the determination file were sufficient to bar filing in most foreign countries. He indicated that the Government should reimburse Miles for the cost of patent preparation even though there is nothing of record to indicate that Miles paid such costs or was a party in interest to such filing. He also raised the question whether Miles had incurred expenses for a new drug application and, if so, has the PHS investigated our obligation to reimburse them stating "This, again, is an expense that the Government would have had to incur if Miles had not."

"Your determination in essence destroys an investment by Miles Laboratories that is in the thousands of dollars, yet you provide not a word justifying the Government's position."

In answer to these objections the Special Assistant to the Chief, DRG, NIH, pointed out:

"(1) There is no mutuality between the Public Health Service and Miles Laboratories. We made no arrangement with them to file patent application. We were not a party to any agreement between the grantee institution, the investigator, and Miles Laboratories. This whole arrangement was a fait accompli when we finally got our invention report. I do not believe, therefore, that we are under any obligation to reimburse Miles Laboratories for anything. (2) There is, in my opinion, absolutely no analogy between the Guthrie case and the McKean case. (3) The State of Massachusetts has been manufacturing and distributing their kits to hospitals in the State for many months. This type of screening is mandatory in Massachusetts hospitals. The New York State Legislature has just passed a bill making such tests mandatory in New York hospitals. A number of other States are contemplating setting up this type of screening. (4) No further development needs to be done by Miles or any other one commercial firm to market the kits. It has been completed; hence the terminology in the determination. (5) Miles intended to charge an exhorbitant price for their kits—40 times what it cost Dr. Guthrie to produce the kits for field trials. Under the circumstances, there appears to be no justification for an exclusive licence to Miles."

Mr. MANUEL B. HILLER,
Department Patents Officer.
HERSCHEL F. CLESNER,
Inventions Coordinator, PHS:

Inventions derived from cosponsored PHS and other DHEW research support.

This will confirm our recent telephone conversations in which you were advised that there are examples of inventions derived from cosponsored "PHS and other DHEW agencies" where the other DHEW agency did not utilize a patent clause, whereas PHS did.

This is difficult to explain to the institution and the grantee investigator when they ask why. This also makes it difficult to require reporting of such inventions.

You asked for actual examples. The best and most readily available example is the Guthrie case. There are at least four inventions involved: (1) the Guthrie inhibition assay test for phenylketonuria, (2) the Guthrie inhibition assay test for maple sirup disease, (3) the Guthrie inhibition assay test for galactosemia, and (4) the Guthrie inhibition assay test for histidimemia.

The background support for Dr. Guthrie is as follows:

Public Health Service support:

B–1960; Jan. 1, 1959–Dec. 31, 1963	$152,375
B–3935; Dec. 1, 1961–Nov. 30,, 1963	99,325
No known committed support after Dec. 31, 1963.	
Total Public Health Service support	251,700
Other DHEW support, Children's Bureau, approximately	492,000
Total DHEW support	743,700

Other support:

NARC, Sept. 1, 1958–Aug. 31, 1963	25,000
AACC, Sept. 1, 1958–Aug. 31, 1963	25,000
Commercial Solvent Corp., Mar. 1, 1962–Feb. 28, 1963	15,000
National Foundation, Jan. 1, 1962–June 30, 1963	20,672
Playtex Foundation, Oct. 8, 1958–Sept. 30, 1959	15,000
Total other than DHEW support	100,672

with general policy directives included in the enclosed patent regulations of the Department of Health, Education, and Welfare.

Section 3.2(b) of the regulations provides that an invention may be assigned to a competent organization for development and administration, if it is determined that the invention thereby will be more adequately and quickly developed for widest use and that there are satisfactory safeguards against unreasonable royalties and repressive practices. Consideration of such a determination by the Surgeon General requires the submission of an acceptable proposal laying a factual basis for assignment of an invention to a grantee institution for administration. The proposal submitted in your letter of August 12, 1963, has been subjected to a thorough evaluation. As a result of this evaluation, I have concluded that the proposal does not meet the criteria of section 32(b) and that the best interests of the public will not be served by granting an exclusive license to a single manufacturer; rather, the invention should be offered to any qualified manufacturer, health service, or laboratory interested in carrying out the program necessary to manufacture or distribute the PKU kit for the market.

In the light of the foregoing conclusions and consistent with section 8.2(d) of the Department regulations, it is my determination that insofar as the invention may be patentable, the equitable ownership of all rights, both domestic and foreign, shall be in the United States, and that assignment of rights in U.S. patent application, serial No. 187,707 filed on April 16, 1962, shall accordingly be obtained. The form of assignment to be executed by the inventor is enclosed. It is my further determination that based on the possible public health significance of this invention, patent protection is in the best interest of the public. The Public Health Service will arrange for the necessary prosecution of U.S. patent application, serial No. 187,707.

Pursuant to this assignment and in accordance with the patent policy of the Department of Health, Education, and Welfare, licenses under the patent application or any patent which may issue thereon will be granted by the Department to all applicants on a nonexclusive, revocable, royalty-free basis, subject only to such controls as to condition of manufacture and quality of the product as may appear needed to protect the public interest.

You are requested to acknowledge receipt of this determination by signing and returning one copy to the Special Assistant for Extramural Patents, Division of Research Grants, National Institutes of Health, Bethesda, Md., 20014. Please include with the signed determination (1) as original and three copies of the duly executed assignment to the Government, (2) a substitute power of attorney to our patent attorneys on the attached form to be signed by your patent attorney, and (3) copies of all actions taken thus far on U.S. patent application, serial No. 187,707.

Sincerely yours,

DAVID E. PRICE,
Acting Surgeon General.

U.S. GOVERNMENT MEMORANDUM

OCTOBER 9, 1964.

To: Files.
From: Mr. Clesner.
Subject: Guthrie.

Many have urged obligatory PKU blood tests for newly born babies.

The test is the Guthrie bacteriologic test (inhibition assay) for estimating the level of phenylalanine in blood.

The test is extremely important as a diagnostic aid for the detection of the condition of phenylketonuria, which mental disease, while having a low incidence rate, has serious consequences both to the individual concerned and to society in general. The mental retardation caused by this disease can be completely prevented by use of a low phenylalanine diet which has been available in the United States and abroad for several years. However, to be completely effective the diet must be started within the first 1 to 3 months of life. It is this early diagnosis which is the purpose of the mass screening of newborn infants before leaving the hospital nursery a procedure made possible for the first time by the "inhibition assay" procedure for blood phenylalanine. The test has application both in this country and foreign countries, since the gene for phenylketonuria has worldwide distribution.

hence the granting of exclusive rights to any one firm would violate the spirit, if not the letter, of the laws governing such arrangements.

My legal references and opinions may be subject to legal question since I am not a lawyer. However, I believe that the views I express are shared by the majority of scientists, health workers, and educators, and I imagine that most lay persons would take the same position as regards public policy and the public interest.

Sincerely yours,

GEOFFREY EDSALL, M.D.,
Superintendent, Institute of Laboratories.

U.S. GOVERNMENT MEMORANDUM

MARCH 25, 1964.

Case No.: N–G116–62.
Grants B–1960 and B–3935.
To: Mr. Herschel Clesner, Inventions Coordinator, PHS.
From: Miss Katharine A. Parent, special assistant for extramural patents, DRG.
Subject: Grantee Invention—GUTHRIE, Children's Hospital, Buffalo, "Bacteriologic testing method ('inhibition assay') for estimating the level of phenylalanine in blood":

Attached is a determination on the subject invention. The invention report was not subjected to independent scientific review because of the involvement of the Children's Bureau and the National Institute of Neurological Diseases and Blindness. Also, the question of patenting was not an issue, since patent application had been filed before submission of the invention report.

Support background is as follows:

PHS support:	
B–1960: Jan. 1, 1959–Dec. 31, 1963	$152,375
B–3935: Dec 1, 1961–Nov. 30, 1963	99,325
Committed support	None
Other support:	
NARC: Sept. 1, 1958–Aug. 31, 1963	25,000
AACC: Sept. 1, 1958–Aug. 31, 1963	25,000
Commercial Solvents Corp.: Mar. 1, 1962–Feb. 28, 1963	15,000
National Foundation: Jan. 1, 1962–June 30, 1963	20,672
Playtex Foundation: Oct. 1, 1958–Sept. 30, 1960	15,000
Children's Bureau: Indeterminate amount of funds allocated to State programs for field trial of the kits	?

Comments: It should be noted that we requested a formal report of invention from Dr. Guthrie on January 10, 1962. We did not, however receive the report until December 14, 1962, after four followup letters and telephone conversations. Please also note that the patent application was filed by their attorney on April 16. 1962, 4 months following the first request for a formal invention report and 7 months prior to submission of the report.

MARCH 30, 1964.

MISS KATHARINE A. PARENT,
Division of Research Grants, NIH, Through: Dr. Eugene Confrey, Chief, DRG, NIH, and Norman J. Letker, Patent Adviser, OD, NIH:

Grantee invention—Guthrie, Children's Hospital, Buffalo: "Bacteriologic Testing Method (inhibition assay) for Estimating the Level of Phenylalanine in Blood."

Your determination on the disposition of invention rights for this major breakthrough indicates that the grantee's request for a period of exclusive patent rights have been subjected to a thorough evaluation and is denied. Your determination further indicates that U.S. patent application, Serial No. 187,707 should be asigned to the U.S. Government.

There is nothing in the file indicating upon what your evaluation and determination is based. Further, there is no indication as to the disposition of foreign patent rights which are equally as important as the domestic rights. Has Miles Laboratories filed in foreign countries?

carry out a statewide program unless they manufactured the necessery materials themselves. It seems to us that the granting of exclusive commercial rights to the Miles Laboratories would prevent Massachusetts and some of the large States now contemplating setting up this screening as a routine, from carrying out their plans. None of these States could afford to institute a program if they had to purchase the kits commercially at the contemplated price, or if they had to pay royalties on the materials they would manufacture themselves.

3. The suggested sales price at which Miles would make these kits available appears somewhat exorbitant in view of the fact that these kits have already been developed, promoted, and tried. A charge which is 40 times what it cost Dr. Guthrie to produce these kits for the field trials seems to us to be out of line when all of the basic development and promotion has already been done.

While we feel strongly that, particularly for some of the smaller States, a commercially available source of these kits is essential if these States are to develop a screening program, it does not seem that an exclusive arrangement with Miles Laboratories would result in such commercial availability at a reasonable cost. There are indications that a number of laboratories would be willing to manufacture these kits with adequate quality control at a reasonable cost if Miles were not granted an exclusive commercial arrangement.

It is our feeling that the rights to this screening kit should be retained by the Government in view of the investment of public funds. Retention of such rights at this time would, we feel, allow a number of States to proceed with the manufacture of their own materials for statewide programs and would allow other commercial laboratories to produce the kits for some of the smaller States at a more reasonable price.

STATE UNIVERSITY OF NEW YORK AT BUFFALO, SCHOOL OF MEDICINE,
DEPARTMENT OF PEDIATRICS, CHILDREN'S HOSPITAL,

Buffalo, N.Y., December 4, 1963.

RUDOLPH HORMUTH,
Specialist in Services for Mentally Retarded Children, Division of Health Services, Department of Health, Education, and Welfare, Washington, D.C.

DEAR RUDY: With reference to your letter of November 21, 1963, here are the answers to your questions to the best of my knowledge:

1. Our cost to produce a kit for the testing of 500 infants, including estimates of all costs (labor, materials, rental and maintenance of space, etc.), and not including materials for collecting blood spots or urine impregnated paper in the hospitals, $6.

2. During my visit to Miles Laboratory last June I was told that their price for the same kit to test 500 infants would be $262. This was explained to me as only 50 cents per test.

3. Other companies who have indicated their interest in producing kits are: Fischer Scientific, Pittsburgh, Pa.; Baltimore Biological Laboratories; Difco Laboratories; Sylvana Co., New Jersey; Dade Laboratories, Miami, Fla.

I think this answers all your questions; if not, please feel free to call on me.

Very truly yours,

ROBERT GUTHRIE, Ph., D., M.D.

THE COMMONWEALTH OF MASSACHUSETTS,
DEPARTMENT OF PUBLIC HEALTH, DIAGNOSTIC LABORATORY,

December 13, 1963.

HERSCHEL F. CLESNER,
Inventions Coordinator, PHS, Department of Health, Education, and Welfare, Washington, D.C.

DEAR MR. CLESNER: Your letter to Dr. Edsall, which is concerned with a proposal that a certain company be granted a license for the exclusive marketing rights for the Guthrie PKU kits, has been referred to me. Since, as you state in your letter, the Commonwealth of Massachusetts does require the PKU test by law and we do make up our own kits in this laboratory for the assaying procedure here, we are appreciative of your courtesy in inviting our comments.

First, I would have some reservations about parts of the sentence you quote in the first paragraph in your letter which reads, "That such time and expenditure is warranted and justified in order to have the company produce the product under the most exacting conditions of quality control in order to insure a high

patent was filed 7 months prior to the actual submission of the invention report. The formal invention report was held up for almost a whole year so that a patent could be filed.

But this is not all, for shortly after Dr. Guthrie filed for a patent, he entered into an exclusive licensing agreement for the life of the patent with Miles Laboratories. This agreement was supported by the Children's Hospital in Buffalo and was approved by two voluntary health associations which had contributed a total of $50,000, but was not approved, I am glad to say, by the Public Health Service. The justification for giving Miles Laboratories a monopoly was the usual one: to induce the company to bring the product to a commercial stage and to assure the widest and most effective utilization.

The hospitals in Massachusetts and in other States were producing a kit for testing 500 infants, including all costs, for $6. The granting of a license to Miles would prevent the manufacture of such kits by anyone except Miles Laboratories. And Miles Laboratories' price was $262, over 40 times the cost to Massachusetts, Louisiana, and other States.

The Chief of the Children's Bureau protested the issuance of the exclusive license as contrary to the public interest. A number of States were contemplating setting up the Guthrie tests on a routine basis and were planning to produce their own materials. Financially they could not carry out a statewide program unless they manufactured the necessary materials themselves. If Miles secured the monopoly and was able to force the States to pay through the nose, this would prevent many States from carrying out their plans. None of these States could afford to institute a program if they had to purchase the kits from the Ames Division of Miles Laboratories at the price demanded or if they had to pay royalties on the materials they would manufacture themselves.

The exorbitance of the Miles' price is magnified by the fact that the Guthrie test kit had already been developed, promoted and tried. A charge which is 40 times what it cost Dr. Guthrie to produce the kits for the field trials, especially when all of the basic development and promotion had already been done, is, in my judgment, an outrage.

Further investigation by the Public Health Service disclosed that at least five companies were interested in obtaining a license and producing the kits at a cost similar to Dr. Guthrie's.

