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SURVEY

OF

UNIVERSITY PATENT POLICIES

PRELIMINARY REPORT

BY

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FOREWORD

This preliminary factual report on the survey of university patent policies which the National Research Council has been conducting is released for the information and guidance of research scientists, university administrators, patent attorneys, industrialists, and other concerned with the conduct, administration, and support of scientific research and the handling of patentable discoveries and inventions growing out of research on the university campus.

For more than thirty years the National Research Council has been interested in the patent problem. In 1917 the United States Commissioner of Patents, with the approval of the Secretary of the Interior, requested the National Research Council to appoint a committee to investigate the Patent Office and the patent system, with a view to increasing their effectiveness, and to consider what might be done to make the Patent Office more of a national institution and more vitally useful to the industrial life of the country. The report of the Patent Committee, appointed by the Council in compliance with that request, was issued in 1919 as the first publication in the Council's Reprint and Circular Series.

The Council's present Committee on Patent Policy, under whose sponsorship this survey of university patent policies has been conducted, was created in 1933. Through the years this committee has given continuing consideration to the various aspects of the patent problem and has held several conferences on the general subject and on specific patent questions.

The present survey has been conducted under the direction of Dr. Archie M. Palmer, who has been a member of the Council's Committee on Patent Policy since its inception in 1933. With thoroughness and acuity, resulting from deep personal interest and extended experience with the problem as university administrator and research worker, he has analysed the prevailing practices of the universities and has prepared this preliminary report on his findings.

Through its Committee on Patent Policy and the director of the survey, the National Research Council gratefully acknowledges its indebtedness to the college and university officials, scientists, and others who liberally contributed information and data concerning existing policies and practices; to Research Corporation which made the survey possible through a generous grant to the National Research Council without placing any restrictions on the conduct of the survey or assuming any responsibility for the findings; to the various professional journals which have published preliminary material on the survey; and to Hugh Samson and Paul F. Johnson who assisted the director of the survey in the collection and analysis of the basic material used in the preparation of this report.

GEORGE B. PEGRAM

1. Deceased 12 August 1947
2. Deceased 11 August 1947

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I

INTRODUCTION

As a service to American higher education and to the scientific fraternity, the National Research Council has been making a factual survey of the policies, procedures, and practices of educational institutions in the handling of patentable results of scientific research. Begun in August 1945, the survey was originally conceived as a factual study of significant prevailing practices. A similar, although much less comprehensive survey[1] made fifteen years ago served a very useful purpose in presenting an analysis of the situation as it existed at that time.

The present survey has been undertaken in recognition of the need at this time for a critical study of the whole question of university research and patent policies, their implications and interrelations. Such a study is particularly opportune as educational institutions adjust themselves to postwar conditions. The original plan for the survey has accordingly been expanded and made more comprehensive.

Survey Procedure

Higher educational institutions of all types -- universities, colleges, scientific and technological institutes, and medical schools -- have been included in the survey. Through correspondence, conversations, and visits to the institutions all available information, including formal policy statements, regulations, agreement forms, reports, and other printed material, concerning prevailing practices and present thinking about research policies and patent management programs has been collected, collated, and analysed.

The scientific, professional, technological, and general literature has been examined for articles, information, and references on patent policies and problems and for pertinent discussions of the various aspects of the subject. Despite the increase in research activity in educational institutions, during recent years, the bearing of patent management practices and procedures on the administration of scientific research programs, and the importance of the inherent problems, relatively little specific material of immediate use in the survey has appeared in the literature, especially during the past ten years.

It has been necessary, therefore, to obtain practically all the desired data on the current situation directly from the institutions themselves. A mail canvass has been made of all those which might conceivably be concerned with the problem or have had experience with patentable discoveries. The returns from this canvass and other available source material indicate that at least two hundred colleges, universities, medical schools, and technological institutes have given or are currently giving thought to this problem. The existing situation in those two hundred institutions has been carefully examined and a preliminary summary analysis of the findings is presented in this report.

Personal visits have been made to more than eighty of the institutions, located in twenty-nine states and Canada, as well as a number of independent and institutionally affiliated nonprofit research organizations. On these visits the problem has been discussed with administrators, trustees, faculty members, and research workers, and conferences have been held at many places with patent committees, research councils, and special groups studying the question.

It has been found, through experience during these visits, that this has been the most productive phase of the study. The information obtained, the views exchanged, and the situations clarified, as well as the personal observations made on these visits, have led to better understanding and more accurate interpretation of the practices of the institutions. Both during the visits and subsequently material and ideas have been freely shared, to the mutual benefit of all concerned. On a number of occasions committee reports, patent management programs, and proposed patent policy statements have been submitted for analysis and criticism.

Insofar as such information has been available and the institutions have been willing to disclose further details, individual experiences with patentable ideas evolved on the college campus and the handling of the resulting patents have been examined for suggestive methods of procedures. Similarly the attitude and experience of individual scientists and of industrial research directors who have had contact and contractual relations with educational institutions, especially in connection with cooperative research, have been sought and studied.

As a result of these efforts a vast fund of valuable data has been assembled, for use (1) as the basis of this report, (2) in further studies to be made of various aspects of the problem, and (3) for such advisory and consultative assistance on patent policy matters as has been and may in the future be requested by representatives of educational institutions and other organizations.

Supplemental Activities

Studies have also been made of the organization, objectives, financing, policies, and programs of nearly a hundred special research institutes, foundations, bureaus, and corporations, both independent and with institutional affiliations, which have been established for the administration of patents as well as the conduct and arrangement of sponsored research programs.

In connection with the survey and also independently, calls for advice and consultation on patent management problems and research policies, as well as assistance in the formulation of patent policies, have been received from educational institutions, research organizations, and government agencies, both in this country and in Canada.

Articles on the survey have appeared in a number of publications, including Science, Scientific Monthly, Chemical and Engineering News, Law and Contemporary Problems, School and Society, the Association of American Colleges Bulletin, the Educational Record, Higher Education, and the Bulletin of the American Association of University Professors; others have

been requested and are in process of publication.[2] The director of the survey has also been invited to discuss the subject before several educational and scientific organizations.

Presentation of Findings

In this report a preliminary summary of the findings of the survey is presented, limited to factual analyses of the existing situation at educational institutions. The report is organized in a series of analytical chapters. The first deals with the subject of patents and university research as a general background for the subsequent analyses of specific areas covered in the report.

Then, following an overall discussion of the present situation and existing patent policies and practices, individual chapters are devoted to the prevailing practices with respect to patentable ideas and patents resulting from (1) the personal research activities of faculty and staff members, specially employed technical personnel, and students, (2) research pursued as part of the regular activities of an institution, and (3) sponsored and cooperative research, supported by foundations, societies, industry, and government.

The findings of a special study of an important and controversial aspect of the patent problem, the handling of the results of scientific research affecting public and individual health, are covered in a separate chapter on medical patents, including a survey of the current practices of the seventy medical schools on the approved list of the American Medical Association.

Separate chapters are also devoted to discussions of (1) patent management procedures and the techniques and machinery used for handling patents, including information on special agencies such as institutionally affiliated foundations and Research Corporation, and (2) prevailing practices in the disposition of revenue received from patents and patent rights.

The final chapter presents a summary of the findings of the survey, pertinent considerations in the formulation of a university patent policy, and certain tentative conclusions.

Verbatim statements of thirty-seven formalized patent policies are given in the Appendix, to supplement and illustrate references made to these policies in the text of the report, and to serve as examples of the exact style and phraseology used in the formulation of a university patent policy statement.

For convenience of reference, source material on various points covered in the text is cited at the end of each chapter and a topical index is included at the end of the report.

Further Studies and Services

The findings of the present survey and experiences acquired during the course of the survey indicate the desirability of further studies in this field and of maintaining as a function of the National Research Council,

under the auspices of its Committee on Patent Policy, a continuing patent policy project (1) to provide counseling and advisory services for educational institutions, research organizations and foundations on patent policies and research problems related to them, and (2) to serve as a clearing house of information on the subject.

Such a program would involve specific studies of (1) the policies and practices of other nonprofit organizations and foundations conducting or supporting scientific research, (2) patent and administrative problems related to sponsored and cooperative research in educational institutions and other nonprofit organizations, and (3) various special aspects of the general problem, with a view to the publication of reports on the findings of such studies.

Suggestions have also come from a number of sources that a series of conferences and symposia on patent problems be held for the general discusstion of the findings of the present survey as revealed in this preliminary report, the exchange and sharing of ideas and experiences by those concerned with these problems, and the refinement and amplification of the information gathered during the survey, with a view to the subsequent publication of a definitive report on the subject as it applies both to educational institutions and to other nonprofit research organizations.

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II

PATENTS AND UNIVERSITY RESEARCH

Patents are usually fortuitous by-products of research. They are not necessarily the conscious or inevitable objectives of scientific investigations. This is particularly true of the products of research on the university campus, conducted with a view to expanding the frontiers of knowledge, encouraging and stimulating the spirit of inquiry, and contributing toward the training of scientific and technological personnel.

Concerned primarily with the discovery of new ideas and the understanding of nature and its laws, most scientists working in university laboratories are content to pursue their investigations without much thought of the practical application of the results. The discovery and development of patentable inventions are not conscious objects of their research efforts. They feel with Sir Henry Dale that "the primary and special function of research in the universities is to build the main fabric of knowledge by free and untrammelled inquiry and to be concerned with the practical uses of it only as these arise in the course of a natural development."[1]

However, many new ideas, discoveries, and inventions, the result of experiments undertaken with quite a different purpose in view, may have valuable commercial application or require protection and control in the public interest. They may not only be essential to scientific and technological progress and to cultural and social advancement, but these new ideas may also be basic to industrial development and expansion. The protection and control provided under the patent laws may have to be invoked to obtain the greatest public benefit and usefulness from these products of scientific research.

The patent law[2] provides that any new and useful art,[3] machine, manufacture, or composition of matter, any new and useful improvement thereof, or any distinct and new variety of plant, other than a tuber-propagated plant, which has been asexually reproduced is subject to patent. Under this provision of the law many of the products of university research can be patented.

Attitudes Toward Patenting

The attitude is taken by many scientists, especially those in universities, that the publication of the results of scientific research and the dedication of their findings to the public is sufficient. However, as President Karl T. Compton of the Massachusetts Institute of Technology said in his annual report for 1932, "responsibility does not always end with mere publication of a patentable scientific discovery or invention; the public benefits derivable from the patent laws and contemplated by the framers of those laws should not be lost through a failure to solicit patent protection"[4]

Discoveries or inventions that are merely published, and are thus made available to everybody equally, are seldom adopted, despite their possibili-

ties of commercial application. As Elihu Thomson so aptly put it:

> Publish an invention freely, and it will almost surely die from lack of interest in its development. It will not be developed and the world will not be benefited. Patent it, and if valuable, it will be taken up and developed into a business.[5]

Yet, some well-meaning scientists look askance at the patenting of the results of their investigations as if it were a rather selfish and ungracious act, essentially unworthy and unethical.

Writing in Chemical and Metallurgical Engineering in 1921, William J. Hale defended the patenting of the results of university research work:

> There is nothing dishonorable in a university scientist seeking a patent. On the contrary, he gains enormously thereby in international prestige. Of course, he usually is condemned at home by the university drones unable to comprehend the value of ideas other than their own; but such childish criticisms are negligible. No true scientist doubts for a moment the rights of a man to patent his own inventions. . . . The real inventor should have a right to his own ideas.[6]

The patenting of the product of creative or inventive research need not necessarily bring any direct personal profit to the research worker himself, even though the patent proves to be commercially profitable, nor need it distract his interest from fundamental research through the lure of greater rewards from work with patentable possibilities.

Financial rewards are not the essential or necessary objectives in obtaining patents. Of even greater importance are the protection of the public against exploitation by irresponsible or selfish persons, the regulation and control of the purity or the reliability of the manufactured product (particularly in the case of a medical discovery), facility in licensing responsible concerns which can effectively commercialize the invention and invest sufficient capital to manufacture a product of appropriate quality without fear of unfair competition and piracy, the introduction of the invention to the public through proper channels and under the proper controls, and the provision through patent protection for unhampered further development -- all in the public interest.

In discussing whether university patents are ethical, Yandell Henderson of Yale University has said:

> Inventions, like all other new ideas, have generally to be forced on conservative mankind. It would be easy to paint to many inventions and other applications of discovery now saving large numbers of lives that would not yet be in use without advertising and the efforts of salesmen. Without commercialization a large part of all the scientific ideas that are now in constant and active use in our daily lives would be locked in books on the dusty shelves of university libraries. It is properly the business of the creative scholar to see to it that, if possible, his ideas serve mankind in his own generation.

> But an even stronger duty rests on a discoverer or inventor. He should see to it that his idea or invention is not misused. He should control it. He should find one or more high-grade concerns to develop it. He should afford them at least such little protection as a patent gives against cut-throat competition, after they have spent money to put the invention into practical form and have made a market for it. Without some assurance of such protection it is difficult to get an idea developed and commercialized. The inventor should so far as possible prevent the sale of inferior or harmful imitations.[7]

A practicing physician, Elmer L. Sevringhaus, summarizes the advantages which can be obtained from patenting in a discussion of the question Should Scientific Discoveries Be Patented?, published in 1932 when he was on the staff of the University of Wisconsin. As he says:

> The public is thereby protected against certain ruinous types of exploitation. Assurance can be gained that technical processes are used in dependable ways. Even the publicity may be kept on a satisfactorily high plane. Rapid development of discoveries which are of academic interest may be secured when patent rights assure a commercial producer of protection in the field.[8]

In a separate article on the same subject he indicates some of the complications caused by the prevailing differences of opinion, especially among medical men, as to whether scientific discoveries should be patented at all:

> The debate about patenting scientific discoveries is not concerned wholly with the matter of profits. It is usually a matter of pride with medical men as well as with many other scientific investigators that any discoveries are given freely to the profession and the public. The tradition opposed to patent restrictions is generally assumed to be based on a renunciation of personal profit because of fraternal ideals. This spirit among productive scientists certainly must be cherished. But there are other ends to be thought of. Does free publication of a new idea, an improved formula for a remedy, or a better instrument secure the most prompt and effective use of the discovery? Pseudo-scientific exploitation may be dishonest or may bring discredit to the science by exaggeration. How may such exploitation be prevented?
>
> There are many necessary steps between the fundamental discovery in the laboratory and general use of the result by a non-technical public. Unless some practical control for a period of perhaps a few years can be assured, it is difficult to secure adequate backing for the adaptation to quantity production and the prompt distribution of the new article. The patent laws provide just this necessary guarantee; the result is not only profit to the inventor and the manufacturer but also a social gain . . .
>
> Even the strictest patent laws may be inadequate properly to protect the interests of the public, quite without regard to the discoverer and manufacturer. There are peculiar possibilities for exploitation of the public whenever a discovery relates to food or

> drugs. The prospective purchaser cannot commonly have sufficient technical information to choose wisely. The advertising of such materials with magic words like "vitamin," "hormone," and the names of famous laboratories, brings quick profits to the dispensers, whether the claims for the product be in the long run justified or not.[9]

Specific examples of some of the more serious disadvantages implicit in the patenting of the results of university research are submitted by Alan Gregg in a discussion of university patents and the practice of certain universities to resort to patenting, directly or through designated agencies, for the purpose of obtaining money to support research work by members of their staffs and students. Experience, he says, is proving that "a policy of patenting, so attractive when first contemplated, involves more numerous and more serious difficulties than were at first foreseen, even by those who opposed the policy on ethical grounds."[10]

> I am not interested in discussing here the ethics or morality of the matter. The way it is working out is proving dangerous: it tends to shut off unselfish exchange of ideas and information, it tends to kill a critical and impartial attitude, it tends to introduce quarrels and bitterness and to consume time and funds in lawsuits. It may quite naturally influence the choice of university personnel and the choice of research problems. If, in addition, the policy of taking out patents for revenue be interpreted as a declaration of independence the public may quite cheerfully acquiesce and leave research work to earn its own way. Why should gifts intended for the general welfare play the role of capitalizing a business? And what becomes of the peculiar function of university research as contrasted with that of the shrewdly administered business enterprise?[11]

Although there is some doubt as to whether the problem need concern the universities, question is sometimes raised about restraints upon the utilization of inventions by financial and industrial interests, through patent control. In a paper he gave in 1938, Bernhard J. Stern cites specific instances of the "suppression" of technological innovations through corporate control of patents.[12] Floyd W. Vaughan also presents instances of the suppression and non-use of new and improved patents to reduce or eliminate competition with existing profitable products in his book on the Economics of Our Patent System,[13] as does Alexander Morrow in a recent article on the Suppression of Patents.[14] This whole question is highly controversial and involves the extent to which such restraints are practiced.

