1959	AFC, Inc. (Agricultural Fertilizers Chemicals)	Edison, Calif.
Sept. 24, 1959	Central Farmers Fertilizer Co.	Chicago, Ill.
Sept. 24, 1959	Hartford Phosphate Co.	Hartford, Ala.
Oct. 29, 1959	Smith-Douglass Co., Inc.	Streator, Ill.

9. The following information may be added to the second list on page 15 (licenses to manufacture superphosphate mixer):

Date of license	Company	Address
Dec. 4, 1958	A. J. Sackett & Sons Co	Baltimore, Md.

10. The attached table may be substituted for the list on page 17 (licenses to use liquid fertilizer processes):

Licenses by TVA for use of liquid fertilizer processes (patent applications serial No. 624,177,[1] serial No. 740,982,[2] and serial No. 819,516[3])

[For standard terms of licenses see the following forms]

Dates of licenses			Company	Address
Process 1 [1]	Process 2 [2]	Process 3 [3]		
Sept. 18, 1958	Sept. 18, 1958		Agriform of Northern California, Inc.	Woodland, Calif.
Aug. 21, 1958	Aug. 21, 1958		Aylward Fertilizer Co	Sullivan, Ill.
Oct. 30, 1957			J. C. Carlile Corp	Denver, Colo.
Sept. 10, 1959	Sept. 10, 1959		C-D Liquid Fertilizer Corp	Liberty, Ind.
Mar. 27, 1958	Aug. 21, 1958		William G. Cox Co	Jacksonville, Ill.
Dec. 19, 1957			Davison Chemical Co., Division of W. R. Grace & Co.	Baltimore, Md.
July 28, 1958	July 28, 1958		Delta Liquid Plant Food Co., Inc.	Greenville, Miss.
Apr. 10, 1958			De Soto Chemical & Supply Co., Inc.	Nesbit, Miss.
Aug. 13, 1959	Aug. 13, 1959		Farmers Elevator Co	Oakville, Ind.
Jan. 9, 1958	Nov. 6, 1958	Feb. 5, 1960	Farmers Liquid Fertilizers, Inc	McCrory, Ark.
Nov. 6, 1958	do		Flo-Lizer, Inc	Kingston, Ohio.
Apr. 1, 1960	Apr. 1, 1960		Edward J. Funk & Sons	Kentland, Ind.
July 29, 1959	July 29, 1959		Kaw Fertilizer Service, Inc	Lawrence, Kans.
Feb. 4, 1958			Liquid Fertilizers, Inc	Greensboro, Ala.
Jan. 24, 1959	Jan. 24, 1959		Macon County Truck & Tractor Co.	Oglethorpe, Ga.
Sept. 24, 1959	Sept. 24, 1959		Marico, Inc	Ocala, Fla.
Dec. 7, 1959	Dec. 7, 1959		Mississippi Federated Cooperatives.	Meridian, Miss.
		Feb. 5, 1960	Ohio Liquid Fertilizer Co., Inc	South Solon, Ohio.
Aug. 21, 1958	Aug. 21, 1958		Ouachita Fertilizer & Chemical Co.	Monroe, La.
Sept. 10, 1959	Sept. 10, 1959		Pacific Supply Cooperative	Portland, Oreg.
Feb. 8, 1960	Feb. 8, 1960		Remole Soil Service	Potomac, Ill.
Sept. 16, 1959	Sept. 16, 1959		Ris-Van, Inc	Belmond, Iowa.
Aug. 12, 1959	Aug. 12, 1959		Sandven Chemical Co	Humboldt, Iowa.
Mar. 3, 1958	Aug. 27, 1958		Southland Liquid Fertilizer Co	Boynton Beach, Fla.
Sept. 24, 1959	Sept. 24, 1959		Tri-County Liquid Fertilizer Co	Eldorado, Ill.
Oct. 29, 1959	Oct. 29, 1959		Washington Cooperative Farmers	Seattle, Wash.
Nov. 22, 1957	Oct. 23, 1958		West Kentucky Liquid Fertilizer Co., Inc.	Hopkinsville, Ky.

[1] With super acid. [2] With super and wet-process acid. [3] Salt suspension fertilizers

11. The attached standard license agreement regarding the use of the process for production of high-analysis fertilizer suspensions (patent application Serial No. 819,516) may be added to the standard agreements contained on pages 17, 18, and 19.

12. The following information may be added to the list on page 20 (licenses to use other processes or equipment):

Date of license	Company	Address	Patent No.
Jan. 15, 1959	Associated Cooperatives, Inc	Sheffield, Ala	United States, 2,857,262; drying nitric phosphate slurries.
July 30, 1959	Central Farmers Fertilizer Co	205 West Wacker Dr., Chicago, Ill.	Patent application serial No. 808,540; concentrated superphosphate.
Feb. 19, 1959	Richmond Mica Corp	Newport News, Va	United States, 2,547,336; wet-ground mica.

13. The Manager of Chemical Engineering now signs for TVA all standard license agreements for developments originating in the Office of Chemical Engineering, rather than TVA's General Manager.

Add at the bottom of page 19:

TENNESSEE VALLEY AUTHORITY AGREEMENT WITH _____ REGARDING USE OF PROCESS FOR PRODUCTION OF HIGH-ANALYSIS FERTILIZER SUSPENSIONS

THIS AGREEMENT made and entered into this _____ day of _____, 19____, by and between TENNESSEE VALLEY AUTHORITY, a corporation of the United States, existing under and by virtue of an Act of Congress (hereinafter called "TVA"), and _____, a corporation existing under and by virtne of the laws of the State of _____ and having an office at _____ (hereinafter referred to as "Licensee");

WITNESSETH:

WHEREAS A. V. Slack, J. D. Hatfield, and H. K. Walters, employees of TVA, have invented a process for the production of high-analysis fertilizer suspensions; and

WHEREAS application for letters patent of the United States, Serial No. 819,516, covering the said invention, was filed by the said employees in the United States Patent office and their entire interest in said invention and application for letters patent has been assigned to TVA; and

WHEREAS Licensee desires to use said process; and

WHEREAS it appears that the use of such process by Licensee under the terms hereinafter stated are consistent with TVA's statutory objectives and its policy regarding the use of inventions owned by it;

NOW, THEREFORE, in consideration of the foregoing and of the mutual covenants and agreements hereinafter set forth, the parties agree as follows:

1. Subject to the terms and conditions hereinafter stated, TVA grants unto Licensee a royalty-free, nonexclusive, nonassignable (except to Licensee's successors in business) license to use the process covered by each and every patent that may issue as a result of said application and any divisional or continuatiou applications derived therefrom. TVA shall notify Licensee of the issuance of such patent or patents. The license granted hereunder shall endure for the life of such patent or patents.

2. TVA makes no warranties or representations with respect to said process or to any patents which may be issued thereon. TVA makes no commitment as to the prosecution of said application and is free to abandon the same in whole or in part without liability or obligation to Licensee. TVA assumes no responsibility with respect to the defense or prosecution of any rights in the process, or under its application for patent, or in connection with any litigation arising therefrom or relating thereto. Licensee, to the extent that it uses said process, shall do so entirely and solely at its own risk.

3. Licensee shall report to TVA in writing as of each Jnly 1 during the life of this agreement the number of months during the preceding twelve months' period in which the process has been used by it.

4. No member of or delegate to Congress or resident commissioner or any officer or agent of TVA shall be admitted to any share or part of this agreement or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement when made by a corporation for its general benefit.

IN WITNESS WHEREOF, the parties have caused this agreement to be executed by their duly authorized officers as of the day and year first above written.

TENNESSEE VALLEY AUTHORITY,

By _____
Manager of Chemical Engineering.

By _____

SCIENTIFIC RESEARCH AND DEVELOPMENT

The following table shows TVA expenditures for research and development in the engineering sciences over the past 10 years, much of which has been directed toward increasing scientific knowledge and toward the application of scientific principles in the fields of chemical engineering, minerals, and metallurgy. Since 1934 TVA has expended approximately $32 million for this kind of research and development.

Fiscal year	Research on fertilizer products and processes within TVA [1]	Mineral resource development		
		Within TVA	Contractual	Total
1950	$1,228,612	$104,399	$14,470	$118,869
1951	1,011,990	74,495	10,112	90,607
1952	1,062,850	8,783	10,997	19,780
1953	1,383,114	9,512	8,701	18,219
1954	1,253,750	----------	609	609
1955	1,289,096	----------	----------	----------
1956	1,340,861	----------	----------	----------
1957	1,408,701	----------	----------	----------
1958	1,456,142	----------	----------	----------
1959	1,693,170	----------	----------	----------

[1] No cooperative or contractual research has been done under this category.

In addition to research that is patent related or that may be expected to result in a patentable discovery, TVA also conducts scientific research and development in other fields, particularly in the agricultural sciences, including agronomy and forestry. It is in this area that TVA presently engages in cooperative research with colleges and universities under contracts providing for sharing of costs. This kind of research is not expected to result in patentable discoveries.

A limited amount of research and development not identified as such is always underway in connection with the conduct of TVA's regular construction and operating programs. From time to time discoveries are made during this incidental research that have resulted in patents being issued to TVA.

TENNESSEE VALLEY AUTHORITY

SCIENTIFIC RESEARCH AND DEVELOPMENT

The following table shows TVA expenditures for research and development in the engineering sciences over the past 10 years, much of which has been directed toward increasing selective knowledge and toward the application of scientific principles in the fields of chemical engineering, mineral and metallurgy. Since 1954 TVA has expended approximately $32 million for this kind of research and development.

Fiscal year	Research on fertilizer products and processes within TVA	Mineral research development		
		Within TVA	Contracted	Total
1950	[illegible]	[illegible]	[illegible]	$118,000
1951	1,011,000	[illegible]	[illegible]	90,007
1952	[illegible]	[illegible]	[illegible]	[illegible]
1953	[illegible]	[illegible]	[illegible]	[illegible]
1954	[illegible]		[illegible]	[illegible]
1955	[illegible]			
1956	[illegible]			
1957	[illegible]			
1958	[illegible]			
1959	[illegible]			

TVA no negative or conventional research has been done under this category.

In addition to research that is patent related or that may be expected to result in a patentable discovery, TVA also conducts scientific research and development in other fields, particularly in the agricultural sciences, including agronomy and forestry. It is in this area that TVA presently engages in cooperative research with colleges and universities under contracts provided for sharing of costs. This kind of research is not expected to result in patentable discoveries.

A limited amount of research and development not identified as such is always underway in connection with the conduct of TVA's regular construction and operating programs. From time to time discoveries are made during this incidental research that have resulted in patents being issued to TVA.

85th Congress
2d Session

COMMITTEE PRINT

PATENT PRACTICES OF THE TENNESSEE VALLEY AUTHORITY

PRELIMINARY REPORT

OF THE

SUBCOMMITTEE ON
PATENTS, TRADEMARKS, AND COPYRIGHTS

OF THE

COMMITTEE ON THE JUDICIARY
UNITED STATES SENATE
EIGHTY-FIFTH CONGRESS, SECOND SESSION

PURSUANT TO

S. Res. 236



Printed for the use of the Committee on the Judiciary

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FOREWORD

This report was prepared by Herschel Clesner of the subcommittee staff, under the supervision of Robert L. Wright, chief counsel of the Subcommittee on Patents, Trademarks, and Copyrights, as part of the subcommittee's study of the United States patent system, conducted pursuant to Senate Resolution 236 of the 85th Congress, 2d session. It is the first of a series that will describe the current practices of each of the agencies of the Federal Government engaged in activities which may result in the ownership of patents by the Government or patent licenses to the Government from employees, contractors or grantees.

This series of reports is based upon material assembled by the subcommittee in response to inquiries first directed to a number of Government agencies in the summer of 1957. The object of these inquiries was to determine how these agencies were discharging their responsibilities with respect to inventions in which the Government had a substantial financial interest, as the result of its expenditures for scientific research and development. No such inquiry had been made since the investigation which culminated in the Attorney General's report and recommendations with respect to Government patent practices and policies, published in 1947. The subcommittee's inquiries were therefore mainly designed to show the extent to which Government agencies have followed or disregarded the recommendations of that report and the reasons underlying the policies presently followed by these agencies. During the past 10 years there has been a tremendous expansion in Government research and development which has given the problem of what the Government should do with inventions produced by its research even greater importance today than it had in 1947.

The 1947 report was the product of a comprehensive investigation by the Department of Justice, of the practices of government agencies with respect to inventions made by their employees and contractors. The final recommendations of that report as to employee inventions resulted in the issuance in 1950 of Executive Order 10096, which was intended to provide a uniform patent policy for the Government with respect to inventions made by Government employees. The report had recommended the institution of a similar uniform policy with respect to inventions made by Government contractors but this recommendation resulted in no executive or legislative action.

The 1947 report recommended as to research contracts and grants that the Government should take title to all inventions produced in the performance of the contract except in special cases approved by a Government Patents Administrator and the head of the agency involved. In these exceptional instances the Government was to receive an irrevocable, royalty-free, nonexclusive license and if the contractor failed to place the invention in adequate commercial use

within a designated period he was to offer nonexclusive licenses at a reasonable royalty to all applicants. No Government Patents Administrator was created and the Chairman of the Government Patents Board created by the 1950 Executive order was given no power over the disposition of inventions made by contractors or grantees.

This 1950 order was intended to provide a uniform administration of employee inventions by having the Government take title where the invention was made during working hours or with a substantial Government contribution or where it bore a direct relation to or was made in consequence of Government duties. In actual administration the order does not appear to have had that effect.

The 1947 report also recommended that the Government acquire foreign patent rights equivalent to those obtained from the United States, except where the agency head involved and the Government Patents Administrator found it desirable in the public interest to release such rights to the inventing employee or contractor. Executive Order 9865 was issued in 1947 to activate this recommendation, and was modified as to employee inventions by the 1950 order referred to above. In actual administration a policy of inaction with respect to the acquisition of foreign rights appears to be presently in effect, in most government agencies.

The 1947 report further recommended that all Government-owned inventions should be made available to the general public by royalty-free, nonexclusive licensing and that the proposed Government Patents Administrator should report periodically on the extent of use of such inventions. As noted above the proposed Government Patents Administrator was never created and the extent of the use of such inventions is still largely unknown.

As will appear from the reports themselves, the policies followed by a number of agencies having research responsibilities vary widely in important respects and in some cases are diametrically opposed. Since these variations are in part the result of varying statutory responsibilities, the subcommittee staff has first summarized in each preliminary report the statutory provisions which control the patent activities of the agency in question. In each report this summary will be followed by a summary of the agency's own account of the way it is discharging its responsibility as to inventions and a further summary of the agency's own views as to whether its past policy has been successful and what its future policy ought to be.

These preliminary reports are intended to provide only a summary of the facts and opinions provided by the agencies themselves. Whether or not this data is adequate to determine whether a given agency is doing what Congress intended it to do is a matter reserved for future comment. The purpose of these preliminary studies is solely to give the Congress and the public an accurate summary of what the numerous Government agencies with patent responsibilities say they are doing with respect to governmentally financed inventions.

Although the patent operations of the Tennessee Valley Authority are unlike those of many other agencies, the format of this report will be followed in subsequent reports in order that comparisons between the policies of all of the agencies covered may be easily made. The TVA report was prepared for publication first because this agency is

one with long experience in handling inventions and was able to provide more information with respect to the use of the inventions it has financed than most of the agencies involved in the subcommittee's survey.

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

JANUARY 2, 1958.