Accordingly, the Public Health Service determined that ownership to the invention belonged to the United States and the proper action was taken. Credit for this action on behalf of the public must be given to Dr. Luther Terry, the Surgeon General, Dr. David E. Price and all those staff people connected with this action. Dr. Guthrie himself was appalled by the price Miles wanted to charge.

This case, Mr. President, illustrates several points:

First. Allowing private patents on Government-financed research will inevitably result in delaying disclosure of new knowledge, inventions, and discoveries, at least for as long as it takes to prepare patent applications and file them. In most cases the delay will be much longer. I have already pointed out that firms in the aerospace industry withheld information for as long as 5 years. In the field of health a delay is especially reprehensible.

Second. Allowing universities, hospitals, and nonprofit institutions to control and administer patents resulting from publicly financed research is contrary to the public interest. This activity is a Government function and must not be delegated to any nongovernmental institution. In the Guthrie case which I have just described, neither the university nor the Children's Hospital at Buffalo had the knowledge, the background, or the sophistication to know what is or is not in the public interest. It was also disclosed that Dr. Guthrie's application was filed by a patent attorney who was hired by the State university system of New York for this purpose, but who was actually a patent attorney for Miles Laboratories.

Educational institutions are not sacrosanct. They have withheld information from the public; they have also violated the antitrust laws. A well-known case is the development of vitamin D at the University of Wisconsin with Government funds. The patent was assigned to the Alumni Foundation, against which the Department of Justice brought an antitrust suit and won. The Comptroller General of the United States revealed a few years ago how this same university—after having received almost $3 million from the Government, the American Cancer Society, and other nonprofit organizations—assigned patent rights on 5–FU, a cancer drug, to a company which, in turn, charged exorbitant prices even to the Government. The Department of Health, Education, and

EXHIBIT 2

TENNESSEE VALLEY AUTHORITY,
Knoxville, Tenn., February 4, 1965.

Hon. RUSSELL B. LONG,
U.S. Senate,
Washington, D.C.

DEAR SENATOR LONG: When the enclosed letter came to me a few days ago, my thoughts went back to the day, nearly 2 years ago, when I appeared before your committee in the hearings on Government patent policy.

You will recall we discussed the fact that new processes developed by TVA in its fertilizer research are patented by TVA: that these patents are made available to the fertilizer industry on a royalty free, nonexclusive basis; and that, as a result of this policy, farmers are getting more and better chemical fertilizers and at lower prices than they did 10 or 12 years ago.

We also discussed the special importance of TVA's research and its patent policy to the smaller concerns manufacturing fertilizer. At the time of the hearing 170 of the 207 companies licensed to use TVA patents were in the category of small businesses, and I pointed out our belief that many of those small manufacturerers would not have been able to stay in business without the benefits of TVA's research and the use of our patents.

The enclosed leter from the Ouachita Fertilizer & Grain Co. is such an illuminating testimonial to many of the points we discussed in your hearing that I feel sure you will be interested to see it. Incidentally, the polyphosphates referred to represent a promising family of fertilizers, new since our discussion, so I can assure you that our work in this field is continuing to show results.

Sincerely yours,

AUBREY J. WAGNER,
Chairman.

OUACHITA FERTILIZER & GRAIN CO., INC.,
Monroe, La., January 25, 1965.

Mr. A. J. WAGNER,
Chairman, Board of Directors,
Tennessee Valley Authority,
Knoxville, Tenn.

DEAR MR. WAGNER: The recent trend in the fertilizer industry continues, and it appears that small independent manufacturers such as our own firm will be at an even greater disadvantage in the future. We are calling this to your attention in order to emphasize the importance of TVA's continuing ist cooperation with these small independent and the farmers we serve.

In the present situation, a number of major companies will approach an independent to see if he wants to sell his business. If the independent prefers to remain as he is, the major companies seem less interested than before in supplying him, with fringe benefits included. Privately, they confirm that they are working toward captive distribution, and once they attain their objective, the unpredictable requirements of the independent will not be important to them. Those major companies who preferred to supply indepndents have been forced to abandon this position. So one of our concerns is supply. Phosphate is the material we worry about, polyphosphates in particular.

Perhaps you are aware that when we first thought of using wet-process acid for our liquid mixtures, the only encouraging reports we saw were printed in various trade journals describing TVA's work with superphosphoric acid. We came to your plant and laboratories at Wilson Dam, and observed the research and development work. Actually, your staff made trials of a number of formulations we were interested in, and they gave us samples for observation. Today our company, under free license from TVA, uses that information and some TVA polyphosphate with commercial wet-process acid in making low-cost liquid fertilizer—lower than any other method available to small businesses such as ours. TVA has been the only source of a satisfactory sequestrant which provides the only means for use of wet acid. We take very little credit for achievements in the field of production. We owe most of our success to TVA, and we believe that the industry should recognize TVA for making major contributions to liquid fertilizer technology—the use of which is considerably enhanced by your supplying new materials. Those of us too small to afford technical staffs are particularly grateful recipients of your development information.

example of this tendency. The talk about economic liberty and competition appears to be music lingering from the past.

One of the areas where our present-day system and mercantilism resemble each other is that, in practice, both to a large extent deny that consumption is the ultimate end of economic activities and that production is only a means to that end. Mercantilism was characterized by the view of production as an end in itself. It was dominated by a regard for different groups of producers, forcing consumers to make the most of whatever consequences follow from these considerations.

If this comparison elicits the reply that the national interest requires monopoly grants as a necessary stimulation of enterprise, the question arises whether the price we are paying is far too heavy even if the means could secure the end, for involved is the sacrifice of the citizens' economic freedom.

EXHIBIT 1

APRIL 4, 1965.

Hon. RUSSELL B. LONG,
Senate Office Building,
Washington, D.C.:

A recent article in Science has called my attention to your work on a comprehensive patent policy for federally financed research. I would like to point out a situation which has a bearing on this policy.

There is deep irony when a large corporation screams foul about incentive being killed as a result of the Government's claiming partial patent rights on the basis of Federal support of the research work. The large corporations have been using this same argument for years to claim entire right to all ideas an individual engineer may have as an employee. You now have the picture of two giants fighting over a piece of property while the creator of that property is standing meekly on the sidelines. I am trying to speak for him.

Our Founding Fathers had deep wisdom and penetrating insight when they inserted the following paragraph into the Constitution: The U.S. Constitution, article I, section 8, paragraph 8—

"To promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive rights to their respective writings and discoveries."

They could see that protecting an inventor's rights does more than define what belongs to him. It stimulates innovation. It provides an incentive for him to invest his heart, mind, sweat, and soul in developing his ideas. It permits him to reap the just reward of his labors by giving him the right to profit from his inventions. Without patent protection, innovation of new, more effective ways of doing things is discouraged; for why should a man try to invent when his ideas will be exploited by others?

Innovation creates wealth because it increases productivity. Take, for example, a nailmaking machine. Before this machine, nails were made by blacksmiths at the forge. It takes little imagination to see the manifold increase in productivity that such a machine can give. This machine was conceived and built by an inventor, an individual, at no small cost in mental and physical labor. Why is our economy sluggish? It is because such men are no longer encouraged; they are discouraged by the policies of corporations.

An engineer has practically no alternative but to work at some time for a corporation and there are virtually no corporations which do not require the signing of a Faustian patent agreement. The following is a sample of such an agreement required by a large corporation. (See enclosure.)

I hereby assign to the corporation my entire right, title, and interest in any invention or idea, patentable or not, hereafter made or conceived solely or jointly by me:

(a) While working in the corporation in an executive, managerial, planning, technical, research or engineering capacity (including development, manufacturing, systems, applied science, sales and customer engineering); and

(b) Which relates in any manner to the actual or anticipated business of the corporation or its subsidiaries, or relates to its actual or anticipated research and development, or is suggested by or results from any task assigned to me or work performed by me for or on behalf of the corporation.

I am a physicist for this corporation and have a personal interest in patent policy, but I also believe that it goes far beyond me. There are thousands of scientifically and technically trained people who would bring their ideas to fruition if only they could be assured of reaping the fruits of the labor.

lieu of salaries. This aspect has been brought over to the 1960's in Government patent policies. One of the arguments advanced by those who favor liberal grants by the Government of patents monopoly or privilege is that the profits as percentage of the contract price are not as high as they would like them, and hence the monopoly grants serve to make Government-financed research and development more attractive.

The patent for the manufacture of white salt, which was assigned to Thomas Wilkes on February 20, 1556, was typical; it was a reward for his service and was the principal part of his maintenance. "The system of monopolies designed originally to foster new arts, became degraded into a system of plunder." [11]

A great hue and cry was raised against the monopoly on salt as an infringement on liberty not to be able to buy and sell salt wherever anyone wished. It was regarded as contrary to the rights of a free man to prevent anyone from converting his salt pit to its best use. A typical complaint was that: "The Price of salte is raysed by the Lycence. And the assignes have taken excessyve gaines." [12]

DEBATE ON MONOPOLIES IN 1601

In the debate on monopolies in the House of Commons in 1601, Sir Edward Stanhop informed the House of the great abuse by the patentee for salt in his country, "that betwixt Michaelmas and Saint Andrews tide, where salt was wont, before the patent, to be sold for 16 pence a bushel, it is now sold for 14 and 15 shillings a bushel. * * *" [13]

It was also revealed that the issuance of patents of monopoly resulted in a large increase in the prices of commodities and in large decreases in their quality. Steel, which had sold at "Two pence half penny the pound before the patent, it is now 5 pence the pound. And where 2,000 poor people were maintained, by working of steel and edge-tooles and might well live by working thereof at 2 pence halfpenny the pound, they are now not able, by reason of the price thereof, to work; but now many go a begging, because the faggot hath also less weight, to the utter undoing of all edge-toole makers." [14] In the case of steel, apparently, the consequences of granting the patent of monopoly was to raise the price considerably, thus reducing the amount of the commodity demanded and increasing the unemployment of many laborers.

What was true for steel was also true for starch, playing cards, stone bottles, pots, brushes, glasses, beer, vinegar, and many other commodities.

PROCLAMATION AGAINST MONOPOLIES

Queen Elizabeth had granted many patent privileges and licences hoping they would tend to the common good, or, as we say it now, advance the public interest. The monopolies did not have this effect, however. Instead, the grants were abused "to the great loss and grievance of the people." On November 28, 1601, therefore, the Queen issued "A proclamation for the reformation of many abuses and misdemeanors committed by patentees of certain priuiledges and licences, to the generale good of all her maiesties louing subjects." The effect was to "further expresly charge and command all the said Patentees and all and every person and persons, claiming by, from or vender them doe not at any time hereafter presume or attempt to put in use or execution any thing therein contained vpon paine of her highnesse indignation, and to bee punished as contemners and breakers of her royall and princely commandement." [15]

The above proclamation was issued against the more obnoxious of the patent monopolies. Those that remained were left to the common law free from any clause of restraint thus entrusting to the courts of the law the responsibility of deciding what grants should be allowed to stand.

THE FREE PRIVATE ENTERPRISE SYSTEM: A REACTION TO MERCANTILISM

The great contribution of the classical economists was their vigorous attacks on the mercantile system and their advocacy of what has been called the system of economic freedom. Adam Smith called monopoly the sole engine of the mercantile system which had a pernicious effect on society. The regulator of the

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[11] Price, "The English Patents of Monopoly," 17 (1913).
[12] 2 Tawney, supra note 8, at 257–262.
[13] Id. at 278.
[14] Id. at 280–281.
[15] Id. at 292–295.

olies was a very important part of the system. Of these monopolies the external ones attracted the most attention, although the internal monopolies included a greater variety of objectives and greater complication of motives.

There were many reasons for establishing monopolies under royal sanction, but the principal one probably was that it was hoped that it would be the means of encouraging new or weak domestic industries. In addition, the fewer the productive units the easier it was to control the economic activities of the nation, for the dominant interest of the national state was to assert the right of the state to regulate economic affairs.

Before the middle of the 16th century the industrial patents granted in England were merely promises of protection to foreign workmen as an incentive to introduce new arts, especially those connected with the clothing trades. The practice of early Tudor monarchs, in encouraging the introduction of new arts, was to attract skilled artisans into their own service. In this way German armorers, Italian shipwrights and glassmakers, and French iron founders were induced to establish new industries in England with the hope of royal patronage.

Queen Elizabeth tried to foster a system of national regulation and to stimulate new industries by increasing the extent and effectiveness of the monopolies. The period covered by the reigns of Elizabeth, James I, and Charles I was actually not the beginning of industrial monopoly: whereas heretofore monopolies had been granted on a local basis, in this period the system of royal monopolies was an attempt to reconstitute them along national lines.

PURPOSES OF MONOPOLY GRANTS

The numerous and varied monopoly grants by the Crown cannot be explained by any single motive. The desire to encourage invention, financial considerations, and the desire to reward her servants and favorites must all be considered as influencing the monopoly policy of Queen Elizabeth. Originally, the encouragement of invention was regarded as one of the chief public concerns. As the years passed, however, this consideration had diminishing weight in patent policy. The patents of monopoly or privilege were usually granted as a result of a petition on the part of someone who had a selfish interest in the grant. In addition, a petitioner was more certain of success in getting a grant if he could show that central control of industry would result from his privilege.

An interesting fact about the monopoly grants is that it was the monarchy that created them—contrary to the common law—but the justification given was that these monopolies existed for the preservation of "good order and government." The justification these days is exactly the same, although the words "in the public interest" are different. In addition, it was the Parliament that fought against monopoly. Monopolies were considered contrary to the traditional rights of every Englishman. In our own day it is the Congress which plays this role. Whenever Congress has legislated on this subject, title generally went to the public, the private corporation getting exclusive rights only in exceptional cases. This is illustrated by specific legislative provisions relating to the Tennessee Valley Authority, Department of Agriculture, the Atomic Energy Commission, and the National Aeronautics and Space Administration. Recent legislation includes the Coal Research and Development Act,[3] the Saline Water Act,[4] the Arms Control Act,[5] the Helium Gas Act,[6] and others. It was only when the law was silent that the executive branch of the Government granted monopoly rights to private persons. Both the Department of Defense and the Department of Commerce are good examples of this. Furthermore, the National Aeronautics and Space Administration, taking advantage of a provision in the law allowing it to grant monopolies when it believed that it was in the public interest to do so, found it in the public interest to waive title on a wholesale basis. A recent example of NASA's enthusiasm in granting monopoly privileges is the granting of its first exclusive patent license for a 7-year period. What is especially significant about this example is that the invention was a product of a Government employee working in a Government installation.[7]

During the 17th century, when the state issued patents of monopoly or privilege, the state shared in the profits. The monopoly was employed by its owner to demand higher prices than he would have been able to get otherwise. The system

[3] 74 Stat. 336 (1960), 30 U.S.C. 661.
[4] 75 Stat. 628 (1961), 42 U.S.C. 1951.
[5] 75 Stat. 631 (1961), 22 U.S.C. 2551.
[6] 74 Stat. 918 (1960), 50 U.S.C. 167.
[7] NASA News Release No. 64–30, Feb. 6, 1964.

system. What these people are really saying is that some kind of a public subsidy—and that is what it really is—is needed for economic growth and the maintenance of employment, income, and the standard of living; the free play of the marketplace cannot be trusted.