In a report on The Protection by Patents of Scientific Discoveries, published in January 1934, the Committee on Patents, Copyrights, and Trademarks of the American Association for the Advancement of Science cited as some of the more pronounced objections frequently voiced against patenting the results of university research:

1. That it is unethical for scientists or professors to patent the results of their work;

2. That patenting will involve scientists in commercial pursuits and leave them little time for research.

3. That publication or dedication to the public is sufficient to give the public the results of the work of scientists;

4. That patenting leads to secrecy;

5. That a patent policy will lead to debasement of research;

6. That patents will place unfortunate stricture on other men who subsequently do fundamentally important work in the same field;

7. That it is debatable whether one man should receive credit for the final result he obtains after a long series of studies has been carried out by others before him;

8. That the policy of obtaining patents will lead to ill feeling and personal jealousies among investigators; and

9. That the act of securing patents is in itself evidence that he (the scientific investigator) desires financial profits from his work.[15]

After analyzing these objections and seeking answers to them in the literature and in the personal experiences of the members of the committee and other interested scientists, the committee reached the conclusion that the patenting of the results of research which have some commercial importance or industrial application is highly desirable:

> Our patent laws have been enacted in accordance with the provision in the Constitution, "to promote the progress of science and useful arts, by securing for limited time to authors and inventors exclusive right to their respective writings and discoveries."
>
> The investigator who takes advantage of our patent laws is therefore perfectly warranted in his act not only for any possible financial returns but also for the good of the public. The obtaining of some remuneration from a patent it no more debasing or tainted with commercialism than the acceptance of copyright royalties from a textbook or even receiving a salary for teaching. We are at present living in an economic structure in which the making of legitimate profit is a fundamental assumption.
>
> The recent economic crisis has reduced the funds available for research to an alarming extent. Scientists are therefore warranted in legitimately obtaining funds from the results of their own work whenever they can do so by patents. In this way they will be able to finance their own work, extend their researches, and at the same time make contributions both to science and to industry.[16]

In its report the committee also pointed out definite advantages in securing patents on important scientific discoveries, since only by means of patents can the legal right be secured to prevent others from unfairly practicing a given process or from commercializing a new product in ways that are not consistent with the highest ethical principles:

> By having such control of new discoveries the investigator is assured that his results will be used only for proper and meritorious purposes. He can prevent the exploitation of the public by dictating the terms under which his patent should be worked and even control the character of the commercial advertising.[17]

The Challenge to Science

Interest in science and scientific research, particularly in the natural sciences and in their application to engineering and medicine, was intensified and accelerated by our experiences during the recent war. However, war is destructive and costly in scientific progress as well as in human life. During a war research projects are largely developmental in nature, designed to meet immediate and urgent needs. The normal course of scientific investigation is interrupted. Research workers are drawn from the laboratory, some never to return. The continuity of research in many fields is broken.

New and fundamental ideas do not flourish in an atmosphere of pressure, of meeting dead-lines and achieving specific developmental objectives. As C. F. Kettering said in his address as retiring president of the American Association for the Advancement of Science in 1946:

> There is nothing in research more important than the time factor. Research must be started years before the results come into general use . . . Research is more a process of evolution than of revolution. Progress is slow and occurs in small increments, and long periods of time are involved in new discoveries.[18]

Now that the military emergency is over, science has an opportunity to return to its normal course of free and unregimented research. The pressure of meeting dead-lines and of achieving urgent developmental objectives is lifted. Research workers and scientific investigators from the university campus and industrial laboratory aided materially in the magnificent record our nation made in war production and military achievement. Returned now to the campus and the laboratory, on release from wartime responsibilities and occupations, they are more research-minded than ever. Interest in research is being given further impetus by government and industry, which are turning to universities, professional schools, and technological institutes for assistance in their postwar reconversion programs.

The situation is made more acute by the critical shortage of scientific and technical personnel and the need for developing a new crop, grounded in fundamentals and trained in research procedures. This new supply of qualified scientists to meet the needs of the future as well as of the immediate present must come from the universities and professional schools. At the same time these institutions are expected tocontinue as centers of basic and fundamental research. During the past several years, largely for war purposes and the national security, we have been using up our storehouse of fundamental knowledge faster than we have been adding to it.

Scientists, industrial leaders, and government officials are concerned over the extent to which the storehouse of fundamental scientific informa-

tion was depleted during the war and the need for promptly restocking the shelves. Social and national security, public and private health, and economic prosperity and well-being depend upon the constant extension of scientific knowledge and the effective application of that knowledge.

American science faces a challenging future. Can science be mobilized for peacetime purposes as effectively as for war? Will scientific investigation be conducted under conditions favorable to the search for new knowledge? Can we build upon and utilize our wartime experiences and the present research consciousness among scientists and the public generally? How will our universities, the primary source of independent scientific investigation, respond to the challenge?

These are questions of paramount importance if this nation is to discharge its responsibilities and assume leadership for peace and progress in the postwar era. Whether we are to enter upon a rich period of productive research, profiting from our wartime experiences and capitalizing on the present research consciousness among scientists and the public generally, will depend to a large extent upon the philosophy behind our university research programs and the administration of those programs.

Some scientific discoveries made on a university campus are of such a character that they should be made public and be available to anyone wishing to make use of them, the university merely retaining, and issuing licenses under, the patent title in order to prevent some person or organization from taking out a patent by slightly modifying the material and thus monopolizing the discovery or invention. A fertilizer or medicine that any manufacturer could make is an illustration in point.

There are cases, however, such as the carbonization of coal or the manufacture of vacuum tubes for radio transmission in which the article can best be manufactured only by one or two establishments, because of the large amount of capital necessary or because the use of the new discoveries depends upon the utilization of materials or processes patented and owned by others. In such a case, it is manifest that the public interests may be best served by giving a license to the manufacturer of the patent or discovery, even an exclusive license if necessary, either royalty-free or on a royalty or cash basis.

Recognition of Equities

There are at least three distinct equities or interests involved in patentable discoveries or inventions resulting from scientific research in an educational institution: the inventor or inventors, the institution, and the general public; to which must be added a fourth, the sponsor or supporter of the research, in the case of sponsored or cooperative research. When further developmental work is necessary, a fifth interest may be involved, although frequently it is the same as the sponsor or supporter of the original research.

The recognition and protection of these several and diverse interests naturally complicate any individual situation. Self-interest, personal rights, professional ethics, institutional policies, employer-employee relations, academic freedom, contractual relations, patent law, business prac-

tices, commercial competition, and the variables in individual cases are some of the elements that contribute to the problem. Nevertheless, to be equitable and effective a patent policy must provide for such recognition and protection, placing the responsibility where it can be best discharged, most expeditiously and with the minimum of burden on the regular teaching and administrative staffs of the educational institution.

While there is at present a great variation of practice among the educational institutions, efforts are being made by many of them to formulate definitive research and patent policies. This is a healthy sign and is to be encouraged and facilitated. Especially insofar as medical discoveries are concerned, protection of the public interest, as well as the interests of the institutions themselves and the inventors, requires that existing differences be resolved and that some agreement be reached among all the parties concerned.

If the proper safeguards are established, our universities and particularly our professional and technological schools can contribute, even more extensively than they have in the past, to the furtherance of science progress through the most effective utilization of their research facilities and the present short supply of scientific and technical personnel.

Desirability of Having a Policy

Of direct concern to university administrators and scientists engaged in the formulation and conduct of research programs is the policy or procedure followed in the handling of the results of scientific investigation. How can the greatest public benefit be obtained from new discoveries and inventions? Specifically, how should these discoveries and inventions be administered in the public interest, taking into account the objectives of the institutions and the over-all welfare of the scientific workers?

The need at this time for a critical study of this whole problem and its relation to scientific research programs is recognized by those concerned with and participating in those programs. Through the years certain institutions, faced with immediate situations, have formulated more or less definitive patent policies. At others, practices or procedures are being currently followed which are not yet clearly formulated in definitive policies, but nevertheless represent the modus operandi of those institutions. Even in many of the institutions where definitive patent policies have been adopted those policies are now under review to meet changing postwar conditions.

The increasing dependence of industrial and economic development upon the research activities of educational institutions and other nonprofit research organizations, particularly in the scientific fields, has changed the outlook of administrators and scientists alike. Clearly defined research and patent policies are recognized as essential to efficient operation and harmonious relations. The consequences of a lack of policy are serious; they are not avoided by evasion.

Furthermore, the number of colleges and universities offering research service to industry and to the Government raises many problems. The recent increase in cooperative and sponsored research in educational institutions

accentuates the need for clarification of attitude and procedure, through the formulation of research and patent policies. This is particularly true in the light of the vast amount of university research now being supported by industry and by Government agencies.

The effect of this type of research on the educational programs of our colleges and universities on the discharge of their responsibility for training scientific personnel poses a serious problem. Basic research, for which there is such a critical need today, will eventually suffer if too much attention is given to developmental research projects, no matter how attractive any possible financial return may seem. The attitude of the scientist toward his research work and his grounding in fundamentals are matters of vital importance, particularly in view of the current shortage of trained scientific personnel and the demand for such personnel, both in the immediate present and in the future.

The implications of cooperative research supported by industry and by Government are more far-reaching than is immediately apparent. What influence will it have on scientific research in our American colleges and universities? and, what effect will it have on the educational programs of those institutions? Will the emphasis be on developmental research? What will be the effect on basic research? How can interest in immediate end-results rather than in the search for new knowledge be avoided? These are all questions of vital importance if the cooperation between education, Government, and industry, which was so effective during the recent war, is to be utilized for the advancement of science.

The full realization of the productivity of university research, as well as the recognition and protection of the various interests involved in scientific research and in the application of new discoveries and inventions having commercial possibilities, makes university research and patent policies highly desirable.

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III

THE PRESENT SITUATION

At present there is a wide diversity of practice among educational institutions, and even at the same institution, in the handling of patentable discoveries and inventions growing out of scientific research. There is no common pattern of policy statement, administrative procedure, recognition of the inventor, determination of equities, assignment requirement, patent management plan, distribution of proceeds or protection of the public interest. Nor is there any convenient grouping according to the type or size of institution, complexity of university organization or kinds of research undertaken. Existing practices vary from strictly drawn patent policies to laissez faire attitudes and even an unwillingness to become concerned with patents.

However, during recent years there has been a growing tendency on the part of educational institutions to adopt definitive patent policies and to establish machinery to meet situations which have arisen or are anticipated. The current revival and acceleration of research activities in universities and other research centers make this problem an active and increasingly important one to both administrators and scientists. The need for facing this problem objectively and for formulating, in advance, methods for meeting situations before they arise is urgent.

The Overall Picture

Some institutions follow a hands-off policy, leaving to the individual inventor the responsibility for determining what disposition is to be made of the product of his research efforts. Others take the position that the institution has an interest in all research activity on the campus and have established formal patent policies or follow generally accepted practices for handling any patentable discoveries that may result. Still others observe a definite policy of not having a patent policy. However, a great many have given little or no consideration to the patent problem, despite the increasing volume of scientific investigation on the campus.

Faced with immediate situations, certain institutions have, through the years, formulated more or less definitive patent policies. Yet less than forty such policies[1] have been formally adopted thus far, more than half of them during the past six years. At a number of other institutions practices and procedures are being currently followed which, though not definitely formalized, are generally accepted as applicable to research throughout the institution. A few have adopted special policies or recognize general practices for dealing with those results of scientific investigation that affect public or private health.[2] Others have developed policies and practices only with respect to sponsored research.[3]

Many of the existing policies and most of the prevailing practices are currently under review to meet changing postwar conditions and current considerations in the institutions. The need at this time for critical examin-

ation of the whole question of what to do with the patentable products of research, and also of its relation to scientific research programs and the overall policies of the institutions, is recognized by those concerned with these programs and with the general administration of the institutions. At a number of institutions, many of which have not previously had any patent policy, faculty and trustee committees are currently studying the question, with a view to formulating new, or revising existing policies.

At many institutions each case is decided on its individual merits in accordance with a general policy or, in the absence of such a policy, by agreement among the parties concerned. A few still feel that they discharge their responsibility by merely publishing the results of investigations or by securing patents and dedicating them to the public. Others accept full responsibility for obtaining patents and administering the patent rights in the public interest. Many exercise control over the patents by issuing licenses and accepting royalty payments, either directly or through agencies designated to manage their patents.

Some recognize the rights and interests of the inventor and share the proceeds with him, either under a prior contractual arrangement or by mutual agreement, but there is no uniformity in the division of the financial return from patents between the inventor and the institution.[4] Even in those instances where the proportion to be given the inventor is specified in accordance with a general policy, there is a wide variation among institutions in the amounts allotted to the inventor. In other institutions the inventor's share is determined in each case after consideration by a special faculty or administrative committee.[5] A few institutions include patent provisions in their contracts of employment, in some instances for all faculty members but more often limited to members of the staff whose entire or major responsibility is research, especially contractual research.[6]

At most institutions the compulsory assignment of patent rights is not considered desirable, except when it is necessary in connection with cooperative or sponsored research. Voluntary assignment is preferred and in many institutions is encouraged and facilitated either through formalized procedures or through special machinery for handling patents set up within the institution. In many instances the services of an outside organization closely related to the institution or under agreement to act as its patent management agent are employed.

Some institutions administer patent applications and the resulting patents directly, utilizing their regular administrative personnel or special units within the institutions or, where separately organized, agencies responsible to their boards of trustees. Others, for legal or fiscal reasons, use the facilities of separately incorporated patent management foundations, independent of but closely allied to the institutions. Still others have entered into agreements with Research Corporation,[7] a nonprofit patent management foundation, to handle patentable discoveries in their behalf, with full protection of their interests and those of the inventors and the public. Most institutions endeavor to avoid becoming involved in the intricate legal and commercial aspects of patent management, mainly because they lack personnel with the requisite specialized knowledge and experience.[8]

Nearly all of the formalized patent policies and many of the generally

accepted practices cover all types of research on the campus. Most of the others are concerned mainly with problems growing out of sponsored research projects supported by outside agencies on a contract basis. Certain institutions are unwilling and a few refuse to undertake research projects which entail patentable developments. Others are willing to undertake such projects only when they retain complete control over both the patent rights and the publication of the findings of the investigation. Still others will enter into contracts under which the sponsor receives, for a consideration, full possession of the research findings, including title to all patentable discoveries.

There is no uniformity in the terms or conditions under which sponsored research is accepted and conducted, nor in the determination of charges.[9] Some institutions have established specific policies for handling all such research; others make the best arrangements obtainable in each case. Some will accept only projects which are definitely related to their educational programs and which can be performed by faculty members and students as part of their regular activities. Others have set up special facilities for sponsored research, employing personnel who devote full time to such activities. A number have established special bureaus or divisions within the institution to relieve the faculty and regular administrative personnel from contractual relations with research sponsors.

Formalized Policies

Even the formalized university patent policies show little similarity in style or research situations covered. As indicated in the thirty-seven policy statements given in the Appendix,[10] some are very brief and general; others are specific in their delineation of procedures; still others are confined to certain types of research. Many of these policies are currently under review to meet changing postwar conditions in the institutions, and also to clarify local situations and conform to experiences with research and patent problems.

Most of the formalized policies have been established through trustee action, usually after extended prior study by special faculty committees and administrative approval and recommendation. In many instances the policy statements have been incorporated in the official by-laws and regulations of the institutions concerned; in other instances they are to be found only in the minutes of meetings of the boards of control. The patent policies of several of the state institutions have been established by legislative action and are part of the organic laws of the states. In one instance the patent policy of an affiliated research foundation serves as the policy of the institution. In other instances the practices of affiliated research foundations conform to general university patent policies.

Certain of the policy statements have been published in booklet form, frequently as part of general research and other faculty regulations, but a number exist only in mimeographed or other semi-permanent form. The statements vary in length and also in the extent to which they provide for the various possibilities that might arise and delineate the procedure to be followed. In practice the policies are all subject to and are given local interpretation, in conformance with institutional regulations and other pertinent considerations.

Of the institutions with formalized patent policies, Columbia University and the Massachusetts Institute of Technology, both of which have had considerable research and patent experience, have developed comprehensive policies and programs of procedure which are most suggestive. Since their original formulation both of these policies have been continuously under review and on several occasions changes in the procedure has been made to improve and facilitate their operation.

The Columbia policy[11] dates from 1924, when the University Statutes were amended to provide for an Administrative Board of University Patents with authority in its discretion, subject to the direction and control of the Board of Trustees of the University, "to accept for and on behalf of the University by assignment or otherwise, either directly or through trustees or holding corporations, patents, patent applications, royalties, licenses, or rights therein covering discoveries, inventions or processes, whether produced by members of the teaching staff of the University by use of University laboratories or otherwise." The Board was also empowered to make arrangements, on such terms and in such way as it might approve, for "the use, manufacture, sale or other disposition thereof, or of rights therein, with power, subject always to the approval of the Trustees, to arrange for the use or division of the proceeds thereof."

The occasion for the formulation of the original Columbia policy was the discovery by a member of the pathology department, while working in one of the University laboratories, of a chemical product which proved to be a specific remedy for the disease of rickets. Desiring to assign to the University the patents issued to him to cover this invention, he raised with the administration the question of procedure. He wanted to assure to the University a share in the royalties which might be expected to accrue under the patents, and also to insure for the public a new and effective medical remedy made under the best possible conditions and sold at a reasonable price. In order to meet this situation and to handle similar patentable devices which might be assigned voluntarily to the University, the Board of Trustees of the University in 1924 amended the University statutes to provide for the establishment of an Administrative Board of University Patents. This Board was almost immediately replaced by a patent holding corporation, University Patents, Inc.,[12] for the same purpose. A Committee on Patents was also created to act as a policy-making group on University patent procedure and to serve in an advisory capacity to staff members.