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PRELIMINARY REPORT AS TO THE PATENT PRACTICES OF THE TENNESSEE VALLEY AUTHORITY

I. Legal Authority as to Patents

The Tennessee Valley Authority is a public corporation with patent activities authorized and controlled by specific legislative provisions relating to research and development. These provisions are intended to aid the Corporation in carrying out its statutory functions of conserving and developing the resources of the Tennessee Valley region and developing improved fertilizer products and processes. With respect to the fertilizer research and development program, the Corporation—

* * * * * * *

> is authorized to manufacture and sell fixed nitrogen, fertilizer, and fertilizer ingredients at Muscle Shoals by the employment of existing facilities, by modernizing existing plants, or by any other process or processes that in its judgment shall appear wise and profitable for the fixation of atmospheric nitrogen or the cheapening of the production of fertilizer (16 U. S. C. 831d (d))—

* * * * * * *

and is also authorized—

> to establish, maintain, and operate laboratories and experimental plants, and to undertake experiments for the purpose of enabling the Corporation to furnish nitrogen products for military purposes, and nitrogen and other fertilizer products for agricultural purposes in the most economical manner and at the highest standard of efficiency (16 U. S. C. 831d (h)).

The principal patent provisions read as follows:

> 16 U.S.C. 831 d(i)—To request the assistance and advice of any officer, agent, or employee of any executive department or of any independent office of the United States, to enable the Corporation the better to carry out its powers successfully, and as far as practicable shall utilize the services of such officers, agents, and employees, and the President shall, if in his opinion the public interest, service, or economy so require, direct that such assistance, advice, and service be rendered to the Corporation, and any individual that may be by the President directed to render such assistance, advice, and service shall be thereafter subject to the orders, rules, and regulations of the board: *Provided*, That any invention or discovery made by virtue of and incidental to such service by an employee of the Government of the United States serving under this section, or by any employee

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of the Corporation, together with any patents which may be granted thereon, shall be the sole and exclusive property of the Corporation, which is authorized to grant such licenses thereunder as shall be authorized by the Board: *Provided further*, That the board may pay to such inventor such sum from the income from sale of licenses as it may deem proper.

16 U. S. C. 831r—Patents; access to Patent Office and right to copy patents; compensation to patentees.

The Corporation as an instrumentality and agency of the Government of the United States for the purpose of executing its constitutional powers shall have access to the Patent Office of the United States for the purpose of studying, ascertaining, and copying all methods, formulae, and scientific information (not including access to pending applications for patents) necessary to enable the Corporation to use and employ the most efficacious and economical process for the production of fixed nitrogen, or any essential ingredient of fertilizer, or any method of improving and cheapening the production of hydroelectric power, and any owner of a patent whose patent rights may have been thus in any way copied, used, infringed, or employed by the exercise of this authority by the Corporation shall have as the exclusive remedy a cause of action against the Corporation to be instituted and prosecuted on the equity side of the appropriate district court of the United States, for the recovery of reasonable compensation for such infringement. The Commissioner of Patents shall furnish to the Corporation, at its request and without payment of fees, copies of documents on file in his office: *Provided*, That the benefits of this section shall not apply to any art, machine, method of manufacture, or composition of matter, discovered or invented by such employee during the time of his employment or service with the Corporation or with the Government of the United States.

II. Present Practice

A. Administration

1. Personnel

The Corporation employs one patent attorney full time who reviews inventions, prepares applications for patents and prosecutes them in the Patent Office. He further utilizes one-third of the time of a clerk-stenographer.

The Corporation maintains a Patent Advisory Committee which is composed of the General Counsel who is Chairman, the Manager of Chemical Engineering, Director of the Division of Agricultural Relations, Director of the Division of Property and Supply, or their designated representatives, and a representative of the Government Relations and Economic staff, Office of General Manager. The purpose of this Patent Advisory Committee is to review the patent policies of TVA and make recommendations.

Patent licenses granted by the TVA are handled by the division where the invention developed as an incident of research and develop-

ment. The licenses are subject to approval by the Board of Directors of TVA as required by statute.

2. Performance statistics

The following is a breakdown by fiscal years of patents applied for, issued to, and owned by TVA:

Fiscal year	Applications filed	Patents			
		Issued	Purchased	Expired	Number at year's end
Prior to—					
1938		20	3	0	23
1938	32	14	1	0	38
1939	25	14	1	0	53
1940	17	17	0	0	70
1941	13	13	0	0	83
1942	20	8	1	0	92
1943	8	8	0	0	100
1944	5	6	0	0	106
1945	7	7	0	0	113
1946	6	3	0	0	116
1947	4	1	0	0	117
1948	7	1	0	1	117
1949	7	2	0	0	119
1950	3	6	0	0	125
1951	9	7	0	2	130
1952	3	7	0	0	137
1953	4	8	0	7	138
1954	2	2	0	12	128
1955	5	2	0	16	114
1956	6	7	0	15	106
1957	3	2	0	18	90

In view of the large number of TVA patents about to expire as compared to its present rate of filing applications for patents, the TVA's ownership of patents will apparently continue the decline indicated by this table for the years 1953–57. This results from the fact that since 1942, TVA's research and development has been confined essentially to the fertilizer field, with a corresponding decrease in the number of patentable inventions.

B. POLICY AS TO RETENTION OF TITLE

1. By employees

All employees of TVA, as a condition of employment, are required to disclose all inventions, know-how, and technical information created during their employment regardless of the subject matter to which the inventions relate or the circumstances under which each invention is made. TVA then determines whether the inventor or TVA shall have title.

Prior to 1949 the TVA asserted ownership of all inventions made by its employees regardless of whether the invention was made in the course of the inventor's employment. This policy was based on a legal interpretation of the language of title 16, United States Code, section 831d (i). However, provision was made for the granting of exclusive licenses to employee-inventors in those instances where TVA had no program in which it could use the invention.

Following reconsideration of the prior interpretation of title 16, United States Code, section 831d (i), the TVA Division of Law, concluded that TVA is required to assert title only to those inventions

made by TVA employees "by virtue of and incidental to" their services as employees. The TVA accordingly revised its policy and now allows title to inventions made by employees which are not "by virtue of and incidental to" such services to remain in the inventor. Under this revised policy and the one previously in effect, TVA has also granted to five employee-inventors royalty-free, exclusive licenses for the life of the respective patents, listed at page 33 of the appendix.

The revised policy also provides that TVA will permit employees to file their own patent applications concerning inventions made in the course of their employment if TVA's interest is insufficient to justify the expense of prosecuting its own applications or if TVA's contribution to the invention is insufficient equitably to justify retention of complete ownership by TVA. However, in either instance, TVA retains the right of royalty-free use by the Government.

Executive Order 10096 promulgated on January 23, 1950, has had little practical effect on the operation of TVA's employee patent policy. By agreement with the original Chairman of the Government Patents Board, TVA allowed the Chairman to review TVA's determinations as to the ownership of inventions and of its decisions to permit employee-inventors to file for their own patents. However, a later Chairman of the Government Patents Board, upon review of title 16, United States Code, section 831d (i), decided that he had no authority to review TVA's decisions. Therefore, submission of all such decisions for his review has ceased.

As noted above, the TVA has statutory authority to pay to any governmental employee-inventor whose patent has become the property of the TVA, any income from the "sale of licenses." This provision has not been used because TVA licenses its inventions on a royalty-free basis and receives no income from them.

2. By contractors and grantees

The TVA has broad and specific powers to make contracts as provided by title 16, United States Code, section 831 c (d) and title 16, United States Code, section 831 d (a)–(i). At present, however, there are no contracts outstanding for research and development work. The TVA also has the right to issue grants to nonprofit organizations. However, no regulations as to the issuance of such grants have yet been promulgated. Therefore, the TVA at present obtains all its patents through inventions created by governmental employees.

C. FOREIGN FILING

1. Employees' patents

The TVA makes no attempt to obtain foreign patent rights on its inventions, since these are developed for the conservation and more effective use of the resources of the Tennessee Valley region by the development of better fertilizers and improved methods for the production and use of fertilizers. It has been the TVA's position that no situation has been presented in which its statutory purpose would be materially served by obtaining a foreign patent on a TVA invention.

2. Contractors' and grantees' patents

As noted above, there are no contractors or grantees holding title to TVA patents.

1. Employees

No infringement has been supplied as to any patent owned by an employee.

2. Contractors and grantees

As noted above, there are no contractors or grantees holding title to patents developed by TVA.

3. The Government

a. Directly.

The TVA puts its patented inventions to use in its own manufacturing operations and in experiments for the purpose of enabling others to produce nitrogen and other fertilizer products. By these patents TVA makes it possible for any National, State, district or county experimental station, farmer, and farm association to use any new form of fertilizer or process to manufacture fertilizers developed by the TVA.

The dissemination of technical information and know-how developed through TVA research and development work is accomplished through publications and by allowing industry representatives and others to visit and observe the TVA work at first hand. The TVA promptly establishes patent ownership of its inventions to avoid claims of invention by others and to preserve for the public the benefits of TVA's research and development work which have been financed by public funds. TVA also states that this step aids in establishing priority in invention in patent interferences and in some instances it is this ownership which enables the TVA to carry out new developments to completion without substantial hindrance as to patent infringement claims.

For example, the TVA did some developmental work and obtained a patent on a rotating electric furnace for the production of phosphorus and a license under this patent was granted to the American Agricultural Chemical Co. Electrokemisk, a Norwegian concern, brought an unsuccessful suit against the American Agricultural Chemical Co. for infringement of Electrokemisk's patent on a rotating electric furnace. The TVA's work in adaptation of the rotating electric furnace to the production of phosphorus and its ownership of a patent thereon contributed substantially to the successful defense by the American Agricultural Chemical Co. The outcome of this suit placed TVA in a strong defensive position regarding its own use of the electric furnace and cleared the way for widespread use by American industry.

Another example of such protection is provided by TVA's patent on a process for reacting ammonia and P_2O_5 to produce a fertilizer material. Monsanto Chemical Co. has made application for a patent on a similar process and TVA's patent is in interference with Monsanto's application. If the TVA establishes priority of the invention in the interference, its patent may protect TVA against suit for infringement in the event the process is carried to large-scale production as well as other possible users of the process.

Although the TVA may use its patents to bring infringement suits against others, it has never done so and at present has never threatened anyone with such action. TVA has never been sued for patent

infringement although claims have been made against it for infringement which have been settled.

Title 16, United States Code, section 831 c (f) and title 16, United States Code, section 831 d (i) give TVA the authority to purchase, sell or license its patents. In its early years the TVA purchased six patents, but has purchased none since 1942. TVA has never sold any patents.

TVA has acquired no patent license from others which requires payment of a continuing royalty. On a few occasions TVA has paid a lump-sum royalty for a paid-up license to use a process or to install and use certain apparatus. The most recent transaction of this nature was the payment in April 1957 of the sum of $7,500 to Armand Bur of Cleveland, Ohio, in settlement of a claim of infringement under United States Patent No. 2,533,090, covering a car dumper sampling apparatus for coal and for a paid up license to make and use the apparatus in any TVA steam plant.

b. Through licensees

TVA's present policy is to grant nonexclusive, royalty-free licenses upon all of its patents. It has summarized the reason for this policy in the following statement:

> *Why TVA does not charge a royalty on its fertilizer patents.*—TVA's policy with respect to the licensing of its patents is as follows:
>
> "A license under any application for Letters Patent for an invention or under any patent acquired by TVA may be granted under terms and conditions applicable to each case, which always reserve the right of royalty-free use by and for TVA and the United States Government. An effort is made to secure wide use of TVA inventions. Generally licenses are nonexclusive; however, a license may be exclusive for a limited term and to the extent required to induce proper development of an invention or utilization of the invention in the interests of the TVA program. Licenses with exclusive features are granted on the basis of the relative qualifications of the prospective licensees to complete the development of the invention, to utilize it effectively in the interests of the TVA program, or to secure the widest public use of the invention. When feasible, and when such data seem likely to be of value in developing the resources of the region, a licensee who is granted exclusive rights may be required to supply economic and technical data obtained through the use of the licensed invention. Nonexclusive licenses are granted free of royalty."
>
> The issuance of licenses on patented improvements in fertilizer technology is an important part of TVA's program of improving, increasing, and cheapening the production of fertilizer as provided for in sections 5 and 11 of the TVA Act. TVA strives in this program to develop and to get into use by fertilizer producers, processes and apparatus that will utilize to the fullest extent the raw fertilizer materials in the country and will produce fertilizers of high concentration and utility at an economical price. The ultimate object of the program is to enable the farmers of the country to obtain higher quality fertilizers at cheaper prices

so that the soil resources of the Nation may be preserved and improved.

It seems obvious that any royalty imposed by TVA on licensees under its fertilizer patents would be passed on to the consumers in higher prices. This would tend to nullify the statutory purpose of cheapening the price of fertilizer for the farmers. Charging a royalty would also inevitably tend to limit the number of producers who would accept and utilize the TVA developments.

It is TVA's conclusion that making these licenses available on a nonexclusive, royalty-free basis, just as it makes available other technical information obtained from its research and developmental work, results in the greatest acceptance and use of its developments and thus contributes most to the objectives of the program. The fact that through August 1958 a total of 155 such licenses have been granted for use in 159 plants dispersed throughout the United States seems to justify this conclusion. While these fertilizer producers that have obtained such licenses have undoubtedly received some financial benefit from the use of TVA-developed processes and apparatus, such benefit appears to be largely the result of the expanding use of fertilizers and thus the greater demand for the manufacturers' products, which the TVA program encourages.

Besides decreasing the beneficial effects of the program on the farmers, charging a royalty has certain administrative disadvantages. In the first place, it is extremely difficult to determine a royalty that is fair to all producers. Moreover, charging a royalty would require TVA to police the licensees' operations to see that proper accounting and payment of the royalty is made and to seek out and enjoin any infringement of the patents. It would also probably entail demonstration to a further degree of the commercial feasibility of processes and apparatus and consumer acceptance of the product; the establishment of a promotion or sales organization to get the inventions into use; and involvement of TVA in claims of infringement made by others.

TVA's experience in licensing patents bears out these objections. Several years ago (around 1940) a number of patents relating to food processing were licensed on a royalty basis. TVA found such agreements difficult and costly to administer and largely unproductive. The net result was that an insignificant return from the licenses was realized and, still worse, very little use was made of the inventions. Thus it appeared that the licensing procedures had helped defeat the very purpose for which the research and developmental work behind the inventions had been conducted—namely, better utilization and conservation of our resources.

The only exclusive license, other than the employee-inventor licenses referred to at page 4, was granted as a means of inducing the commercial exploitation of one of TVA's patents. This license, which was exclusive for 5 years, not exclusive thereafter, was granted to the English Mica Co. and covered a patent on wet-ground mica. The purpose of the exclusive provision was to enable the licensee to finance

construction of a plant and complete development work necessary for commercial acceptance of the product. The license further provided that at the end of the 5-year period the company should supply such technical and economic data obtained through the use of the process as might be requested by the TVA and if the company failed to use the process over any period of 12 consecutive months prior to the expiration of the 5-year exclusive term, the TVA had the right to terminate the license.

At the expiration of the exclusive license period to the English Mica Co., another royalty-free license under this patent was granted to the International Minerals & Chemical Corp., of Chicago, Ill., and the English Mica Co. retained only a nonexclusive license.

Prior to 1946 the TVA did not have an established policy as to the terms on which patent licenses would be granted. The number of licenses granted was small and generally they were nonexclusive. They sometimes called for a royalty payment. However, as noted above, the TVA decided that charging a royalty seemed to hinder the acceptance and use of patents that it had developed.

The three nonexclusive royalty bearing licenses referred to above dealt with patented food freezing inventions which were developed through the cooperative research of the TVA and one of the land-grant colleges in the TVA area. Two of the licensees never did carry out operations under the license and all three companies shortly thereafter entered bankruptcy or became insolvent. There was therefore no substantial financial return from these licenses.

All of the remaining patent licenses granted by the TVA, have been on a royalty-free, nonexclusive basis. In all of its licensing arrangements the TVA has retained, for other governmental agencies, as well as itself, the right to manufacture and use.

TVA has succeeded in achieving wide use of its developed fertilizer improvements. It estimates, on the basis of available data, that the processes and methods controlled by TVA patents are used in the production of about two-thirds of the granular fertilizer manufactured annually in the United States.