Mr. President, I think we ought to settle this problem once and for all. If what these gentlemen say is true, then perhaps we ought to consider repealing the Sherman Act, the Clayton Act, the Federal Trade Commission Act and other legislation which was designed to preserve our system of economic freedom, and to prevent the closing off of large segments of our economy to those people who wish to risk their resources and add to the wealth—both material and spiritual—of our society.

Mr. President, this is not merely an economic problem. This is a problem which concerns our liberty and freedom. To the extent that, through the granting of monopolies, areas of our economic life are barred to many of our citizens, to that extent is our freedom abridged.

Scientific and technological research conducted or financed by the U.S. Government represents a vast national resource, which could equal or surpass in actual and potential value the public domain opened to settlement in the last century. Because the control of patent rights in inventions resulting from such activities means the control of the fruits of this resource, it is the function of the Government to make the results of research available for use by the entire American public which has made this research possible.

Mr. President, if one would only picture what is involved, and project this matter over 8 years of a President's term, assuming he is reelected by the people, we are talking about a gross amount of $120 billion to be invested over an 8-year period either in establishing, strengthening, or maintaining, monopolies which are burdensome and expensive to the public. We are talking about a vast public investment by the people amounting to $120 billion. This is knowledge which should be made available not merely to a few Government favorites.

For that reason, I am introducing the bill, which I now send to the desk, for appropriate reference, and I ask unanimous consent that the text of the bill be printed in the Record.

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Mr. LONG of Louisiana. Mr. President, discussing the general philosophy and possible results of improper government patent policies is a fine article which appeared recently in the Federal Bar Journal for the winter, 1965, written by Benjamin Gordon, staff economist for the Committee on Small Business, entitled "Government Patent Policy and the New Mercantilism." I believe it well points out how erroneous is the policy and how completely outdated is the philosophy that the Government should help establish private monopolies with public funds.

I ask unanimous consent that this article be printed at this point in the Record.

There being no objection, the article was ordered to be printed in the Record, as follows:

GOVERNMENT PATENT POLICY AND THE NEW MERCANTILISM

(By Benjamin Gordon*)

The practice of some Government agencies in giving patents of monopoly to private contractors on the results of publicly financed research and development suggests a similarity to the type of economic system; namely, mercantilism, which existed in England before the establishment of what we call the free, competitive enterprise system. The aim of this article is to show the close similarity of the present system to certain features of the mercantile system. It would not be improper to call our present system the new mercantilism or neomercantilism.

Research and development, the production of new scientific and technological knowledge, is the fastest growing industry in the United States. It could be the largest single contributor to the increase in our national output. The introduction of new technology can mean construction of modern plants, the installation of more efficient equipment, and the employment of more workers. And yet, never has so much money been spent by the Government with so little consideration for its ultimate social and economic consequences.

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*Staff Economist of the Senate Select Committee on Small Business; A. B. Harvard, 1938, M.A., University of Chicago, 1951.

duction for 1964 was 57 million yards. By 1975, it is expected that more than 2¼ million bales of all textile fibers will be devoted to stretch cotton.

Those in the executive branch in the Government, who are trying to justify the granting of monopoly rights on Government-financed research, would say that since everyone has access to this new technology, no one will use it. But, Mr. President, something must be wrong with this claim. We find, instead, that 30 companies—large and small—are using this new technology.

Other important developments for the cotton industry have been the developmen of durable, flame-resistant cotton fabrics, and weather-resistant cotton fabrics, which are being produced by processes invented and developed in the laboratories of the Department of Agriculture and which are freely available to anyone who wishes to use them. Dozens of firms in the chemical, fabric, and laundry industries are benefiting from these new developments.

The Tennessee Valley Authority, as everyone knows, does considerable research and makes the results freely available to the public. New processes developed by TVA in its fertilizer research, for example, are patented by TVA and then are made available to the fertilizer industry on a royalty-free, nonexclusive basis. As a result of this policy, farmers are getting more and better chemical fertilizers and at lower prices than they did 15 years ago. Two hundred and seven companies have been licensed to use TVA fertilizer patents, and about 170 of the are small businesses. Many of the small businesses would not have been able to be in business without the benefits of TVA's research and the use of its patents. This is illustrated in specific and concrete terms by letters from Mr. Aubrey Wagner, Chairman of the Tennessee Valley Authority, and from the Ouachita Fertilizer & Grain Co. of Monroe, La. I ask unanimous consent that these letters be printed in the RECORD at the end of my remarks.

The PRESIDING OFFICER (Mr. Mondale in the chair). Without objection, it is so ordered.

(See exhibit 2.)

Mr. LONG of Louisiana. Mr. President, research conducted by the Department of Defense in its own laboratories has also been made freely available to the public and there has been no hesitation in using these new developments. Let me cite a few examples.

The Chemical Corps packaging and materials development program has led to the development of a number of items of great value to both the military and civilian economies. The Chemical Corps, for example, used polyester resin to develop bleach containers that would withstand the corrosive action of bleaches. a polythylene plastic carboy to reduce expensive losses due to the breakage of glass carboys, and also a multiwall paper sack to ship bulk chemicals. These developments were needed in the civilian economy also because metal drums used to transport chemicals were subject to deterioration from corrosion and glass carboys were subject to breakage. There was also a need for inexpensive and strong shipping containers for bulk chemicals. Manufacturers of bag and sacks—as have manufacturers of various plastic suitcases, and many other manufacturers—are using the results of this research.

An improved method of producing technical grade DDT developed by the Army's Chemical Corps is being used in the manufacture of DDT by many small manufacturers.

In connection with studies of Tabun, a nerve gas containing the cyanide radical, an existing spot test for cyanide ion and cyanogen chloride was converted by Chemical Corps personnel into a sensitive method for quantitatively estimating minute concentrations of cyanide ion or cyanogen chloride. This quick and simple test has been used to detect minute quantities of cyanide by public health agencies, silver plating companies. coke plants, companies producing fertilizer by the nitrogen fixation process, the petroleum refining industry, the manufacturers of certain kinds of paper, and other industries. Manufacturers of vitamin products use it to measure the exact amount of cyanide in vitamin B_{12}. Cyanide is used in the manufacture of this vitamin.

The U.S. Army Engineer Research and Development Laboratories have developed cartographic drafting methods and equipment which has reduced by about 50 percent the cost of map compilation drafting used by private firms in this industry. The same organization has made available to the whole lithographic printing industry the results of its research in a new method of resurfacing lithographic press plates, which could reduce the cost of this operation by about one-third. Other cost-reducing methods and processes in printing, engraving, and lithography have been made available to all private firms that want to use

financing for it. Dr. Nelson concluded that if the Government is not willing to waive title to patents, it might encourage the private firms to do their own research and in that way, enlarge the total of research and development in the economy.

What is wrong about that? They ought to be encouraged to do so.

A good illustration was given to me by Dr. Hornig, the Director of the Office of Science and Technology.

"Research personnel at Ohio State University conceived and tested and improved method for detecting the presence of surface fissures in metal objects involving the use of a liquid penetrant and a developer. This was not done under Government sponsorship, but the university was doing another study for the Government in the general area. Since a substantial amount of the development work would be required on the new process, the Government was asked if it was interested in supporting the work under contract. The Government declined. The university itself is undertaking to complete the work and will assume the task of patenting and licensing so as to make it available to the public."

IV. GOVERNMENT RESEARCH AND DEVELOPMENT RAISES TECHNOLOGICAL LEVEL OF OUR SOCIETY

By making the results of Government-financed research freely available to all, the technological level of our whole society is raised. Private industry itself benefits from this. A good illustration is the development of the fermentation process for the production of penicillin at the Peoria, Ill., laboratories of the Department of Agriculture. This process is still the basic process used in the production of penicillin and is also used for the production of practically all antibiotics made by private drug companies. The process which was available to all manufacturers thus enabled them to use it for other products. In addition, improvements were made in penicillin, and other changes, on which patents have been secured by private companies.

Another interesting example is that of dialdehyde starch which was developed at public expense by the Department of Agriculture and then made available to all of industry. The result is that private firms in many different industries are using the higher technological level as a new takeoff point, are making improvements, are making new adaptations to fit their own industries, and are securing patents on the work they themselves did. Dialdehyde starch is now being used for making high wet-strength paper and other special kinds of paper. It is used in the tanning of leather. Eastman Kodak is using it as a hardening of gelatin for film, and it is also being used for surgical sponge.

Another illustration is epoxidized oils which are used as substitutes for conventional type plasticizer for synthetic resins. It prevents resins from turning yellow as they age. Plasticizers are used to make plastics pliable and tough so they can be molded and worked without cracking and remain flexible throughout their life. The new plasticizer makes plastics last longer.

The fact that a plasticizer makes up as much as 30 to 40 percent of many plastic products indicates the importance of this research. Here, again, the Department of Agriculture made the results of its research available to the public, and General Mills, Rohm & Haas, and other companies built on the public's research, upon which they secured their own patents.

These are only a few of innumerable examples available which show that private firms take to new developments as ducks take to water. There is no quicker way to stimulate production, provide employment, and raise the standard of living than to have the Federal Government unlock the treasures of modern science and make them available to all on equal terms.

Private industry has used the work, the knowledge, and the research of the Department of Agriculture to solve its problems. For example, Dr. V. T. Patton, director of urethane chemicals research and development, Wyandotte Chemical Corp., of Michigan, invited two Department of Agriculture research people for a visit to the company. The Department's people were able to advise the men of the Wyandotte research and development laboratories on several problems they had encountered in laboratory trials of the Department's starch-derived glycol glucoside polyether preparation. Representatives of three starch companies also had discussions with Department of Agriculture people because they had run into a problem identical to Wyandotte's experience—notes from the Director of the Northern Division, issue No. 757, April 16, 1965.

The knowledge and experience developed in the laboratories of the Department of Agriculture are available to all of mankind. One of the great develop-

In the 14th annual report of the Senate Small Business Committee the report of the minority emphasizes that one of the factors to be considered in disposing the Government's property rights should be the background experience and knowledge of the contractor. But we do not hear a single word about the background and experience of the people who do the research and development. I have never seen a Government contract which requires the contractor to do what he himself forces his employees to do.

Some firms are so generous that they give a special consideration to their employees who come up with important inventions. According to a publication of the United Aircraft Corp.—"The Data Capsule," February 1965, pages 1 and 2—when an idea is accepted by a special corporation patent committee and a patent application is filed, the inventor receives the munificient sum of $250. He will receive an additional $50 when the patent is issued. Needless to say, if the company is doing research and development for the Government, even this small pittance will be paid by the Government.

II. CERTAIN EMPLOYEES OF EXECUTIVE DEPARTMENT WORKING AGAINST PUBLIC INTEREST

One of the chief arguments used to justify the giveaway to private firms of the results of research paid for by the public is that a new discovery or invention will not be produced unless a private firm has a monopoly for at least 17 years. What these people have in mind is that the public should pay for the research, then the Government on behalf of the public should give monopoly rights to the contractor, in order to enable him to charge the public a higher price than would be possible under competitive conditions. What this amounts to is that the Federal Government taxes the citizens of this country to secure funds for scientific research, on the grounds that such research promotes the general welfare, and then turns the results of such research over to some private corporation on a monopoly basis. This amounts to public taxation for private privilege, a policy that is clearly in violation of the basic tenets of a democracy. New discoveries derived from research supported by public funds belong to the people and constitute a part of the public domain to which all citizens should have access on terms of equality.

Whenever Congress has studied this problem, it has always come to the conclusion that the information and results of Government-financed research should be freely available to the public, and the language has been expressed in words similar to the Long amendment. I refer the Senate to the Helium Gas Act, the Saline Water Act, the Water Resources Act, the Coal Research and Development Act, the Housing Act, the Arms Control and Development Act, the Veterans' Administration Prosthetic and Sensory Device Research Act, and the Appalachia Regional Development Act. The intent of the Atomic Energy and the National Aeronautics and Space, the Tennessee Valley Authority, and Solar Energy Acts are similar. If there is any consistency in Government patent policy, it is in those areas which are covered by statutes. If consistency is desirable, then the widespread adoption of the Long amendment is the logical way.

Certain employees in the Commerce Department, however, are lobbying to insure that the Long amendment is not adopted.

These representatives of industry on the public payroll are even putting pressure on the Department of Health, Education, and Welfare to oppose the Long amendment publicly. They want to insure that the results of Government-financed research in the field of health, specifically cancer, be given away as private monopolies.

In my judgment, Mr. President, this is a betrayal of a public trust.

Today, the public, through its Government, underwrites the training covered by colleges, medical schools, internships, careers, and research projects for individuals involved in medical research. The public underwrites equipment, construction, and facilities. The public provides grants for research programs and health demonstration projects. Yet, these public officials urge that the public should also pay through the nose for the use of the results of the research for which it pays.

The U.S. Chamber of Commerce, the National Association of Manufacturers, and other trade and industry groups are expected to represent their business constituents—and they do so very ably and legitimately. Government officials, who are paid by the public, however, are not expected to act as lobbyists on

documentation requirements. The fee finally negotiated for this contract was $714,107. While the amount included in the negotiated fee specifically for the loss of patent rights is not known, it is evident that STL estimated the value of such rights, together with the attendant paperwork, at $94,700.

CONTRACTOR COMMENTS

STL, in commenting on our report draft, pointed out that its patent position is the same as that of any other contractor engaged in any program for the Department of Defense. STL stated that application of a clause requiring that the Government take title to patents would:

"* * * have the effect of driving many companies whose contributions are important out of the program, because they simply could not afford to abandon their ownership of the commercial rights in inventions which they conceived. Hence we believe that if this clause were applied to all ballistic missile contractors it would have a very serious harmful effect upon the ballistic missile program. If, on the other hand, this clause were applied only to companies having systems engineering and technical direction responsibilities for weapon system development programs, we believe that the effect would be ultimately to deny the Government the contributions of those companies most qualified to assume such responsibilities."

If the Government were to retain the patent rights on all inventions arising from work by STL on the ballistic missile program, the natural reluctance of associate contractors to making freely available to STL information that could lead to valuable patent rights probably would be reduced. However, as shown above, this restriction, similar to the hardware ban preventing STL from capitalizing on the knowledge and competence obtained in the program, would remove an important incentive from its continued participation in the program. Use of a Government staff to provide systems engineering and technical direction of the program probably would avoid this deterrent to the full flow of information and at the same time better assure continued retention of the necessary capability.