The Massachusetts Institute of Technology policy[13] was originally adopted in 1932 when a Faculty Committee on Patent Policy, appointed by the President of the Institute, was established, with the following duties:

1. To receive and act upon reports of invention from members of the staff.

2. To determine inventorship, dates of conception, disclosure, and reduction to practice in respect to 1 above.

3. To determine equities of Institute, inventor, co-inventor, and other parties.

4. To recommend inventor participation in financial returns.

In December 1942, at its own request the Committee on Patent Policy was relieved of the following responsibilities, which were then assumed by a new Committee on Patent Management:

> To unify a policy on the business management of all patents in which the Institute has equities.
>
> To advise on patent provisions of contractual arrangements to which the Institute is a party.
>
> To advise on patent arrangements which involve expenditures of funds of, or on account of, the Institute, and to make recommendation in this regard to the President.
>
> To review matters of broad policy in patent matters affecting Institute relations with the public.
>
> To represent the Institute in receiving and disposing of patent rights.

The title of the former Faculty Committee on Patent Policy was changed to the Massachusetts Institute of Technology Patent Committee, its personnel remaining unaltered. An agreement has also been made with Research Corporation whereby this organization handles all legal and commercial aspects of inventions assigned to it by Institute inventors.[14]

The patent policy[15] of Lehigh University, adopted in 1924, is designed to preclude the appropriation and exploitation by personal or private interests of the results of discoveries or inventions made in the laboratories of the University, the cost of which has been paid from University funds or from funds under the control of the University. That policy differentiates between inventions made by members of the University staff in the course of their regular duties and those made on sponsored research projects. The Lehigh Institute of Research[16] was created in April 1924 "to encourage and promote scientific research and scholarly achievement in every division of learning represented in the organization of the University; and in recognition of the need for further and more exact knowledge in science and in the applications of science to the affairs of modern life."

The policy[17] governing the administration of patents resulting from research at Pennsylvania State College is embodied in a series of recommendations formulated by the Council of Research of the College, and adopted by the Board of Trustees in March 1931. Patent rights assigned to the College under the terms of the policy may be assigned to the Pennsylvania Research Corporation[18] or other agency selected for the administration of the patent rights in the interest of the public, the College, and the inventor. The policy covers investigations financed wholly by the College; investigations in which a part only of the material requirements or personal services involved are provided at the expense of the College, the remainder being contributed by an organization of an industrial or other character, or by individuals not connected with the College; investigations financed wholly by an organization of an industrial or other character; and investigations performed by members of the college staff on their own time and at their own expense.

In 1935 Drexel Institute of Technology, the University of Louisville, and Michigan College of Mining and Technology formalized their policies.[19] That of the Drexel Institute of Technology is similar to the Massachusetts Institute of Technology policy and that of the University of Louisville is patterned after the original Columbia policy. The provisions of the Michigan College of Mining and Technology policy are included in the agreement signed by every employee when accepting a position at the College.

It is the policy[20] of the University of Illinois in such cases where it seems best to take out patents on discoveries and inventions made by members of the staff on University time and using University equipment, to require the staff members concerned to assign the patents to the University. Under this policy it is considered the duty of the University to conserve and advance the interests of the public in matters of discoveries and inventions made under its auspices and to seek to insure for these the largest possible use. As the widest benefits to the public at large may not always be attained by the same procedure, it is provided in the by-laws of the Board of Trustees of the University that each case must be decided on the basis of the character of the patentable discovery or invention and a procedure adopted accordingly. These matters are handled by two committees, one a committee of the Board of Trustees which concerns itself with questions of policy and the other a committee of the faculty which handles the administration of the patent matters. The patents are assigned to the Board of Trustees of the University for a nominal consideration and the Board administers the rights under the patents in ways to suit the conditions, dedicating the patent to the public or licensing its use. The facilities of the University of Illinois Foundation[21] may be used in the commercial exploitation of the patent rights.

In 1913 the officers of the Engineering Experiment Station at the University of Illinois adopted a series of regulations to govern the activities of the staff of the station. These regulations, with slight modification, have been approved by the Trustees of the University for general applicability to the entire University.

> (1) That the principle be recognized that the results of experimental work carried on by or under the direction of the scientific or teaching staff of the College of Engineering and the Engineering Experiment Station, and having the expense thereof paid from the University funds or from funds under the control of the University, belong to the University and the public and should be used and controlled in ways to produce the greatest benefit to the University and the public.
>
> (2) That in case of valuable discoveries and inventions which may be expected to have a basic relation to other discoveries or inventions of commercial importance, the practice be established of taking out patents to be controlled by the University, and that any member of the scientific or teaching staff of the College of Engineering who has made a valuable discovery or invention as the direct result of his regular duties on University time and at University expense may be required to patent his discovery or invention, the expense connected therewith to be borne by the University.[22]

A policy,[23] originally adopted in 1937 for the School of Mines of the University of North Dakota, to provide for the administration of patents on discoveries of utility in experimentation and testing of state minerals and allied resources, is now applied on a university-wide basis. Established by legislative action, that policy is embodied in the Complied Laws of the State of North Dakota. In 1943 the North Dakota Research Foundation[24] was created by legislative enactment to plan, execute, and direct a program of research designed to develop the natural resources, both mineral and agricultural, and to bring about greater economic stability in the state. The Foundation is authorized under the law to accept and administer patents assigned to the state, including those assigned in accordance with the University patent policy.

In 1938 the policy[25] was established at Iowa State College of securing patents to be controlled by the College, or any agency established by it, on inventions that are the outgrowth of the research work of members of the staff, when it is believed to be for the best interests of the state. It is not the purpose to secure patents merely because there appears to be the possibility of revenue accruing, nor is the research program to be directed away from fundamental research into development work in the hope of securing valuable patents. The Iowa State College Research Foundation[26] was created as an agency to which members of the College staff might assign patents for management and exploitation.

The basic policy[27] of Princeton University was formulated in 1938 and has continued in effect without substantial modification since that time. The administration of the policy was originally the responsibility of a Patent Committee, superceded in 1946 by a Committee on Project Research and Inventions.[28] In common with a number of other institutions, Princeton has entered into an agreement with Research Corporation to act as its patent management agent.

Stanford University also adopted a formalized patent policy[29] in 1938. Under this policy discoveries or inventions made by members of the staff or by other persons making use of the laboratories or other facilities of the University are reported to the Patent Committee of the University and those which, in the opinion of the committee, should be protected by patents are assigned to the University. The University reserves the right, in its discretion, to so manage and exploit all patents assigned to it in the public interest and in such manner as it considers to be consistent with the best interests of both the public and the University.

The Board of Regents of the University of Arizona adopted a university patent policy[30] in 1939, under which an employee, either on full or part time, who develops an invention as the result of research work for which he is paid by the University, is required to report it to a Patent Committee of the Faculty. If the committee decides that the invention or discovery is meritorious and if the process or article is such that it probably can be marketed profitably, the matter is submitted to Research Corporation, which has been designated by the University to act as its patent management agent.

Under a policy[31] adopted in 1940, the South Dakota School of Mines and Technology recognizes the principle that the results of research whose cost

has been paid from School funds, or funds under the control of the School belong to the School and should be used for the benefit of the School and the State of South Dakota. When a research worker reports a patentable discovery or invention to the President of the School, a faculty committee is immediately appointed to investigate it and make a recommendation on the desirability of patenting it. Patents assigned to the School, either under the procedure asuthorized under the policy or by gift, are administered by a Patent Administration Committee which may assign the patent rights to a research foundation for management.

In 1943, after a long study by a special committee, the Regents of the University of California adopted a formal patent policy[32] applicable to "all members of the faculty and other employees of the University who may devise inventions which are patentable." It is designed to facilitate patent applications, to protect both the University and the inventor, to arrive at an equitable determination of the rights of all concerned, and to provide uniform procedure in patent matters. The policy statement delineates in detail the attitude of the University and the procedure to be followed in handling patentable discoveries. While the University recognizes an obligation to safeguard whatever interest it may possess from patents issued on discoveries and inventions growing out of research on its campus, the assignment by the inventor of whatever rights he may possess in a patent or the appointment of the University Board of Patents to act as his agent is optional on the part of a faculty member or other employee.

The policy statement of Carnegie Institute of Technology,[33] which is published in booklet form for distribution to all concerned, also covers in detail questions concerning the ownership of inventions, the administration of the policy, and its applicability to students. The Institute believes in the encouragement of invention and discovery, and in adequate rewards to inventors. While the development of patentable inventions and discoveries is not the primary purpose of research activities conducted at the Institute, patents on inventions and discoveries made on its campus or with its cooperation may be deemed desirable for various reasons. Examples of those reasons are: "to protect the Institute from possible undesirable publicity resulting from uncontrolled development; to protect the public from possible mis-use of an invention or discovery through its exploitation by personal or private interests; or to improve facilities for research from any income that may accrue."[34]

Three of the shortest, but nevertheless comprehensive, policies are those of the University of Chicago, Clemson Agricultural College, and Yale University. All three present very definitely the attitudes of the institutions on the patenting of the results of scientific research conducted by members of their staffs. Under the University of Chicago policy,[35] based upon the principles of complete freedom of research and the free, unrestricted dissemination of information, neither the University nor any member of its staff may profit from research by means of patents, royalties or licensing agreements. At Clemson Agricultural College the principle is recognized that the results of experimental work carried on by or under the direction of any College employee or employees, where any of the facilities of the College are used or where any part of the expense involved is paid from funds controlled by the College, belong to the College and the public and shall be used and controlled in ways to produce the greatest benefits to the

College and the public. In the event of any discoveries or inventions resulting from such experimental work, the Board of Trustees reserves the right to determine what use may be made of them in the best interests of the public.[36] It is the policy[37] of Yale University that neither the University nor the members of its faculties should make profits from inventions or discoveries made at the University, or in connection with its activities, and especially from inventions or discoveries which may affect the health or welfare of individuals or of the public.

These brief descriptions of the situation at institutions which have formulated patent policies illustrate the great diversity of practice now prevailing. As indicated in the verbatim policy statements given in the Appendix,[38] some of the more recently adopted policies are patterned after those already existing in other institution, particularly Columbia and Lehigh Universities, Massachusetts Institute of Technology, the University of Illinois, and Pennsylvania State College.

Generally Accepted Practices

A number of institutions which do not have formal patent policies follow practices which are generally accepted throughout the insitutions for the handling of patentable products of the research efforts of their faculty members and other employees. In the observance of these generally accepted practices an inventor or discover is usually under no compulsion to assign his patent rights to the institution. However, in many instances he is encouraged to utilize the facilities of a nonprofit research foundation independently incorporated but closely related to the institution or to assign his patents to Research Corporation for management and exploitation. Many of these institutions have been giving consideration, especially during the past several years, to the formulation of definitive patent policies.

At Cornell University the members of the faculty are under no obligation to turn over patentable discoveries and inventions to the University. However, opportunity is provided through the Cornell Research Foundation[39] for them to seek relief from the intricate legal and administrative responsibilities of patent management by the assignment of their patents under mutually agreeable terms. Recently the University entered into an agreement with Research Corporation to represent its interests and those of the Cornell Research Foundation, the stock of which is wholly owned by the University.

While it is recognized by the Regents of the University of Minnesota that the compulsory assignment of patentable discoveries is necessary when they are the result of cooperative research or are developed in one of the University's experiment stations, it is the belief of the Regents that other discoveries should be assigned to the University on a voluntary basis. To handle situations as they might arise the Regents established in 1938 a University Committee on Patents, to which all patentable discoveries are reported. That committee is authorized to receive and consider applications from staff members desiring to secure patents, at University expense and with University control and participation in profit, and recommends to the Board of Regents agreements with staff members for the assignment of patents. One-fourth of all royalties are given to the staff member when the patent is in the general field of his employment, and one-half when it is outside that

field and University funds and facilities were not used in the development. Patents assigned to the University are managed directly by the governing board of the University, which enjoys wide latitude in its powers.[40] The position is taken that it is not improper to use the control of patents as a means of adding to the research funds of the University. In the administration of patents assigned to it, the University is guided by the spirit of the conclusions of a faculty committee of some years ago, although not following the recommendations in every instance. These conclusions provide for the granting of monopolies for the manufacture, sale and use of products the patents for which are held by the University, and also the acceptance of royalties by the University from the sales of such products. It is the practice in all such cases to allocate the funds so received to further research in the same or allied fields.

The recommendations of the faculty committee present some fundamental aspects of the problem which are worthy of study.[41]

> The University cannot take out patents, but they can be secured by members of the staff and later signed over to the University. When a member of the staff signs over a patent to the University, presumably he is moved to do so for one or more of the following reasons:
>
> First, if the institution in which he works is supported by taxation, he feels that the benefits of his discovery should, so far as he and his institution are concerned, be given to the people. Being in the employ of the University when he makes the discovery, he does not feel that he is entitled to the financial benefits likely to come from it.
>
> Second, if he holds the patent, and accepts royalties from the sale of a product or process, which, in the natural course of his work he must pass judgment upon, he loses caste with research workers in his field. He is regarded as being commercial rather than scientific in his purposes, his subsequent contributions to science do not carry so much weight because his fellows are not sure of his motives. At this point he does not get full protection if the University grants a monopoly on the manufacture and sale of the product, and if it accepts royalties from sales, because his fellows will feel that either directly or indirectly he is the recipient of benefits from the patent.
>
> Third, he is aware of the temptation to become commercial in his outlook, particularly in case of a large volume of sales of the patented product and wishes to avoid any such temptation. Whether or not large profits will accrue from any particular patent is not germane, since it is inevitable that in most cases the measure of success will be the financial returns.
>
> Fourth, in most fields of scientific work the university man feels that his professional code of ethics would not sanction the proposed arrangements any more than would the lawyer's code permit him to be a silent partner in a firm which he was prosecuting.

In granting monopolies on patents and in accepting royalties from the sales of the resulting products, the University faces problems that may prove embarrassing.

First, the research spirit in the staff would suffer and the regard for the University as a research institution would be lessened.

Second, there would be a tendency, on the part of the public, to let the University live on its earnings. As this situation developed, it would ever be that the value of a man to the University would be measured by the income which he brought to the institution, rather than by scholarly attainment.

Third, research workers are fallible. It is not beyond possibility that a mistake will be made, that a product lacking in merit will be patented, that large sales will be made for a time and that the University will receive severe criticism for accepting royalties on the sales of such a product.

Fourth, by granting monopolies and accepting royalties the University indirectly competes with commercial companies. A company may offer an inferior product as a substitute for one on which the University is accepting royalties. If so, it will be rather difficult for the University to prove that its statements relative to its inferiority are unbiased. Competing companies will be prompt to take advantage of this situation.

Fifth, the Agricultural Experiment Station would be most affected by any policy of granting monopolies on patents and accepting royalties from the sales of the resulting products. For years these institutions faced the criticism that their work was so centered upon the immediately practical that it was not sound scientifically. There were always outstanding exceptions and in recent years the insitutions have demonstrated their thoroughness and scientific background. They would be exposed to new and general criticism and greatly handicapped in their work if they became definitely involved in competition with commercial firms.

Sixth, a company to which a monopoly is granted may not be anxious for improvements on the patented product to come in rapid succession. A specific instance of a company so expressing itself can be cited. Such an attitude depresses the spirit of research.

Ohio State University follows the general practice of using the facilities of the Ohio State University Research Foundation[40] in the handling of patent matters, as well as sponsored research projects. Each patentable discovery or invention is considered on its own merits and in the light of the circumstances leading to its conception. Except in connection with research projects conducted under contracts made by the Foundation, the University has no formalized patent policy other than the provisions in the State Statutes that all rights accruing from patentable discoveries resulting from investigations carried out in the University laboratories with the use of University facilities are the property of the University and that the

University may assign and transfer its rights or grant licenses as desired. It has been the general practice for the University not to apply for patents in the field of medical research, but rather to disseminate the results of such work in the widest possible way for the greatest public benefit. Patents in this field would be applied for only in those special cases in which the medical profession felt that it was necessary for the protection or welfare of the public.

Similarly, the University of Tennessee has no formalized patent policy but all members of the faculty and staff of the University are encouraged to use the facilities of the University of Tennessee Research Corporation,[43] which was organized in 1934 with "the general welfare of society, not individual profit" as its main object. While legally independent, the Corporation is in effect a subsidiary of the University and is controlled and maintained through the membership of administrative officers and faculty on its directorate. The Corporation was formed to hold title to patents issued to members of the staff of the University of Tennessee as a result of developments growing out of research work in the various divisions and departments of the University and to promote the use of the inventions and discoveries covered by these patents. It is believed that the major benefits come from the fact that the Corporation serves as a means of protecting results of research from selfish exploitation or suppression by interests which might gain control in some way. The Corporation also provides a link between the laboratory and the field of practical application.