Under United States patents Nos. 2729554 and 2741545, relating to a continuous process and apparatus for the ammoniation of superphosphate, the TVA, as of October 27, 1958, had issued 77 licenses to corporations, farm cooperatives, societies, small businesses, and others on a nationwide basis. All the major manufacturers and distributors of fertilizer are included in TVA's list of licensees found at appendix, p. 11.

TVA further licensed another 21 corporations, manufacturers and others to manufacture the continuous ammoniator equipment covered by the foregoing United States patent No. 2741545 (appendix p. 13). Another successful process for the use and manufacture of superphosphate by a mixer is licensed by TVA under United States patent No. 2528514 to 35 licensees (appendix p. 15).

There are 12 TVA licensees under patent applications serial Nos. 624177 and 740982 which are directed to a process for the preparation and production of liquid fertilizers (appendix p. 17).

TVA further licenses to numerous corporations, the use of processes and equipment relating to aluminum-silicon alloys, calcium metaphosphate, superphosphoric acid, wet ground mica, phosphorus and phosphoric acid, carbon monoxide catalyst, fused tricalcium phos-

phate, slag expansion, phosphate reducing furnace, and a rotating furnace.

All of these licenses require the licensee to report annually on the number of months the invention was in actual use. By these reports the TVA is kept informed as to the use made of all of its inventions, even when used only by licensees.

III. Agency Viewpoint

A. JUDGMENT AS TO EFFECTIVENESS OF PRESENT POLICY

The TVA has stated—

> the positive usefulness of TVA ownership of patents on inventions developed by it is exemplified by the great number of licenses which have been issued to fertilizer producers and manufacturers of fertilizer products and equipment under the patents described above. Through the nonexclusive, royalty-free licenses TVA grants under such patents, TVA preserves to the public the benefit of its efforts, in accordance with the provisions of the TVA Act, to improve the quality of fertilizers and to improve and cheapen the methods of production. Obviously, a manufacturer of fertilizer or equipment is much more willing to try a new process or piece of apparatus developed by TVA if he has the protection of TVA's patent ownership. TVA's system of licensing has also helped it to keep reasonably accurate data on the extent of use of its developments. It is estimated on the basis of such data that TVA methods are used in the production of about two-thirds of the 3 to 4 million tons of granular fertilizers manufactured annually in the United States (letter of Sept. 23, 1957, from Chairman of the TVA Board, Herbert D. Vogel, to Senator Joseph C. O'Mahoney).

B. RECOMMENDATION AS TO FUTURE POLICY

None were offered.

phate, slag expansion, phosphate reducing furnace, and a rotating furnace.

All of these licenses require the licensee to report annually on the number of [illegible] the invention was in actual use. By these reports the TVA is kept informed as to the use made of all of its inventions, even when used only by licensees.

III. Agency Viewpoints

1. Judgment as to effectiveness of present policy

The TVA has stated—

> the positive usefulness of TVA ownership of patents on inventions developed by it is exemplified by the great number of licenses which have been issued to fertilizer producers and manufacturers of fertilizer products and equipment under the patents described above. Through the nonexclusive, royalty-free licenses TVA grants under such patents, TVA preserves to the public the benefit of its efforts, in accordance with the provisions of the TVA Act, to improve the quality of fertilizers and to improve and cheapen the methods of production. Obviously, a manufacturer of fertilizer or equipment is much more willing to try a new process or piece of apparatus developed by TVA if he has the protection of TVA's patent ownership. TVA's system of licensing has also helped it to keep reasonably accurate data on the extent of use of its developments. It is estimated on the basis of such data that TVA methods are used in the production of about two-thirds of the 3 to 4 million tons of granular fertilizers manufactured annually in the United States (letter of Sept. 23, 1957, from Chairman of the TVA Board, Herbert D. Vogel to Senator Joseph C. O'Mahoney).

2. Recommendations as to future policy

None were offered.

APPENDIX

Licenses by TVA for use of continuous ammoniator (United States patents 2,729,554 and 2,741,545)

[For standard terms of license see the following form]

Date of license	Company	Address
Mar. 6, 1958	AFC, Inc. (Agricultural Fertilizers Chemicals)	Post Office Box 11, Edison, Calif.
June 9, 1954	The American Agricultural Chemical Co	100 Church St., New York, N. Y.
Apr. 20, 1956	ArkMo Plant Food Co., Inc	Walnut Ridge, Ark.
Jan. 9, 1958	Aroostook Federation of Farmers	Caribou, Maine.
Apr. 14, 1954	Baugh & Sons Co	25 South Calvert St., Baltimore, Md.
Dec. 21, 1954	The Buhner Fertilizer Co. (purchased by AACC—American Agricultural Chemical Co.).	Seymour, Ind.
Oct. 23, 1957	Central Chemical Corp	Hagerstown, Md.
Feb. 11, 1954	Central Texas Fertilizer Co., Inc	Comanche, Tex.
May 12, 1958	Consumers Cooperative Association	Post Office Box 7305, Kansas City, Mo.
Oct. 10, 1956	Cooperative Plant Foods, Inc	Schereville, Ind.
Dec. 23, 1954	Cornland Plant Foods	230 Park St., Grinnell, Iowa.
May 24, 1956	Crest Chemical Co	Watertown, S. Dak.
Mar. 24, 1954	Darling & Co	4201 South Ashland Ave., Chicago, Ill.
Mar. 19, 1956	Dixon Chemical Industries, Inc., I. P. Thomas division.	Cuthbert Rd., Merchantville, N. J.
Oct. 4, 1954	Eastern States Farmers' Exchange, Inc	West Springfield, Mass.
Feb. 3, 1954	Farm Belt Fertilizer & Chemical Co	Post Office Box 417, Kansas City, Mo.
Apr. 30, 1954	The Farm Bureau Cooperative Association, Inc	245 North High St., Columbus, Ohio.
July 2, 1956	Farm Bureau Service Company of Missouri, Inc	New Florence, Mo.
Oct. 17, 1956	Farm Bureau Services, Inc	Kalamazoo, Mich.
Mar. 23, 1954	Farm Fertilizers, Inc	Post Office Box 351, Omaha, Nebr.
Aug. 7, 1956	The Farmers Fertilizer Co	Post Office Box 2002, Columbus, Ohio.
Feb. 2, 1955	Federal Chemical Co	Starks Bldg., Louisville, Ky.
Dec. 21, 1954	Fertilizer Manufacturing Cooperative, Inc	1800 South Clinton St., Baltimore, Md.
Sept. 26, 1957	Foremost Fertilizer Co	Leesburg, Fla.
June 14, 1958	Fort Smith Cotton Oil Co	Fort Smith, Ark.
Oct. 17, 1956	Gilchrist Plant Food Co	525 West Washington St., Morris, Ill.
Mar. 15, 1954	Illinois Farm Supply Co	100 East Ohio St., Chicago, Ill.
June 9, 1955	Indiana Farm Bureau Cooperative Association, Inc.	47 South Pennsylvania St., Indianapolis, Ind.
Nov. 29, 1956	International Minerals & Chemical Corp	20 North Wacker Dr., Chicago 6, Ill.
July 21, 1955	Iowa Farm Supply Co	1019 High St., Des Moines, Iowa.
Dec. 29, 1954	Jackson Fertilizer Co	Jackson, Miss.
Feb. 22, 1955	Kelly, Weber & Co., Inc	Lake Charles, La.
Mar. 8, 1958	Ke-Wash Fertilizer Co	Keota, Iowa.
Aug. 16, 1955	Kingsbury & Co., Inc	Post Office Box 7107, Indianapolis, Ind.
Dec. 23, 1957	N. S. Koos & Son Co	4500 13th Ct., Kenosha, Wis.
Nov. 22, 1955	Land O'Lakes Creameries, Inc	Minneapolis, Minn.
July 2, 1957	Longhorn Construction Co	Box 336, Sulphur Springs, Tex.
Sept. 30, 1957	Midwestern Farm Fertilizers, Inc	Post Office Box 282, Stevens Point, Wis.
Aug. 5, 1954	Minnesota Farm Bureau Service Co	101 Fairfield Ave. East, St. Paul, Minn.
June 24, 1957	Mississippi Federated Cooperatives	Meridian, Miss.
Mar. 8, 1954	Missouri Farmers Association, Inc	301 South 7th St., Columbia, Mo.
Mar. 29, 1958	Missouri Plant Food Co. (affiliate of ArkMo Plant Food Co., Inc.).	Sikeston, Mo.
Sept. 11, 1957	The Mountain Copper Co., Ltd	230 California St., San Francisco, Calif.
Apr. 30, 1954	Nichols Seed & Fertilizer Co. (formerly Oklahoma Fertilizer & Chemical Co.).	Post Office Box 1296, Oklahoma City, Okla.
Jan. 22, 1954	The Norris Fertilizer Co	25 South Calvert St., Baltimore, Md.
Dec. 24, 1957	Northland Chemical Co., Inc	East Grand Forks, Minn.
Dec. 21, 1954	Northwest Cooperative Mills, Inc	635 North Fairview Ave., St. Paul, Minn.
May 24, 1956	The Ohio Equity Exchange Co	704 Cook Tower, Lima, Ohio.
July 26, 1955	Ohio Farmers Grain & Supply Association	Fostoria, Ohio.
June 12, 1956	Olin Mathieson Chemical Corp	Williamston, N. C.
Dec. 9, 1953	Oregon Washington Fertilizer Co	Post Office Box 3314, Seattle, Wash.
Feb. 10, 1955	F. H. Peavey & Co	Minneapolis, Minn.
Jan. 7, 1957	Price Chemical Co	Miller's Lane, Louisville, Ky.
Dec. 5, 1955	Chas. W. Priddy & Co., Inc	Post Office Box 900, Norfolk, Va.
July 26, 1955	F. S. Royster Guano Co	Norfolk, Va.
Mar. 7, 1955	Simonsen Mill-Rendering Plant	Quimby, Iowa.

Licenses by TVA for use of continuous ammoniator (United States patents 2,729,554 and 2,741,545)—Continued

[For standard terms of license see the following form]

Date of license	Company	Address
July 1, 1954	The Smith Agricultural Chemical Co	Columbus, Ohio.
Sept. 18, 1958	C. O. Smith Guano Co	Moultrie, Ga.
Oct. 27, 1953	The Snyder Chemical Co., Inc	Post Office Box 946, Topeka, Kans.
Sept. 22, 1955	Southern Cotton Oil division, Wesson Oil & Snowdrift Co., Inc.	Post Office Box 30, Little Rock, Ark.
Sept. 25, 1956	Southwestern Agrochemical Corp	Post Office Box 337, Chandler, Ariz.
Dec. 5, 1955	The Summers Fertilizer Co., Inc	Totman Bldg., 210 East Redwood St., Baltimore, Md.
Feb. 14, 1957	Sunland Industries, Inc	Post Office Box 1669, Fresno, Calif.
Feb. 4, 1957	Super-Crop Plant Foods, Inc	Box 324, Ottumwa, Iowa.
Feb. 20, 1956	Texas Farm Products Co	Nacogdoches, Tex.
Feb. 11, 1954	Tyler Fertilizer Co	420 South Oakland Ave., Tyler, Tex.
Mar. 21, 1956	Tyler Grain & Fertilizer Co	619 Madison Ave., Wooster, Ohio.
Mar. 7, 1955	Valley Fertilizer Co	Post Office Box 402, Greenville, Miss.
Aug. 21, 1956	Virginia-Carolina Chemical Corp	Richmond, Va.
Oct. 23, 1957	Weaver Fertilizer Co., Inc	National Bank of Commerce Bldg., Norfolk, Va.
Aug. 31, 1954	Wilson & Toomer Fertilizer Co	Post Office Drawer 4459, Jacksonville, Fla.
Dec. 5, 1955	Wisconsin Farmco Service Cooperative	801 West Badger Rd., Madison, Wis.
Sept. 9, 1958	Arcadia Cotton Oil Co	Arcadia, La.
Oct. 2, 1958	Pasco Packing Co	Post Office Box 97, Dade City, Fla.
Sept. 15, 1958	Planters Fertilizer & Phosphate Co	Box 865, Charleston, S. C.
Oct. 2, 1958	Rath Packing Co	Post Office Box 330, Waterloo, Iowa.
Sept. 9, 1958	Ruston Oil Mill & Fertilizer Co	312 West Louisiana, Ruston, La.

TENNESSEE VALLEY AUTHORITY AGREEMENT WITH REGARDING USE OF PROCESS AND APPARATUS FOR AMMONIATION OF SUPERPHOSPHATE

THIS AGREEMENT, made and entered into this ——— day of ———, 195—, by and between TENNESSEE VALLEY AUTHORITY, a corporation of the United States, existing under and by virtue of an Act of Congress (hereinafter called "TVA", and ———, a corporation existing under and by virtue of the laws of the State of ——— and having an office at ——— (hereinafter referred to as "Licensee"),

WITNESSETH:

WHEREAS, TVA is the owner of U. S. Patents No. 2,729,554 and No. 2,741,545 relating to a process and apparatus for the ammoniation of superphosphate; and

WHEREAS, Licensee desires to use said process and to use, repair, and reconstruct said apparatus for the manufacture of fertilizer; and

WHEREAS, it appears that the use of such process and the use, repair, and reconstruction of such apparatus by Licensee under the terms hereinafter stated are consistent with TVA's statutory objectives and its policy regarding the use of inventions owned by it;

NOW, THEREFORE, in consideration of the foregoing and of the mutual covenants and agreements hereinafter set forth, the parties agree as follows:

1. TVA will furnish to Licensee, without cost to the latter, such description of the process and apparatus described in the preamble and such reports of the experimental use thereof as are now available.

2. TVA makes no warranties or representations with respect to said process and apparatus other than that TVA has legal title to U. S. Patents No. 2,729,554 and No. 2,741,545. TVA assumes no responsibility in connection with the defense or prosecution of rights in the

process and apparatus or in connection with any litigation arising therefrom or relating thereto. Licensee, to the extent that it uses said process and apparatus shall do so entirely and solely at its own risk.

3. Licensee shall report to TVA in writing as of each July 1 during the life of this agreement the number of months during the preceding twelve-months' period in which the process and apparatus have been used by it.

4. TVA hereby confers upon Licensee a license to use the said patented process and to use, repair, and reconstruct the said patented apparatus; said license to be nonassignable except to Licensee's successors in business, nonexclusive, royalty-free, and for the full term of each of the said patents.

5. No member of or delegate to Congress or resident commissioner or any officer or agent of TVA shall be admitted to any share or part of this agreement or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement when made by a corporation for its general benefit.

IN WITNESS WHEREOF, the parties have caused this agreement to be executed by their duly authorized officers and their respective corporate seals to be hereunto affixed, as of the day and year first above written.

ATTEST: TENNESSEE VALLEY AUTHORITY

_____ By _____

Assistant Secretary *General Manager*

ATTEST: _____

_____ By _____

_____ _____

(Title) (Title)

Licenses by TVA for the manufacture of continuous ammoniator (United States patent 2,741,545)

[For standard terms of license see the following form]

Date of license	Company	Address
Oct. 19, 1954	Atlanta Utility Works	East Point, Ga.
Feb. 7, 1956	Barnard & Leas Manufacturing Co., Inc.	1200 34 12th St. SW., Cedar Rapids, Iowa.
Mar. 9, 1954	Blaw-Knox Co.	Post Office Box 778, Pittsburgh, Pa.
Aug. 21, 1956	Blue Valley Equipment Manufacturing & Engineering Co.	Post Office Box 73, North Topeka, Kans.
June 24, 1957	Davidson-Kennedy Co.	Post Office Box 97, Station D, Atlanta, Ga.
Mar. 30, 1954	Divine Engineering, Inc.	Post Office Box 1670, Cedar Rapids, Iowa.
Dec. 2, 1955	J. H. Ehrsam & Sons Manufacturing Co.	Enterprise, Kans.
May 15, 1954	Equipment & Engineering Co., Inc.	Atlanta, Ga.
Nov. 7, 1955	Fertilizer Engineering & Equipment Co., Inc.	Memorial Dr., Green Bay, Wis.
July 9, 1954	Fertilizer Equipment Sales Corp.	Post Office Box, 1968, Atlanta, Ga.
Dec. 9, 1953	Link-Belt Co.	300 West Pershing Rd., Chicago, Ill.
June 24, 1957	Longhorn Construction Co.	Box 336, Sulphur Springs, Tex.
Oct. 23, 1957	Manitowoc Shipbuilding, Inc.	Manitowoc, Wis.
Dec. 9, 1953	Pioneer Manufacturing & Supply Co. (license canceled at request of company).	Springfield, Mo.
June 30, 1954	Edw. Renneburg & Sons Co.	2639 Boston St., Baltimore, Md.
Dec. 9, 1953	The A. J. Sackett & Sons Co.	Baltimore, Md.
Apr. 23, 1957	Stedman Foundry & Machine Co., Inc.	Aurora, Ind.
Oct. 23, 1953	Sturtevant Mill Co.	Park and Clayton Sts., Dorchester, Boston, Mass.
Apr. 30, 1954	The D. M. Weatherly Co.	80 11th St. NE., Atlanta, Ga.
Aug. 21, 1956	White Oil & Equipment Co., Inc.	Bossier City, La.
Mar. 8, 1954	Worthington Corp.	Plainfield, N.J.