SIGNIFICANT SAVINGS WOULD RESULT IF SYSTEMS ENGINEERING AND TECHNICAL DIRECTION WERE PERFORMED BY GOVERNMENT PERSONNEL

In addition to the advantages that would be obtained through the Government staff's acquiring the necessary technical capability to direct the ballistic missile program and the assurance that this capability would continue to be available, there are substantial costs that would be avoided if this capability were provided by a Government staff rather than a private contractor.

The necessity for payment of substantial fees to the contractor for performance of systems engineering and technical direction would be eliminated. Such fees authorized to R–W/STL for the period from May 3, 1954, through December 31, 1958, exceeded $8 million, and a fee of almost $6.5 million is provided for in the current contract covering the period from January 1, 1959, through June 30, 1960.

In view of the research and development nature of the work to be performed by the contractor, the contracts are negotiated on a cost-plus-a-fixed-fee basis to cover a given period, generally 1 year. The estimated cost of the contract work is based on the anticipated expenditures to be made during the contract period, which represents primarily salaries of personnel and cost of providing facilities and equipment. A significant element in the estimates of cost for performing continuing research and development work is the actual cost previously experienced, particularly where the cost consists mainly of items of a recurring nature, such as salaries and rentals. Consequently, increases in continuing costs tend to cause increasing fees in subsequent contracts. Under these conditions and in the absence of competition, there is little incentive for a contractor to minimize costs.

In addition to the savings in fee payments, the use of a Government staff would probably have avoided costly lease arrangements made by R–W/STL with Air Force approval to obtain necessary office space. Also, costs of more than $460,000 due to extensive leasing of personal property by the contractor would probably have been avoided. The availability of a contractor enabled the Air Force to obtain space and equipment through expensive methods generally not used in the Government. In view of these factors and the elimination of the fee, significant savings would result if systems engineering and technical direction were performed by Government personnel.

Our findings with respect to the fees and rental costs are reported in the following sections of this report.

this unusual restriction also apply to the potential acquisition of valuable patents arising from R–W/STL's unique position in this program. On this basis, R–W/STL would have been restricted from the outset of the ballistic missile program from obtaining title to patents developed as a result of work performed at Government expense in this program.

As of June 30, 1959, 240 patent disclosures[1] had been made by R–W/STL employees arising from work under Government contracts. Many of these disclosures had culminated in patent applications that had been granted, filed, or approved for filing, and title to the patents vests in R–W/STL. The patent counsel of R–W division of TRW has advised that some patent applications were not filed because the inventions may have been made from the information obtained in the course of work with associate contractors in the Air Force ballistic missile program. We have no indication that R–W/STL took advantage of its privileged position by applying for patents based on inventions disclosed or conceived by the associate contractors. However, the opportunity for such action obviously existed and we believe that this is another factor that can reasonably be expected to be a deterrent to the full flow of information in the ballistic missile program.

Defense contracts generally permit contractors to obtain patent rights on inventions arising from work on Government contracts, but the Government receives a royalty-free license. If the Government were to retain the patent rights to inventions made by STL, the natural reluctance of participating contractors to making information available to STL probably would be reduced. On the other hand, the additional restriction on STL would remove an important incentive for its continued participation in the ballistic missile program. Use of a Government staff for the systems engineering and technical direction of the program can reasonably be expected to avoid this deterrent to the full flow of information while providing better assurance of continued retention of the necessary capability.

The Air Force contracts with R–W/STL, with the exception of those negotiated for the National Aeronautics and Space Administration (NASA), contain the standard clause covering patent rights prescribed in ASPR 9–107. However, the NASA contracts contain special provisions whereby title to inventions resulting from work done by R–W/STL in the space program is retained by NASA. As a condition of employment, R–W/STL employees have been required to assign to R–W/STL any inventions, developments, and discoveries made or conceived during the period of their employment. Inventions conceived through October 31, 1958, the date of the merger of R–W with Thompson Products, Inc., and the separation of STL, are considered the property of TRW, even though they were disclosed subsequent to that date. Inventions conceived subsequent to the establishment of STL are the property of STL.

MANY VALUABLE PATENT DISCLOSURES BY TRW ARISING FROM WORK UNDER AIR FORCE CONTRACTS

As of June 30, 1959, 218 patent disclosures had been made by the employees of R-W Division, TRW, 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[2] 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.

We were informed by the patent counsel of the R-W Division, TRW, 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; i.e., to provide recognition of the inventor. We were informed, however, that patent

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[1] A patent disclosure is a descriptive written statement required to be furnished by a contractor to the contracting officer for an invention or discovery conceived or first actually reduced to practice by its employees while performing experimental, developmental, or research work under the contract. To protect the Government's interest in receiving a royalty-free license to practice or have practiced any such inventions, the standard patent rights clause prescribed by section 9–107.2 of the Armed Services Procurement Regulation provides that, for each such invention which reasonably appears to be patentable, a prompt disclosure shall be made, together with a statement specifying whether or not a patent application has been or will be filed.

[2] Two of these disclosures were combined into a single patent application.

An unusual clause was inserted in the R–W/STL contracts prohibiting the development or production by R–W/STL of components for the ballistic missile program. However, as explained below, this clause may not have been fully effective in overcoming the natural reluctance of contractors to provide full cooperation in view of the substantial amount of work performed by R–W/STL in closely related fields.

Furthermore, as discussed below, information developed by participating contractors probably would be made available more freely to a Government staff than to a potential competitor in view of the possibility that such information may lead to valuable patents. If R–W/STL had been restricted from the outset of the ballistic missile program from obtaining title to patents in this program, the natural reluctance of contractors to make information freely available to a potential competitor might have been reduced. However, such a restriction, similar to the hardware ban preventing R–W/STL from fully capitalizing on the knowledge and competence it had obtained in the program, would remove an important incentive for its continued participation in the program. Many valuable inventions have been made by R–W/STL employees under the Air Force ballistic missile contracts, and title to these inventions is vested in R–W/STL.

Use of a Government staff to provide the systems engineering and technical direction of the program can reasonably be expected to avoid this deterrent to the full flow of information and simultaneously better assure the continued retention of the necessary capability.

RESTRICTIONS PROHIBITING PRIVATE CONTRACTOR FROM DEVELOPING OR PRODUCING COMPONENTS IN PROGRAMS UNDER ITS TECHNICAL DIRECTION MAY NOT OVERCOME NATURAL RELUCTANCE OF PARTICIPATING CONTRACTORS IN VIEW OF POTENTIAL COMPETITION IN RELATED FIELDS AND FUTURE PROGRAMS

In recognition of the need for special precautions in order to promote a greater degree of objectivity on the part of the technical director in advising the Air Force on technical matters which may naturally affect other industrial contractors, and to facilitate acceptance of technical decisions by the contractors working in the program, an unusual clause was placed in the R–W/STL contracts. This clause, contained in the initial definitive contract, AF 18(600)–1190, read as follows:

"The contractor agrees that due to its unique position in the administration and supervision of the program contemplated hereunder, the Ramo-Wooldridge Corp. will not engage in the physical development, or production of any components for use in the ICBM's contemplated herein, except with the express approval of the Assistant Secretary of the Air Force (Materiel) or his authorized representative."

Similar restrictions appear in subsequent contracts.

While as a result of this prohibition direct competition between R–W/STL and the contractors in the ballistic missile program was generally precluded. R–W

4. The reward sought by plaintiff from defendant for inventions to be licensed in no way related to the quality of the individual patents and under the package license each patent drew strength from the others, thus unlawfully extending the monopoly of each.

5. Plaintiffs' offer to license its patents individually but at royalty rates far in excess of the package rate was never an alternative to its controlling policy to grant defendant a license only under all of its patents. Rather, it was proposed by Hazeltine in the later stages of its negotiations in the instant case to cloak the harshness of the original demand by seemingly meeting the request of defendant in that regard. Although it may be said that the Hazeltine proposals on the surface were offers to treat of individual patents, the design was quite apparent—to force by unlawful coercion the acceptance of unwarranted patents. This constituted an illegal extension of the patent monopolies. Whatever may be the asserted reason or attempted justification of Hazeltine, its efforts to compel defendant to accept a package of patents involved the use of one patent or group of patents as a lever to compel the acceptance of a license under others. Such a licensing scheme under applicable decisions of The Supreme Court is illegal and constitutes a misuse of the patents involved.

VI. There is a further feature of Plaintiff's licensing practices that in and of itself constitutes an illegal attempt to extend the patent monopolies. The license agreement, whether it be under a single patent or under Hazeltine's entire patent package, requires the payment of royalties in large sums for a period of five years on the entire production of the licensee whether or not any licensed patent is employed in any way in the licensee's products. Plaintiff's demands that royalties be paid on admittedly unpatented apparatus constitute misuse of its patent rights and plaintiff cannot justify such use of the monopolies of its patents, by arguing the necessities and convenience to it of such a policy. While parties in an arms-length transaction are free to select any royalty base that may suit their mutual convenience, a patentee has no right to demand or force the payment of royalties on unpatented products.

VII. The defense of misuse asserted by defendant is a valid one.

The Patent Pools

VIII. Every act in furtherance of a general plan to restrain trade and commerce, foreign or domestic, in violation of the Sherman Act, is illegal regardless of whether such act or acts when standing alone and absent conspiracy could be found to be legal.

Conspiracy

IX. It is fundamental that an unlawful conspiracy may be and often is formed without simultaneous action or agreement on the part of conspirators. Acceptance of an invitation to participate in a plan, the necessary consequence of which,

the Pool have systematically policed the market in order to locate and stop the sale of imported receivers and have immediately attacked by infringement suit or threat thereof any dealer found to be selling imported receivers. Warning notices addressed to importers, vendors and users of radio and television receivers advise the trade and the public that only the products of certain named local manufacturers are licensed by the Pool under "basic patents" and that even "users" of unlicensed products are subject to suit on account of patent infringement. Many advertisements run by the Pool went much further. They contained disparaging statements about imported receivers to the effect that they were cheaply made, unsatisfactory in operation, caused fires and were dangerous to use because of "shock hazard."

XXVIII. Mass attacks in the form of infringement suits were made on dealers found to be selling imported American-made radio and television receivers. Suits or the threat of suits effectively prevented dealers from handling American made sets.

XXIX. For many years Zenith attempted to set up distribution for its products in Canada but in every instance where a Canadian distributor began to sell Zenith products he was warned by the Pool to stop and return the merchandise or face expensive infringement litigation. To ward off these attacks Zenith attempted to get a license from the Pool, but in every instance it was advised by the Pool manager that importation would not be permitted and, only local manufacture would be licensed.

XXX. As a part of the settlement in the Zenith litigation against RCA, General Electric and Western Electric which involved the activities of the Canadian patent pool, Zenith obtained world-wide rights under the patents of the defendants and having obtained these and other patent licenses permitting importation into Canada, Zenith began late in 1958 to export to and sell in Canada its radio and television products through its Canadian subsidiary, Zenith Radio Corporation of Canada. The manager of the Pool, Brian McConnell, investigated the matter and informed Zenith that in order to continue this business in Canada, Zenith would be required to sign the Pool's standard package license which did not permit importation and that Zenith would have to manufacture in Canada any products it intended to sell there. The Pool manager further informed Zenith that it was infringing at least one of Hazeltine's Canadian patents and that Hazeltine's patents, as well as all of the other patents in the Pool, with the exception of those owned by Westinghouse and General Electric Company, could not be licensed for importation. With respect to the latter two companies, McConnell stated that they had instructed the Pool not to refuse to license their patents for importation. The notices to "importers, vendors or users of radio and television receivers" warning them not to purchase imported sets continued to be run by the Pool despite protests by Zenith. Shortly

British inventions controlled by General Electric Co. Ltd. are licensed to Hazeltine for exclusive licensing use in its American territory and are included in its United States package licensing activities. The Hazeltine-General Electric Co. Ltd. exclusive agreements were specifically devised to get the Hazeltine patents into the British Patent Pool in a manner which would provide for G. E. C. maximum bargaining power vis-a-vis the other Pool members on the division of the Pool income.

Restrictions on U.S. Exports

XVI. Pursuant to these arrangements, General Electric Co. Ltd. on its own behalf and on behalf of Hazeltine entered into successive pooling arrangements with the other members of the British Pool wherein and whereby it was agreed that the Hazeltine patents along with the patents of all of the Pool members be licensed in the territory of Great Britain solely by the Pool and on terms and conditions determined by the members of the Pool. Each of the participating parties in all of the interrelated agreements, including Hazeltine by virtue of the exclusivity of its joint arrangements with General Electric Co. Ltd., contractually pledged that during the period of the agreements no license would be issued that would permit the export of radio and television receivers from the United States into the British market and that the only license employed by the Pool would be a standard package license limited to local manufacture. Hazeltine has been participating in this plan and arrangement since 1938, is currently participating in it and intends to continue its participation.

XVII. Hazeltine has had full knowledge of the various interrelated agreements under which the Pool operates and has operated and of the purpose and effect of the plan which is to protect the British manufacturers in the Pool against competition from television receivers made in the United States and other countries. Hazeltine contends that it has entered into these arrangements because in that manner it can obtain more income from its English patent properties than it could through its own individual effort.

Licensing by the Pool

XVIII. The Pool has always issued one form of license which, like the Hazeltine package license in the United States, covers all of the patents in the pool and requires payment of royalties on all of the licensees' production whether or not any of the patents are employed. The effect of this plan is to amass all of the patents for assertion against anyone not licensed, to prevent importers or foreign manufacturers from entering the market and to preclude the possibility of any attack by the licensees on the validity of any one patent.

Policy of the Pool

more patents would be licensed at 100 percent of the package rate. Hazeltine reserved the right to sue for infringement of any patent not licensed. All licenses would otherwise be subject to all the terms and conditions of the standard package form of license and would require payment of royalties on all production during the five-year term of the license irrespective of whether any patent was employed or not. The license would not cover color television receivers.

Zenith refused to sign either of the proposed agreements and on November 20, 1959 the instant suit was filed.

VIII. With the suit on file and at issue, Hazeltine continued its attempt to persuade Zenith to sign the package license. During the course of discovery proceedings Hazeltine informed Zenith that in addition to the patent in suit, Zenith was infringing at least 9 designated Hazeltine patents and applications in the manufacture and sale of its color television receivers. The old form of standard package license under all the Hazeltine patents was again tendered to Zenith for signature and Zenith again refused to sign it.