At the University of Wisconsin the individual research worker, faculty or student, is privileged to handle the patentable results of his scientific research in any manner he sees fit, unless funds for the research project are derived from a private source and some prior arrangement has been made underwhich the sponsor obtains title to any patentable discoveries. Some staff members have assigned their inventions and discoveries to the Wisconsin Alumni Research Foundation[44] as their agent and have permitted profits which have accrued from these discoveries to be compounded through this agency. The Foundation was organized in 1925 "to promote, encourage, and aid scientific investigations and research at the University and to assist in providing the means and machinery by which the scientific discoveries and inventions of the staff may be developed and patented, and the public and commercial uses thereof determined; and by which such utilization may be made of such discoveries and inventions and patent rights as may tend to stimulate and promote and provide funds for further scientific investigation and research within said University." When patentable ideas developed by university faculty members or students are voluntarily turned over to the Foundation, efforts are made to commercialize them with the understanding that after the cost of development has been recouped, any remaining moneys are to be employed in the support of research in the natural sciences.

It has been the general practice at Indiana University, which does not have a formal patent policy although the question has been under study for some time and considerable work has been done on the formulation of a definite statement of policy, not to permit applications on the products of individual or school supported research. In 1936 a separately incorporated body, the Indiana University Foundation,[45] was established to finance research, handle patents, aid the University in undertakings for which funds were not otherwise available, and generally perform such functions as the

University, being a state institution, could not do for itslef. Many of the contracts made by the University in connection with research grants contain clauses relative to the ownership of the inventions that may develop as a result of the grant. In most of these contracts the University has the option of retaining ownership of the invention in its own name or in the name of the Indiana University Foundation. Members of the faculty have also been permitted to sign contracts with commercial organizations furnishing financial support and to agree in the contract as to the patent rights, in some instances with the returns from royalties going directly to the research worker. It is felt that this plan is not objectionable and is broad enough to encourage substantial support of research studies by commercial organizations, and that a stricter policy would undoubtedly remove considerable support of research programs and would deny faculty and graduate students the opportunity of gaining valuable research experience.

No pressure is brought to bear on a staff member of the University of Toronto to assign to the University any patent that may be issued to him on a discovery of his own, even though that discovery may have been made in one of the University laboratories, but a procedure similar to that followed at Columbia University has been developed and is generally observed. Under the procedure the University will accept the assignment of a patent offered to it if in the judgment of the Governors of the University such acceptance is considered desirable. Since 1906 the Governors of the University have been empowered to "purchase or otherwise acquire any invention or any interest therein, or any rights in respect thereof, or any secret or other information as to any invention, and apply for, purchase or otherwise acquire any patents, interests in patents, licenses and the like conferring any exclusive or nonexclusive or limited right to make or use or sell any invention or inventions; and use, exercise, develop, dispose of, assign or grant licenses in respect of, or otherwise turn to account the property rights or information so acquired; and generally possess, exercise and enjoy all the rights, powers and privileges which the owner of any invention or any rights in respect thereof, or the owner of a patent of invention or of any rights thereunder may possess, exercise and enjoy."[46] It will be recalled that it was in the laboratories of the University of Toronto that the possibilities of insulin as a treatment for diabetes were discovered in 1921.

There are no special legal or statutory provisions at Purdue University for handling questions concerning patentable devices and inventions resulting from faculty or institutional research. Each case is considered individually and on its merits. In those instances where royalties have been received the investigator has been permitted to share in the royalties on some equitable basis. Because of the large amount of research work being done on the Purdue campus and the extensive research relations with industry, much consideration has been given to the problems involved, and the need for a more definite policy for determining these matters recognized. In 1930 the Purdue Research Foundation[47] was organized to cooperate with industry in the solution of pure and applied scientific research problems, "to promote educational purposes by encouraging, fostering and conducting scientific investigations and industrial research; by training and developing persons for the conduct of such investigations and research and by acquiring and disseminating knowledge in relation thereto; and further, both in connection with Purdue University and independently thereof, to foster and encourage education and learning in science, agriculture and mechanic arts and

to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." The facilities of the Foundation are available to the staff of the University and to the University itself for the handling of patent matters and the administration of patents, obtained either by voluntary assignment or, in the case of sponsored research, as required under the terms of the contract with the sponsor.

The formulation of definitive research and patent policies is currently under consideration at the State College of Washington, in line with plans for the extension of the research activities of the College. At present patents are handled through the State College of Washington Research Foundation,[48] which was organized in 1939 with extensive powers for promoting educational objectives "by encouraging, fostering and conducting scientific investigations," along lines similar to the Purdue Research Foundation, after which it is patterned.

At a number of other institutions which do not have formal patent policies it is the generally accepted practice either to leave to the individual inventor full responsibility for handling patents resulting from his research efforts or to decide each case on its merits, as it arises, and in a manner that seems best under the circumstances. Aid and assistance may be given through standing and ad hoc committees, through administrative officers and legal counsel, or by reference to a patent management organization such as Research Corporation or an affiliated research foundation. Largely as the result of recurring problems and the increasing interest in scientific research many of these institutions are presently giving consideration to the formalizing of existing practices into definitive research and patent policies.

Policies of Limited Application

Experiences and problems with medical patents and patentable results of sponsored research, contractually arranged with industrial concerns and government agencies, are causing many institutions to establish either formal policies, institutional practices or standard procedures for dealing with such matters. Specific instances of the situation at a number of medical schools, as well as the universities with which many of them are affiliated, are describedin the chapter on Medical Patents, while the policies and practices observed in connection with contractual research are discussed in the chapter on Sponsored Research. Brief mention of certain of those situations will serve to illustrate the limited application of many prevailing policies and practices.[49]

Neither Harvard University nor Johns Hopkins University concerns itself with discoveries and inventions made by faculty members or students in fields other than those relating to public and individual health, both institutions leaving such matters to the inventor. At Harvard University no patents primarily concerned with therapeutics or public health may be taken out by any member of the University, except with the consent of the President and Fellows of the University, nor will such patents be taken out by the University itself except for dedication to the public.[50] This policy, originally adopted in 1934 upon the recommendation of several faculties of the University, deals with the subject matter of the research rather than the site of its performance. Similarly, Johns Hopkins University, while

officially pursuing a hands-off policy on patents resulting from research in its various schools, discourages the acquistion of patents, either by an individual staff member or by the University, on inventions and discoveries which may affect public health.[51] Both universities encourage the use of the facilities of Research Corporation in cases where it seems desirable in the public interest to resort to patents.

While the formulation of a general university patent policy has been under study for several years at St. Louis University, the only policy observed at present is with reference to the voluntary assignment, without consideration of personal benefit, of patent rights to discoveries in fields in any way related to medicine and public health. This practice, initiated in 1930 in connection with the discovery of theelin and its subsequent patenting, provides a procedure for handling such patents in a manner that will insure more adequate public protection and foster further scientific research within the University.[52]

Other examples of formalized policies and generally accepted practices governing the specific handling of medical patents, frequently at variance with the general patent policies of the institutions with respect to other types of patents, are discussed in the chapter on Medical Patents,[53] as is the situation in independent medical schools. In many instances provision is made for the control and administration of such patents in the public interest through Research Corporation or other special nonprofit patent management foundations.

The substantial volume of sponsored research now being conducted on the university campus, especially contractually arragned research supported by industry and by Government, has caused many institutions to adopt definitive policies for the handling of patents that might grow out of such research. A number of institutions, in their patent policies, differentiate between research which is sponsored and supported by agencies off the campus and other types of research. Others, which observe a laissez-faire attitude with respect to other types of research have formalized their procedure for handling sponsored research.

Except with respect to contractual research conducted in or under its Department of Engineering Research, the University of Michigan itself does not have any clearly defined patent policy. Outside of such sponsored research projects, each case is handled in the light of its own circumstances, with a resulting wide variation of practice and procedure in the various departments of the University. However, in connection with its contractual research program, the Department of Engineering Research has over the years developed a definite policy and procedures for handling patents growing out of such research.[54] Patentable discoveries and inventions made by University employees engaged in these research projects are handled in accordance with an optional patent agreement clause fully covering matters of title and compensation, which is contained in the contract made with the sponsor.

Sponsored research conducted in the College of Engineering of New York University, under contract with industry, government agencies, and philanthropic or scientific organizations, is governed by university regulations. A formal agreement, called a memorandum of understanding, is made with the sponsor of the research project. This agreement includes the disposition.

of any patent rights that accrue, compensation of the inventor, and control of publication and publicity in any way connected with the project.[55]

No control is exercised over patents issued to members of the general faculty of the Georgia School of Technology, but full-time research employees, including those in the engineering experiment station, and those engaged on investigations directly financed by the School, the Georgia Tech Research Institute,[56] or an outside sponsor are under obligation to assign their patents to the School. The policy in all such cases is intentionally broad in order to meet individual situations. A private nonprofit Georgia corporation, known as the Industrial Development Council, formerly handled patent matters for the School. In 1946 it was superceded by the Georgia Tech Research Institute, whose purpose is to implement and coordinate the utilization of the research facilities of the School by industrial concerns, associations, government agencies, and individual sponsors. In the administration of contractual research projects the sponsor is protected on patent rights, which may be exclusively assigned to him under the terms of the contract made with the Institute. In accordance with their contracts of employment, employees of the School and of the Institute participate in the net proceeds realized by the Institute from the exploitation of patents, unless by preassignment all patent rights become the property of the sponsor of a particular research project.

In 1932 the governing board of the Virginia Polytechnic Institute formulated a policy governing the research activities of the Institute staff, particularly those in the engineering experiment station. Three years later the V. P. I. Research Foundation[57] was organized as a nonprofit corporation to provide suitable facilities and a stimulating atmosphere at the Institute for productive research and to protect the interests of the Institute and its staff in the results of such research. This action was taken in recognition of the fact that the management of patents and of research grants is somewhat foreign to the usual functions of an educational institution and that it was desirable to create a separate corporation to administer such funds. Income from patents is divided between the Foundation and the inventors, the Foundation's share being devoted to increased financing of scientific research.

Policies and administrative procedures for the handling of sponsored research and resulting patents have been subjects of discussion at several recent meetings of the Engineering College Research Council of the American Society for Engineering Education. The question is of deep concern to the engineering schools belonging to the Council, many of whom conduct extensive sponsored research programs. In 1944 the Council published, for the benefit of its members, an exhibit of representative patent policies of six colleges and universities, and in 1947 published a similar exhibit including the policies of eighteen others.[58]

Institutions with agricultural and engineering experiment stations require full-time research employees of those stations to assign their patent rights on discoveries and inventions growing out of their regular duties. Similarly, full-time employees of the research institutes and foundations affiliated with a number of the institutions, as well as part-time faculty members undertaking research projects in or under these institutes and foundations, are required to assign their patent rights under formalized policies

or in accordance with the terms of the contracts made with the sponsors of the projects.[59]

At Fordham University a formal patent policy, applicable only to the teaching members of its Department of Chemistry, was adopted a number of years ago. At that time several patentable ideas, including a process for producing thiamine hydro-iodide and a fluorophotometer, had been developed in the department. Under this policy a faculty member who discovers any material or procedure that has commercial possibilities or that he suspects has commercial value may choose one of two ways for its disposal, depending upon whether the estimated proceeds would total $6,000 or more. If the estimated proceeds would total more than $6,000, the matter is referred to a research committee, appointed by the President of the University, which would investigate the idea, negotiate regarding the patent and its administration, and provide for a division of the proceeds between the University and the inventor.[60]

In view of their obligations to the citizens of the states from which they derive their support, several of the state institutions reserve to themselves, for the benefit of the state, patent rights within the state on all patentable discoveries and inventions made in their laboratories. At the Colorado School of Mines, for example, the understanding with the faculty in regard to such matters is that the individual investigator shall assign to the School all rights for the territory of Colorado. All other rights are the property of the inventor, who assumes all patent costs.[61]

Publication of Research Results

It is the usual practice for educational institutions to retain control over the publication of the results of all research conducted on the campus, except personal research. When an investigation is financed through outside funds, that control is frequently but not always exercised subject to prior consent of the sponsor, and publication is withheld for a reasonable time to protect patent applications and the interests of the sponsors in the commercial development of new discoveries or processes.[62] A few institutions turn over all results to the sponsor, including publication privileges as well as patent rights, merely reserving approval of any reference to the institution or its part in the investigation. In practically every instance they proscribe use of the name of the institution in any way.

The question of publication rights is specifically covered in many of the formalized patent policies. Columbia University, for example, reserves all rights to the publication of data resulting from cooperative industrial research, subject to the following conditions:

> i. At the written request of the cooperating industry, publication will be withheld for a reasonable period so that patent application can be filed. The industry will use its best efforts to expedite such application but, unless specifically agreed upon, this period shall not exceed six months.
>
> ii. Any patented or commercial products mentioned in such publication shall not be referred to by name except with the consent of both the University and the industry.

iii. While the University will submit to the industry for review and suggestions any proposed publication previous to printing same, and will endeavor to meet all reasonable requests and suggestions, the University reserves full authority as to the form, scope, and content of such publications.[63]

The University of Chicago will cooperate with industrial organizations by conducting fundamental research projects financed by grants from such organizations and will make research reports to the grantors, but the University reserves the right to publication of the results.[64] In all cases the University reserves the right to publish the results of its researches in such manner as its faculty may determine. It also reserves the right to engage in further research relating to a patented product or process previously developed by University personnel or to use any of its derivatives or modifications. Only under these conditions does the University feel that it can fulfill its obligations to the public and to industry as a whole. The University will not permit its name or the names of its investigators to be used in advertising.

In its collaboration with commercial firms in investigative work, the University of Pennsylvania requires that the results of such investigations must be published solely according to the judgment of the workers and the head of the department. The University will exercise reasonable delay in the publishing of material that might jeopardize the position of patents growing out of the investigation. The name of the University, unless specifically authorized, is not to be used in advertising or publicity material. The names of the investigators are to be mentioned only in literature references. All advertising or publicity matter, including the distribution of papers or reprints, based on an investigation at the University of Pennsylvania is subject to prior approval insofar as the advertising or publicity material refers to or is an interpretation of the work done at the University.[65]

Most institutions specify, in their agreements or contracts with off-campus sponsors of research projects, the terms and conditions under which the research results may be published. In the absence of such a written agreement, some reserve all rights to publication, as well as patents, provided this condition is understood by the cooperating agencies in advance. Similarly, in the contracts with research workers, both those on full time and those participating in a part-time supervisory or research capacity, the institutions control the publication of results, in order to protect the interests of the sponsors as well as their own.

In the contractual agreement made with sponsors of cooperative investigations, the University of Illinois prescribes that "under no circumstances will the sponsor state or imply in any advertisement or other published announcement that the University has tested or approved any manufactured product, manufactured, sold, or distributed under a specific brand, name, or trademark. It is also agreed by the sponsor that it will not under any circumstances use the name of the University in any advertisement, whether with reference to the cooperative agreement or any other matter.[66]

The Massachusetts Institute of Technology takes the position that the imposition, by outside agencies, of restrictions on publication of research

results, either for secrecy or patent reasons, would be incompatible with the basic concept of an educational institution as a source and distributor of knowledge. Therefore, research contracts involving such restriction will be undertaken only for exceptional and important reasons. In no case would a situation be permitted which could inhibit free and effective work by the Institute in any scholarly field. Contracts with industrial or other outside sponsors, arranged through its Division of Industrial Cooperation,[67] are written on this basis.