TENNESSEE VALLEY AUTHORITY AGREEMENT WITH _____ REGARDING MANUFACTURE AND SALE OF APPARATUS FOR AMMONIATION OF SUPERPHOSPHATE

THIS AGREEMENT, made and entered into this ____ day of _____, 195__, by and between TENNESSEE VALLEY AUTHORITY, a corporation of the United States, existing under and by virtue of an Act of Congress (hereinafter called "TVA"), and _____, a corporation existing under and by virtue of the laws of the State of _____ and having an office at _____ (hereinafter referred to as "Licensee"),

WITNESSETH:

WHEREAS, TVA is the owner of U. S. Patent No. 2,741,545 relating to apparatus for the ammoniation of superphosphate; and

WHEREAS, Licensee desires to manufacture, sell and/or install said apparatus; and

WHEREAS, it appears that the manufacture, sale and/or installation of such apparatus by Licensee under the terms hereinafter stated are consistent with TVA's statutory objectives and its policy regarding the use of inventions owned by it;

NOW, THEREFORE, in consideration of the foregoing and of the mutual covenants and agreements hereinafter set forth, the parties agree as follows:

1. TVA will furnish to Licensee, without cost to the latter, such description of the apparatus described in the preamble and such reports of the experimental use thereof as are now available.

2. TVA makes no warranties or representations with respect to said apparatus other than that TVA has legal title to U. S. Patent No. 2,741,545. TVA assumes no responsibility in connection with the defense or prosecution of rights in the apparatus or in connection with any litigation arising therefrom or relating thereto. Licensee, to the extent that it manufactures, installs, sells, or uses said apparatus shall do so entirely and solely at its own risk.

3. Licensee shall notify purchasers of apparatus covered by this agreement of TVA's ownership of the invention covered by tbe said patent and that upon request TVA will grant them a license to use such apparatus and the appurtenant process for which TVA holds U. S. Patent No. 2,729,554, such license to be in TVA's standaid form and subject to such terms and conditions as its policy with respect to the administration of its inventions may then require. Licensee shall promptly notify TVA in writing of the name and address of each person or firm for whom Licensee furnishes or installs such apparatus.

4. TVA hereby confers upon Licensee a license to manufacture, install, use for demonstration purposes, and sell any and all apparatus covered by the said patent; said license to be nonassignable except to Licensee's successors in business, nonexclusive, royalty-frce, and for the full term of the said patent.

5. No member of or delegate to Congress or resident commissioner or any officer or agent of TVA shall be admitted to any share or part of this agreement or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement when made by a corporation for its general benefit.

IN WITNESS WHEREOF, the parties have caused this agreement to be executed by their duly authorized officers and their respective corporate seals to be hereunto affixed, as of the day and year first above written.

ATTEST: TENNESSEE VALLEY AUTHORITY

By _____

Assistant Secretary *General Manager*

ATTEST:

By _____

(Title) (Title)

Licenses by TVA for use of superphosphate mixer (United States patent 2,528,514)

[For standard terms of license see the following form]

Date of license	Company	Address
May 31, 1957	The American Agricultural Chemical Co.	100 Church St., New York, N. Y.
Mar. 19, 1956	American Cyanamid Co.	30 Rockefeller Plaza, New York, N. Y.
July 23, 1956	Cartledge Fertilizer Co., division of Wilson & Toomer Fertilizer Co.	Post Office Drawer 4459, Jacksonville, Fla.
Dec. 21, 1956	Central Texas Fertilizer Co., Inc.	Comanche, Tex.
Aug. 26, 1954	Centrala Farmers Co-op, Inc.	Post Office Box 15, Selma, Ala.
Nov. 19, 1957	Chemical Fertilizer Co., Inc.	Post Office Box 1443, Modesto, Calif.
Aug. 7, 1958	Coastal Chemical Co.	Yazoo City, Miss.
Aug. 21, 1958	Darling & Co.	Mississippi Ave., East St. Louis, Mo.
Mar. 4, 1953	Davison Chemical Co., division of W. R. Grace & Co.	Baltimore, Md.
June 9, 1955	Etheredge Guano Co., Inc.	753 Reynolds St., Augusta, Ga.
Oct. 6, 1953	Farm Service, Inc.	Post Office Box 271, Apelousas, La.
Apr. 29, 1957	Farmers Fertilizer Co.	Post Office Box 944, Texarkana, Tex.
Aug. 13, 1951	Gates Bros., Inc.	Wendell, Idaho.
Apr. 20, 1956	Gilchrist Plant Food Co.	525 West Washington St., Morris, Ill.
Mar. 19, 1956	Green & Reedy Fertilizer Plant	Franklinton, La.
Jan. 2, 1954	Guaranty Seed Co., Inc.	Bunkie, La.
Mar. 7, 1955	Mississippi Federated Cooperatives	Meridian, Miss.
Jan. 19, 1954	Phillips Petroleum Co.	Bartlesville, Okla.
Apr. 15, 1955	Riverside Fertilizer Factory	Marks, Miss.
Apr. 30, 1954	F. S. Royster Guano Co.	Norfolk, Va.
Sept. 13, 1957	C. O. Smith Guano Co.	Moultrie, Ga.
Aug. 29, 1956	Standard Chemical Co.	Troy, Ala.
Nov. 7, 1950	Tennessee Corp.	61 Broadway, New York, N. Y.
June 24, 1957	Tennessee Farmers Cooperative	La Vergne, Tenn.
June 9, 1955	Virginia-Carolina Chemical Corp.	Richmond, Va.

Licenses by TVA for the manufacture of continuous superphosphate mixer (United States patent 2,528,514)

[For standard terms of license see the following form]

Date of license	Company	Address
Nov. 25, 1955	Davidson-Kennedy Co.	Post Office Box 97, Station D, Atlanta, Ga.
Mar. 19, 1956	Dorr-Oliver, Inc.	Barry Pl., Stamford, Conn.
Jan. 5, 1953	Fertilizer Engineering & Equipment Co., Inc.	Memorial Dr., Green Bay, Wis.
Sept. 22, 1953	Fertilizer Equipment Sales Corp.	Post Office Box 1968, Atlanta, Ga.
Feb. 20, 1956	The Fluor Corp., Ltd.	Post Office Box 7030, East Los Angeles Branch, Los Angeles, Calif.
Jan. 19, 1953	Link-Belt Co.	300 West Pershing Rd., Chicago, Ill.
Oct. 23, 1957	Manitowoc Shipbuilding, Inc.	Manitowoc, Wis.
Aug. 22, 1958	W. J. Savage Co.	912 West Clinch St., Knoxville, Tenn.
Nov. 7, 1950	Sturtevant Mill Co.	Park and Clayton Sts., Dorchester, Boston, Mass.
Apr. 15, 1955	The D. M. Weatherly Co.	80 11th St. NE., Atlanta, Ga.

TENNESSEE VALLEY AUTHORITY LICENSE TO _____
UNDER U. S. PATENT NO. 2,528,514

THIS AGREEMENT, made and entered into this ____ day of _____ _____, 195__, by and between TENNESSEE VALLEY AUTHORITY, a corporation of the United States, existing under and by virtue of an Act of Congress (hereinafter called "TVA"), and _____, a corporation existing under and by virtue of the laws of the State of _____ and having an office at _____ (hereinafter referred to as "Licensee"),

WITNESSETH:

WHEREAS, TVA is the owner of U. S. Patent No. 2,528,514 relating to a process for manufacturing superphosphate; and

WHEREAS, Licensee desires to use the process covered by the foregoing patent in its production of fertilizer materials; and

WHEREAS, TVA is willing to grant Licensee a license to use such process in accordance with the terms and conditions set out below;

NOW, THEREFORE, in consideration of the foregoing and of the mutual covenants and agreements hereinafter set forth, the parties agree as follows:

1. Subject to the terms and conditions hereinafter stated, TVA grants unto Licensee a royalty-free, nonexclusive, nonassignable (except to Licensee's successors in business) license to use the process covered by U. S. Patent No. 2,528,514. The license granted hereunder shall endure for the life of said patent.

2. TVA makes no warranties or representations with respect to the process covered by this agreement other than that TVA has legal title to U. S. Patent No. 2,528,514. TVA assumes no responsibility with respect to the defense or prosecution of any rights under said patent or in connection with any litigation arising therefrom or relating thereto. Licensee, to the extent that it uses said process, shall do so entirely and solely at its own risk.

3. Licensee shall report to TVA in writing as of each July 1 during the life of this agreement the number of months during the preceding twelve months' period in which the process has been used by it.

4. No member of or delegate to Congress or resident commissioner or any officer or agent of TVA shall be admitted to any share or part of this agreement or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement when made by a corporation for its general benefit.

IN WITNESS WHEREOF, the parties have caused this agreement to be executed by their duly authorized officers, and their respective corporate seals to be hereunto affixed, as of the day and year first above written.

ATTEST: _____ TENNESSEE VALLEY AUTHORITY

_____ By _____
General Manager

ATTEST: _____

_____ By _____

_____ _____
(Title) (Title)

Licenses by TVA for use of liquid fertilizer processes (patent applications Serial No. 624,177 [1] and Serial No. 740,982 [2])

[For standard terms of licenses see the following forms]

Dates of licenses		Company	Address
Process 1 [1]	Process 2 [2]		
Sept. 18, 1958	Sept. 18, 1958	Agriform of Northern California, Inc.	Post Office Box 6, Woodland, Calif.
Aug. 21, 1958	Aug. 21, 1958	Aylward Fertilizer Co.	Sullivan, Ill.
Oct. 30, 1957	.....	J. C. Carlile Corp.	Post Office Box 2851, Denver, Colo.
Mar. 27, 1958	Aug. 21, 1958	William G. Cox Co.	Route 5, Jacksonville, Ill.
Dec. 19, 1957	.....	Davison Chemical Co., division of W. R. Grace & Co.	Baltimore, Md.
July 28, 1958	July 28, 1958	Delta Liquid Plant Food Co., Inc.	Alexander at North St., Greenville, Miss.
Apr. 10, 1958	.....	De Soto Chemical & Supply Co., Inc.	Post Office Box 60, Nesbit, Miss.
Jan. 9, 1958	.....	Farmers Liquid Fertilizer, Inc.	McCroy, Ark.
Feb. 4, 1958	.....	Liquid Fertilizers, Inc.	Greensboro, Ala.
Aug. 21, 1958	Aug. 21, 1958	Ouachita Fertilizer & Chemical Co.	Post Office Box 454, Monroe, La.
Mar. 3, 1958	Aug. 27, 1958	Southland Liquid Fertilizer Co.	Post Office Box 607, Boynton Beach, Fla.
Nov. 22, 1957	.....	West Kentucky Liquid Fertilizer Co., Inc.	Hopkinsville, Ky.

[1] With super acid.
[2] With super and wet process acids.

TENNESSEE VALLEY AUTHORITY AGREEMENT WITH _____ REGARDING USE OF PROCESS FOR PRODUCTION OF LIQUID FERTILIZERS

THIS AGREEMENT, made and entered into this ____ day of _____, 195__, by and between TENNESSEE VALLEY AUTHORITY, a corporation of the United States, existing under and by virtue of an Act of Congress (hereinafter called "TVA"), and _____, a corporation existing under and by virtue of the laws of the State of _____ and having an office at _____ (hereinafter referred to as "Licensee"),

WITNESSETH:

WHEREAS, M. M. Striplin, J. M. Stinson, and J. M. Potts, employees of TVA, have invented a process for the production of liquid fertilizers; and

WHEREAS, application for letters patent of the United States, Serial No. 624,177, covering the said invention, was filed by the said employees in the United States Patent Office and their entire interest in said invention and application for letters patent has been assigned to TVA; and

WHEREAS, Licensee desires to use said process; and

WHEREAS, it appears that the use of such process by Licensee under the terms hereinafter stated are consistent with TVA's statutory objectives and its policy regarding the use of inventions owned by it;

NOW, THEREFORE, in consideration of the foregoing and of the mutual covenants and agreements hereinafter set forth, the parties agree as follows:

1. Subject to the terms and conditions hereinafter stated, TVA grants unto Licensee a royalty-free, nonexclusive, nonassignable (except to Licensee's successors in business) license to use the process covered by each and every patent that may issue as a result of said application and any divisional or continuation applications derived

therefrom. TVA shall notify Licensee of the issuance of such patent or patents. The license granted hereunder shall endure for the life of such patent or patents.

2. TVA makes no warranties or representations with respect to said process or to any patents which may be issued thereon. TVA makes no commitment as to the prosecution of said application and is free to abandon the same in whole or in part without liability or obligation to Licensee. TVA assumes no responsibility with respect to the defense or prosecution of any rights in the process, or under its application for patent, or in connection with any litigation arising therefrom or relating thereto. Licensee, to the extent that it uses said process, shall do so entirely and solely at its own risk.

3. Licensee shall report to TVA in writing as of each July 1 during the life of this agreement the number of months during the preceding twelve months' period in which the process has been used by it.

4. No member of or delegate to Congress or resident commissioner or any officer or agent of TVA shall be admitted to any share or part of this agreement or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement when made by a corporation for its general benefit.

IN WITNESS WHEREOF, the parties have caused this agreement to be executed by their duly authorized officers, and their respective corporate seals to be hereunto affixed, as of the day and year first above written.

ATTEST: TENNESSEE VALLEY AUTHORITY

_____ By _____

Assistant Secretary *General Manager*

ATTEST:

By _____

_____ _____

(Title) (Title)

TENNESSEE VALLEY AUTHORITY AGREEMENT WITH _____ REGARDING USE OF PROCESS FOR PREPARATION OF STABLE LIQUID FERTILIZERS

THIS AGREEMENT, made and entered into this ___ day of _____, 195__, by and between TENNESSEE VALLEY AUTHORITY, a corporation of the United States, existing under and by virtue of an Act of Congress (hereinafter called "TVA"), and _____, a corporation existing under and by virtue of the laws of the State of _____ and having an office at _____ (hereinafter referred to as "Licensee"),

WITNESSETH:

WHEREAS, M. M. Striplin, J. M. Stinson, and J. A. Wilbanks, employees of TVA, have invented a process for the preparation of stable liquid fertilizers; and

WHEREAS, application for letters patent of the United States, Serial No. 740,982, covering the said invention, was filed by the said employees in the United States Patent Office and their entire interest in said invention and application for letters patent has been assigned to TVA; and

WHEREAS, Licensee desires to use said process; and

WHEREAS, it appears that the use of such process by Licensee under the terms hereinafter stated are consistent with TVA's statutory objectives and its policy regarding the use of inventions owned by it;

NOW, THEREFORE, in consideration of the foregoing and of the mutual covenants and agreements hereinafter set forth, the parties agree as follows:

1. Subject to the terms and conditions hereinafter stated, TVA grants unto Licensee a royalty-free, nonexclusive, nonassignable (except to Licensee's successors in business) license to use the process covered by each and every patent that may issue as a result of said application and any divisional or continuation applications derived therefrom. TVA shall notify Licensee of the issuance of such patent or patents. The license granted hereunder shall endure for the life of such patent or patents.