IX. On April 11, 1962, Hazeltine submitted to Zenith a license proposal for color television which provided an annual royalty rate of $435,000 merely for the 9 patents asserted and an annual rate of $500,000 for a license under all of Hazeltine's patents and patent applications for color television. However, if the standard package license covering all of Hazeltine's patents, for monochrome as well as color, were signed, the maximum royalty rate would be $150,000, the same as the rate in the Hazeltine-RCA package license (later raised to $200,000). Zenith refused these proposals on the grounds that they were obviously designed to force Zenith to take the package license which it did not want or need; that Zenith could not place itself at a competitive disadvantage by taking a license under only 9 patents at $435,000 a year rather than signing the package license containing all Hazeltine patents at the package rate of $150,000 per year.

Alternative Package Arrangements

X. Hazeltine continued its efforts to persuade Zenith to sign the standard package license before this case could be brought to trial. In March 1963, as the case approached the final pretrial conference, Hazeltine made the following proposal to Zenith:

It grouped together the nine patents and one application which were claimed by Hazeltine to be employed in the manufacture of Zenith color receivers. It placed a maximum royalty on this package of $275,000 per year but for color receivers only. For the entire package containing all of Hazeltine's then existing patents for color television, an annual maximum of $300,000 was set and for all present as well as future patents issued during the license period an annual maximum of $310,000 was demanded for color television alone.

In this same license proposal, Hazeltine offered its entire package of present and future patents, unspecified, for both monochrome as well as color receivers

It is the job of the contracting officer to ride herd on these fellows and make them perform under their contracts.

Now, sometimes these contractors are so wealthy and powerful that they have enough influence that they can manage to keep that contract and get the money even without performing, but that is your job under a contract, to insist that they do perform under it, and I do say it, some of these Government contracting officers do a magnificent job on this. Obviously they are doing a good job in Atomic Energy on this; they are doing a good job in Health, Education, and Welfare; a magnificent job over in Federal Aviation Agency.

So the truth is where you have got a good administrator, there is no real problem. FAA, for example, is fortunate to have some very fine administrators. For example, General Quesada was their administrator for a while. I have heard people describe him as the ablest officer in the Armed Services. I don't vouch for it myself, but he was a real tough administrator. Halaby who came along behind him was a very fine administrator. They have had some great administrators over there, and even though they are not bound by law to do it, they have a firm fixed policy that they don't give private patents on Government research. They also see to it that the Government gets the maximum advantage that can be achieved by this research.

So I would say that the truth about the matter is that it is just dependent upon whether you have a good contracting officer riding herd on his contractors or have a lax fellow who is the type that seems to be inefficient and even corrupt handling those contracts. It just depends on the contracting officer, whether he insists upon doing a good job; and also the contractor. You take a lousy contractor and you are not likely to get a good job anyway.

Senator BURDICK. Then it is your testimony that you don't believe patent incentives are necessary?

Senator LONG. Well, it is just this simple. You have got two ways to get something done. A patent incentive will get you a lot of inventions, and we are are getting that from private industry, and when they do that, they pay for it. They pay for it, get a patent monopoly,

Admiral Rickover testifies to us that there is no problem, he didn't even know there was a problem. He said, "I don't have any difficulty in finding enough contractors to do work for me." He said, "My problem is that I don't have enough contracts to go around. I have got so many folks wanting these contracts that I just don't have enough contracts to go around."

Now, there may be somebody who, for his own selfish reasons, may not want to do research for the Government. If he doesn't want to, great. We have all the contractors we have any use for anyway applying, and you will find that some of the same people who make that statement to you have contracts over in Atomic Energy.

Why do they go apply for them? They are over there doing research. There is just no shortage of these people. As a practical matter, if they indicated they didn't want to do research for the Government, there is always somebody else who would be glad to do it and hire the same scientists that they would have hired. So if they say it, it is just not true.

Here is General Electric, the bell cow, saying unless National Aeronautics and Space Administration could give them patent rights in the original contract, without waiting to see what they were going to discover under the contract, they would not want to do the research.

We turned them down. What did they do? They rushed right in there and tried to hog it all up again in NASA where they couldn't get advance patents at that time. They say it, but the very guys that say it by their own actions prove themselves to be liars.

Senator BURDICK. All right, Senator. The next question is this. If your bill was passed, became law, could we use a crossflow of ideas between Government and commercial research?

Senator LONG. Well, would you mind explaining why it would not do that?

Senator BURDICK. I didn't say it.

Senator LONG. Well, I think I have indicated that it would be just the other way around. I told you about this study the General Accounting Office made on Lockheed and Thompson Ramo Wooldridge.

In my judgment, gentlemen, that was a bluff. You try to find out who it was that would do it. Who were these big corporations? While the American boys—you had sons yourself out there fighting, Mr. Chairman, and while your sons were out there fighting these Germans and Japanese, giving their lives fighting those people as your sons did—while they were doing that, here these companies were telling the public that "We won't even do research, not even to protect our own hide from those Germans and Japanese. No, sir. We won't do research for you unless we can have private patents on all the research we do."

Well, you say, they said it. Who was that? And then they all duck for cover and pretend "it wasn't me."

Well, I have made some effort to find out who it was. The best I can make out of it seems that General Electric was the bell cow of that crowd.

Now, General Electric, you may recall, just a short time ago was one of the 10 electrical equipment contractors who had to go before the U.S. court and pleaded guilty in 7 cases including the turbine case and pleaded nolo contendere in 13 of the cases, that that company had been systematically engaging in price fixing with 9 other contractors in supplying electrical equipment to this Government. It was such a serious offense, such a serious violation of the antitrust laws, and such a horrible conspiracy that it was necessary that somebody from each company go to the penitentiary.

Now, for the record, just one guy was guilty, but don't you think about the same way that judge thought? The whole company knew about all that. They would get together, make all this profit, and act so sanctimonious as if they didn't know about it. When this was found out, these concerns found that they were going to have to pay damages to their customers because there is an antitrust law that says if you engage in a conspiracy to violate these antitrust laws, you owe treble damages to the guy that got hurt. So, these private customers, when they saw that General Electric and these boys had to plead guilty, then proceeded to file claims against them for

terests, and they do it very well. But on the whole, they are decent guys; and we think that if you vote against them because you are sincerely convinced that they are wrong, sometimes they secretly agree with you. And my guess is that if you bring out legislation here that carefully protects the public interest, those fellows will be right in there asking for contracts, and they will still be performing the research. The only difference is they will be communicating this information to one another as they should be doing it; and when they develop something, it will benefit 190 million people instead of somebody sitting down to figure out how can he make the greatest advantage on it.

I don't want to quarrel with patent lawyers. If I were a member of the Patent Law Association I would be outraged at Senator Long for trying to keep me from getting rich at the public expense.

I don't quarrel a darn bit that they protect their interests and I am through speaking before their associations. I think they have been most kind, even letting me get out of the hall with my hat when I address them, considering the tremendous financial interests those folks have in preserving the tremendous costs for a completely unnecessary operation.

Imagine, here we spend a fortune to find how to get into outer space. We can't use it for 4 or 5 years. We have got to turn it over to a patent lawyer and let him figure out what we can do.

Here you have something that is great. Wait a minute. You haven't fenced that patent in. Do you understand what "fencing in" of a patent is? "Fencing in" means that you have something great but somebody else might be able to do something similar and save the public a fantastic amount of money. For example, what is this thing that does the same thing as quinine? Atabrine. Suppose you had developed quinine. It is good for malaria. Now, atabrine will do the same thing. If you had discovered quinine, you don't want to let the public know about this until you have also discovered atabrine because otherwise the public might not pay you a fantastic price for

This Government will go up to some outfit like Standard Oil of New Jersey and say, we would like to have a new jet fuel for a particular jet engine that we are inventing. Standard Oil of New Jersey has done enough research on their own account and knows enough about the subject so that they can do that for you without any difficulty whatever. They have got enough background information to where it is as as easy as falling off a log.

Now, oh, yes, you can force onto them a couple of hundred thousand dollars to do this, but as a practical matter if you said, "Look, here is the engine and we would like you to develop a fuel with a certain octane and certain characteristics for this engine and if you will develop it, we will be glad to give you a procurement contract and let you make a nice profit selling it to us." That is all you would have to do.

Here is the area where some people would like to confuse things by saying, "Well, these folks would not be interested in doing research if they couldn't acquire the patent rights to it. All you have got to do is say that "that is what I want and we would like you to make it for us and we will buy it from you if you will."

Those folks would be more interested in having a private patent on it than they would be in divulging what they know to you. They would rather develop it, manufacture it, and patent it, and they would rather keep their trade secrets in their own shop. All you have got to do is just tell them that you would like to have the fuel.

As a matter of fact, I have talked to lawyers on this subject who tell me they have gone to great pains to try to persuade their concerns to take Government money. Now, if these folks would rather do the research with their own money, why not let them do it. If some firm wants to do it with Government money, then why not do business the way a private corporation would do it, just say, "All right, if we are going to pay for it, we get it."

Some time ago I asked a man who was at one time the General Manager of the Atomic Energy Commission, who is one of the great executives of America, how he looked upon this problem. At first

Louisiana side and he is on the Federal side, but he made a very simple suggestion.

He said, look, Senator, let us quit talking about this matter as though you are representing Louisiana and I am representing the Federal Government. Let's us just assume you represent Texas Co., and I represent Gulf and that the Gulf Oil Co., is the Federal Government and the Texas Oil Co., is Louisiana.

He said, let us talk about the claim on that basis because it is my duty to talk to you about it on just that basis. That is how we are going to do business. And if I do say it, that tended to clarify the atmosphere because he feels that he is representing his client and I am representing mine. And that is how I think we ought to do whether we are lawyers or Senators or Congressmen, representing 192 million people or 3 million people for Louisiana and a similar number for Arkansas and a lesser number for North Dakota. Let us just think about this thing as though we are lawyers looking after the interests of our clients.

If you signed a $100 million research contract with some fellow and you let him keep the patent rights to it, your stockholders wouldn't just fire you. They would probably institute criminal proceedings. They would figure that there had to be something crooked about a deal in which you spend $100 million of their money and the fruits of it go to the fellow that you gave the money to. They would say it just had to be crooked. And they probably would wind up putting us in jail unless we could prove we were ignorant, stupid, and didn't know what we were doing.

Now, we represent over 190 million Americans. How can we justify giving these contracts for fantastic amounts and letting these people charge the folks their eyeballs for the benefit of it? Fortunately, penicillin was developed in Government laboratories in Peoria, Ill. The fellow who developed it might have had a little incentive award but his great reward will be in heaven for what he did for mankind.

Now, if he had been on one of these cost-plus-fixed-fee contracts, they could be charging you $100 for a dose of that stuff. If you got

I understand that the Manufacturing Chemists Association testified before you for what they want to get out of the public. I am not sure whether it is the same outfit but one of these chemical outfits a short time ago invited me to a debate. They brought some fellow down from New York—I have seen him on television sometime or other—the best hired debater that the U.S. Chamber of Commerce had. They brought him down from New York and told me they wanted to record the debate. At the time I agreed to go on, I didn't realize it was going to be a stacked deal, but I thought I was going to have some people who might be on my side. They said there would be some Government folks who would be sympathetic.

When I got there, I found they had really rigged this against Long. Everyone there was a specialist in getting something out of the Government and paying nothing for it.

So, I said, "Well, OK, you can record the debate provided you let me have a copy of that tape." This was to be played over Mutual Broadcasting System.

Well, I have done a lot of debating. I have won some and lost some. Most of them that we lost were my fault, not my partner's fault; and if I ever won a debate, I won that one. I really think I took that fellow from all sides, and when it was over with I asked for a copy of the tape. They said, "It will be coming, it will be coming." So I called back in about 3 hours: "Where is my tape"? I knew I won that one. They said, "The tape has been washed." They ran it back through and took everything off the tape.

These fellows had their best primed man down out of New York and their case is so sordid that they had to wash the tape and not let anybody hear it. And I will say to the Senators, anybody who wants to advocate this public giveaway, don't you go on that "Open End" program with someone on your side. This is an issue that must not be exposed to the press. The Washington Post in an editorial said they thought Senator Long was right about this matter. I heard from some of their people, by the grapevine, that they had never had such pressure in their lives brought to bear upon them that all these

considerable degree how these folks go about fencing in patents. It is kind of cute how they do some of this. If you discover something that is good, it is not always good to patent it. Our patent law is such that the patent runs 17 years from the date that it is granted and the guy who gets the reward is a fellow who discovered it first.

Look here. Here are two people. Let's say one of them discovers a new drug that would cure heart disease. He figures he wants to fence this thing in to make sure nobody discovers something parallel to it that might bypass his patent. So he is keeping it a secret. He can keep that in his bosom for 20 years or forever and when he gets ready to apply for the patent, he has got 17 years to exploit that because he was the first man to get the idea.

Now, here is another character who might be like Dr. Guthrie who is complaining about Miles Laboratory raping the public interest. This fellow perhaps discovers the same thing but he discovered it 5 hours later. He goes ahead and makes it available to the public and applies for the patent so the public can have the benefit of this.

Who do you think gets the reward? The man who wanted to benefit the public or the guy who wanted to hold it back forever to guarantee that when he really finally filed this thing for application, he could really reap the harvest.

Well, naturally, it is the guy who thought of the idea first who wanted to reap the harvest.

It seems to me we ought to do something about that. But these are the kinds of problems you get into once you start trying to compromise between right and wrong. The right of it is very simple.

In the first year of the administration of President George Washington, even before we had a patent law, this Government signed a contract with Eli Whitney to see if he couldn't develop interchangeable parts for firearms so if they had a bunch of fellows out in the woods and one would break the hammer off his rifle, he would take a hammer off another. If one had a barrel busted, he would take the hammer off that one and put it on a good barrel and go right on fighting. At least you had one good rifle instead of none.

How did they get away with that? It couldn't be but one reason, in my judgment, and, of course, I couldn't prove this and I don't pretend I can. I am just expressing my opinion and you are privileged to have yours. Influence. Influence. And how did they get all those big contracts that company has? Don't you think that has got something to do with influence, and they make a fortune at it.

But having done so, why should you let that corporation that already has 15,000 patents—15,000—why let them hog up all the Government's money and then erect a private monopoly on top of it and make people pay anywhere from 10 to 100 times the cost of producing something that we developed with Government money? It doesn't make a lot of sense to me and over a period of time if this issue is going to continue to be resolved in favor of the private concerns continuing to take advantage of the public, there are going to be more and more examples where we, as elected representatives of the people, are going to be criticized, and some of us are going to criticize others, until this issue is resolved.

I thank the Chair and members of the committee for permitting me to present my views on this matter and I will be glad to answer any questions the gentlemen might have to ask.

Senator McCLELLAN. Thank you very much, Senator. I appreciate your appearance and the very constructive statement you have given the committee.

I got interested, though, when you said you were down talking to the Solicitor General about Tidelands. Did he agree that the State should own oil and not the Federal Government?

Senator LONG. No, he didn't, Mr. Chairman.