In the case of personal research, conducted on an individual's own time and at his own expense, little or no restriction is in general placed on the publication of the research results. As long as the name of the institution is not improperly used or its prestige jeopardized, publication is left in the discretion of the research worker. Administrative approval, frequently exercised through a special research committee, is usually required in the case of institutionally supported research, undertaken as a part of the educational program or of the regular duties and responsibilities of the investigator. In the case of sponsored research, especially when performed under contracts, the consent of the sponsor as well as the institution is prescribed in the contractual agreements, both between the sponsor and the institution and between the investigator and the institution or its research agency.[68]

In undertaking research and development projects for private or governmental agencies, California Institute of Technology will normally accept only those which involve fundamental research likely to add to the knowledge of natural laws and processes and which fall clearly within the scope of the Institute's educational and research programs. Contracts for such research are made under the condition that they will not unduly restrict the publication of research results and conform to the Institute's patent policy.[69]

The contract, under which sponsored research is conducted at the University of Michigan under its Department of Engineering Research, contains the provision that, while the University agrees to use its best efforts to prevent the disclosure of any facts or data furnished by the sponsor, the University may, when duly approved by the sponsor, publish for the benefit of science such results of the research project as are in the nature of fundamental or general principles.[70]

The basic assumption underlies cooperative research activities at the University of Minnesota that, as a state-supported institution, the University has a interest in the advancement of scientific knowledge and in the advancement of the economic interest and welfare of the people, particularly the people of the state of Minnesota. Therefore, in the memorandum of agreement made with a research sponsor, the University reserves the right to publish the results of the investigation, but before publishing them the University will give the sponsor an opportunity to review the manuscript and will consider modifications. However, the decision of the University as to what the publication shall contain is final. If the University elects not to publish the results of the investigation, then the sponsor may with the consent of the University publish them, after having first given the University an opportunity to review the manuscript, which shall not be published until approved by the University in writing. No commercial brands or trade

names shall appear in the publication of the results, except as they are essential in the description of the research, nor shall the name of the University be used in any way for advertising purposes.[71]

In its cooperative research program Rutgers University makes suitable provision for the publication of research results of any character. If patent rights are involved, publication will be withheld for a reasonable period so that the patent application may be filed. Usually this period, stated in the agreement, should not exceed six months. Although the University will submit to the sponsor, for review and suggestions, any proposed publication and will endeavor to meet all reasonable requests and suggestions, the University reserves full rights as to the form, scope, content, and medium of publication of research results.[72]

In their conduct of research completely financed by industrial or other outside sponsors, the special research institutes and foundations affiliated with educational institutions usually turn over all the research findings to the sponsor, including rights to the publication as well as the patenting of those results. However, they restrict any reference, in advertising or publicity matters, to the institution or to its research agency, unless prior approval has been given. Their research employees are required, in their contracts of employment, to fulfill the obligations of the institutions and their research agencies to the sponsors.[73]

References

1. See Appendix, page 119 ff

2. See chapter on Medical Patents, page 71 ff

3. See chapter on Sponsored Research, page 53 ff

4. See chapter on Patent Revenue, page 109 ff

5. See chapter on Patent Management Procedures, page 95 ff

6. See chapter on Sponsored Research, page 53 ff

7. See page 101

8. See chapter on Patent Management Procedures, page 95 ff

9. See chapter on Sponsored Research, page 53 ff

10. See Appendix, page 119 ff

11. See Appendix, page 131

12. See page 104

13. See Appendix, page 148

14. Policies and Procedures, Massachusetts Institute of Technology (1945), pages 36-37

15. See Appendix, page 146

16. See pages 64 and 101

17. See Appendix, page 152

18. See page 105

19. See Appendix, pages 137, 146, and 150

20. See Appendix, page 140

21. A nonprofit corporation, organized in 1935; also see page 107

22. Excerpt from Minutes of Board of Trustees, University of Illinois, 16 February 1918, page 661; also see Appendix, page 140

23. See Appendix, page 152

24. Established in 1943 by legislative action

25. See Appendix, page 142

26. A nonprofit corporation, formed in 1938; also see Appendix, page 143

27. See Appendix, page 155

28. See pages 64 and 98

29. See Appendix, page 159

30. See Appendix, page 122

31. See Appendix, page 158

32. See Appendix, page 126

33. See Appendix, page 128

34. Statement of Patent Policy, Carnegie Institute of Technology, page 1

35. See Appendix, page 129

36. See Appendix, page 131

37. See Appendix, page 163

38. See Appendix, page 119 ff

39. See page 105

40. Also see page 97

41. Palmer, A. M., University Patent Policies, 16 Journal of the Patent Office Society 114, (February 1934)

42. See pages 66 and 106

43. See page 106

44. See page 104

45. A nonprofit corporation, chartered 15 June 1936; also see page 107

46. Palmer (supra, note 41), page 100

47. See pages 66 and 105

48. A nonprofit corporation, organized in 1939

49. Also see chapters on Medical Patents, page 71 ff, and on Sponsored Research, page 53 ff

50. See page 75

51. See page 77

52. Bulletin of St. Louis University School of Medicine (July 1931)

53. See page 71 ff

54. Also see page 65

55. Research Policy, New York University College of Engineering (30 September 1944)

56. Rosselot, G. A. and Baker, H. L., Jr., Georgia Tech Research Institute, The Research Engineer, Georgia School of Technology, page 17 (May 1946)

57. See page 106

58. Exhibit of Representative Patent Policies and Research Foundations in Colleges and Universities, Engineering College Research Association (1944); Exhibit of Patent Policies in 22 Colleges and Universities, Engineering College Research Council (1947)

59. See chapter on Patent Management Procedures, page 95 ff

60. Regulation Regarding Patents, Fordham University Department of Chemistry

61. Palmer (supra, note 41), page 123

62. Also see chapter on Sponsored Research, page 53 ff

63. See Appendix, page 131 ff, particularly page 135

64. The Patent Policy of the University of Chicago and Its Relations to Research (15 March 1944)

65. Procedure for Obtaining Support of Research Programs and Policy with Respect to Research for Private Industry, University of Pennsylvania (1947)

66. Agreement for Cooperative Research, University of Illinois; also see Appendix, page 140

67. Also see pages 64 and 98

68. See chapter on Sponsored Research, page 53 ff

69. Policies and Procedures, California Institute of Technology, 1 July 1947, pages 12-13 and 15 ff; also see Appendix, page 124

70. See page 65

71. Also see page 97

72. Research and Patent Policies, Rutgers University Research Council, January 1946, pages 4-6

73. Also see chapter on Sponsored Research, pages 53 ff, particularly pages 63 ff

IV

PERSONAL RESEARCH

In order to provide incentive and encourage personal research interests of faculty members and other employees, most educational institutions place little or no restriction on the disposition of inventions and patentable discoveries resulting from scientific research conducted on an individual's own time and at his own expense, even though the institution's facilities and equipment may have been used. Such inventions are considered to be the exclusive property of the inventor, and he retains the full patent rights and complete freedom to dispose of them as he deems proper. A similar attitude is usually taken in the case of student research.

It is the general practice at those institutions, particularly independent liberal arts colleges, which have had little or no experience with the problem and no urgent occasion as yet to adopt formal patent policies, to allow their faculty personnel the widest freedom in these matters. When the issue has arisen, it has either been decided by mutual agreement or the college has disclaimed any share in royalties or other benefits. Faculty committees and administrative officers have usually ruled in favor of the inventor when any question has been raised as to the institution having any interest or equity in the discovery.

Institutions with formalized patent policies usually recognize, by explicit reference or by implication in formal policy statements, that an invention or discovery which is not related to the individual's regular teaching or research responsibilities belongs to the inventor, and accordingly waive all claim to a share in any possible financial returns. Similarly, at many of the institutions which, in the absence of established policies, recognize generally accepted practices, as well as those which observe laissez-faire or hands-off policies, the ownership of patents resulting from personal research rests with the inventor. This is also one of the basic considerations in most of the new policies now being formulated.

Exceptions to General Practice

Notable exceptions to the general rule are the University of Chicago, Worcester Polytechnic Institute, and certain of the Catholic institutions where many of the members of the faculty are community priests who have limited property rights. At these Catholic institutions no question of ownership arises, as patent rights, royalties, and other benefits accruing from inventions would be administered by the community or the university in the same manner as any other property.

The statutes of the University of Chicago provide that, in view of the University's policy[1] of complete freedom of research and the free and unrestricted dissemination of information, neither the University nor members of the staff shall profit from research by means of patents, royalties or licensing agreements. Members of the staff are not permitted to receive direct or indirect financial returns from patents based on work performed

during their employment by the University or to make arrangements for such returns which take effect after the termination of their employment.

It is the practice at Worcester Polytechnic Institute, when a patentable idea is evolved by a member of the staff and a patent application is made, for the individual to assign the application to the Institute. When the patent is granted, the entire right, title and interest become the property of the Institute, which may then enter into a monetary arrangement with the staff member concerned.[2]

As discussed more in detail in the chapter on Medical Patents,[3] certain institutions make exceptions in the matter of patentable products of scientific research that affect public or individual health, even though they are the result of investigations conducted by a faculty member independent of his regular duties, on his own time, and at his own expense. In this connection particular attention is called to the specific policies of Harvard, Johns Hopkins and St. Louis Universities[4] and the generally accepted practices in a number of the medical schools where no formalized patent policy exists.

Within Field of Employment

At a few institutions a distinction is made between discoveries within the inventor's field of employment and those outside that field. Such a distinction is embodied in the formal patent policies of the University of Florida and Massachusetts Institute of Technology. Almost invariable those employed for full-time research in state agricultural and engineering experiment stations and in special research laboratories and institutes affiliated with educational institutions are required to sign patent waiver agreements covering patentable ideas and inventions in any way related to their work.

Patent rights growing out of an investigation conducted by an employee of the University of Florida on his own expense and his own time go to the employee and remain his private property, if the discovery is made outside the field in which he is employed by the University. If the discovery is within the field of his employment, it must be reported to the University Research Council for study and recommendation of a "suitable policy" for handling the patent rights, including the payment of a "just compensation," (at least twenty-five per cent of the net proceeds) to the inventor.[25]

Inventions or developments produced by staff members of Massachusetts Institute of Technology along lines unrelated to any Institute program of research with which the individual may be connected and to the production and development of which the Institute contributes nothing substantial in funds, space or facilities are the exclusive property of the person producing the inventor or development.[6]

The results of research investigations performed by the staff members of Pennsylvania State College on their own time and at their own expense are recognized as "obviously the private property of the investigator." It is generally assumed that title to a patent remains with the inventor unless the College can show that the patent was the result of an investigation on which the inventor was specifically employed, usually covered by contract, or as a result of studies made by him under the direction of the College.[7]

At California Institute of Technology any invention or discovery made by a staff member on his own time and without aid of Institute facilities is the sole property of the inventor. However, under the patent policy[8] of the Institute, adopted in 1945, faculty members may not patent inventions which are in a specific field of an Institute program without permission from the Institute. The policy also prescribes that patents "should be administered so as not to involve the Institute name or to discredit the Institute" and that time spent in administering the patents should conform to the Institute policy on the outside activities of staff members.

Special Determinations and Aid

In the absence of established policies some institutions consider each case on its merits, leaving it to the judgment of the faculty member whether he should bring the matter to the attention of the president or designated administrative officer or faculty committee charged with consideration of research and patent problems. A few of the universities having definite patent policies require that all patentable discoveries, as well as the intention to apply for patents, be brought to the attention of the administration, either directly or through appropriate committees.

A number of institutions have special committees or boards to which are referred patentable discoveries, questions of the institution's interest in them, and the desirability of securing patents at the institution's expense. When recommending the specific action to be taken in each case, these committees usually also determine what recognition or reward, if any, should be given the inventor. In many instances the inventor is required or advised to assign his rights to a patent management organization designated by the institution to represent its interest and handle the commercialization and general administration of the patent rights.

In the administration of formal patent policies many institutions use these committees or the patent management agencies to advise and aid faculty members on matters of patentability, prosecution of the patent application, commercialization of the patent when issued, and general business aspects of patent management. Through these committees and the regular university administrative organization, and also through the facilities of affiliated patent management foundations where they exist, means are provided whereby faculty members by voluntary assignment of their patent rights may be relieved of the burdensome legal and administrative problems associated with the commercial exploitation of patents.[9]

Frequently these committees also have responsibility for determining whether the institution has any interest or equity in the discovery and for defining what action should be taken in line with the prevailing patent policy or accepted practice of the institution. In many instances it is difficult to determine the extent to which incidental or permitted use of equipment and other facilities, membership in the company of scholars on the campus, professional contacts with colleagues and others connected with the institution, and the general atmosphere and surroundings contribute to the evolution of patentable ideas.

The Committee on Patents at Columbia University acts not only as the policy-making group on University patent procedure but also in an advisory

capacity to staff members, calling, when desirable, upon experts in various fields of research and patent law for advice, and recommending to the staff member and to the University authorities suitable action in specific cases. As indicated in its patent policy,[10] the University has provided through the Committee on Patents and University Patents, Inc., means by which a staff member may secure advice and aid on patent proposals and arrange to share with the University the return from any patent rights. While it is the policy of the Faculty of Medicine to discourage the patenting of any medical discovery or invention, and to forbid the patenting or exploitation of such discoveries by members of its staff, the right of staff members in the other divisions of the University to secure patents on their inventions is recognized by the University. Individual staff members, in general, are free to patent any device or discovery resulting from their personal researches and to make any arrangements they deem desirable in reference to patents and other rights incidental to personal arrangements for consulting and similar services.

Reimbursement of University

Certain institutions require reimbursement of whatever contribution in institutional time, money or facilities has been made to the production of a patentable discovery, even though the patent rights may remain the sole property of the inventor.

The University of Alabama waives all claim to a share in royalties unless the University has made a substantial contribution, which is defined as at least two hundred dollars in money, but the inventor is under obligation to reimburse the University for its contribution if he derives sufficient profits from the invention to do so. If the University's contribution is in excess of two hundred dollars, the invention becomes the property of the University and a percentage of the net profits derived from the sale or exploitation of the invention is assigned to the inventor.[11]

Under the patent policy[12] of the University of Texas, adopted in 1945 the title to a patent on any discovery or invention made by an employee of the University belongs to the employee and he is free to develop and handle it in any manner he seesfit, subject to the following provisos:

> (a) When total net royalties, or other compensations, are less than $1,000, no payment ot the University is required;
>
> (b) When net royalties, or other compensations, amount to more than $1,000 and less than $5,000, ten per cent of the excess of such royalties or other compensations above the sum of $1,000 and less than $5,000 shall be paid to the University;
>
> (c) When net royalties, or other compensations, amount to more than $5,000, the royalty to be paid to the University shall be ten per cent of the amount above $1,000 and less than $5,000 and twenty per cent on all amounts above $5,000.

In the absence of a specific contract to the contrary, this policy obtains and its provisions are incorporated in the employment agreements of faculty personnel and other employees of the University.

A similar policy[13] was adopted at the University of Nebraska in 1946. That policy was established for the express purpose of stimulating inventive genius, encouraging disclosure for the public benefit of discoveries and new inventions made at the University by its faculty personnel and employees, and defining the rights of the University in returns from resulting patents.

Under the patent policy[14] adopted at the University of Arizona in 1939, an inventor is required to pay into a special Fund for the Promotion of Research ten per cent of all monies received by him from his invention, in recognition of the fact that university laboratory and other space and equipment, together with laboratory facilities, were doubtless used in developing the invention. The contribution of ten per cent of gross earnings may be waived or reduced if it is evident that university facilities and time were not used in developing the invention or were used to such a slight extent that a ten per cent contribution might be considered exorbitant.

Student Research

Few patent policies include any reference to patentable discoveries resulting from student research, except where the student is employed or receives specific fellowship aid under an industrial research contract. In general, inventions made by students, including those on scholarships and fellowships, are considered to be the private property of the students, and this includes the right of the student to assign or otherwise dispose of his patent rights.

Nevertheless, the question of requiring students to sign patent waiver agreements is frequently raised, especially when the students are given scholarship aid. In a patent policy recommended some years ago for a midwestern university, a research fellow was treated as intermediate between a faculty member and a student, and it was proposed that any inventions made by a research fellow under any circumstances should be the property of the university.[15]

The patent policy of the Massachusetts Institute of Technology provides that, in case the invention or development is produced by a student who is paying tuition, and who is utilizing for research only a reasonable amount of space and facilities, it shall be considered that the Institute is not making a contribution to the research beyond that covered by the tuition payment. In cases where the student is receiving scholarship aid, the acceptance of such scholarship aid is not considered as changing the status of the student in regard to title to inventions or developments, since such scholarship funds have been provided primarily for the assistance of outstanding students and are in general administered by, rather than controlled by, the Institute. The rights of the student include the right to assign or otherwise dispose of his patent rights.[16] Drexel Institute of Technology observes a similar policy[17] patterned after the one at the Massachusetts Institute of Technology.

At Georgetown University, on the other hand, a distinction is made in the handling of patentable results of scientific research conducted by fellowship holders according to the sources of the funds supporting the research. When a research fellowship is paid out of University funds, inventions from work under the fellowship accrue to the University. When the

fellowship is financed by an industrial firm or other outside agency distinct from the University, any resulting inventions and developments are assigned to the sponsor supporting the research on the understanding that from three to ten per cent of the net proceeds resulting from the invention or development accrue to the University. Where research sponsored by an industrial organization is performed in the University laboratories but is not a part of the requirements for an advanced degree the University does not enter into a contract with the research worker.[18]

At Carnegie Institute of Technology all graduate students who spend substantially full time at the Institute in any combination of study, research, and teaching are required to indicate in writing their acceptance of the provisions of the patent policy of the Institute.[19] The rights of the Institute, if any, in inventions made by any other student under the sponsorship of the Institute or employing its facilities are subject to determination, unless otherwise expressly agreed, by the applicable laws relating to inventions, implied licenses, and shoprights.

The patent policy of the University of Alabama specifically states that a patentable invention made by a student who is not employed by the University shall be the property of the student.[20]

The bulletin of the Graduate School of Purdue University contains the following statement on publication and use of student theses:

> The results obtained and the thesis prepared in connection with the regularly assigned thesis subject for an advanced degree are the property of the University. No part of the thesis may be reproduced or published without the written consent of the President of the University; nor may it be used, directly or indirectly, in support of or in condemnation of any product or procedure referred to therein.[21]

It is the policy of the University of Florida that, if the material involved in a patent comes from research done as a dissertation or connected with a dissertation problem, the faculty member participates with the student, on a two-thirds and one-third basis, in the financial return allotted by the University's Board of Control as the inventor's "just compensation" from the net proceeds from the patent.[22]

Summary

As indicated in the previous discussion and as specified in many of the formalized patent policies quoted in the Appendix,[23] patentable products of personal research are generally considered the exclusive property of the inventor. However, several institutions require at least partial reimbursement of their financial contribution toward the production of such patentable discoveries.

In general the inventor retains full patent rights to discoveries made outside his regular teaching or research functions, on his own time and at his own expense, and without any substantial use of university facilities or equipment. He is permitted to retain his patent rights and to dispose of them as he deems proper, despite the recognition at many institutions that

This places an unfair burden on the individual, to determine what procedure is in the greatest public interest, to process the patent application and commercialize the patent when issued, and to concern himself with developing the patent, disposing of it, and protecting it against infringement and interference.