2. TVA makes no warranties or representations with respect to said process or to any patents which may be issued thereon. TVA makes no commitment as to the prosecution of said application and is free to abandon the same in whole or in part without liability or obligation to Licensee. TVA assumes no responsibility with respect to the defense or prosecution of any rights in the process, or under its application for patent, or in connection with any litigation arising therefrom or relating thereto. Licensee, to the extent that it uses said process, shall do so entirely and solely at its own risk.

3. Licensee shall report to TVA in writing as of each July 1 during the life of this agreement the number of months during the preceding twelve months' period in which the process has been used by it.

4. No member of or delegate to Congress or resident commissioner or any officer or agent of TVA shall be admitted to any share or part of this agreement or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement when made by a corporation for its general benefit.

IN WITNESS WHEREOF, the parties have caused this agreement to be executed by their duly authorized officers, and their respective corporate seals to be hereunto affixed, as of the day and year first above written.

ATTEST: TENNESSEE VALLEY AUTHORITY

_____ By _____

Assistant Secretary *General Manager*

ATTEST:

_____ By _____

_____ _____

(Title) (Title)

Licenses by TVA for use of other processes or equipment

Date of License	Company	Address	Patent No.
June 9, 1955	The American Agricultural Chemical Co.	100 Church St., New York, N.Y.	United States 2,744,944; rotating furnace.
Apr. 15, 1955	----------	----------	United States 2,590,901; slag expansion.
Sept. 17, 1952	Apex Smelting Co	2537 West Taylor St., Chicago, Ill.	United States 2,488,568; aluminum-silicon alloys.
Dec. 11, 1957	Central Farmers Fertilizer Co.	205 West Wacker Dr., Chicago, Ill.	United States 2,589,272; calcium metaphosphate.
June 10, 1958	----------	----------	Patent application serial No. 648,445; superphosphoric acid.
Apr. 3, 1951	The English Mica Co	Sterling Bldg., Stamford, Conn.	United States 2,547,336; wet-ground mica. (5-year exclusive license expired in 1956.)
Apr. 2, 1951	Food Machinery & Chemical Corp.	161 East 42d St., New York, N.Y.	United States 2,221,770, 2,355,080, 2,509,228, and 2,532,322; phosphorus and phosphoric acid.
Sept. 8, 1948	The Harshaw Chemical Co.	1945 East 97th St., Cleveland, Ohio.	United States 2,419,255; carbon monoxide catalyst.
Dec. 5, 1955	International Minerals & Chemical Corp.	20 North Wacker Dr., Chicago, Ill.	United States 2,363,649, 2,474,831, 2,499,385, and 2,770,451; fused tricalcium phosphate.
July 23, 1956	----------	----------	United States 2,547,336; wet-ground mica.
Jan. 28, 1953	National Metallurgical Corp.	Springfield, Oreg	United States 2,488,568; aluminum-silicon alloys.
Feb. 12, 1952	Hooker Chemical Corp., Phosphorus division (formerly Shea Chemical Corp.).	1940 Ward St., Niagara Falls, N. Y.	United States 2,221,770, 2,355,080, 2,509,228, and 2,532,322; phosphorus and phosphoric acid.
Dec. 19, 1952	----------	----------	United States 2,590,901; slag expansion.
Aug. 1, 1951	Virginia-Carolina Chemical Corp.	Richmond, Va	United States 2,509,228; phosphate reduction furnace.

NOTE.—Standard terms: These licenses are nonexclusive, nontransferable, royalty-free and require the licensee to report annually on the number of months the invention was in actual use.

TENNESSEE VALLEY AUTHORITY AGREEMENT, WITH _____, REGARDING USE OF PROCESS FOR PRODUCTION OF SUPERPHOSPHORIC ACID

THIS AGREEMENT, made and entered into this _____ day of _____, 195__, by and between TENNESSEE VALLEY AUTHORITY, a corporation of the United States, existing under and by virtue of an Act of Congress (hereinafter called "TVA"), and _____, a corporation existing under and by virtue of the laws of the State of _____ and having an office at _____ (hereinafter referred to as "Licensee"),

WITNESSETH:

WHEREAS, M. M. Striplin, D. McKnight, and E. C. Marks, employees of TVA, have invented a process for the production of superphosphoric acid; and

WHEREAS, application for letters patent of the United States, Serial No. 648,445, covering the said invention, was filed by the said employees in the United States Patent Office and their entire interest in said invention and application for letters patent has been assigned to TVA; and

WHEREAS, Licensee desires to use said process; and

WHEREAS, it appears that the use of such process by Licensee under the terms hereinafter stated is consistent with TVA's statutory objectives and its policy regarding the use of inventions owned by it;

NOW, THEREFORE, in consideration of the foregoing and of the mutual covenants and agreements hereinafter set forth, the parties agree as follows:

1. Subject to the terms and conditions hereinafter stated, TVA grants unto Licensee a royalty-free, nonexclusive, nonassignable (except to Licensee's successors in business) license to use the process covered by each and every patent that may issue as a result of said application and any divisional or continuation applications derived therefrom. TVA shall notify Licensee of the issuance of such patent or patents. The license granted hereunder shall endure for the life of such patent or patents.

2. TVA makes no warranties or representations with respect to said process or to any patents which may be issued thereon. TVA makes no commitment as to the prosecution of said application and is free to abandon the same in whole or in part without liability or obligation to Licensee. TVA assumes no responsibility with respect to the defense or prosecution of any rights in the process, or under its application for patent, or in connection with any litigation arising therefrom or relating thereto. Licensee, to the extent that it uses said process, shall do so entirely and solely at its own risk.

3. Licensee shall report to TVA in writing as of each July 1 during the life of this agreement the number of months during the preceding twelve months' period in which the process has been used by it.

4. No member of or delegate to Congress or resident commissioner or any officer or agent of TVA shall be admitted to any share or part of this agreement or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement when made by a corporation for its general benefit.

IN WITNESS WHEREOF, the parties have caused this agreement to be executed by their duly authorized officers, and their respective corporate seals to be hereunto affixed, as of the day and year first above written.

ATTEST: TENNESSEE VALLEY AUTHORITY

---------- By ----------

Assistant Secretary *General Manager*

ATTEST:

---------- By ----------

---------- ----------

(Title) (Title)

LICENSES BY TVA FOR USE OF MISCELLANEOUS PATENTS

1. Birmingham Ice & Cold Storage Co., Birmingham, Ala.; license dated February 14, 1941; TV60820 and TV60821:

United States patent 2,164,362; a process for freezing foods.

United States patent 2,172,417; a process for washing food with a refrigerant.

United States patent 2,172,418; a process for separating refrigerant from frozen foods.

Pending patent application serial No. 275,701; a process for purification of refrigerant.

Pending patent application serial No. 288,346; a refrigerant composition.

Pending patent application serial No. 293,598; apparatus for freezing foods.

Comments: This license was never used by the licensee.

2. Chickamauga Producers, Inc., Dayton, Tenn.; license dated May 9, 1941:

United States patent 2,164,362; a process for freezing foods.

United States patent 2,172,417; a process for washing food with a refrigerant.

United States patent 2,172,418; a process for separating refrigerant from frozen foods.

Pending patent application serial No. 275,701; a process for purification of refrigerant.

Pending patent application serial No. 288,346; a refrigerant composition.

Pending patent application serial No. 293,598; apparatus for freezing foods.

Comments: Freezing operations were never carried out under this license. The licensee filed a petition in bankruptcy on July 11, 1947, and discontinued its operations as of that time.

3. Instruments Corp., 4 North Central Avenue, Baltimore, Md.; license dated September 16, 1952:

Patent application serial No. 350,540; now United States patent 2,690,553; telemetric device.

Terms: Implied nonexclusive, royalty free; stated to be for term of pendency of application only—to be replaced by formal license in accordance with TVA policy in effect after issue of patent.

4. Stephenson Brick Co., Inc., Birmingham, Ala.; license dated November 21, 1950; TV46439:

United States patent 2,063,953. Glazed ceramic ware and method of making.

Terms: License is royalty free, nontransferable, limited to Stephenson's Cordova plant only for the term of an investigation period of 3 months; then geographically unrestricted.

5. S. Neil Varnell, Cleveland, Tenn.; license dated March 3, 1939. TV38191; a combination lease of surplus equipment and license under patent applications:

Serial No. 217,971; a process for freezing foods.

Serial No. 219,426; a refrigerant composition.

Serial No. 237,473; apparatus for freezing foods.

Comments: The Varnell enterprise failed in 1941.

6. Dixie Frosted Foods Co., Birmingham, Ala.; license dated January 1, 1943; a combination lease of surplus equipment and license under patents:

United States patent 2,164,362; a process for freezing foods.

United States patent 2,172,417; a process for washing food with a refrigerant.

United States patent 2,172,418; a process for separating refrigerant from frozen foods.

United States patent 2,304,860; apparatus for freezing foods.

Comment: This company was liquidated by foreclosure sale on February 23, 1948.

Exclusive licenses from TVA to TVA employee-inventors

Date of license	Employee-inventor	Patent No.
May 2, 1940	Robert A. Noor	Patent No. 2,183,465; football charging machine.
Nov. 4, 1942	Joseph A. Hardin	Patent No. 2,286,732; electric furnace.
May 31, 1949	Norman W. Hatker	Patent No. 2,565,769; electric heater.
Aug. 5, 1949	Jesse Ebersole	Application No. 100,277; variable pitch slant mechanism engine.
Nov. 14, 1955	R. Bruce Shipley	Application No. 535,047; testing apparatus for impedance or distance relays.

86th Congress
1st Session

COMMITTEE PRINT

PATENT PRACTICES OF THE VETERANS' ADMINISTRATION

PRELIMINARY REPORT

OF THE

SUBCOMMITTEE ON

PATENTS, TRADEMARKS, AND COPYRIGHTS

OF THE

COMMITTEE ON THE JUDICIARY

UNITED STATES SENATE

EIGHTY-SIXTH CONGRESS, FIRST SESSION

PURSUANT TO

S. Res. 53

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FOREWORD

Are the disabled of America reaping the benefits of the Veterans' Administration research in the field of prosthetic appliances, as Congress intends they should? This question is posed by the following report on patent practices of one of the Government agencies having research and development responsibilities.

The report was prepared by Herschel F. Clesner of the subcommittee staff, under the supervision of Robert L. Wright, chief counsel of the Subcommittee on Patents, Trademarks, and Copyrights, as part of the subcommittee's study of the U.S. patent system, conducted pursuant to Senate Resolution 53 of the 86th Congress, 1st session. It is the third of a series dealing with patent practices of the various agencies. Their purpose and scope are more fully described in the forewords of the reports on patent practices of the Tennessee Valley Authority and the National Science Foundation and in the annual report of the subcommittee issued on March 9, 1959.

This report deals with the practices of an agency which, as in the case of TVA, has been specifically authorized by Congress to make its research results available to the general public; the law passed by Congress provides that the Veterans' Administration may make results of its research in the prosthetic field available to all disabled persons, as well as to veterans. However, the comparatively loose procedures used by VA to accomplish this result present sharp contrast with the procedures used by TVA.

Although the VA states that it believes mere publication of research results would be inadequate to make them available to the general public, it has also found it unecessary for the Government to take title to any inventions produced by its research contractors. The justification for leaving title with the contractors is that the Government has reserved the right to direct the contractors to issue royalty-free licenses, when and if the VA finds that such licenses are necessary to accomplish the statutory purpose to permit all disabled persons to share in the benefits of a patented discovery. However, the fact that the VA itself has not maintained a complete record of the use made of these inventions and has never had occasion to use its power to compel such licensing, leaves doubt as to whether the VA is in a position to say with confidence that the statutory purpose of making the results of its prosthetic research available to all disabled persons has, in fact, been fully accomplished.

The VA policy of relying heavily on the Orthopedic Appliance and Limb Manufacturers Association to see that improved prosthetic techniques are made available to the general public may have been satisfactory during a period when VA research was producing only a few inventions of limited application. That policy may be wholly inadequate as applied to the presently developing situation in which inventions of wider application are now being produced. Whether or not

title to such inventions should be allowed to vest in private parties is a matter that deserves the urgent attention of Congress. Forthcoming reports will show that other agencies with a similar obligation to make research results available to the general public have chosen still other means of reaching this result and the question arises as to whether or not this is a matter which should be left to varying and conflicting policies, evolved without any statutory guide.

In conclusion, I should like to call attention to the part of the report which relates how a doctor employed by VA voluntarily assigned a medical invention he had made to the United States, even though he was not required to do so. This was a gratifying exhibition of concern for the public interest over and above the call of duty.

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

JUNE 18, 1959.

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APPENDIX

PRELIMINARY REPORT AS TO THE PATENT PRACTICES OF THE VETERANS' ADMINISTRATION

I. Legal Authority as to Patents

The Veterans' Administration received specific authority to enter into contracts for research purposes from which inventions might result with the enactment of Public Law 346, 78th Congress, June 22, 1944, and Public Law 729, 80th Congress, June 19, 1948. These laws were first codified as title 38 United States Code, sections 253, 254, and 697(a).

Section 253 stated:

> There is authorized to be appropriated annually to the Veterans' Administration and to remain available until expended the sum of $1,000,000 to be expended, in accordance with laws now or hereafter applicable to the Veterans' Administration, for prosthetic research, including all forms of prosthetic and orthopedic appliances and sensory devices.

Section 254 stated:

> In carrying out the research program authorized by section 253 of this title the Administrator of Veterans' Affairs is authorized to make available the results of his investigations to private or public institutions or agencies and to individuals in order that the unique investigative materials and research data in the possession of the Government may result in improved prosthetic appliances for all disabled persons.

Public Law 85–857, 85th Congress, 2d session, H.R. 9700, September 2, 1958, which became effective January 1, 1959, recodified sections 253 and 254, as section 216, which states:

> The Administrator shall conduct research in the field of prosthesis, prosthetic appliances, orthopedic appliances, and sensory devices.
>
> In order that the unique investigative materials and research data in the possession of the Government may result in improved prosthetic appliances for all disabled persons, the Administrator may make available to any person the results of his research.

The VA states that "there is no change of substance" [1] as a result of the recodification because the purpose was merely to simplify the language of old sections 253 and 254. It, therefore, seems clear that the VA is obligated to make the results of its prosthetic research available to all disabled persons as well as to veterans.

[1] Letter of Oct. 10, 1958, to Hon. Joseph C. O'Mahoney, chairman, Subcommittee on Patents, Trademarks and Copyrights, Committee on the Judiciary of the U.S. Senate from Ouy H. Birdsall, General Counsel, Veterans' Administration, hereinafter cited as letter of Oct. 10, 1958.

Section 697(a) granted general authority to engage in and control medical research. This section has been recodified as section 213 with no change in meaning.

Public Law 85–934, 85th Congress, 2d session, S. 4039, September 6, 1958, granted the VA and other Government agencies specific authority to issue research grants to nonprofit organizations.

II. Present Practice

A. Administration

1. Personnel

The Veterans' Administration is presently spending annually about $15 million for medical research (including $1 million for prosthetic research) which is producing a substantial number of inventions.

The VA has no staff setup to deal exclusively or primarily with patent matters but the General Counsel is authorized to act for the Administrator of Veterans' Affairs in patent and invention matters. The contracting officer and the scientific officer also act on patent and invention matters as part of the duties of their office. Records relating to patents developed under research contracts in the field of prosthetic and orthopedic appliances and sensory devices are maintained by a GS–6 employee who devotes less than 10 percent of his time thereto.