Senator McCLELLAN. I think he is wrong, don't you?

Senator LONG. About the same experience I have had with all Solicitors. There hasn't been much difference.

Senator McCLELLAN. Any questions, Senator Burdick?

Senator BURDICK. I want to thank you, Senator Long, for your very

Senator LONG. See, if I do say it, Senator Burdick, if you are working on a Government contract, especially if you are like a great number of these fellows who don't do research for themselves at all, they are only doing Government research—Aerojet General, for example, a big corporation—it may be doing all its business on Government cost-plus-fixed-fee contracts. And that is how a lot of them are. If all the research you are doing is Government research, then you have got no incentive to withhold the information because you aren't going to be able to keep it anyhow. It is going to be made available to the public at the time you apply for a patent. You might as well reveal it because if you try to sneak it out of the shop and take a private patent on it for your own advantage, they are going to sue you and make you put it in the public domain anyhow.

As a matter of fact, there is another study by the General Accounting Office—there was one in 1960 on the ballistic missile program. Thompson Ramo Wooldridge was more or less in charge of that, subbing it out to other contractors. The General Accounting Office found that these people who were doing research under these contracts did not want to reveal the results to the principal contractor for fear that by doing so they might lose their chance to get a private patent, and Thompson Ramo Wooldridge would get it instead of them. They found that even the subcontractor who was working for the contractor would not reveal to the contractor what he was finding out because he was afraid that the contractor would get it. This is in violation of his own contract. Although he is paid to discover something he doesn't reveal it as he is supposed to, which is to help this Government, because if he reveals it his boss, who is the prime contractor, is then going to get the patent. So the subcontractor keeps it and waits until the contract expires, and after the contract has expired, then he pretends that he did the research subsequently and then applies for a patent for himself.

That is the kind of chicanery you encounter when you let them have private patents on Government research.

I can supply this for the record if you care to have it.

Now, the people doing the inventing, the fellow who actually gets down in that laboratory and spends these long hours at night studying and thinking up ideas and trying to figure things out, does not have any patent incentives. He gets paid—sometimes generously—for doing this. That is his job. There is no particular point in giving him a patent on it as well.

So the incentive has always been adequate so far as private industry is concerned. This is how they do business. They pay somebody to do research and so do we in every agency except the Department of Defense which paid them to do research up until 1942. The National Aeronautics and Space Administration, NASA, is supposed to take the patents but they have a right to waive it and that is where we get into mischief under NASA because these people are trying to get to where they even waive the public's property rights before they know what they are waiving.

Even with NASA it is supposed to be that they pay them to do the research rather than provide them patents for doing it.

Senator BURDICK. Now, in your wide experience, Senator, do you know whether private industry contracts with private industry for research? Does company A contract with company B?

Senator LONG. They do and almost without exception the way they do it is that if a corporation contracts with another corporation, the latter corporation will do the research, the patent rights belong to the corporation that pays for it. So that the company that does the research will have their inventors apply for the patent and then they turn it over to the company that paid for it.

Of course, it is kind of amusing how that company up in Baltimore does it the Martin Co. They are very generous. If they are doing it—if they hire somebody to do research for the Martin Co. and they use their own funds, they insist the patent rights belong to Martin Co.

Now, if that is Government money they are using and they hire another firm to do research for the Government, they will permit that fellow to keep the patent rights for himself. So, notice, if it is the taxpayers' money, they don't mind what happens to the patent rights,

affirmative defense that plaintiff was misusing its patents, including the patent in suit, in violation of public policy and the Sherman Act (15 U.S.C. §§ 1 and 2) and that it, therefore, came into this court with unclean hands and is therefore barred from receiving any relief in this action. Defendant also filed a counterclaim for damages and injunctive relief pursuant to Rule 13(a) of the Federal Rules of Civil Procedure, Sections 1 and 2 of the Sherman Act (15 U.S.C. §§ 1, 2) and Sections 4 and 16 of the Clayton Act (15 U.S.C. §§ 15, 26).

II. Defendant-Counterclaimant Zenith Radio Corporation, is a corporation organized and existing under the laws of the State of Delaware with its principal place of business located at 6001 W. Dickens Avenue, Chicago, Illinois, and is now and has been continuously for more than 43 years last past engaged in the development for sale and use and in the manufacture, sale and use of radio apparatus and receiving sets, and since the advent of television, television receiving sets throughout the United States and in foreign commerce, and during said period has built up a large volume of business in manufacturing and selling as the demand therefor has existed and will continue to exist, and in the shipment and sale of such apparatus in commerce between the various states of the United States and in foreign commerce, and said counter-claimant is now and has been engaged in said commerce during all of the period above stated and during all time material to this counterclaim.

Court Decisions

Hazeltine Research, Inc. v. *Zenith Radio Corp.*

Patent Holding Company

III. Counterdefendant, Hazeltine Research, Inc., the party plaintiff in this suit, is an Illinois corporation owned and operated as a wholly owned subsidiary of Hazeltine Corporation, a New York corporation, engaged in the manufacture and sale of electronic equipment and devices. The parties stipulated that for the purposes of this litigation Hazeltine Research, Inc. and its parent, Hazeltine Corporation, would be considered as one entity operating as a patent holding and licensing company, engaged in the exploitation of patent rights in the electronics industry in the United States and in foreign countries. The gross income of the Hazeltine enterprises approximates $47 million per year.

IV. For many years plaintiff has accumulated a large number of patents, domestic and foreign, for use in its patent licensing business in the electronics industry. At the time of the filing of this suit Hazeltine had over five hundred patents and patent applications in its licensing portfolio.

Package Licensing

color production to the assertion of any or all of the color patents not licensed and subject its entire monochrome production to the assertion of any of the hundreds of patents in the Hazletine package.

4. Take the standard package license under all patents and patent applications of Hazeltine, present and future, for both monochrome and color television at an annual maximum of $200,000 per year. Over a five-year license period it would cost $500,000 to $550,000 more for a license under the small group of ten patents for color television alone than for the entire Hazeltine package covering over 500 patents and applications for monochrome as well as color television. In addition, the full package license would remove the risks of futher protracted and expensive litigation or harassment whereas the more expensive license under less than the entire package would leave Zenith and its customers exposed to renewed charges of infringement based on any or all of the remaining hundreds of existing Hazeltine patents as well as all patents issuing during the term of the license. The only practical answer would be to accede to Hazeltine's demand and accept a full package license.

Economic Coercion

XI. Plaintiff's offer to license any one of its hundreds of patents for monochrome at 50 percent of the package rate, any two at 80 percent of that rate and any three or more at the full package rate was an attempt by economic coercion to force the taking of the package. This is clear from the fact that plaintiff had asserted that Zenith was infringing at least four patents in its monochrome receivers. Moreover, the reward demanded by plaintiff for a license under less than the full package of patents is in no way related to the quality of the patents since the price is determined solely by the number of patent's chosen and most of the patents in the package are characterized by Hazeltine itself as "insignificant."

XII. In all of its proposals to Zenith, Hazeltine insisted as an alternative to litigation that Zenith for a period of five years pay royalties in large sums based on its entire production of receivers whether or not any Hazeltine patent was employed in any way in its products. Plaintiff thus insists that royalties be paid on admittedly unpatented apparatus.

Damages

XIII. As of the date the trial began Defendant had been injured in its business and property as the proximate result of the acts and demands of Hazeltine, referred to above, in the amount of $50,065. Defendant has been forced to make expenditures of money and to use the time of its officers, employees, and

free worldwide rights under the inventions and patents of these companies and began to ship radios to the British market. The Pool could not assert any of these rights to prevent importation and since all basic radio patents have expired, Zenith has been able for the first time to export to and sell its radio receivers in the English market. This is not true of television apparatus however. The Pool is armed with thousands of patents from the Pool members including the British counterparts of patents asserted by Hazeltine against Zenith in the United States. Zenith has been constrained from entering the British television market by the threat of the assertion against it of pooled patents, although Zenith has successfully engineered sets for the British market and has shipped some to its English distributor with the hope that the injunctive relief sought in this suit would be granted and business on a commercial scale could be conducted.

XXIII. The manufacture in the United States of receivers for sale to exporters here or directly to importers in England (or in Canada and Australia where corresponding patent pools are operating) would risk further charges by Hazeltine of infringement of the United States patents asserted against Zenith here and Hazeltine, by virtue of its exclusive arrangements with the English companies, is contractually unable to grant a license to manufacture in the United States for export to and sale in England under the British counterparts of its domestic patents. Hazeltine's United States package license expressly states, in compliance with the restrictions involved in the pooling arrangements, that no license is granted under any patent rights of countries foreign to the United States.

XXIV. Hazeltine has always told its licenses in the United States that as a matter of policy it would never collect a second royalty on sets exported to foreign countries "where Hazeltine had complete control over its patent situation" but that with respect to England, Canada, Australia and New Zealand, where Hazeltine patents are included in an industrywide pool, the American licensees would have to make their own arrangements with such Pools.

The Patent Pool in Canada

XXV. The patent pool existing in Canada is called Canadian Radio Patents Limited. This organization was formed in 1926 by the General Electric Company of the United States through its subsidiary, Canadian General Electric Co., and by Westinghouse, through its subsidiary, Canadian Westinghouse. The shareholders of Canadian Radio Patents Limited are Canadian General Electric, Canadian Westinghouse, Standard Radio Mfg. Corp. Ltd., the Canadian subsidiary of Philips of Holland, Canadian Marconi and Northern Electric (an affiliate of AT&T and Western Electric). The Pool has been largely made up of Canadian manufacturers (most of which are subsidiaries of American companies) who were and are competitors of Zenith with respect to sales sought to be made in Canada. The Pool for many years has had the exclusive right to sublicense not

Telephone and Cables Pty. Ldt., N. V. Philips Gloeilampenfabricken, Electric and Musical Industries Ltd. (owning Marconi's and other rights for Australia), Pye, Ltd. and Neutrodyne Proprietary Limited. Neutrodyne is a controlled subsidiary of Hazeltine; the latter company owns seventy percent of its stock.

XXXIV. Under an exclusive license agreement dated September 11, 1928, but still in full force and effect, Neutrodyne is authorized to place all inventions and patents of Hazeltine into the Australian Pool and is required to see to it that all of the requirements, restrictions, and provisions of the standard package license of Hazeltine are contained in any pooling license issued thereunder. Sublicening rights, existing and future, under all of Hazeltine's inventions have been granted the Australian Pool under this arrangement for 35 years and have been the subject of the only form of license agreement issued by the Pool, a standard package license not referring to any particular patent or invention but to all of the rights of all the conspiring companies. A standard Pool license imposes the restrictions necessary to effectuate the division of territories involved in the overall arrangements. It requires the licensee to agree not to export or import or sell or offer for sale in Australia any radio or television receiving apparatus not manufactured in Australia. Hazeltine has been fully aware of the Pool's plan and policy not to license for importation and has cooperated with and approved the operation of the Pool with respect to all the Hazeltine Australian patents.

XXXV. The standard package form of Hazeltine license covering all patents subject to licensing by the Pool and requiring royalty payment whether or or not any such patent is used in the licensed apparatus, is employed by each Pool referred to in these findings and is also used by Hazeltine in the United States in order to prevent attacks by licensees on any of the patents of the participating companies in any of the markets covered by these findings.

Damages Sustained by Zenith

XXXVI. The foreign commerce of Zenith has been drastically curtailed by the patent Pools in England, Canada and Australia. The damages Zenith has sustained were estimated by experienced officials of Zenith, thoroughly familiar with the business problems and sales potentials in the markets involved. They determined the approximate damages sustained by a thorough study of each of the markets involved and all relevant factors including tariffs, shipping costs and manufacturing problems. Zenith's foreign commerce has been damaged by the Pools in the following amounts during the 4-year statutory damage period:

Canada:	
Television	$5,826,896
Radio	470,495
England:	

Intent

XII. Hazeltine's defense that it had no intent to restrain trade and that it participated in the Pools for business reason has no legal validity. If good business reasons and expressions of good intent would serve as a defense for restraining trade, the Sherman Act would be rendered impotent and would afford no aid to the free flow of commerce.

Applicability of Sherman Act

XIII. Hazeltine's claimed defense that conspiracies by American companies with companies abroad are governed solely by foreign law and are not violative of the Sherman Act has no legal validity. It is well established that a conspiracy to restain the domestic or foreign commerce of the United States to which any American company is a party violates the Sherman Act irrespective of the fact that the conduct complained of occurs in whole or in part in foreign countries.

XIV. By virtue of its arrangements in connection with the Pools in Canada, England and Australia, Hazeltine has violated Section 1 of the Sherman Act.

XV. Counterclaimant has established that it has been injured in its business by virture of the unlawful conspiracy and acts performed in furtherance thereof. As a co-conspirator Hazeltine is liable for those damages.

XVI. Counterclaimant is entitled to the injunctive relief sought in the counterclaim.

INITIAL REPORT ON REVIEW ON ADMINISTRATIVE MANAGEMENT OF THE BALLISTIC MISSILE PROGRAM OF THE DEPARTMENT OF THE AIR FORCE BY THE COMPTROLLER GENERAL OF THE UNITED STATES—DATED MAY 19, 1960—REPORT NO. B–133042 PP. 37–52

CONTRACTORS ARE LIKELY TO COOPERATE AND EXCHANGE INFORMATION MORE FULLY WITH A GOVERNMENT STAFF THAN WITH A POTENTIAL COMPETITOR

The fact that a private contractor functioning as systems engineer and technical director is a potential competitor tends to discourage participating contractors from providing the full cooperation in exchange of information considered so vital in the complex ballistic missile program. Even though the systems engineer and technical director may be barred under his contract from engaging in manufacturing activities in connection with the programs assigned to him, the likelihood that the know-how being developed may be used by him to compete for production in related fields and in future programs is a deterrent to full cooperation by the participating contractors. This handicap to complete exchange of information would be avoided if the systems engineering and tech-

The work called for in these contracts and subcontracts in general was not specifically under the ballistic missile program, but did involve work in closely related fields, such as design of hardware for lunar and space probes and development or production of a direction-finder system, an infrared seeker, airborne digital computer, and a telemetry data converter and data checker.

The following instances illustrate the close relationship of the work performed by R–W/STL under these contracts with its efforts in systems engineering and technical direction of the ballistic missile program.

1. R–W/STL received an Air Force prime contract amounting to $4,281,400 for the design and development of a vehicle capable of lunar flight. The payload, known as the Pioneer, was designed and produced by R–W/STL and used in three lunar probe flights. The Thor IRBM which was used as the first stage of these vehicles was developed and the launchings were performed under the technical direction and systems engineering of R–W/STL. All components of the payload including instrumentation, were produced by R–W/STL. Hardware modification responsibility was also assigned to R–W/STL for the second, third, and payload stages which were added to a Thor IRBM to complete the vehicle.