Through special research and patent committees, as well as through the use of the facilities of affiliated or specially designated patent management agencies, faculty members are given relief from the intricate and time-consuming problems associated with the prosecution of patent applications and the subsequent administration, commercialization, and protection of patent rights.[24]

When the individual is employed specifically for research and the results of his investigations are considered as definite objectives of his employment, the employing institution usually reserves to itself the control of the patent rights. Similarly, in cases of discoveries and inventions affecting the public health, there is a disposition on the part of educational and professional institutions to place restrictions on individual ownership of patents.[25]

While relatively little consideration has in the past been given to patent questions growing out of student research, this problem is becoming of increasing concern in certain institutions, particularly in cases where faculty members as well as students are involved or where students are used on sponsored research projects.

References

1. See Appendix, page 129

2. Letter from President Wat Tyler Cluverius, 11 September 1946

3. See chapter on Medical Patents, page 71 ff

4. See pages 75, 77, and 76

5. See Appendix,page 138

6. See Appendix, page 148

7. See Appendix, page 152

8. See Appendix, page 128

9. See chapter on Patent Management Procedures, page 95 ff

10. See Appendix, page 131; also page 104

11. See Appendix, page 121

12. See Appendix, page 162

13. See Appendix, page 151

14. See Appendix, page 122

15. Spencer, Richard, University Patent Policies, page 10 (1939)

16. See Appendix, page 148

17. See Appendix, page 137

18. Letter from President Lawrence C. Gorman, 3 July 1947

19. See Appendix, page 128

20. See Appendix, page 121

21. Purdue University Bulletin, Graduate School, Announcements for Sessions of 1945-46, vol. 46, March 1946, no. 3, page 15

22. See Appendix, page 138

23. See Appendix, page 119 ff

24. See chapter on Patent Management Procedures, page 95 ff

25. See chapters on Institutionally Supported Research, page 45 ff, and on Medical Patents, page 71 ff

V

INSTITUTIONALLY SUPPORTED RESEARCH

Institutionally sponsored research, conducted by faculty members and other employees as a regular part of their teaching and research responsibilities, especially when the products of such research are patentable or should be controlled in the public interest, frequently raises problems requiring policy determination. This is particularly true in a state institution which has a special responsibility to the people of the state for the proper handling of discoveries and other products of research conducted by staff members as part of their regular duties. These institutions, and also the privately endowed institutions, recognize their responsiblity for administering such research results, particularly those which may have commercial application or should be patented in the public interest, in a manner that will be of greatest public benefit and that will make any income that may accrue available for the promotion of further research.

Even where inventions and other developments grow out of research which is entirely or substantially financed by the institution there is considerable variation in the patent policy observed, the procedures followed, and the recognition of the inventor. However, when the research is part of the regular duties and responsibilities of a faculty or staff member, it is generally the practice to require assignment of title to such inventions and developments, as well as any patent rights that may accrue from them, to the institution or to its designated agent. In such cases the institution bears the costs of obtaining the patent and assumes responsibility for its exploitation. Provision is usually made for the patent rights to revert to the inventor if the institution or its designated agent does not file a patent claim within a reasonable time. The exact period of time is sometimes but not always specified in the patent policy or in the assignment agreement.

Exceptions to the general rule are found, for the most part, in those institutions which observe a definite hands-off patent policy and leave all such matters to the discretion of the inventor. In certain of these institutions, however, restrictions are placed on discoveries affecting public or individual health.[1] A few institutions make a distinction between discoveries within the inventor's field of employment and those outside that field, as at the Massachusetts Institute of Technology and at the Universities of Arkansas and Florida.[2]

Most institutions require full-time research personnel and others employed on special research projects to sign patent assignment agreements covering all patentable ideas and discoveries that may result from their investigations. Such agreements are generally required of full-time research employees in state agricultural and engineering experiment stations, and also of those employed on projects conducted in or under special research institutes affiliated with educational institutions.

A number of institutions have special patent committees or boards which exist primarily for the purpose of insuring that pertinent institutional reg-

ulations are observed. Patentable discoveries are referred to these committees, as well as questions of the institution's interest in them and the desirability of securing patents at the institution's expense. As in the case of personal research,[3] these committees usually also determine what recognition or reward, if any, should be given to the inventor when recommending the specific action to be taken in each case. Where such an agency exists, the inventor is required or advised to assign his rights to a patent management organization designated by the institution to handle the commercialization and general administration of the patent rights.

The following brief descriptions of specific situations at a number of institutions having formalized patent policies illustrate both the prevailing practices and the diversified procedures followed in the handling of patentable results of institutionally supported research.

Earlier Patent Policies

Under a policy[4] adopted in 1924, any member of the scientific or teaching staff of Lehigh University who has made a valuable discovery or invention as the direct result of his regular duties on University time and at University expense may be required to patent his discovery or invention, the expenses therewith to be borne by the University. If a patent is issued, the patentee shall assign the patent to the Board of Trustees of the University for a nominal consideration. A patent thus assigned will be administered by the Board of Trustees in such manner as it may determine. If the patent is sold or a royalty for its use is received, one-half of the money thus realized by the University will be paid to the patentee and the other half is assigned to the Lehigh Institute of Research[5] for the furtherance of research.

At Columbia University provision is made for University participation in patent rights which may develop through the activities of its staff, generally on a voluntary basis but also, under certain conditions, as a definite requirement. Similarly, patent rights originating in cooperative research may, depending upon the extent of University or industrial or other outside support, result in University participation in such rights. A Committee on Patents would then recommend suitable action, a special organization, University Patents, Inc., would hold such rights, and their administration would be carried out under the agreement with Research Corporation in accordance with the general University patent policy[6] originally adopted in 1924.

Under the patent policy[7] adopted at the Massachusetts Institute of Technology in 1932, inventions and other developments, whether or not subject to patent, resulting directly from a program of research financed entirely by the Institute, become the exclusive property of the Institute. The Institute is entitled to all benefits and rights accruing from such inventions or developments, and may acquire title to any patents based upon them, holding and administering them for the ultimate benefit of the public. In cases where, after a reasonable time, the Institute does not choose to acquire rights to inventions or developments arising in this manner, provisions may be made whereby the patent rights or a part of them revert to the individuals who make the inventions or developments. A similar policy,[8] adopted in 1934, is in effect at Drexel Institute of Technology, although comparatively little research is currently conducted at the Institute.

The principle is recognized under the University of Illinois Statutes that the results of experimental work carried on by or under the direction of the scientific and teaching staffs of the University, the expense of which is paid from University funds or from funds under the control of the University, belong to the University and the public and should be used and controlled in ways to produce the greatest benefit to the University and to the public. Accordingly any staff member who makes a valuable discovery or invention as the direct result of his regular duties on University time and at University expense may be required to patent his discovery or invention, the expenses connected therewith to be borne by the University. The filing of an application for a patent to cover such a discovery or invention must be approved by the President of the University and the patentee is required to assign the patent, when issued, to the Board of Trustees of the University for a nominal consideration.[9]

Many of the policies subsequently adopted and now observed in other institutions, particularly state colleges and universities, for the handling of patents resulting from institutionally supported research are patterned after these earlier policies. Nevertheless, there is a wide diversity of procedure followed in individual institutions, both in the handling of the patents and in the recognition of the inventor in the division of revenue accruing from the exploitation of the patent rights.

At State Institutions

At the University of Arkansas any invention, formula or process discovered or developed by a faculty or staff member in the general field of his University employment, in the course of his regular duties and with the use of University facilities and funds, shall be controlled by the University. An equitable division of royalties or profits derived from the sale or licensing of such a discovery, when patented at University expense, is made by a University Committee on Patents which is also charged with recommending the terms of the agreement to be made for the assignment of the patent.[10]

Under a policy,[11] adopted in 1943, all matters relating to patents in which the University of California is in any way concerned are administered by a University Board of Patents, whose responsibility is to facilitate patent applications, to protect both the University and the inventor, to arrive at an equiable determination of the rights of all concerned, and to provide a uniform procedure in patent matters. Faculty members and non-academic employees are required to bring to the attention of the Board, for examination of its merits, potentially patentable projects developed in the course of their work. Under this policy provision is made to assist these individuals in all matters related to patents based on discoveries and inventions made as a result of financial support from the University or the use of its facilities and equipment, and to safeguard whatever interest the University may have in patents arising from such discoveries and inventions. Assignment to the University Regents of whatever rights he may possess in the patent or appointment of the University Board of Patents as his agent is optional on the part of the inventor or discoverer.

The General Statutes of the State of Connecticut provide that the University of Connecticut is entitled to own the entire right, title, and interest in, or to place in the custody of the University of Connecticut Re-

search Foundation,[12] any invention conceived in the course of performance of customary or assigned duties by an employee of the University or which emerges from any research, development or other program of the University or is conceived or developed wholly or partly at the expense of the University or with the aid of its equipment or personnel.[13]

The by-laws of the University of Hawaii provide that patents resulting from work for which the employee has been paid by the University shall, at the request of the Board of Trustees, be assigned to the University and the Board may, at its discretion, claim all or part of any royalties that may accrue.[14]

At Rhode Island State College it is recognized as a guiding principle that the College, as a publicly supported institution, has as a major responsibility the promotion and protection of the public interest. In view of this responsibility inventions and discoveries resulting from research financed wholly from institutional funds, including state and Federal appropriations, become the property of the College. If, in the opinion of the College Research Committee, the interests of the public will be best served under patent protection, the investigator who made the discovery may be required to apply for a patent, the expense to be borne by the College. At the time of filing the application for a patent it is assigned to the Board of Trustees of the State Colleges of Rhode Island, to be administered in the public interest. If the College does not care to assume the responsibility for the patent, the investigator may be authorized to contract with a collaborating agency for the purpose of securing the patent and developing it commercially. In either case, the rights of both the investigator and the College to share in any financial returns by way of royalties or license fees are recognized and any contracts made with the collaborating agency must safeguard these rights.[15]

It is similarly recognized at Clemson Agricultural College that the results of experimental work carried on by or under the direction of any College employee or employees, where any of the facilities of the College are used or where any part of the expense involved is paid from funds controlled by the College, belong to the College and the public and shall be used and controlled in ways to produce the greatest benefits to the College and the public. In the event of any discoveries or inventions resulting from such experimental work, the Board of Trustees reserves the right to determine what use may be made of them in the best interests of the public.[16]

If the University of Alabama makes a substantial contribution in time, money ("in excess of two hundred dollars"), or facilities to the production of any patentable invention made by a faculty member, the invention becomes the property of the University, but the inventor receives a percentage of any net profits which the University may derive from the sale or exploitation of the invention. A person who is expressly employed to devote all or a specific part of his time to research is required to sign a patent waiver agreement.[17]

At both the University of Texas, under a patent policy[18] adopted in 1945, and the University of Nebraska, under an identical policy[19] adopted in 1946, title to a patent issued on any discovery or invention made by an employee belongs to the employee and he is free to develop and handle it in

any manner he sees fit. However, if the total net royalties or other compensations amount to more than $1,000, he is required to pay a certain percentage to the University. The provisions of this policy are incorporated in employment agreements of faculty personnel and other employees of both universities.

Patents which may develop from research financed wholly or in part by the Alabama Agricultural Experiment Station or the Engineering Experiment Station at Alabama Polytechnic Institute are to be assigned to the Auburn Research Foundation,[20] which pays the costs of obtaining such patents. The Foundation agrees to pay the inventor at least fifteen per cent of the net profits from the patent, after all expenses have been paid. If the Foundation does not file a patent claim within one year from the date a written report describing the patentable discovery is submitted to the Foundation, all patent rights in the invention revert to the inventor.[21]

Anyone at Kansas State College of Agriculture and Applied Science who believes that an invention resulting from research sponsored by the College should be patented is required to submit the matter to a Faculty Advisory Committee appointed by the President of the College, which will recommend whether or not the invention should be assigned to the Kansas State College Research Foundation[22] and the Foundation should prosecute a patent application. If this committee should decide that the invention does not warrant patenting by the Foundation, the inventor will be free to patent it himself. In such a case, however, the College does not relinquish its right to publish any of the data obtained in the research project. In the event that any sum over and above the cost of obtaining the patent should be realized by the Foundation from a patent assigned to it, a fair share of the profits will be paid to the patnetee.[23]

In accordance with the terms of a patent agreement signed by every employee when accepting a position at Michigan College of Mining and Technology, any discovery or invention conceived, devised or worked out in the course of the inventor's employment, by or through the use of the facilities and equipment of the College, shall at the option of the College become the property of the College. If, within a period of thirty days, the College exercises its option to take over the discovery or invention, the patent application or the patent, if issued, is assigned to the Board of Control of the College. The inventor receives fifteen per cent of the net proceeds of the earnings or yield from any source, whether from license fees, royalties or sale.[24]

In the case of a research worker engaged for or assigned to a specific research project, the contract made by Pennsylvania State College with such an employee requires that he patent the result of his researches and assign the patent rights to the College. The College pays the cost of obtaining the patent and, in the event that the College should dispose of the patent on such terms as to yield a return in excess of the cost of the patent, the College will consider a "just compensation" to the discoverer or inventor. If the College fails to pay the cost of obtaining a patent within a year after the discovery is announced to the College, then all rights and title to the patent remain in the name of the inventor.[25] A similar policy obtains at the University of Maine.[26] At Pennsylvania State College the facilities of the Pennsylvania Research Corporation[27] may be utilized in the administration and exploitation of the patent.

Likewise, at the University of Florida all workers on projects financed wholly by the University are under contract whereby they may be required, at the option of the University Research Council, to patent their inventions and assign the patent rights to the Board of Commissioners of State Institutions of the State of Florida for the use and benefit of the state, the University paying the cost of obtaining the patents. The University may, on the recommendation of the Research Council, pay the inventor a "just compensation" of not less than twenty-five per cent of the net proceeds from the disposal or licensing of the patent rights.[28]

At the Georgia School of Technology no control is exercised over patentable discoveries of faculty members unless the investigation leading to the invention or its development is directly financed by the School or the Georgia Tech Research Institute.[29] However, full-time research employees of the State Engineering Experiment Station are under contract to assign to the Research Institute patents granted on inventions made in the course of their work. Employment contracts call for a 15 to 33 1/3 per cent participation by the inventor in the net proceeds realized by the Research Institute from exploitation of a patent.[30]

At Other Institutions

While it is in general the policy[31] of the California Institute of Technology, adopted in 1945, that no revenue in excess of administrative costs should be received from patents or inventions made by staff members in line of duty or with Institute facilities, it is recognized that such a policy, if rigidly adhered to, might be too limiting on the activities of the Institute and its staff. Therefore, on the recommendation of a faculty Committee on Patents, certain inventions when patented in order to protect the Institute and the public, may be assigned to the Institute or its nominee and all costs involved in obtaining the patents are borne by the Institute. The inventor receives from the Institute fifteen per cent of the gross amount accruing to the Institute. In order to make this policy effective and uniform in its application all members of the research and instructional staff at the time the policy was adopted were requested and all new staff members are required to sign agreements assigning their rights to such patents and invention to the Institute or its nominee.

Any member of the staff of the University of Louisville who has made a valuable discovery or invention may, on recommendation of the University's Administrative Board of Patents, be required to patent his discovery or invention, the expense to be borne by the University, and to assign the patent to the Board of Trustees of the University. The patent is administered by the Administrative Board of Patents in such manner as it may determine, with the understanding that, if the patent is sold or royalty for its use is received, one-half of the money thus realized by the University will be paid to the patentee and the other half assigned to the University.[32]

Members of the staff at Rutgers University who make discoveries or inventions during the course of research supported by University funds which are not under any restrictions with regards to patents are free to apply for patents according to their own desires.[33] While claiming no interest in such inventions and not accepting the assignment of any patent rights, the University desires that inventions shall be administered in an effective

manner with due regard for the public interest. Accordingly a University Committee on Patents has been appointed by the President to give assistance and advice on patent matters and to serve as a clearing house for information about patents applied for and secured. The facilities of the Rutgers Research and Endowment Foundation[34] are also available for aid in securing patent applications, in accepting patent assignments, and in administering the patent rights in the support of further research.

At Stanford University a discovery or invention developed by a staff member or other person making use of the laboratories or other facilities of the University must be reported to the University Patent Committee. If in the opinion of the committee it should be patented, a written agreement is made with the patentee to assign to the University such patents as he may obtain. The University provides patent counsel and other necessary expenses incident to securing the patent and reserves the right in its discretion to so manage and exploit all patents so assigned to it as will best protect the interests of the public and the University. Of the gross royalties or other revenues received by the University, ten per cent is paid to the inventor, except in the case that he is a member of an organization whose ethics deny the right of their members to receive such revenues.[35]

It is the policy[36] of Yale University that neither the University nor members of its faculties should make profits from inventions or discoveries made at the University or in connection with its activities, especially those inventions and discoveries which may affect the health or welfare of individuals or of the public. Where in the public interest or for the advancement of learning it may seem desirable to apply for patents the inventor is required to bring the matter to the attention of the President of the University, for report by him to the Prudential Committee of the Yale Corporation, and that committee is authorized to deal with each case according to its merits.