Prior to September 4, 1953, if it appeared that an employee invention was a matter of public interest, the matter was referred to the Civil Division of the Department of Justice. Since that time the Department of the Army has processed such employees' patent applications pursuant to the provisions of 31 U.S.C. 686.[2]

2. Performance statistics

The Veterans' Administration has caused the Government to take title to two patents developed by employees, one of which covers a blood oxygenator.[3]

Patent applications have been filed at Government expense in cases in which the inventions were made by VA employees or arose out of VA programs. The Government obtained a royalty-free license for use and manufacture for governmental purposes in all of these cases except the two noted above.

[2] This provision provides that departments or agencies of the Government may perform services for each other.

[3] U.S. Patent No. 2833279.

Year filed	In case of employee		Under research contract		Total cases filed
	By Justice	Other	By Justice	Other	
1937–1941					0
1942	1				1
1943–45					0
1946			1		1
1947			18	2	20
1948			15	6	21
1949	1		3		4
1950	1		2		3
1951	1		3		4
1952			2	6	8
1953	2			1	3
1954		1			1
1955				1	1
1956	2	4			6
1957					0
Total	8	5	44	16	73

B. POLICY AS TO RETENTION OF TITLE

The Veterans' Administration, after initiating its prosthetic research program, concluded that "publication of results would not protect the interests of disabled persons as effectively as patents would, if the patents are properly controlled." [4] The VA believes that with mere publication outsiders could still obtain patents on these inventions, but that their chances would be much less if patent applications were filed in the first instance by either the VA or the contractor. Under present VA policy, the results of all research are published and where an invention is made which is the product of VA expenditure a patent application is filed. However, as noted above, VA itself has taken title to the patent in only two instances.

1. Employees

The determination of invention rights as between the Government and the employee is made by the General Counsel of the VA. The VA has left title to the invention in the employee in all instances but two, retaining for the Government a nonexclusive, irrevocable, royalty-free license in the invention for all governmental purposes. These decisions have been subject to the approval of the Chairman of the Government Patents Board.[5]

An employee may file simultaneously for an incentive award for his invention under the Federal departments and agencies incentive award program authorized by title 5 United States Code, sections 2121–2123. This action by the employee does not affect his right to a patent, nor does the filing of a patent application affect his filing for an incentive award.

2. Contractors and Grantees

The Veterans' Administration treats the rights to patents as a matter for negotiation between the parties to a research grant or contract. Usually these contracts provide that inventions and patents are the property of the contractor or grantee subject to a nonexclusive, irrevocable, royalty-free license to the Government for the use and

[4] Letter of Oct. 10, 1958, supra.
[5] See Executive Order 10096, dated Jan. 23, 1950.

manufacture of the invention for governmental purposes. The VA, in addition, usually acquire the right to reproduce and disclose technical information, designs, drawings, reports, and data pertaining to the invention.

The Veterans' Administration originally drafted a "short form"[6] and later a "long form"[7] patent clause to be used in its research contracts. Under the "short form" clause the Government retains all foreign and domestic rights to inventions and the VA's contracting officer determines whether patents should be applied for. The VA at present has 10 contracts still in effect containing the "short form" or the "modified short form"[8] clauses. Six contracts containing the "short form," "modified short form A"[9] and the "Modified short form B"[10] clauses have terminated. The "modified short form A" and "modified short form B" clauses are essentially identical to the "short form" clause except that both of these "modified" forms state that the contractor is relieved from any obligation of prior art searches, the preparation, filing, and prosecution of patent applications, determination of questions of novelty, patentability, and inventorship. The "modified short form A" also states that the contractors are not responsible to the Government for any default caused by an employee directly engaged in the contract work who breaches an agreement with the contractor to execute all documents and other required duties necessary to fulfill the contract. The "modified short form" patent contract clause states that whenever any patentable invention is made by the contractor or its employees in the course of the contract, the VA contracting officer has the sole power to determine whether or not a patent application shall be filed, and to determine the disposition of the title to and the rights under any application or patent that may result. Although contracts containing the "short form" and the various "modified short forms" patent clauses have been in use since World War II, the Veterans' Administration has yet to file any patent applications for inventions resulting from these research contracts.

The "short form" patent clause in contracts for the development of prosthetic devices was originally prepared by the Judge Advocate General's Office of the Department of the Army at the request of the then Secretary, Robert Patterson, in order to aid civilian employees injured in war plants as well as injured servicemen. For this purpose it was deemed necessary that the Government retain title to the invention and whatever other rights that would be the result of the contract. However, the VA has never insisted that the "short form" be inserted in its contracts.

Under the terms of the "long form" patent clause, if the contractor chooses to apply for a patent, the Government only retains for its own use a nonexclusive, irrevocable, royalty-free license to the invention in the United States and the right to file for foreign patents. If the contractor does not wish to apply for a patent then the Government may. Although the contractor obtains title to the invention under this clause he may not grant licenses without the permission of the Veterans' Administration and is obligated to grant royalty-free licenses to whosoever is designated by the Veterans' Administration.

[6] See app. A.
[7] See app. B.
[8] See app. C.
[9] See app. D.
[10] See app. E.

At present the Veterans' Administration has seven contracts still in effect and seven terminated contracts containing the "long form" patent clause.

The so-called "modified long form" [11] patent clause provides that the invention shall be the property of the Government but that the contracting officer may designate the form in which title shall be held. At the present time the VA has only one contract outstanding containing this clause. It also had one contract with a patent clause that the Veterans' Administration has designated as a "special form",[12] where the Government had no right to title.

The VA also contracts to pay the contractor the costs that are required to file for and prosecute an application for a patent even though the contractor will have title and the Government merely license rights. The Veterans' Administration reviewed 22 patents which were obtained from 1946 through 1952 as a result of the VA's contracting program and found the approximate average cost for each patent was $402.

C. FOREIGN FILING

Regulation 652(b) [13] of the Veterans' Administration recites that part of Executive Order 9865 which states: "All Government departments and agencies shall, whenever practicable, acquire the right to file foreign patent applications on inventions resulting from research conducted or financed by the Government * * *." The VA has informed the subcommittee in a letter dated January 13, 1958, that under the provisions of Presidential Executive Order 9865 "applications for foreign patents did not appear to be practicable under the circumstances." No funds have been appropriated for this purpose. The Veterans' Administration has therefore never made application for patents in foreign countries.

1. Employees

Veterans' Administration has no information as to foreign applications on patents owned by employees. It regards as impracticable the reservation of power to grant licenses for governmental purposes under employee's foreign patents provided for in regulation 652(b).

2. Contractors and grantees

The Veterans' Administration has no information as to whether any of its contractors have filed for foreign patents on inventions developed under VA research contracts.

D. USE BY PARTIES RETAINING TITLE

1. Employees and contractors

The Veterans' Administration has no complete records indicating usage by veterans or by the general public of the inventions produced by its research. These include prosthetic and orthopedic appliances, and sensory devices, as well as newly discovered or improved fitting principles, which are of public importance but no effort is made to maintain complete records of specific applications of these devices. The Veterans' Administration, therefore, believes that its information

[11] See app. D.
[12] See app. E.
[13] Veterans' Administration Regulations 650-663, 38 C.F.R. 1.650-1.663.

and experience is too limited to afford a basis for determining the commercial value of the inventions developed by Veterans' Administration funds.

However, the Veterans' Administration has knowledge that some devices developed as a result of its research program are widely used. For example, Threewit, U.S. Patent No. 2493841, terminal connection for control cables, and Motis, U.S. Patent No. 2509445, entitled "Quick disconnect anchor-fitting for Bowden cables" are used on most of the present artificial arms. Other inventions, such as the two elbow locks patented as a result of the Northrop and Hosmer subcontracts (Fishbein, Nagy, and Threewit, U.S. Patent No. 2537338 and Lambert, U.S. Patent No. 2573032, respectively), under the VA's research program were widely used for a few years but have since been replaced by another invention, the Nortbrop model C. Threewit, covered by U.S. Patent No. 2637042. Another similar example is the Northrop rotary wrist for below-elbow amputees, U.S. Patent Nc. 2457316, which was widely used for a few years but has since been largely abandoned.

The Veterans' Administration has had developed under contract an experimental machine which will electronically scan printed material and transform the material into sound patterns for transmission. From this start, the VA presently has underway a program of contract research to provide various types of advanced reading machines of varying complexity for the blind. It is hoped that these devices will be perfected and will allow the blind to read through sound impressions material in normal print including typewritten business correspondence.

Although the VA has never used the power retained in its research contracts to control licenses, the Veterans' Administration and its advisory body, the Prosthetics Research Board of the National Academy of Sciences—National Research Council, which serves also in a correlative capacity to the Veterans' Administration in an integrated program of research on artificial limbs and braces, "have always been satisfied that the results of the research program have in fact been made available for all disabled persons at reasonable prices. Neither the scientific officer of the Veterans' Administration's Prosthetic and Sensory Aids Service nor his advisers have therefore ever suggested that *it was necessary to invoke the right of the Veterans' Administration to name licensees under the existing patents.*" [14] [Emphasis supplied.]

No formal licenses have been issued for the use of any inventions produced by the expenditure of VA funds since 1947. In 1947 formal licenses were issued under the inventions made by Northrup Aircraft and Hosmer Corp., then subcontractors to the National Academy of Sciences-National Research Council which in turn had a private contract with the Government.

The following are the reasons advanced by VA for not requiring the issuance of formal licenses on the patents which they control.

> For several reasons it has not appeared necessary in the opinion of the scientific officer or his advisers to issue formal licenses on their patents. Some patents relate to improvements of relatively limited application so that there is little

[14] Letter of Dec. 10, 1958, to Hon. Joseph C. O'Mahoney, chairman, Subcommittee on Patents, Trademarks, and Copyrights, Committee on the Judiciary, U.S. Senate, from William S. Middleton, Chief Medical Director, Veterans' Administration.

commercial jealousy in regard to their usefulness, although they may be potentially useful in future improvements and are valuable in building up the patent position of the Government. A major factor has been the growing tendency of individual limb manufacturers to buy prefabricated components from one or from a very few central manufacturers, particularly in the case of some of the more complex and sophisticated devices arising from the artificial limb program. Therefore, individual licenses to large numbers of limb manufacturers have not been deemed necessary as might have been the case in former days when each limb facility made practically the entire limb on its own premises. Another major factor has been the growing professional spirit among the limb manufacturers, in pleasant contrast to the situation at the end of World War II. The Orthopedic Appliance & Limb Manufacturers Association and the American Board for Certification have been very cooperative with the research program of the Veterans' Administration, and in fact practically every director of the American Board for Certification has been closely associated with the research program. A code of ethics was adopted by the Orthopedic Applicance & Limb Manufacturers Association under the sponsorship of the Federal Trade Commission in April 1946 and was adopted by the American Board for Certification in August 1948. Item 19 in the Code of Unfair Trade Practices is particularly pertinent:

"(19) To fail to recognize that the interest of the amputee and the handicapped is the first concern of this craft and therefore any failure to make available to all of its members and the general public any improved technique that may be used as to making, fitting, alining or servicing of industry products shall be an unfair trade practice." [15]

The Veterans' Administration makes available to the various prosthetic educational centers the latest techniques for using the specific components and devices resulting from the Veterans' Administration program. Reports, reprints of significant papers, pamphlets, and other informational publications are also made available.

No contractor has ever requested authority from VA to issue a license. VA states that because of the limited market for its inventions the major problem has sometimes been to interest a reliable manufacturer in making the devices in question. Normally, while a device is still being developed and evaluated, the Veterans' Administration attempts to arrange for production engineering of the inventor's model and for the manufacture of a limited number (10 to 100) of test models for evaluation on a larger scale. The engineering services and models are obtained after an informal canvass, with the cooperation of the Orthopedie Appliance & Limb Manufacturers Association, of firms likely to be qualified and interested. In many cases only a few firms show an interest in building the best models. It normally develops that later production of a further improved model is undertaken by the same firm which built the test models.

[15] Supra, note 14.

2. Government

Title to the patent previously referred to as covering a blood oxygenator is held by the Secretary of the Army. The invention was made by Dr. Frank Gollan, an employee of the Veterans' Administration at its hospital in Nashville, Tenn. The patent was granted on May 6, 1958, as U.S. Patent No. 2833279 and is presently used in a number of VA hospitals. Title was taken by the Government in this instance because the invention was made in the course of research activity to which Dr. Gollan had been assigned. There have been no requests for licenses under this patent and it has not yet been used commercially.

The other employee patent previously referred to relates to a synthetic blood plasma extender and is assigned to the Administrator of Veterans' Affairs. This patent, U.S. Patent No. 2866783, was granted on December 30, 1958, to Dr. Max Bovanick. The invention was assigned to the United States at the request of the employee who did not develop this invention in the course of his assigned duties.

III. Agency Viewpoint

A. Judgment as to effectiveness of present policy

The Veterans' Administration states[16] that it "knows of no instance in which different policies might have proven useful to the Government or in the public interest" and that "the present patent policy seems to be conducive to the effective discharge of agency responsibilities."

B. Recommendations as to future policy

None were offered.

[16] Letter to Hon. Joseph C. O'Mahoney, chairman, Senate Judiciary's Subcommittee on Patents, Trademarks and Copyrights from Guy H. Birdsall, General Counsel, Veterans' Administration, dated January 13, 1958.

APPENDIX

Short Form Patent Clause

Article 7. *Patent Provisions.* The Government shall be entitled to all rights to discoveries or inventions, made, produced, or developed in the performance of this contract, and the Contractor agrees to assign or cause to be assigned to the Government any discovery or invention subject to patent or copyright made, produced, or developed by the Contractor or its officers and employees in the course of the subject work, together with all rights to patents or copyrights, domestic and foreign, which may be obtained or obtainable in respect to any such discovery or invention; and the Contractor further agrees to execute and deliver or cause to be executed and delivered to the Contracting Officer or his designee such instruments of assignment and other documents as the Contracting Officer or his designee deems necessary to vest in the Government all rights to such discoveries or inventions, patents, or copyrights. The Contractor shall include the provisions of this Article in all contracts of employment with persons who perform any part of the subject work.

List of contractors using this clause

	Number of contract
Active:	
Haskins Laboratories, Inc	V1005M–1254
Haverford College	V1001M–1900
Houston Speech and Hearing Center	V1005M–1239
Massachusetts General Hospital	V1001M–1766
H. A. Mauch Research & Development Laboratory	V1005M–1412
National Academy of Sciences	VAm–21223
San Francisco Hearing and Speech Center	V1005M–1099
University of Southern California	V1005M–458
Wayne State University	V1005M–163
Inactive:	
Battelle Memorial Institute	V1005M–1261
Central Institute for the Deaf	V1001M–577
H. A. Mauch Research & Development Laboratory	V1005M–1410
Mellon Institute	V1001M–4497

Modified Short Form Patent Clause A

Article 7. *Patent Provisions.* The Government shall be entitled to all rights to discoveries or inventions, made, produced, or developed in the performance of this contract, and the Contractor agrees to assign or cause to be assigned to the Government any discovery or invention subject to patent or copyright made, produced, or developed by the Contractor or its officers and employees in the course of the subject work, together with all rights to patents or copyrights, domestic and foreign, which may be obtained or obtainable in respect to any such discovery or invention; and the Contractor further agrees to execute and deliver or cause to be executed and delivered to the

Contracting Officer or his designee such instruments of assignment and other documents as the Contracting Officer or his designee deems necessary to vest in the Government all rights to such discoveries or inventions, patents, or copyrights. The Contractor shall include the provisions of this Article in all contracts of employment with persons who perform any part of the subject work.

If the Contractor shall secure from each employee directly engaged in the subject work of this contract a written agreement to execute all documents and do all things necessary or proper to carry out the judgment of the Contracting Officer, the Contractor shall not be responsible to the Government for any default under this section on its part which is caused by the non-performance under such agreement by such employee.

It is agreed that the making of prior art searches, the preparation, filing, and prosecution of patent applications, the determination of questions of novelty, patentability and inventorship, as well as other functions of a patent attorney are excluded from the duties of the Contractor.