2. A subcontract was awarded to R–W/STL for production of harware in connection with the Titan program. The American Bosch Arma Corp., an associate contractor responsible for the all-inertial guidance system for the Titan, awarded a subcontract approximating $800,000 to R–W/STL for design and fabrication of data processing equipment, including spare parts. Arma had solicited 18 companies for bids on this work and had received two proposals, one of which was from R–W/STL. The R–W/STL proposal was considered by Arma to be technically superior and lower in cost. The Commander, BMD, approved award of the subcontract to R–W/STL on the basis that it "* * * is in no way related to the number of missiles produced and has no production follow-on, being a one-time design and fabrication job" and, therefore, did not conflict with the intent of the ballistic missile hardware prohibition.

3. With approval of the Secretary of the Air Force, R–W/STL was awarded a contract by Rome Air Development Center in the amount of $18.6 million for the development and production of the intelligence data handling system for a military reconnaissance satellite program known as the WS–117L. The WS–117L reconnaissance system is composed of the satellite vehicle, the booster, launch facilities, tracking facilities, and a complex communication and data processing network. Lockheed Aircraft Corp., is the weapons system contractor for the WS–117L, and R–W/STL is not responsible for technical direction of this program. R–W/STL was selected after an Air Force evaluation of proposals by it and three large industrial corporations resulted in a determination that the R–W/STL proposal was clearly superior.

applications are not filed for inventions that only have military applicability. Also, we were advised that some patent applications were not filed because the inventions may have been made from information obtained in the course of work with ballistic missile program associate contractors, and that such items and inventions with military application only are included among the inventions classified as inactive.

We were informed by the contractor that it could not determine the future value of the patents obtained or applied for as a result of the Government contract work. However, the following information obtained from TRW indicates that in its opinion the value is substantial. TRW classifies inventions as follows:

DEFINITIONS OF IMPORTANCE CLASSIFICATIONS

"Numeral 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.

"Numeral 2. Secondary. Relates to a development which is part of an important commercial or patent position (e.g., one of several developments relating to a major commercial program or to an active patent licensing program); or which offers the possibility of obtaining enforcible patent protection for a particular product as to which commercial use is definitely predictable.

"Numeral 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.

"Numeral 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 (e.g., to provide recognition of the inventor, or to provide insurance against patenting by competitors)."

TRW rated, as follows, the 62 disclosures for which applications have been filed and the 33 which were approved for filing as of June 30, 1959:

Primary	11
Secondary	69
Speculative	13
Marginal	2
Total	95

STL ALSO HAS MADE VALUABLE PATENT DISCLOSURES UNDER AIR FORCE CONTRACTS

Twenty-two patent disclosures were made by STL employees under Air Force

[From the Congressional Record, May 4, 1965]

EXPENDITURES BY THE GOVERNMENT FOR RESEARCH AND DEVELOPMENT

Mr. LONG of Louisiana. Mr. President, expenditures by the Government for research and development are designed to promote science and technology in the United States, not for the profit of any individual but for the benefit of all the people. There is no reason why the taxpayers of this country, who furnish the funds for this purpose, should then have to pay through the nose to use the results of the research they have already paid for.

I. SITUATION OF EMPLOYED INVENTOR

It is said that we must encourage the inventive genius of the United States, and that if we do not allow Government contractors to charge monopoly prices on the results of publicly financed research, inventors will be muffled and the scientific and technological level of our country will fall. That statement has been made by many hypocrites who themselves contract with scientists and engineers day after day and prohibit them from having the benefit of their discoveries, and yet they expect those scientists to produce good work for them.

I have here a letter I received from a scientist working for one of the largest corporations in this country. This corporation, which is one of the largest Government contractors, requires that its employees sign the following confidential agreement:

"I hereby assign to the corporation my entire right, title, and interest in any invention or idea, patentable or not, hereafter made or conceived solely or jointly by me:

"(a) While working in the corporation in an executive, managerial, planning, technical, research, or engineering capacity (including development, manufacturing, systems, applied science, sales and customer engineering); and

"(b) Which relates in any manner to the actual or anticipated business of the corporation or its subsidiaries, or relates to its actual or anticipated research and development, or is suggested by or results from any task assigned to me or work performed by me for or on behalf of the corporation."

I ask unanimous consent that the letter and the confidential agreement form be inserted in the Record at the conclusion of my remarks. It was necessary to delete the names of the scientist and the firm for which he works, otherwise his job with the company would be placed in serious jeopardy.

The PRESIDING OFFICER. Without objection, it is so ordered.

(See exhibit 1.)

Mr. LONG of Louisiana. Mr. President, it is no wonder that this is a confidential agreement, for it shows that corporate scientists are tied hand and foot. Even

behalf of special interest groups. If public officials feel that their predispositions or their philosophies do not permit them to protect and advance the interests of the public as a whole, then they should join the special interest groups openly.

III. COMMINGLING OF FUNDS

The question is sometimes asked: Why should the public reap the benefits of research and development when the Government puts in, say, 10 or 20 percent, and the private company puts in the rest? The question can be reversed also. Why should the public contribute any amount, even 5 percent, to help a private corporation attain a monopoly position in order to be able to force the public to pay monopoly prices?

There is no reason why the Government should share in the costs with any private firm. This is the surest road to socialism. If the Government shares in the cost, inevitably and justifiably the Government will share in the profits, and perhaps share in the responsibilities of management. If ever a practice was devised to undermine the free, private competitive enterprise system, it is the practice of cost sharing.

If private industry wants to retain patents, trade secrets, and other property rights, then it should pay for the research and then try to sell its results without any strings attached. Private industry should be given every opportunity to fulfill the public's needs. If the Government wants to provide special services that the public needs, then the Government should pay the whole cost. In that way there can be maintained the sharp distinction between the private and public sectors of our society. Once the distinction becomes blurred, then woe to the private sector.

Mr. President, I should like to say something about the public contribution. I could, in good conscience, support appropriations of $12 billion or $15 billion—and the gross figure this year will be about $15 billion—for Government research, if we are doing that research to obtain information that we need, and the information developed is to be made available to the 190 million people in this country for their benefit. But if all we are doing is spending the $15 billion to pay some private concern to do something it would have done anyhow, and if we let that concern have private monopoly rights on its developments, then in my judgment we shall have given away $15 billion. If they would have done the research on their own account anyway, it would be a giveaway. So why not keep it clear? Either private concerns will carry on the research with their own money, with all the advantages of a private monopoly bestowed upon them, and with the Government protecting their private monopoly for them, or we should do it with Government money, the way we have done it during the first 150 years of the history of our Republic. In that case, when we do develop [illegible] that a private concern would do if it had paid for it.

ments of this great area of Government is dextran. Because of the vital need of the Armed Forces and civilian defense for a satisfactory blood plasma extender that could be used for the treatment of casualties in the event of atomic bombing or other national emergency, a comprehensive program for the development of a plasma substitute was initiated by the Department of Agriculture in 1950.

As a result of this work and cooperation with other governmental agencies and industrial groups, production of clinical-grade dextran on a commercial scale and its use in hospitals and on battlefields of Korea as a substitute for human blood plasma became a recognized accomplishment in approximately 1 year's time. Dextran is important in cases of immediate need for restoration of blood volume in accidents in civilian life where time and facilities do not permit blood typing. It is difficult, if not impossible, to place a dollar value on the importance of the development of clinical dextran, since human life is involved.

Because the knowledge of this product is available to anyone, people from all over the world come to see how they can benefit. Recently, representatives from Pharmacia, of Sweden visited the Northern Agricultural Laboratories in Peoria, Ill. Increased dextran consumption and inability of its suppliers to step up capacity to meet Pharmacia demands brought these men from overseas to discuss production and to obtain information about equipment. In fact, Pharmacia, one of the largest privately owned drug producing firms in Sweden, which has two subsidiary plants in the United States, because this development is available to all of industry, is contemplating the possible construction of facilities for producing dextran in the United States. This will be helpful in increasing investment, employment, and income in this country.

V. GOVERNMENT RESEARCH BENEFITS ALL OF INDUSTRY

The principal argument that is used to justify the giveaway of the public's property rights in patents is that a monopoly is needed to insure the commercial utilization of new inventions and discoveries. It follows from this argument, of course that new discoveries would remain unutilized if patent rights were held by the Federal Government and made freely available to all.

This argument is just plain nonsense. There is no evidence in support of this contention. The experiences of the Department of Agriculture, the Tennessee Valley Authority, the Atomic Energy Commission, the Interior Department, and other departments and agencies of Government show just the opposite. I have already given specific examples to show how private firms have taken new inventions and discoveries which were available to everyone and, basing their own work on them, have made improvements on which they secured their own patents. The new technological base was available to anyone who wished to take advantage of it.

them. The consequence has been a reduction in cost to consumers and greater and more profitable business for private firms.

The Army Engineering Laboratories has developed all kinds of paints—such as odorless and fire-resistant paints—protective coatings, snow and ice removal equipment, cranes, equipment for handling liquid fuels, fire-extinguishing agents, firehose, water purifiers, and a host of other things which are being produced by hundreds of companies, large and small.

The Quartermaster Corps has developed tents, sleeping bags, toilet soaps, heating and lighting equipment, precooked and dehydrated food products, fuels, and materials-handling equipment. New methods of tanning leather to make it more durable and long wearing have been developed by the Quartermaster Corps, put into the public domain, and are being used by the shoe and leather industry.

The Research and Development Division of the Office of the Surgeon General, Department of the Army, has developed new drugs, vaccines, and new medical procedures which are widely used in the civilian economy. The Walter Reed Army Medical Center has developed dental equipment which is used by all civilian dental practitioners.

The U.S. Army Electronics Laboratories have developed printed or etched circuits which eliminate laborious, skilled hand wiring, a process which opens the door to automated electronic production. The entire electronic industry has taken advantage of this development, which has brought about tremendous savings in the production and maintenance of all types of electronic consumer goods and capital equipment, from tiny hearing aids to giant computers. Not only can this process of manufacture save the Government as much as $30 million annually, but it can also save the consumers millions of dollars in electronic electrical goods production and maintenance.

The Army's Electronics Laboratories have made important contributions in the development of the transistor and in increasing the understanding of semiconductor properties. The advancement of the state of the art and free availability of new developments have opened the door in a practical and economic sense to the creation of a new industry with a tremendous potential growth. All of industry has benefited by the basic work done in this area by the Army's laboratories: the semiconductor industry and the electronic equipment industry, as well as all industrial users of electronic equipment. Some of the civilian products incorporating these new developments are radar in commercial aircraft, hearing aids, computers, radio and television, electronic home appliances, industrial equipment, medical research and equipment, and other products too numerous to mention.

I can go on indefinitely citing specific examples which certainly corroborate my point that new knowledge, new discoveries, new inventions, when made freely available to all our people, raise our standard of living, increase employment and consumer welfare, increase total profits, and enrich our lives in general.

GOVERNMENT CONTRIBUTION TO THE NATION'S R. & D.

Of all the production of new scientific and technological knowledge in our society, the people of the United States through their Government pay for 70 percent, according to the latest figures available. The Federal Government now spends more for research and development each year than it did for a total of all years from the American Revolution through the end of World War II. In fact, we now spend an average of about $35 million a day in fiscal 1963 and about $41 million a day in fiscal 1964, which is more than was spent in any one year before the military effort during World War II.

There is good reason to believe that the public's stake in total R. & D. is even greater than 70 percent. The reason for this is that industry in many cases is merely reclassifying traditional outlays in terms of the now fashionable "research and development" effort. A good illustration is the development of nylon, the cost of which is claimed to be about $1,960,000.[1] Included in this figure is $782,000[2] for sales development. There is no reason to doubt that included in industry's 30 percent of R. & D. are large sums for such purposes as sales development and promotion and market research. This means that the private sector is paying a smaller share than the published figures indicate, and the public is paying a much greater share of actual research and development than the 70 percent mentioned before—perhaps even as much as 80 percent.

Since the Government is the major contributor to the development of new scientific and technological knowledge, the policies regarding the disposition of rights arising out of work done under Government contracts will inevitably have a serious effect on the growth and the competitive structure of the American economy in the years to come.

GOVERNMENT PATENT POLICY

The U.S. Government's research and development efforts are massive. In fiscal 1963 about $15 billion was spent in this field with considerable scientific and technical knowledge being generated. The results of this great public effort are largely being handed over to the giant corporations that receive the bulk of the funds. Other companies—the smaller ones—and other industries which might put this new knowledge to good use, perhaps in unforeseeable as well as entirely expected ways, are effectively denied use of the new scientific and technical information being developed. What is even worse is that many of the discoveries that are being made each day—both major and minor ones—are not being exploited by anyone at all, not even those corporations which have received them as gifts from the Government.

Although Government patent policies vary in accordance with the contract-

thus involved an indirect taxation of goods—both consumers' and producers'—in the financial interests of the state. It was an indirect taxation of consumption by means of a monopoly, not in the hands of the state, but wielded by private individuals.

Similarly, under a large part of U.S. Government patent policies the public is first taxed to pay for the research and development on the grounds that such research promotes the general welfare, and then the public is taxed again through monopoly profits when it purchases or uses the commodities embodying the research and development it originally paid for, which amounts to public taxation for private privilege. Contrary to the practice of the 17th century, however, the state in our day does not share in the profits. The private corporation pockets the whole thing.

SOME RESULTS OF GOVERNMENT-CREATED MONOPOLIES

By the end of the 1650's there was an extreme antimonopolist tendency. Monopoly was regarded as "a cause of all dearth and scarcity in the Commonwealth" and as being opposed to the nature of society and the development of cities the aim of which was "to live in plenty and cheapness."

An illustration of the results of a government-created monopoly is the complaint against the Newcastle Coal Monopoly in April 1650 by the Lord Mayor of London. He stated that as a result of the monopoly the price went up from 4 shillings to 9 shillings, but even worse was that the buyers had to take both the good and bad "cole" together. The monopoly created a "scarscitie as mae best serue for theire advantage, Albeit the said mynes will afforde great plentie without feare of future want of the commodite." [8]

A good example of cloaking the private interest with the interest of the public is to be found in a 1591 petition of John Thornborough, Dean of York, for a patent grant to control the export of coal and to levy a duty. The justification given was that the best coal was being transported from London, a practice which should be discontinued for the benefit of all. It was seen, however, that this amounted to a "generall restrainte of transportinge of all manner of coles" and that what was really wanted was that "none shalbe transported but by my lycense." [9] In other words, good coal can also be transported if a fee is paid.

The mercantilists, nevertheless, talked about freedom of trade and a harmony of interests, but these sentiments were not always taken literally by them. It was generally a question of beautiful phrases ready at hand to serve some particular interest or other. Their outlook was not free from contradiction or confusion. For example, the mercantilists were interested in increasing trade in general and foreign trade in particular, and yet they were continually striving to obstruct imports.