Summary

While there is considerable variation in the procedures followed, and also whether and to what extent the inventor should share in any revenue that might accrue, it is generally the practice to require a faculty member or other employee to assign to the institution, or its nominee, title to any patentable discovery or invention resulting from research wholly or substantially financed from institutional funds or from funds under the control of the institution. This is particularly true when such an invention develops from a specific project or work for which he was engaged or to which he had been assigned as part of his regular duties. Patent assignment agreements are included in many contracts of employment, or are required separately, of full-time research personnel and part-time research and supervisory personnel working on special projects. The institution pays the cost of obtaining the patent and controls the patent rights in what it considers the best interests of the public and the institution.

References

1. See chapter on Medical Patents, page 71 ff

2. See Appendix, pages 148, 124, and 138; also page 38

3. See pages 39 and chapters on Patent Management Procedures, page 95 ff, and on Patent Revenue, page 109 ff

4. See Appendix, page 146

5. Also see pages 9, 64, and 101

6. See Appendix, page 131

7. See Appendix, page 148

8. See Appendix, page 137

9. See Appendix, page 140

10. See Appendix, page 124

11. See Appendix, page 126

12. See Appendix, page 135

13. Ibid.

14. See Appendix, page 139

15. See Appendix, page 156

16. See Appendix, page 131

17. See Appendix, page 121

18. See Appendix, page 160

19. See Appendix, page 151

20. See Appendix, page 119; also page 67

21. See Appendix, page 119

22. A nonprofit corporation, organized 5 September 1942; also see Appendix, page 144

23. See Appendix, page 144

24. See Appendix, page 150

25. See Appendix, page 152

26. See Appendix, page 148

27. See page 105

28. See Appendix, page 138

29. See page 30

30. Letter from Director Gerald A. Rosselot, 28 July 1947

31. See Appendix, page 124

32. See Appendix, page 146

33. See Appendix, page 157

34. Research and Patent Policies, Rutgers University Research Council, January 1946, pages 3-7; also see Appendix, page 157

35. See Appendix, page 159

36. See Appendix, page 163

VI

SPONSORED RESEARCH

The recent increase of cooperative and sponsored research in educational institutions, supported by government agencies, foundations, scientific societies, industry, and trade groups, raises many problems. This is particularly true in the light of the vast amount of scientific research now being supported by government agencies and industry. While certain of this research is of a fundamental or basic nature, much of it is developmental in character and may have valuable commercial application. The effect of such research activities on the overall educational programs of the universities, colleges, medical schools, and technological institutions and on the discharge of their responsibility for training scientific personnel poses a serious problem.

Scientific research sponsored and supported by industry and by government is today a major activity on many a university campus. It is conducted both as an integral part of the educational program and as a special service to industry and the Government. The support is given in various forms; as unrestricted gifts, grants-in-aid, industrial fellowships, and the financing of specific research projects.

Industry-Supported Research

Industry support of university research is not a new phenomenon. For years industrial corporations and trade associations, as well as individual industrialists, have provided funds for the conduct of both basic and fundamental research and specialized developmental, or applied research, investigations at educational institutions. Progressive business executives recognize the potential value of the research facilities and the scientific personnel available in universities and technological institutions in the promotion and expansion of industrial progress.

A considerable number of companies are presently giving, or have at one time or another given, financial support to university research, although in some instances it has been on a limited scale. Many have made extensive use of university facilities on specific research problems of immediate concern to their own operations. Some -- and the number is increasing -- have developed or are developing systematic programs for supporting university research through long-term or continuing grants and fellowship aid to promising graduate students. Others are participating in the cooperative research activities at universities, sponsored by such organizations as the American Gas Association, Glass Science, Inc., the Nutrition Foundation, the Textile Research Institute, and various national, regional, and state trade groups.

A total of 302 companies reported to the National Research Council in 1946 that they were supporting research outside their own laboratories, through approximately 1800 fellowships, scholarships, and grants. This was a material increase over the number included in a previous compilation, made by the National Research Council in 1944, when, despite the suspension of

such support by many companies for the duration of the war, 201 reported a total of 956 fellowships and scholarships, and grants for research. From 1929, when the National Research Council compiled its first list of 95 research scholarships and fellowships supported by 56 companies, there has been a steady growth in industry support of university research.[1]

In its return to peacetime status industry has been turning more than ever to the colleges, universities, and technological institutes for assistance in solving its reconversion problems. When unable to provide within their own organizations means for producing new ideas for the improvement and replacement of obsolete facilities and processes to meet postwar conditions, large and small businesses alike, as well as trade associations and groups of related industrial firms, have been seeking the service of educational institutions in research on specific developmental problems.

The educational institutions have been quick to respond to this new call upon them, despite the heavy teaching load resulting from swollen postwar enrollment and their own lack of adequate instructional personnel. A number have for years been rendering such service to industry, both on an institutional basis and through consulting and research work on the part of individual staff members. This has been particularly true in state universities, land-grant colleges, and technological institutes. However, largely as the result of experiences with war contracts and observation of what others have done and are doing, there has been a material increase during the past several years in the number of colleges and universities interested in offering research services to industry.

An appendix in the National Research Council's recently published directory of industrial research laboratories lists approximately three hundred educational institutions which offer such service, and the list is admittedly incomplete.[2] At a number of institutions special research institutes, corporations, and foundations, usually independently incorporated but closely related to the institutions, have been established for the conduct and administration of sponsored research programs, as well as the management of the patentable results of the research.

Encouraged by the success, often more apparent than real, of certain of these organizations, more than seventy colleges, universities, and technological institutes have set up such agencies, many within the past four or five years, and other are contemplating similar action.[3] These organizations are located in all parts of the country and at all types of institutions, large and small, public and private -- at endowed universities, state universities, land-grant colleges, technological institutes, medical schools, and small colleges alike.

Some are integral parts of the administrative and organic structure of the institutions concerned, operating as special departments or divisions. Others are independent nonprofit foundations, separately incorporated but closely affiliated with the educational institutions and utilizing their regular personnel and facilities. A few maintain special research laboratories and separate personnel distinct from the regular teaching staffs of the institutions. Combinations of full-time services of special research workers and part-time research and supervisory services of regular teaching members are found at a number of institutions.

Many of these agencies have been organized to provide convenient means for relieving the institution's regular business and administrative staff of contractual relations with research sponsors and also patent management problems. In some instances they are also concerned with the general development of new sources of financial support for the institution itself. Still others are designed to provide machinery for conducting sponsored research activities, particularly where restrictive statutory provisions make it either impossible or undesirable for the institutions to perform these services themselves. This is especially the case in tax-supported institutions.

The creation of these special research organizations and the conduct on the university campus of extensive research programs supported by industry, and also by Government, raise problems whose implications are more far-reaching than is immediately apparent. What effect will such programs have on the character of scientific investigation in our American colleges and universities and what influence will the extension of such activity have on the educational programs of those institutions? Will the emphasis be on developmental research? Will basic research suffer? Will there be greater interest, among the faculty and by the institution itself, in immediately usable end-results than in the search for new knowledge? Will too much reliance be place upon the financial return from sponsored research projects in balancing the institution's budget? Will due consideration be given to the uncertainty of that revenue and its possible effect upon other sources of income and upon the tax-free status of the institution?

These are problems of vital importance to those in industry as well as those in education. Upon their solution will depend to a large extent the progress of both pure and applied science and the most effective utilization of research facilities. The public welfare, educational objectives, direction of scientific thought, and the advancement of knowledge are all involved. If science is to be mobilized for peacetime purposes as effectively as it was for war and we are to enter upon a rich era of productive research, sound policies and procedures must be developed.

Attitude of the Universities

At present there is a wide diversity of policy among institutions and considerable variation in procedure for accepting and discharging the responsibilities of sponsored research programs. There is a lack of uniformity in the terms and conditions under which sponsored research projects are accepted and conducted, and also in the determination of costs and of the charges made. Some educational institutions have established specific policies for handling such research; other make the best arrangements obtainable in each case. Some will accept only projects which are definitely related to their educational programs and which can be performed by faculty members and students as part of their regular activities. Others have set up special facilities for sponsored research, employing personnel who devote full time to such activities. A number have established special bureaus or divisions within the institution to handle contractual relations with research sponsors.

In accepting industry support of their research activities the universities are motivated by a number of considerations, and often by a combina-

tion of considerations. They are prompted primarily, although sometimes unconsciously, by the pressing need for financial aid, to offset shrinking income from endowment, loss of former sources of private benefactions, and increased cost of operation. Scientific research on the university campus is costly, in material and in personnel, but it is an essential part of the overall educational program, particularly in view of the expanding fields of science and the current shortage of adequately trained scientific and technological personnel.

Through sustained interest and financial assistance industry can give the educational institutions assurance of the stability and continuity of support that is essential for carrying on basic and fundamental research, especially when the support extends over a period of years. Such interest and support will help the universities to enrich the academic curriculum, to retain on the staff outstanding teachers, and also to encourage and make possible the continuance in school of promising young research scientists who, in the absence of this aid, would be forced to abandon their advanced studies and be lost to science.

The additional funds place the universities in a position, through the payment of more adequate salaries and through providing better working conditions, to attract to the campus experienced teachers and qualified research workers. Such assistance also makes possible the purchase of new and modern equipment for expanding educational programs opened up and developed during the war. Further, through cooperative research relations with industry, faculty members enjoy contacts with current industrial developments that are mutually beneficial and enhance both their teaching and their professional growth.

The continuity of university research is of genuine concern to those in industry as well as those in educational circles. Directors of industrial research and development recognize the necessity for maintaining facilities and opportunities in the universities, colleges, and technological institutes for the adequate training of scientific and technical personnel and for those explorations into the unknown which produce the fundamental information upon which you can draw for your own purposes in solving specific problems and making commercially profitable applications.

Patentable discoveries resulting from sponsored university research are handled in different ways in different institutions, the ownership and control of patent rights sometimes being retained by the university but more often being turned over to the sponsor under a predetermined contractual arrangement. Certain institutions are unwilling and a few refuse, to undertake research projects which are likely to entail patentable developments. Others are willing to undertake such research projects only when they retain complete control over both patent rights and publication of the results of the investigation. Still others will enter into contracts under which the sponsor receives, for a consideration, ownership of all patentable discoveries, as well as full and confidential report on the research findings.

Attitude of Industry

Industry gives sponsorship and financial assistance to university research for a number of reasons. Some of them admittedly stem from selfish

interests but more often from a desire to strengthen our educational institutions as sources of trained manpower and as incubators of basic scientific information so essential to the progress of industrial research.

Industry support of university research is of two general types, distinguished by the objectives of the research and the limitations and restrictions placed upon the investigators themselves and on the use of the findings:

> (1) unrestricted gifts, grants-in-aid, and graduate research fellowships, given without expectation of any direct return to the sponsors but rather as contributions toward the general educational programs of the universities, usually in response to requests for aid of research activities initiated by faculty members and advanced students, and
>
> (2) the financing of specific projects of immediate interest and benefit to the sponsors, through industrial fellowships and research contracts, with limitations on the areas of study and restrictions on the control and use of the research findings.

Support of the first type is usually given in recognition of the need for aiding the universities in their primary function of training men and advancing the frontiers of knowledge. Many companies consider it an obligation of industry to assist the universities in carrying on both their training and other research programs.

Emphasizing the stake of business in American education, Frank W. Abrams, chairman of the board of directors of the Standard Oil Company (New Jersey), recently said:

> If business and industry could not draw upon a large reservoir of educated manpower, they would be handicapped in every phase of their operations . . . The intelligence and initiative of people is a tremendous natural resource of any nation. All other natural resources are meaningless without it . . . If we let our educational system decay, we will gravely injure the foundation of our greatness as a nation. By the same token, if we develop our edutional system -- expanding it and making it stronger -- we will be cultivating the greatest of our natural resources, the people of America. And no one has a greater stake in the future of America than American businessmen.[4]

The growing concern of industry for strengthening the hands of the universities and providing them with the tools for doing a better job is well expressed by two representatives of large industrial companies, to cite but two of many such recent expressions. At the 52nd Congress of American Industry Robert E. Wilson, chairman of the board of the Standard Oil Company (Indiana), said: "Industry must recognize an increasing responsibility to support basic research in our universities."[5]

Roy C. Newton, vice president in charge of research for Swift and Company, has also been outspoken in pointing out industry's responsibility for, as he says, "each day it become more apparent that there is a definite need

for a general program of promotion calling for a more widespread support of basic research." He indicates industry's responsibility in the following words:

> The challenge in the future lies in accelerating the pace of these basic studies in colleges and universities and under conditions which provide the greatest possible freedom for initiating this kind of research, developing it, and publishing the results. Colleges and universities reach out beyond the limited spheres of interest of any single industry or even a group of industries. They train the men who are needed to broaden our scientific frontiers.[6]

A similar challenge to industry, to at least partially fill the gap and participate in the expansion of scientific research, through its support of pure science in the universities, comes from Sumner T. Pike, a businessman who is now vice-chairman of the Atomic Energy Commission. Recently, in discussing the future of pure science in this country, he called attention to the stringent financial problems confronting the universities which prevent them from financing the vast amount of basic research which is crying to be done and which obviously can best be performed on the university campus. As he said, "since the universities are unable to finance such work out of their own funds, it is highly preferable that industry should step into the breach with individual contributions, rather than that Government, in the absence of adequate private support, should come to dominate this field.[7]

If industrial research is to flourish, exploratory research in the universities and other educational institutions must be adequately supported and proportionately emphasized. Only in that way can we assure the essential restocking of our storehouse of basic information. During the past several years, largely for war purposes and the national security, we have been using up our storehouse of fundamental knowledge faster than we have been adding to it.

The need for more fundamental research and the desirability of fostering such research in the colleges and universities were well stated by the late Thomas Midgley, Jr., in a discussion of the future of industrial research. He gave as reasons for entrusting fundamental research to the universities and for industry giving them both encouragement and support:

> First, the university staffs are generally able to bring a much broader vision to bear on these fundamental problems; second, where fundamental problems are being prosecuted in industrial laboratories they have a habit of being set to one side and forgotten when more urgent work develops; and third, the work thus given to the educational staffs will be of considerable value in educating future scientists to do more such work.
>
> On the other hand, applied research should not be given to university or college staffs when the industrial unit is capable of performing this service for itself. Universities do not maintain the industrial tempo, nor are their staffs in the habit of, nor should they be asked to, work in the confidential capacity required for successful patent control.[8]

Through its support of university research industry can encourage fundamental investigation in broad fields of industrial interest and help advance the teaching of basic subjects and postgraduate research in the universities. Such aid is also required if the educational institutions are to perform their major function of training men and are to provide a continuing and steadily increasing supply to relieve the present critical shortage of adequately trained scientific and technological personnel, for industry as well as education and government.

Government-Sponsored Research

In the five years from 1941 through 1945 three billion dollars were spent for research and development in the United States, most of it in war-induced projects, essential to war production and military achievement. Despite these vast expenditures during that period, it is estimated that the nation's postwar budget for research and development during the past year reached the highest point in our history, approximating a billion dollars, in large part from government sources.[9]

The Federal Government, cognizant of the magnitude of the task ahead and the relation of a well-developed scientific research program to the national defense and the public welfare, is itself launched upon an extensive scientific research program, both within its own laboratories and through its financial support of research conducted elsewhere. In an effort to replenish the backlog of basic scientific data, to revive and accentuate fundamental research, and to meet the current shortage of scientific and technical personnel, government agencies, both Federal and state, have been making heavy demands on the personnel and facilities of our educational institutions. The needs and implications of such research, supported with public funds, have been matters of serious concern in the recent studies of the President's Scientific Research Board[10] and of the Office of Scientific Research and Development, which under the chairmanship of Vannevar Bush reviewed the information, techniques, and research experience developed by that agency during the war period and their application to peacetime conditions.[11]

In the report on its findings, consideration was given to the patent problem involved in government-sponsored research, particularly in connection with the proposed National Science Foundation. It was recognized that the success of the program would depend, to a large degree, upon the cooperation of organizations outside the Government, mainly educational institutions. The report included the recommendation that:

> In making contracts with or grants to such organizations the Foundation should protect the public interest adequately and at the same time leave the cooperating organization with adequate freedom and incentive to conduct scientific research. The public interest will normally be adequately protected if the Government receives a royalty-free license for governmental purposes under any patents resulting from work financed by the Foundation. There should be no obligation on the research institution to patent discoveries made as a result of support from the Foundation. There should certainly not be any absolute requirement that all rights in such discoveries be assigned to the Government, but it

> should be left to the discretion of the director and the interested Division whether in special cases the public interest requires such an assignment. Legislation on this point should leave to the Members of the Foundation discretion as to its patent policy in order that patent arrangements may be adjusted as circumstances and the public interest require.[12]

As part of its recent investigation of the patent policies and practices of the various departments and agencies of the Government concerning inventions made by their employees and contractors, the Department of Justice made a limited study of the patent policies and practices of more than fifty educational institutions and nonprofit research organizations in the United States and Canada.[13] The patent policies and practices of this group were considered pertinent to the problem under investigation because of the public and quasi-public nature of these organizations and because the patent problems raised by their relationship to employees, contractors, and sponsors are in many respects similar to those arising in connection with both Government-conducted and Government-sponsored research.