List of contractors using this clause

Inactive: Columbia University V1001M-3376

Modified Short Form Patent Clause B

Article 7. *Patent Provisions.* The Government shall be entitled to all rights to discoveries or inventions, made, produced, or developed in the performance of this contract, and the Contractor agrees to assign or cause to be assigned to the Government any discovery or invention subject to patent or copyright made, produced, or developed by the Contractor or its officers and employees in the course of the subject work, together with all rights to patents or copyrights, domestic and foreign, which may be obtained or obtainable in respect to any such discovery or invention; and the Contractor further agrees to execute and deliver or cause to be executed and delivered to the Contracting Officer or his designee such instruments of assignment and other documents as the Contracting Officer or his designee deems necessary to vest in the Government all rights to such discoveries or inventions, patents, or copyrights. The Contractor shall include the provisions of this Article in all contracts of employment with persons who perform any part of the subject work. It is understood that the prosecution of patent applications, the determination of questions of novelty, patentability, prior art researches and inventorship, as well as other functions of the patent attorney are excluded from the duties of the Contractor.

List of contractors using this clause

Inactive: University of Chicago V1001M-2846

Modified Short Form Patent Clause

Article 7. *Patent Provisions.* Whenever any patentable discovery or invention is made by the Contractor or its employees in the course of the Subject Work, the Contracting Officer shall have the sole power to determine whether or not a patent application shall be filed, and to determine the disposition of the title to and the rights under any

application or patent that may result. The judgment of the Contracting Officer on such matters shall be accepted as final, and the Contractor, for itself and for its employees, agrees that the inventor or inventors shall execute all documents and do all things necessary or proper to carry out the judgment of the Contracting Officer. The Contractor shall include the provisions of this Article in all contracts of employment with persons who do any part of the subject work.

List of contractors using this clause

Active: National Academy of Sciences V1005M–1914

Long Form Patent Clause

(Revised January 25, 1952)

Article 7. *Patent Provisions.* (a) Where used in this Article and not elsewhere in this contract, the expression "Subject Invention" means any invention, improvement and discovery (whether or not patentable or subject to copyright) conceived or first actually reduced to practice (1) in the performance of this contract, including any subcontract hereunder except subcontracts for standard commercial items or subcontracts which do not involve either research or development (including engineering which amounts to either research or development) beyond that normally incident to the performance of a supply contract for the class of item involved, or (ii) in the performance of any research or development work relating to the subject matter hereof which was done upon the understanding that this contract or any subcontract hereunder would be awarded; the expression "Technical Personnel" means any person employed by or working under the direction of this contractor or any subcontractor hereunder who, by reason of the nature of his duties in connection with the performance of this contract, or any subcontract hereunder would reasonably be expected to make inventions; the expression "Contractor's Patent Rights" means all patents and applications for patent, under which Contractor now has or may hereafter prior to final settlement acquire the right (without obligation to make payment to others) to grant the license hereinafter set forth, to the extent that they are based upon the disclosure of inventions (other than a Subject Invention) which relate to or are useful in connection with the manufacture or use of the subject matter of this Contract; and the terms "subcontract" and "subcontractor" mean any subcontract or subcontractor of the contractor, and any lower-tier subcontract or subcontractor under this contract.

(b) Contractor agrees to and does hereby grant to the Government an irrevocable, nonexclusive, nontransferable and royalty-free license to practice, and cause to be practiced for the Government, throughout the world, (i) each Subject Invention in the manufacture, use, and disposition according to law of any article or material, and the use of any method; *provided*, however, that as respects any Subject Invention made by Technical Personnel employed by or under contract with the Contractor prior to the date of this contract whom Contractor has in good faith endeavored to being under agreement to pass, or giving Contractor the right to pass, to the Government the rights herein provided, and as respects any Subject Invention made by others

than Technical Personnel, and as respects the practice of any Subject Invention in foreign countries, the said license and other rights hereinafter provided shall be to the extent of Contractor's right to grant the same; and provided, further, that with respect to any subcontract hereunder, Subcontractor's obligations under this article will be discharged upon its including in such subcontract a patent right or copyright article not less favorable to the Government than as herein *provided;* and (ii) each invention covered by Subcontractor's Patent Rights in the manufacture, use, and disposition according to law of any and all discoveries, inventions, devices, and parts thereof of the type made or developed in the performance of this contract or any subcontract hereunder, and any modification or improvement thereof, but acceptance or exercise of said license shall not estop the Government at any time to contest the enforceability, validity, or scope of, or the title to, any patent or copyright so licensed.

(c) In consideration of the premises, the nature of the subject matter, and the payments indirectly made by the Government under this contract, Contractor agrees to grant to any person, firm, or organization designated by the Administrator of Veterans Affairs, or the duly authorized representative of the Administrator, a nonexclusive, nontransferable, royalty-free license, revocable upon like designation of the Administrator, to practice and cause to be practiced the Subject Inventions and inventions under Contractor's Patent Rights for the manufacture of devices of the type or related to subject invention other than for the Government, and to grant no other license or licenses therefor.

(d) Contractor agrees (i) to deliver to the Contracting Officer, or his designee, promptly and in any event prior to final settlement, a complete written disclosure of each Subject Invention which reasonably appears to be patentable or subject to copyright and, as to each such invention, to exert its best efforts to effect such delivery within six months after first publication, public use or sale; (ii) to designate, at the time of such delivery, whether or not said invention has been or will be claimed in a patent or copyright application, and to file or cause to be filed in due form and time an application covering each such invention affirmatively so designated; (iii) to furnish to the Contracting Officer or his designee, on request, copies of an irrevocable power of attorney to inspect and make copies of each patent or copyright application filed by or on behalf of the Contractor covering any Subject Invention; (iv) to deliver to the Contracting Officer or his designee, duly executed, such instruments of assignment, application papers and rightful oaths, prepared by the Government, as the Contracting Officer or his designee deems necessary to vest in the Government (but, as hereinabove provided, only to the extent of Contractor's right to do so) the sole and exclusive ownership in, and the right to apply for and prosecute patent or copyright applications covering each Subject Invention which Contractor does not affirmatively designate as aforesaid (subject, however, to the reservation of a nonexclusive and royalty-free license thereunder to Contractor which license shall be assignable to the successor of that part of Contractor's business to which it pertains); and (v) to deliver to the Contracting Officer or his designee, duly executed, such instruments of license, prepared by the Government, confirmatory of any license

rights herein agreed to be granted to the Government, as the Contracting Officer or his designee may require.

(e) Contractor agrees to and does hereby grant to the Government, to the full extent of Contractor's right to do so, the right to reproduce, use and disclose for any purpose in furtherance of the development of subject invention or any invention or device in the same field all or any part of the reports, drawings, blueprints, data and technical information to be delivered by Subcontractors to the Contractor and the Government under this contract; *provided*, however, that nothing contained in this sentence shall be deemed to grant a license under any patent or copyright now or hereafter issued.

(f) Anything in this Article to the contrary notwithstanding, the Government shall have, and the Contractor does hereby grant to the Government, the right to file foreign patent or copyright applications on inventions resulting from research conducted or work performed under this contract.

List of contractors using this clause

	Number of contract
Active:	
Haskins Laboratories, Inc	V1005M–1253
New York University	V1005M–1917
Do	V1001M–184
Northwestern University	V1005M–1079
Do	V1005M–1080
Do	V1005M–1926
Do	V1001M–3614
Inactive:	
Alderson Research Laboratories, Inc	V1001M–3123
Board of Trustees of the Leland Stanford, Jr., University.	V1005M–716
Catranis, Inc	VAm–22995
Franklin Institute	V1001M–3768
Northrop Aircraft, Inc	VAm–23062
University of Michigan	V1001M–529
University of Rochester	V1001M–1681

Modified Long Form Patent Clause

2. *Article 7.* Patent Provisions is hereby amended to read as follows:

"(a) Where used in this Article and not elsewhere in this contract, the expression "Subject Invention" means each invention, improvement and discovery (whether or not patentable or subject to copyright) conceived or first reduced to practice (i) in the performance of this contract, including any subcontract hereunder except subcontracts for standard commercial items or subcontracts which do not involve either research or development (including engineering which amounts to either research or development) beyond that normally incident to the performance of a supply subcontract for the class of item involved, or (ii) in the performance of any research or development work relating to the subject-matter hereof which was done upon the understanding that this contract or any subcontract hereunder would be awarded (unless disclosed), in a patent or copyright application filed prior to the commencement of such performance): the expression "Technical Personnel" means each person employed by or working under the direction of Contractor or any subcontractor hereunder who, by reason of the nature of his duties in connection with the performance of this contract, or any subcontract hereunder,

would reasonably be expected to make inventions; and the expression "Contractor's Patent Rights" means all patents and applications for patent or copyright, under which Contractor now has or may hereafter acquire the right to grant a license, to the extent that they are based upon the disclosure of inventions other than a Subject Invention.

"(b) Each Subject Invention made by Technical Personnel and, to the extent of Contractor's assignable rights therein, each Subject Invention made by other than Technical Personnel, shall be the sole and exclusive property of the Government,and the Contracting Officer or his designee shall have sole power to determine to whom, and in what manner and form, consistent with law, title thereto shall be assigned and patent and copyright protection therefor shall be obtained in any country; *provided*, however, (i) that as respects any Subject Invention made by Technical Personnel employed by or under contract with the Contractor prior to the date of this contract whom Contractor has in good faith endeavored to bring under agreement to pass, or giving Contractor the right to pass, to the Government the rights herein provided the foregoing and other rights hereinafter provided shall be to the extent of Contractor's right to assign or grant the same; (ii) that nothing contained in this sentence shall be deemed to grant a license under Contractor's Patent Rights; and (iii) that with respect to any subcontract hereunder, Contractor's obligations under this article will be discharged upon its including in such subcontract a patent right or copyright article not less favorable to the Government than as herein provided.

"(c) Contractor agrees (i) to deliver to the Contracting Officer or his designee, promptly and in any event prior to final settlement, a complete written disclosure of each Subject Invention which reasonably appears to be patentable or subject to copyright and, as to each such invention, to exert its best efforts to effect such delivery within six months after first publication, public use or sale; and (ii) to deliver to the Contracting Officer or his designee, duly executed, such instruments of assignment, application papers and rightful oaths, relating to each Subject Invention title to which is to be assigned pursuant to this contract, as the Contracting Officer or his designee may require in order to enable patent or copyright applications therefor to be filed and prosecuted, and title to such applications to be assigned and recorded, in any country.

"(d) Contractor agrees to and does hereby grant to the Government, to the full extent of Contractor's right to do so, the right to reproduce, use and disclose for any governmental purpose all or any part of the reports, drawings, blueprints, data and technical information to be delivered by Contractor to the Government under this contract; provided, however, that nothing contained in this sentence shall be deemed to grant a license under any patent or copyright now or hereafter issued.

"(e) Anything in this Article to the contrary notwithstanding, the Government shall have, and the Contractor does hereby grant to the Government, the right to file foreign patent or copyright applications on inventions resulting from research conducted or work performed under this contract."

Active: University of California ---------- VAm-23110

SPECIAL FORM PATENT CLAUSE

ARTICLE 7(a). *Patent Provisions.* (1) Where used in this Article, but not elsewhere in this contract, the expression "subcontract hereunder" means any subcontracts hereunder including the contract between Contractor and Samuel Alderson dated May 24, 1946. The expressions "subcontractors hereunder" and "Technical Personnel" include said Alderson as well as other persons. The expression "Subject Invention" means any invention, improvement or discovery (whether or not patentable) conceived or first actually reduced to practice (i) in the performance of this contract, including any subcontract hereunder except subcontraets for standard commercial items, or subcontracts which do not involve either research or development beyond that normally incident to the performance of a supply contract for the close of item involved, (but engineering which amounts to research or development is not within this exception), or (ii) in the performance of any research or development work relating to the subject matter hereof which was done upon the understanding that this contract or any subcontract hereunder would be awarded, or (iii) in the performance of research or development work on Contractor's artificial arm project subsequent to October 15, 1945, but without prejudice to the Government's titles or rights, if any, in respect to the subject matter for any period prior to June 30, 1947 (date of expiration of Government contracts prior to Veterans Administration contracts). The expression "Technical Personnel" means persons employed by or working under the direction of this Contractor, all Subcontractors, and persons employed by or working under the direction of any Subcontractor, hereunder who, by reason of the nature of his duties in connection with the performance of this contract, or any subcontract hereunder, would reasonably be expected to make inventions. The expression "Contractor's Patent Rights" means all patents and applications for patent, under which Contractor and/or Technical personnel now have or may hereafter, prior to final settlement, acquire the right (without obligation to make payment to others) to grant the license hereinafter set forth to the extent that they are based upon the disclosure of inventions, (whether or not it is a subject invention), which relate to the manufacture or use of the subject matter of this contract.

(2) Contractor agrees to and does hereby grant to the Government an irrevocable, nonexclusive, nontransferable and royalty-free license to practice, and cause to be practiced or manufactured for the Government, throughout the world, each Subject Invention in the manufacture, use and disposition according to law of any article or material, and the use of any method; but acceptance or exercise of said license shall not prevent the Government at any time from contesting the enforceability, validity or scope of, or the title to, any patent so licensed. Contractor further agrees to include in any subcontract hereunder, including that to Alderson, as well as in any contract of employment hereunder, a requirement for the grant by such subcon-

tractor or employee of a like license to the Government by such subcontractor or employee.

(3) Contractor agrees (i) to deliver to the Contracting Officer, or his designee, promptly and in any event prior to final settlement under this contract, a complete written disclosure of each Subject Invention which reasonably appears to the Scientific Officer to be patentable and, as to each such invention, to exert its best efforts to effect such delivery within six (6) months after first publication, public use or sale; (ii) to designate, at the time of such delivery, whether or not said invention has been or will be claimed in a patent application, and to file or cause to be filed in due form and time an application covering each such invention; (iii) to furnish to the Contracting Officer or his designee, on request, irrevocable authority to inspect and make copies of each patent application filed by or on behalf of the Contractor, any subcontractor or employee of either the Contractor or any subcontractor, covering any Subject Inventions; (iv) to deliver to the Contracting Officer or his designee, duly executed, such instruments of license, prepared by the Government as the Contracting Officer or his designee may require, confirmatory of the license rights herein agreed to be granted to the Government.

(4) Contractor agrees for itself, to grant to the Government, and to include in any subcontract or employment contract a provision requiring such subcontractor or employee to execute similar grants, the right to reproduce, use, and disclose for any governmental purpose all or any part of the reports, drawings, blueprints, data, and technical information available under this contract.

ARTICLE 7(b). *Grants.* Samuel Alderson hereby grants to the Government an irrevocable, nonexclusive, nontransferable and royalty-free license to practice and cause to be practiced or manufactured for the Government, throughout the world, as to each subject invention (defined in Article 7 as amended hereby of Contract V1001M–2195 between the Government and IBM) patented by or for the said Alderson, or discovered by the said Alderson subsequent to October 15, 1945, without prejudice to any existing rights of the Government under any prior Government Contracts in this field; and agrees that the contract between Alderson and Contractor dated May 24, 1946, and effective October 15, 1945, shall be deemed a subcontract under said Contract V1001M–2195 from and after this date and during any extension thereof including this agreement.

List of contractors using this clause

Inactive: International Business Machines Corporation---- V1001M–2195.

(16)

EXHIBIT No. 7

ADDENDUM TO STATEMENT BEFORE SUBCOMMITTEE ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF THE COMMITTEE ON THE JUDICIARY, U.S. SENATE, BY DR. ROBERT E. STEWART, REPRESENTING THE VETERANS' ADMINISTRATION

The following material is submitted to bring up to date the previous reports forming the basis for the Appendix of the Subcommittee's Preliminary Report on the Patent Practices of the Veterans' Administration.