This confusion of ends is not absent in the present-day patent policies of

marketplace was to be competition, which would prevail if supply positions were not licensed or made the subject of exceptional privilege. The free private enterprise system was based on the doctrine of self interest within a competitive environment. The classical economists did not think that government interference was necessarily justified by superior knowledge on the part of the government.

Government restrictions, according to Smith, were injurious, doing harm where they sought to do good. They prevented the free flow of capital and labor from less advantageous to more advantageous employments. The solution was to be found in economic freedom: "It is thus that every system which endeavors, either by extraordinary encouragements to draw toward a particular species of industry a greater share of the capital of the society than what would naturally go to it; or by extraordinary restraints, to force from a particular species of industry some share of the capital which would otherwise be employed in it; is in reality subversive of the great purpose which it means to promote. It retards, instead of accelerating, the progress of the society toward real wealth and greatness; and diminishes, instead of increasing, the real value of the annual product of its land and labor."

All systems either of preference or of restraint, therefore, being thus completely taken away, the obvious and simple system of natural liberty establishes itself of its own accord. Every man, as long as he does not violate the laws of justice, is left perfectly free to pursue his own interest his own way, and to bring both his industry and capital into competition with those of any other man, or order of men. The sovereign is completely discharged from a duty, in the attempting to perform which he must always be exposed to innumerable delusions, and for the proper performance of which no human wisdom or knowledge could ever be sufficient; the duty of superintending the industry of private people, and of directing it toward the employments most suitable to interest of the society.[16]

A series of writers developed Smith's ideas. John Stuart Mill, although admitting the possible validity of the formal argument for giving incentives and protecting new industries, stated that the older he got the more shocked he became at the uses to which this argument was put. He confessed that: "I am now much shaken in the opinion, which has so often been quoted for purposes which it did not warrant, and I am disposed to think that when it is advisable, as it may sometimes be, to subsidize a new industry in its commencement, this had better be done by a direct annual grant, which is far less likely to be continued after the conditions which alone justified it have ceased to exist." [17]

CONCLUSIONS

A study of many documents from the mercantile period in England (and in France) reveals innumerable close similarities to present-day governmental

I cannot conceive of any man with a sense of justice not finding this patent agreement at variance with Article I of the Constitution of the United States.

——— ———.

EMPLOYEE CONFIDENTIAL INFORMATION AND INVENTION AGREEMENT

(To be signed by all employees on the first day of employment)

In consideration of my employment by ———.

1. I will not disclose to anyone outside of ——— or use in other than ——— business, any confidential information or material relating to the business of ——— or its subsidiaries, either during or after my ——— employment, except with ——— written permission.

2. I will not disclose to ———, or induce ——— to use, any confidential information or material beloning to others.

3. I will comply, and do all things necessary for ——— to comply, with U.S. Government regulations, and with provisions of contracts between the agencies of the U.S. Government or their contractors and ———, which relate either to patent rights or to the safeguarding of information pertaining to the defense of the United States.

4. I hereby assign to ——— my entire right, title and interest in any invention or idea, patentable or not, hereafter made or conceived solely or jointly by me:

(a) while working in ——— in an executive, managerial, planning, technical, research or engineering capacity (including development, manufacturing, systems, applied science, sales and customer engineering); and

(b) which relates in any manner to the actual or anticipated business of ——— or its subsidiaries, or relates to its actual or anticipated research and development, or is suggested by or results from any task assigned to me or work performed by me for or on behalf of ———;

except any invention or idea which I cannot assign to ——— because of a prior invention agreement with ——— which is effective until ——— (Give name and date or write "none").

5. I agree that in connection with any invention or idea covered by paragraph 4:

(a) I will disclose it promptly to the local ——— patent operations manager; and

(b) I will, on his request, promptly execute a specific assignment of title to ———, and do anything else reasonably necessary to enable ——— to secure a patent therefor in the United States and in foreign countries.

6. I represent that I have indicated on the back of this form whether or not I have any inventions or ideas, not covered by paragraph 4, in which I have any right, title, or interest, and which were previously conceived either wholly or in

Formerly, when majors were in the business of selling independents raw materials, they supplied technical information and did product development work for their customers, the independents. Now, this activity is largely proprietary. So another concern is our inability to keep up in new product development. We, and most of the other small independent fertilizer manufacturers, are almost entirely dependent upon TVA for this important function.

Will we be able to depend on TVA in the future to supply materials not available from industry, and to carry out research and do product development work for the small companies who have no facilities for this type activity? The answer to the above will have considerable bearing on our future planning. We will appreciate your carefully considered opinion.

Sincerely yours,

NELSON O. ABELL,
President.

Mr. LONG of Louisiana. Mr. President, I suggest the absence of a quorum.

The PRESIDING OFFICER. The clerk will call the roll.

The legislative clerk proceeded to call the roll.

Mr. LONG of Louisiana. Mr. President, I ask unanimous consent that the order for the quorum call be rescinded.

The PRESIDING OFFICER. Without objection, it is so ordered.

[From the Congressional Record, May 17, 1965]

PRIVATE PATENT MONOPOLIES

Mr. LONG of Louisiana. Mr. President, I have stated on many occasions on the floor of the Senate that granting private patent monopolies to the results of research paid for by the public is concentrating economic and political power in the hands of a few, is retarding our economic growth, and is stifling our capacity to protect ourselves. This is bad enough. But when the desire to make monopoly profits at the public's expense can adversely affect the health of our children, it is time to call a halt to this immoral and evil practice.

Today, I would like to present a case study which should be of great interest not only to the Congress but also to the American people.

Phenylketonuria, or PKU, is a physical condition that leads to mental retardation. It is a chemical imbalance in the blood that causes permanent brain damage if it is not detected during the first month of a baby's life. If PKU is caught in time, the damage can be prevented by altering the child's diet.

In 1962, the U.S. Public Health Service began using a simple blood test developed with public funds by Dr. Robert Guthrie at the University of Buffalo that could be given 3 days after birth to detect the presence of PKU. Thus an afflicted infant can be put on the special diet before brain damage occurs. We

Welfare in this case, also, had to intervene and reclaim the patent on behalf of the public.

With the Government paying for construction, equipment, and other facilities to universities and giving them grants for all kinds of research programs, there is no reason to give them patent rights, also.

I cannot see why we should set them up in the business of patent licensing. If they are educational institutions and wish to take advantage of that status, they should stay out of business.

Third. The third point is the falsity of the reason given for granting a monopoly. Further development was unnecessary. Creation of a new market was unnecessary. No unusual risks were involved. Other companies were willing to produce the Guthrie kits for testing of 500 infants for $6; and they would still be making a profit.

Fourth. The case also illustrates what happens when a private company gets a monopoly. In this case its price was so exorbitant that many States would have had to curtail their programs with the ultimate sufferers being innocent, mentally retarded children, who could have been saved.

Dr. Guthrie and the hospitals in Louisiana, Massachusetts, and other States could produce kits for testing 500 infants, including all costs, for $6. Miles Laboratories wanted $262 for the same thing. If this is not blood money, extracted at the expense of the taxpayer, I should like to know what is.

Mr. President, it is very important for the American people to know about these governmental activities. Therefore, I ask unanimous consent that some of the documents concerning the subject which I have discussed be printed at this point in the Record.

There being no objection, the documents were ordered to be printed in the Record, as follows:

U.S. GOVERNMENT MEMORANDUM

NOVEMBER 5, 1963.

To: Mr. Herschel Clesner, Inventions Coordinator, Office of the Surgeon General, PHS.

From: Katherine B. Oettinger, Chief, Children's Bureau.

Subject: Miles Laboratory request for exclusive commercial arrangement to develop Guthrie PKU kit.

We have considered the above request in the Children's Bureau and at this point would strongly recommend to the Surgeon General that such exclusive commercial rights not be granted to Miles Laboratories. In making this recommendation, we have taken into account the following factors:

1. Expenditure of public funds in the development, promotion, and distribution and trial of this kid. In addition to funds expended by the Public Health Service for the development of the assay which is utilized in these kits, the Children's Bureau has invested a total of $242,792.27 since fiscal 1962 in the actual development of the kit, in the promotion of field trials to test the effi-

order of quality and consistency of reproducibility from batch to batch, also the company will have to continue development research on the product to the point of developing modifications or even substitution in order to provide a better diagnostic aid and that it will have to conduct an extensive educational and promotional effort to obtain the widest possible distribution and usage of the product." Actually, we have not found it particularly difficult to purchase and set up the various ingredients which go into the media used, nor the other supplies to complete the testing kits. We would feel that any properly qualified and reasonably resourceful laboratory would be able to adjust and standardize the reagents used and quite economically, as they perform the tests according to the published directions of Dr. Guthrie. Furthermore, a considerable educational and promotional effort has already taken place in one way or another resulting in more than half the States now trying out the test, although of course a much wider use of the screening test is greatly to be desired.

Since the test is now mandatory and performed on a practically 100 percent basis in Massachusetts, we continue to find it most efficient and economical to make up our own kits in our laboratory here. We would be very strongly opposed, and I think with good justification, to the granting of any license which in any way prevented or curtailed our making up the ingredients and supplies into laboratory assaying kits. Our present system of preparing from available commercial sources the finished materials for doing the testing is working superbly well, and quite inexpensively. Indeed, our entire cost of running the PKU tests, including professional, subprofessional, and clerk salaries and the costs of making up both the laboratory kits and the hospital collecting kits we estimate as about 50 cents per baby tested. Of this total cost only a quite small portion goes into the laboratory assay kits. Dr. Guthrie, for instance, had told me that his costs have been $6 for producing kits to do 500 tests in the laboratories, i.e., 1.2 cents per test and our costs would be roughly comparable.

In our opinion, it would not be in the public interest for any patent or license to in any way prevent or curtail our laboratory or any qualified laboratory in the manufacturing of PKU kits for its own use. Further, since we have a number of ethical, competing firms that produce a variety of excellent biological products and media, the problems and complexities many of which are as great or greater than for PKU kits, I would seriously question granting exclusive rights to any one firm. By so doing, it seems to me, we arbitrarily keep out of the market other firms that might conceivably produce a better product at a lower cost.

Yours sincerely,

ROBERT A. MACCREADY, M.D.,
Director, Diagnostic Laboratories.

What are your intentions as to reimbursing Miles Laboratories for their cost of patent preparation? This is a cost that the Government would obviously had to have incured if Miles had not filed. (This is exactly the same situation ignored in the McKean case.)

Has Miles incurred expenses for a new drug application? If so, have you investigated our obligation for reimbursing them? This, again is an expense that the Government would have had to incur if Miles had not.

Your determination in essence destroys an investment by Miles Laboratory that is in the thousands of dollars, yet you provide not a word justifying the Government's position (your position).

APRIL 1, 1964.

Re N-G116-62.

To: NORMAN J. LATKER, Patent Adviser, OD, NIH.

From: Miss Katharine A. Parent, Special Assistant for Extramural Patents, DRG, NIH.

Subject: Grantee Invention—Guthrie, Children's Hospital, Buffalo: "Bacteriologic Testing Method ('Inhibition Assay') for Estimating the Level of Phenylalanine in Blood."

In view of your memorandum of March 30, 1964, regarding the determination made on the Guthrie case, Children's Hospital, Buffalo, the determination is being sent direct to Mr. Clesner along with a copy of your memorandum, since the questions raised were answered many months ago; in fact many months before you joined the National Institutes of Health.

I should like to make the following comments: (1) There is no mutuality between the Public Health Service and Miles Laboratories. We made no arrangement with them to file patent application. We were not a party to any agreement between the grantee institution, the investigator, and Miles Laboratories. This whole arrangement was a fait accompli when we finally got our invention report. I do not believe, therefore, that we are under any obligation to reimburse Miles Laboratories for anything. (2) There is, in my opinion, absolutely no analogy between the Guthrie case and the McKean case. (3) The State of Massachusetts has been manufacturing and distributing their kits to hospitals in the State for many months. This type of screening is mandatory in Massachusetts hospitals. The New York State Legislature has just passed a bill making such tests mandatory in New York hospitals. A number of other States are contemplating setting up this type of screening. (4) No further development needs to be done by Miles or any other one commercial firm to market the kits. It has been completed; hence the terminology in the determination. (5) Miles intended to charge an exorbitant price for their kits—40 times what it cost

The test was developed with the following support background as indicated by official NIH grant files.

Public Health Service:	
Grant No. B–1960 (National Institute of Neurological Diseases and Blindness) Jan. 1, 1959, to Dec. 31, 1963	$152,375
Grant No. B–3935 (National Institute of Neurological Diseases and Blindness) Dec. 1, 1961 to Nov. 30, 1963	99,325
Total	251,700
Other support:	
National Association for Retarded Children Inc. (NARC) Sept. 1, 1958, to Aug. 31, 1963	25,000
Association for the Aid of Crippled Children (AACC) Sept. 1, 1958, to Aug. 31, 1963	25,000
Other possible support:	
Commercial Solvents Corp., Mar. 1, 1962, to Feb. 28, 1963	15,000
National Foundation, Jan. 1, 1962, to June 30, 1963	20,673
Playtex Foundation, Oct. 1, 1958, to Sept. 30, 1960	15,000

Children's bureau up to November 1963. Not disclosed in NIH records.

Approximately $492,000 has been utilized in order to develop, promote, distribute, and try out these kits when the field trials, involving 33 States and approximately 600 hospitals, are completed.

Dr. Guthrie did not voluntarily forward to the Public Health Service an invention report as required by PHS grant agreements B–1960 and B–3935. A formal invention report was requested of Dr. Guthrie on January 10, 1962. After four followup letters and innumerable telephone conversations an invention report was received from him on December 14, 1962. In the interim, patent application serial No. 187,707 relating to this invention was field in Dr. Guthrie's name on April 16, 1962. This was 4 months following the initial request for a formal invention report and 7 months prior to the actual submission of the invention report. Shortly thereafter Dr. Robert Guthrie entered into an exclusive licensing agreement for the life of the patent with Miles Laboratories which was approved by two voluntary health associations involved, but not by the Public Health Service. The agreement called for royalty proceeds (a small percentage of net sales) that may result from the license agreement to be assigned to one or more of the sponsoring charitable organizations. Dr. Guthrie and Children's Hospital of Buffalo petitioned the Public Health Service to leave exclusive rights to Miles. No reference was made of the massive Children's Bureau contribution. Study disclosed that Ames Division of Miles Laboratories intended to sell the test kit for 40 times the price that Guthrie and Children's Hospital of Buffalo, N.Y.; Massachusetts State Public Health Biological Laboratories; and other contractors were charging the Children's Bureau. Therefore.