INACTIVE CONTRACTS

The following contracts listed in the Subcommittee Preliminary Report on Patent Practices of the Veterans' Administration as active have now become inactive:

"Short Form" Patent Clause:

Massachusetts General Hospital	V1001M–1760
San Francisco Hearing and Speech Center	V1005M–1099
Wayne State University	V1005M–163

"Long Form" Patent Clause:

New York University	V1001M–184
Northwestern University	V1001M–3614

"Modified Long Form" Patent Clause:

University of California	VAm–23110

Wayne State University, Contract V1005M–163, was maintained on the active list after the death of the principal investigator in October 1958, to permit the completion of the final report in the form of a chapter in a book for which he had completed the manuscript just prior to his death and to determine the disposal of the property. This contract terminated as of June 30, 1959.

ADDITIONAL CONTRACTS

The following contracts are not covered in the Appendix of the Committee Print on the Patent Practices of the Veterans' Administration:

"Short Form" Patent Clause:

American Speech and Hearing Association	V1005M–1939
Battelle Memorial Institute	V1005M–1961
Mauch Laboratories, Inc	V1005M–1943

"Long Form" Patent Clause:

Univ. of Calif. (UCLA Medical School)	V1005M–2090

"Special Form B":

University of California	V1005M–2075

"Special Article on Publication Privileges":

American Academy of Orthopaedic Surgeons	V1005M–463

COMMENTS

American Speech and Hearing Association, under contract V1005M–1939, conducted a very small project to survey the status of research in the various fields of hearing and hearing aids and related problems. This survey pointed out a nnmber of areas requiring further study. The project terminated June 30, 1959. The findings were published in the Jonrnal of Speech and Hearing Disorders, Monograph Snpplement 5, September 1959. This docnment has been widely distributed among professional workers in that field.

Battelle Memorial Institute, V1005M–1961, which is is many respects a contnnation of V1005M–1261 on the development of a reading machine for the blind, is now active.

Mauch Laboratories, Inc., V1005M–1943, now an active contract on a reading machine for the blind, is in a sense a continuation of the work originally begun under Mauch Research and Development Laboratories, V1005M–1410.

The University of California contract V1005M–2090, covering studies of edema and contracture at the University of California at Los Angeles Medical School,

has a "long form" patent clause. It is anticipated that this contract will terminate June 30, 1960.

The University of California which had requested the "modified long form" patent clause in contract VAm–28110 (now inactive), insisted during negotiation of its new contract, V1005M–2075, on further modifications resulting in the following "Special Form B":

"ARTICLE 7. *Patent Provisions.* (a) Where used in this Article and not elsewhere in this contract, the expression "Subject Invention" means each invention, improvement and discovery (whether or not patentable) conceived or first reduced to practice (i) in the performance of this contract, including any subcontract hereunder except subcontracts for standard commercial items or subcontracts which do not involve either research or development (including engineering which amounts to either research or development) beyond that normally incident to the performauce of a supply subcontract for the class of item involved, or (ii) in the performance of any research or development work relating to the subject matter hereof which was done upon the written understanding that this contract or any snbcontract hereunder would be awarded (unless disclosed in a patent application filed prior to the commencement of such performance); the expression "Technical Personnel" means each person employed by or working under the direction of the Contractor or any subcontractor hereunder who, by reason of the performance of this contract, or any subcontract hereunder, would reasonably be expected to make inventions.

(b) Each Subject Invention made by Technical Personnel and, to the exteut of Contractor's assignable rights therein, each Subject Invention made by other than Technical Personnel, shall be the sole and exclusive property of the Contractor. The Contractor agrees to aud does hereby grant to the Government an irrevocable, nonexclusive, nontransferable, and royalty-fee license to make and use, and to dispose of according to law, or cause to be made and used for Governmental purposes, any such Subject Invention on which the Contractor applies for patent. The Contractor shall deliver to the Government duly executed instruments fully confirmatory of any license rights herein granted to the Government.

(c) Contractor agrees to and does hereby grant to the Government, to the full extent of Contractor's right to do so, the right to reproduce, use and disclose for any Governmental purpose all or any part of the reports, drawings, blueprints, data and technical iuformation to be delivered by Contractor to the Government under this contract.

(d) Contractor agrees (i) to deliver to the Contracting Officer, or his designee, promptly and in any event prior to final settlement, a complete written disclosure of each Subject Invention which reasonably appears to be patentable and, as to each such invention, to exert its best efforts to effect such delivery within six months after first publication, public use or sale.

(e) Anything in this Article to the contrary notwithstanding, the Government shall have, and the Contractor does hereby grant to the Government, the right to file foreign patent applications on inventions resulting from research conducted or work performed under this contract, subject to the reservation of a nonexclusive and royalty free license to the Contractor.

(f) In connection with each Subject Invention referred to above, the Contractor shall do the following:

(i) if the Contractor specifies that a United States patent application claiming such Invention will be filed, the Contractor shall file or cause to be filed such application in due form and time; however, if the Contractor, after having specified that such an application would be filed, decides not to file or cause to be filed such application, the Contractor shall so notify the Contracting Officer at the earliest practicable date and in any event no later than eight months after first publication, public use or sale.

(ii) if the Contractor specifies that a United States patent application claiming such Invention has not been filed and will not be filed (or having specified that such an application will be filed thereafter notifies the Contracting Officer to the contrary), the Contractor shall—

(A) inform the Contracting Officer in writing at the earliest practicable date of any publication of such Invention made by or known to the Contractor or, where applicable, of any contemplated publication by the Contractor, stating the date and identity of such publication or contemplated publication; and

(B) convey to the Government the Contractor's entire right, title, and interest in such Invention by delivering to the Contracting Officer *upon written request such duly executed instruments* (prepared by the Government) of assignment and application, and such other papers as are deemed necessary to vest in the Government the Contractor's right, title, and interest aforesaid, and the right to apply for and prosecute patent applications covering such Invention throughout the world, subject, however, to the reservation of a nonexclusive and royalty-free license to the Contractor."

This agreement was reached only after negotiations which were prolonged throughout most of the fiscal year. It is unlikely that patentable inventions will arise from the fundamental research at the University of California, through correspondingly there is a possibility that inventions, if made, will have a broad character compared to those made with laboratories pursuing quite specific developments. (No patents had been taken during many years of experience with the preceding contract VAm–23110 or the earlier subcontract under the National Academy of Sciences.) The position of the Government itself is fully protected on "subject inventions."

As far as is known, the University of California has no "contractor's patent rights" useful in prosthetic devices. Because of the size and complexity of the University and its large numbers of contracts in many fields, though, the University has been very reluctant to provide blanket assurance of privileges under any "contractor's patent rights" which it might have.

In order to retain the advantages of the highly skilled and experienced research group at the University of California, it seemed necessary to waive access to hackground patents which might possibly be covered under "contractor's patent rights" on the usual "long form" and to allow the contractor the possibility of controlling use for nongovernmental purposes of any patents which might arise. Because the University of California is a State university, primarily concerned with fundamental research, it seems unlikely that abuses would occur. Title to copyrights was also omitted from discussion in this patent clause, but the government obtained the right to reproduce, use, and disclose for any governmental purposes the documents of the type which might be subject to copyright.

The Veterans' Administration took over from the Army the completion and publication of Volume II of the Atlas of Orthopedic Appliances (Artificial Arms and Legs), now VA Contract V1005M–463. This work had been initiated under the Office of the Surgeon General, Department of the Army, and both the Office of the Surgeon General and the Veterans' Administration have contributed to the cost of preparing this authoritative Atlas or Manual. It has now passed the stage of galley proofs and should appear this summer. Because the contractor itself was contributing both financially and otherwise to the subject work beyond the amounts contributed by the Government, the usual patent clause of other contracts was replaced by the following:

"ARTICLE 6. *Publication Privileges.* It being contemplated that the Contractor will contribute to or provide for the Subject Work, above and beyond the services hereinabove specified, certain additional services for which the Government does not hereby or otherwise obligate itself to pay, which said additional services may exceed the amount for which this contract obligates the Government, the Contractor may publish or cause to be published and sold to the public the material so developed, subject only to the requirement that the Government may procure such publication royalty free and in any quantity which the Government may desire to purchase."

Volume I of the Atlas on Braces appeared in 1952. It also was published under the auspices of the American Academy of Orthopaedic Surgeons in cooperation with the Surgeon General of the U.S. Army and the Department of Medicine and Surgery of the Veterans' Administration. It has been a standard reference work in this field, and an additional 2,000 copies are currently being reprinted because the original edition is completely sold out. It is expected that the second volume will enjoy equal reputation and popularity, contributing substantially to our policy of disseminating information about prosthetics.

EXHIBIT NO. 8

MEDICAL RESEARCH

1. Attachment A summarizes the contractual arrangements being utilized by the Research Service in support of its activities. There are no contracts in effect for the actual conduct of research. The use of contractual arrangements is for the supporting services which may be more effectively or more economically provided by other organizations. These services are for the direct support of research activities being conducted in VA hospitals and clinics throughout the country.

2. No grants have been made under the authority of Public Law 85-934 and none are anticipated at this time.

3. The total funds available to the Veterans' Administration for medical research through appropriation by Congress are summarized on attachment B hereto for fiscal years 1959, 1960, and 1961. Since this budget presentation was prepared, action of the House of Representatives has increased the estimated amount for fiscal year 1961 to $17 million. The Senate has not yet acted upon this appropriation request. In exhibit B, total amounts shown under item "07 Contractual services" are broken down to show the nature of the arrangements. Much of this expenditure is for minor contractual services in repairs or special services at station level. The total amount shown on exhibit A is included in the item listed as "Contractual services by individuals and organizations" in exhibit B. The difference is in the utilization of consultant services and other individuals or organizations for the provision of minor local services to VA field stations. The contracts listed in exhibit A are executed at central office level.

4. In addition to the contracts shown which include financial arraugements, there are several contracts still in existence with medical schools or universities which have been continued for the past several years without any funds being made available to the contractors. These have been continued primarily for the purpose of keeping in use certain items of equipment which were installed in medical school facilities. Prior to the enactment of Public Law 85-934, termination of these contracts would have required the removal of the equipment aud disposition through some authorized action. In most cases, the equipment is of custom nature, such as a mass spectrometer built by scientists at the Johns Hopkins Medical School which would not be usable by other scientists and of no value to the VA except through cooperative use iu the contracting institution.

5. None of the contractual arrangements set up in the medical research program have involved activities which would result in patents by the coutractor.

6. In addition to research supported by funds appropriated directly to the Veterans' Administration, the VA medical research program has cooperated with the National Institutes of Health in the couduct of a study of chemotherapy of cancer. The National Institutes of Health has supported this program by transfer of approximately $675,000 to the Veterans' Administration during fiscal year 1960. No patent activities are involved in this transfer of funds on the basis of a letter of agreement between the Chief Medical Director and the Director of the National Institutes of Health. This cooperative activity is appropriate siuce the Veterans' Administration has the hospitalized patients iu large numbers to provide clinical material for such studies.

7. Some additional funds are used by individual VA investigators through grants made available by the National Institutes of Health, through affiliated medical schools in which the VA investigators hold academic appointments. These grants provide uo direct financial reward to the VA investigator but assist in covering costs of supplies and materials and technical help iu many individual VA institutions.

8. The funds expeuded for medcal research are allocated and controlled by the Director, Research Service. The actual selection of areas of research aud the procurement of equipment and supplies and employment of personnel is largely decentralized to VA field stations. At each station having research activities, a research and education committee serves as the advisory group to approve proposed studies and to guide the distribution of funds locally into the most appropriate channels. In some cases, cooperative studies involving more than one hospital are couducted through central office supervision, and fuuds for these studies are provided specifically by central office.

ATTACHMENT A

DEPARTMENT OF MEDICINE AND SURGERY, MEDICAL ADMINISTRATION AND MISCELLANEOUS OPERATING EXPENSES

Medical research—Comparative extra-VA research costs [1]

Category	Fiscal year 1959 actual	Fiscal year 1960 estimated	Fiscal year 1961 estimated	Increase (+) or decrease (−) 1961 over 1960
National Research Council (National Academy of Sciences)[2]	$189,220	$191,500	$203,000	+$11,500
Bio-Sciences Information Exchange (Smithsonian Institute)[3]	28,000	31,400	30,000	−1,400
National Bureau of Standards [4]	39,000	20,000	15,000	−5,000
Forest Products Laboratory (Department of Agriculture)[5]	20,000	10,000		−10,000
Jacksonville Hospital Educational Programs, Inc.[6]	25,560	30,000		−30,000
National Science Foundation [7]		3,500		−3,500
Colorado Foundation for Research [8]	1,000			
Total	302,780	286,400	248,000	−38,400

[1] This table reflects that portion of total object 07 applicable to research performed or coordinated for this agency on a contractual basis by outside institutions.

[2] This contractual agreement is composed of contracts for 3 separate purposes: (*a*) for basic statistical analysis in connection with followup studies of specific diseases and preparation of results for publication; (*b*) for the work being performed by the Armed Forces Institute of Pathology in the preparation of the "Atlas of Tumor Pathology;" and (*c*) for statistical analysis and presentation of research in oncology by the Armed Forces Institute of Pathology.

[3] Funds for the support of a central file of research papers jointly with other Government agencies.

[4] For the testing of dental prosthetic materials and for a study of ventilation standards in connection with air hygiene studies.

[5] Funds for bioassay of loblolly pine extract for sarcoidosis research.

[6] Contract with non-Government organization for research in sarcoidosis.

[7] Funds for the translation of Russian scientific papers in conjunction with support furnished by 7 other governmental departments and agencies.

[8] Contract with a non-Government group to perform bioassays of isoniazid used in tuberculosis research.

ATTACHMENT B

DEPARTMENT OF MEDICINE AND SURGERY, MEDICAL ADMINISTRATION AND MISCELLANEOUS OPERATING EXPENSES

Medical research, $15,344,000—Comparative analysis of total costs

	Costs by object	Fiscal year 1959 actual	Fiscal year 1960 estimated	Fiscal year 1961 estimated	Increase (+) or decrease (−) 1961 over 1960
01	Personal services:				
	Consultants	$180,845	$215,000	$215,000	
	Clinical investigators	487,246	594,400	617,300	+$22,900
	Clinical psychologists	458,595	559,500	580,700	+21,200
	Social workers	55,212	67,400	78,700	+11,300
	Wage rate employees	702,346	856,900	874,000	+17,100
	Other personal services	6,916,298	8,434,600	8,649,300	+214,800
02	Travel employee	130,994	164,500	200,000	+35,500
03	Transportation of things	22,681	19,500	19,500	
04	Communications	6,207	6,500	6,500	
05	Rents and utilities	4,022	4,500	4,500	
06	Printing and reproduction	17,767	37,000	37,000	
07	Contractual services:				
	Repair of furniture and equipment	125,521	119,100	118,300	−800
	Extermination services	1,507	1,500	1,500	
	Repair of special use equipment	45,670	43,300	43,300	
	Employee insurance	24,752	30,400	31,200	+800
	Contractual services by individuals and organizations	589,606	559,700	559,700	
08	Supplies and materials:				
	Office supplies	54,624	60,800	55,000	−5,800
	Drugs, medicines, and chemicals	247,880	348,600	250,500	−98,100
	Radioisotopes	323,564	389,600	325,000	−64,600
	Dental supplies	3,953	4,800	4,000	−800
	Operating supplies	725,751	828,800	726,000	−102,800
	Glassware	159,367	192,000	160,000	−32,000
	Maintenance supplies	94,149	113,400	95,000	−18,400
09	Equipment:				
	Fixed equipment	503,237	498,200	169,900	−328,300
	Furniture and fixtures	223,580	221,300	75,500	−145,800
	Medical, dental and scientific equipment	2,365,323	2,344,800	801,300	−1,543,500
11	Grants, subsidies, and contributions (CSB)	500,565	609,500	626,400	+16,900
13	Refunds, awards, and indemnities	6,291			
15	Taxes and assessments	17,251	18,500	18,900	+400
	Net total costs	14,994,804	17,344,000	15,344,000	−2,000,000

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