Among its recommendations, which included a strong advocacy of a uniform Government-wide patent policy in place of the present varied practices of the several departments and agencies of the Government, and even within the same department or agency, the report on the investigation dealt with the problem of patentable discoveries and inventions made in the course of Government-financed research projects. It was recommended that, "as a basic policy, all contracts for research and development work financed with Federal funds should contain a stipulation providing that the Government shall be entitled to all rights to inventions produced in the performance of the contract," but exceptions to the basic policy might in particular cases be made administratively.[14]

Representatives of educational institutions have been working with the Government agencies concerned with sponsored scientific research, particularly the War and Navy Departments,[15] in formulating principles for the determination of costs under Government research and development contracts with educational institutions. As part of a broad study of the business and research activities of educational institutions, now being made under the auspices of the American Council on Education, consideration is being given to the whole problem of government-sponsored research, including the question of patent rights involved in research projects conducted under contracts with government agencies. The need for clarification and more uniform practices with respect to both charges for government-sponsored research and the handling of patents that might grow out of such research are fully recognized by all concerned.

Other Forms of Sponsored Research

In their support of scientific research in educational institutions, through grants-in-aid and fellowships, philanthropic foundations and scientific societies observe flexible patent policies. They usually accept the specific policy or general practice of the institution where the research is performed. Their interest is primarily in the promotion and stimulation of scientific investigation and the broadest possible use of the research findings in the public interest. They are not concerned with possible fi-

nancial returns from patentable discoveries and inventions growing out of research which they have supported. As a corollary to the present study of university patent policies, a study is being made by the National Research Council of the policies and practices of these nonprofit organizations.

The policy of Research Corporation[16] which makes extensive grants in support of scientific and technological research in educational institutions is interesting in this connection. In addition to its patent management services, the Corporation grants funds to institutions, large and small, for the encouragement, stimulation, and development of research, investigation, and experimentation. No patent strings are attached to these grants. Any patentable ideas that may result from work done under a grant which the Corporation has made is subject to the patent policy of the institution under whose auspices the work was performed. While it makes no claim whatsoever to patents obtained as the result of such subsidized research, the Corporation is authorized under its charter to accept and administer any patent rights voluntarily assigned to it. The patents are administered under an agreement prepared to fit the individual situation; any financial returns realized by the Corporation, other than those allotted to the inventor or the institution, are used along with the other earnings of the Corporation for the further advancement of science and technology.

The National Research Council, which administers both fellowships and research funds for foundations, government agencies, and industry, also has a very flexible policy. The Council follows the practice of acquiring patents arising from work conducted under its auspices and of dedicating them to the public in accordance with a resolution adopted in 1924:

> That in the event patentable discoveries are made in the course of work carried on under the auspices of the National Research Council it is expected that the fellows or others, on the approval of the Research Council, which will defray the cost, will apply for patents on such discoveries as should be protected in the interests of the public and that such patents will be assigned to the National Research Council; and, further
>
> That the National Research Council hereby declares its intention to dedicate to the use of the public, in such manner as the Research Council may deem most effective, the results of such discoveries as are made in the course of investigations conducted under the auspices of the Research Council.[17]

In its support of fundamental research and education in the science of nutrition, the Nutrition Foundation, which operates on funds provided by a group of companies in the food industry, does not require a contractual agreement in placing its grants in university centers and medical schools, but includes the following statement on patents in a booklet distributed to grantees:

> If patentable inventions should be made in the course of research work supported by the Nutrition Foundation, the Foundation recognizes its duty to cooperate in arranging for these inventions to be handled in the public interest.

> Upon request, the Foundation will assist in working out a satisfactory basis of procedure, consistent both with the aims of the Foundation and with the customs and policies of the colleges, universities or other institutions receiving grants.[18]

As a matter of practice the Foundation recommends to grantees that they should apply for patents, if that course of action is desirable in their judgment, and in turn initiate negotiations with Research Corporation with regard to the further development of patent claims.

The Institute of Paper Chemistry, an independent nonprofit educational and research organization founded in 1929 in affiliation with Lawrence College, but financed through membership dues and contributions of companies engaged in the manufacture of pulp and paper, conducts an extensive program of research for the benefit of the industry.[19] All students, faculty, and staff are under patent waiver agreements with the Institute. Patents and patentable ideas originating within the Institute belong to the Institute and through it to its supporters or, in the case of a confidential research project for an individual mill, group of mills or trade association, to the company or group which initiated and financed the specific project.

Using the Institute of Paper Chemistry as a model, the Institute of Gas Technology was organized in 1941 as a nonprofit membership corporation affiliated with the Illinois Institute of Technology. Sponsored and supported by members of the gas industry, including appliance manufacturers as well as natural and manufactured gas companies, the Institute operates as an independent research and educational institution. Since the research facilities of the Institute have been developed through membership support and the staff is sustained by the membership dues and contributions, the patent policy of the Institute provides that any benefits accruing from the results of research be made available to the gas industry without further cost. Research projects are accepted by the Institute if they are of potential value to the industry. Where a project is of recognized importance and its support is obtained from member companies or from a gas association, any patents which result from its prosecution must be made available on a non-exclusive, royalty-free basis to all members of the gas industry. However, the Institute reserves the right to prosecute such patents outside the industry for its own benefit. Where the project is not of recognized importance and an individual sponsor wishes to accept the development of the project, the sponsor receives full patent rights exclusive of shop-rights for the Institute.

In 1924 the Tanners' Council of America, the national trade association of the leather industry, built a technical research laboratory at the University of Cincinnati, dedicated to scientific research in the service of the entire industry. The laboratory is a unit of the Institute of Scientific Research, organized at the University in 1920 as an agency through which combinations of industries in any particular field might establish and maintain, cooperatively, research laboratories under University direction. In general all research conducted under the auspices of the Institute in its constituent laboratories is subject to the patent policy of the University.[21] In the case of the Leather Research Laboratory, patents resulting from research performed by an individual working in or associated with the Laboratory are assigned to the Foundation of the Tanners' Council

and any and all moneys accruing therefrom will be devoted to the endowment and operating expense of the Laboratory. It is understood that, in recognition of their support of the Laboratory, the members of the Council will be able to use any and all such patented processes or materials without charge.

While the chief purpose of the Coal Research Laboratory, organized at Carnegie Institute of Technology in 1930 with the financial support of the coal producing and coal consuming industries, is to pursue fundamental investigations, discoveries may be made from time to time which should be protected by patents. Such patents, when issued to a member of the staff of the Laboratory, are assigned by him to the Institute, in whose name they are held. The patent rights are administered by the Board of Trustees of the Institute to the end that the people generally may benefit from the investigations and discoveries made in the Laboratory, without prejudice to the interests of those who have supported the work of the Laboratory.[22]

Through a study made in 1945, in cooperation with the American Trade Association Executives, a committee of the Association of Land-Grant Colleges and Universities reviewed the experiences of state agricultural experiment stations with research work supported by trade associations, individual corporations and cooperatives. The committee found that a total of 104 trade associations -- 35 national in scope, 10 regional, and 59 with largely state or local interests -- were cooperating with the 44 experiment stations which reported on their experiences with such cooperative research. Recognizing the advantages of such cooperative relations, the committee is now exploring the possibilities of developing closer relations between trade associations and the land-grant institutions, especially as regards the agricultural experiment stations. Included in the further study is the development of mutually acceptable policies with reference to the terms of the contracts covering industrial fellowships, especially as regards special or exclusive rights to findings coming out of the research, and the inclusion of a percentage charge in the contracts to cover overhead costs.[23]

The use of university research facilities by industry through their trade associations and the related patent problems were included in a recent study of the scientific and technical research activities of trade associations, made by Gustav E. Larson for the United States Department of Commerce.[24] Consideration is now being given to a further extension of this study by the National Research Council, through an analysis of the possibilities of such cooperative research activities.

Special Research Agencies

In many educational institutions contractual relations with research sponsors are handled through already established administrative units, such as the comptroller's or business office, or through school or department heads. Occasionally they are handled by the individual investigator. In most cases the assistance of legal counsel is obtained when writing the research contract. Where a considerable amount and variety of sponsored research is conducted, the legal and business aspects of the program place a heavy burden on these offices and individuals. Therefore, a number of institutions have set up or have encouraged the establishment of special agencies to handle these matters, sometimes as an integral part of the ad-

ministrative and organic structure of the institution, but in many instances as a related but separately incorporated body.

At the Massachusetts Institute of Technology relations between the Institute and outside research sponsors, especially industry and government sponsors, are the concern of its Division of Industrial Cooperation.[25] The research itself is conducted by the Institute staff, but the Division maintains a catalog of current industrial relations between the Institute staff and outside sponsors and approves all agreements and contracts, which involve the use of Institute facilities, except in the case of certain research centers within the Institute which use a standard form of contract, when this approval of specific contracts is waived. The arrangements for the conduct of the research and provision for handling the results are in accordance with the general research policy of the Institute, approved by the Faculty Council in 1940, and the Institute's patent policy, adopted in 1932.[26]

Similarly, at the University of Maine research for outside organizations is handled by a Department of Industrial Cooperation.[27] The Department is not a separate entity; it is a regular department of the University, which makes available to industry, especially the industries of the state, and other research sponsors the staff and facilities of the University for industrial research and service, through cooperative research studies, industrial research fellowships, and consultation. Its functions are largely administrative; the research is actually performed by the experiment stations and the academic departments of the University, under the terms of the patent policy adopted in 1942.[28]

The Lehigh Institute of Research was created in 1924 by the Board of Trustees of Lehigh University "to encourage and promote scientific research and scholarly achievement in every division of learning represented in the organization of the University; and in recognition of the need for further and more exact knowledge in science and in the application of science to the affairs of modern life." The Institute is strictly an administrative division of the university and has no separate corporate existence and no connection with any other institution. Its purpose is to encourage and coordinate cooperative research in the various departments of the University, particularly research projects sponsored by outside agencies. The Institute was reorganized in 1945, to provide for more flexible conditions of cooperative research sponsored by industry or agencies of the United States Government. No member of the staff of Lehigh University may undertake, for an outside agency, research involving the use of University facilities except through the medium of the Institute. Under contracts for cooperative research all patent rights are usually assigned to the sponsor, sometimes with the reservation of a royalty. However, the University does not wish to be in the business of owning and exploiting patents.[29]

Several years ago Princeton University established a Committee on Project Research and Inventions, replacing an earlier Committee on Contract Research and Patent Policy and a still earlier Patent Committee, for the purpose of coordinating and planning on a broad scale the activities of the University in entering into outside contracts or other financial arrangements for the sponsoring of research in science and engineering, and also for the purpose of establishing and implementing policies on patents and in-

ventions which might arise through work of members of the University. It is the general policy of the Committee to ensure that an equitable division is made of the benefits of any patent between the inventor and the University, the Research Corporation if involved, and any sponsor who may have contributed financial support to the work.[30] The University has an agreement with Research Corporation under which that Corporation acts as the University's patent management agent.

Through its Business Problems Bureau,[31] which was established in 1942, the University of Chicago invites and welcomes support of its research activities by business concerns or associations. In connection with research activities of the University so supported, the University recognizes that its main function is to expand scientific knowledge and that the industrial application of inventions and discoveries is the task of industry, not of the University. The University stands ready to stipulate in advance with a donor that, in the event commercially valuable discoveries are made during the course of industrially sponsored research, the University will, on the request of the donor, use its best efforts to have the inventions or discoveries patented and to arrange for the assignment of such patents to the donor; or the donor, if it so desires, may have the right to prepare and file applications for patents at its own expense. In the absence of such an agreement, it is understood that the University retains the right to apply for any patents resulting from industrially sponsored research, and to deal with them in the same way as if the investigations that produced such discoveries had been financed wholly with its general funds.

A number of other universities handle the administration of contractually sponsored research through similar specially organized divisions of the institution. The University of Arkansas has a Bureau of Research,[32] established in 1943, for the purpose of providing a university-wide administration and sponsorship for research in parallel with those divisions previously established for resident teaching and extension. At the University of Denver a Bureau of Industrial Research, one of a series of research bureaus recently organized as a means of coordinating the research activities of the University, is responsible for the promotion and administration of research aimed at producing information of industrial value.[33] Although the University of Denver does not now have a formalized patent policy, the matter is under study with a view to formulating one. Norwich University[34] maintains the Vermont Bureau of Industrial Research for the benefit of the industries of that state, in accordance with action of the state legislature.

In making contracts for industrially sponsored research projects in or under the Department of Engineering Research at the University of Michigan, provision is made for the inclusion of a patents charge, upon payment of which the sponsor of the project obtains the option of acquiring ownership of any patentable discoveries that may be made during the performance of the research. Ordinarily the sponsor is granted an irrevocable, non-exclusive, royalty-free license to make, have made, use, and sell the articles, machines or devices (or the right to practice the process, if a process invention) under patents that may be granted the University or any of its employees engaged on the project as a result of the research. The University agrees to use, in carrying out its research work under these contracts, only such of its employees as have executed inventor's agreements. If, at the time of executing the contract, the sponsor elects to pay the

patents charge, computed as ten per cent of the total other charges specified in the contract, he obtains a six-month option on all patentable results. If the option is exercised, the sponsor agrees to pay the expenses of preparing and prosecuting the patent application, to pay an inventor's fee of one hundred dollars for each application or divisional application at the time it is executed, that fee to be paid to the Department of Engineering Research for the account of the inventor, and to grant the University an irrevocable, non-exclusive royalty-free license to make, have made and use, but not sell, the patented article, machine, device or process.[35]

While the University itself does not have any general formalized patent policy this practice for the handling of industrially sponsored research is the result of experience dating back to 1920 when the Department of Engineering Research was organized. The by-laws of the Board of Regents of the University, as approved in 1942, provide that:

> Unless otherwise specifically provided by action of the Board of Regents or by contract entered into under the authority of the Board, patents issued in connection with research projects and all royalties or profits derived therefrom shall belong to the University.[36]

At a number of institutions sponsored research contracts are handled, entirely or mainly, through separately incorporated nonprofit research foundations, independent of but closely related to the institutions. The actual investigations are performed by the regular members of the teaching and research staffs, but all arrangements for the research and for the administration of resulting patents are made in the name of the foundation. While usually, under the terms of the contracts, patent rights become the property of the sponsor, the foundation acts, when necessary, as the patent management agent for the institution and, as a general practice, recognizes the inventor in the distribution of patent revenue.

The oldest and one of the most active of these foundations is the Purdue Research Foundation.[37] An outgrowth of an all-University Department of Research Relations established in 1928, the Foundation was created in 1930 to assume those legal and financial responsibilities not clearly falling within the powers of the governing board of the University as defined by state and Federal statutes. At present neither the Foundation nor the University has a formal patent policy: each case is considered individually and on its merits. The facilities of the Foundation are also available to the members of the staff and to the University itself for the handling of patent matters, and a number of patents have been assigned to the Foundation for management. Many of the more recently established university research foundations, especially those at state institutions, have drawn their inspiration and their patterns of organization and operation from the Purdue Research Foundation.

Ohio State University is another state institution, engaged in an extensive contractual research program, that follows the general practice of using the facilities of an affiliated research foundation, the Ohio State University Research Foundation,[38] incorporated in 1936 along the lines of the Purdue Research Foundation, for both contractual research arrangements and patent management. Neither the Foundation nor the University itself has

a formalized patent policy: each patent problem is considered on its own merits and in the light of the historical background leading to the discovery or invention.

The Auburn Research Foundation,[39] created by the Board of Trustees of Alabama Polytechnic Institute in 1944, and the Georgia Tech Research Institute,[40] organized at the Georgia School of Technology in 1946, handle contractual research and patent management matters for those institutions. Although for the most part using the regular members of the School and the State Engineering Experiment Station staff, the Georgia Tech Research Institute also employs full-time investigators on sponsored research projects. Exclusive patent rights, which may be assigned to the sponsor, are protected by Institute-employee agreements. The Institute supersedes a private nonprofit Georgia corporation, known as the Industrial Development Council, which formerly handled the patent problems of the School.

At Washington University cooperation with industry and other outside sponsors is conducted through the Washington University Research Foundation.[41] A nonprofit corporation established in 1945, largely through alumni and local industrial initiative, the Foundation aims to conduct research for industry and to promote industrial and educational progress by joint, cooperative effort of industry and the University, utilizing the research personnel and equipment of the science and engineering departments of the University. The Foundation arranges for the sponsorship and support of the research by outside agencies and then makes contracts and agreements with the University for its performance.

Recently special research institutes have been organized at a number of institutions located in or near large centers of industrial activity. Using full-time research staffs, as well as occasional part-time supervisory and research services of regular staff members and advanced students, these institutes offer research services to industry and government. Many of the more recently established institutes are patterned after the Mellon Institute of Industrial Research and the Armour Research Foundation.

Originally organized in 1912 as an integral part of the University of Pittsburgh, the Mellon Institute of Industrial Research[42] has since 1927 been operated as a separate nonprofit industrial research institution, although it still maintains close relations with the University. Research projects are conducted under industrial fellowships, a plan conceived and developed by its first director, Robert Kennedy Duncan. Under a contract made with the research sponsor, all discoveries germane to the subject of the investigation become the property of the sponsor and are protected by patent waiver agreements signed by the fellows.

The Armour Research Foundation[43] was established at the Illinois Institute of Technology in 1936 as a separately incorporated part of the Institute and operates as a self-contained organization. All employees of the Foundation are required to sign contracts in which they recognize that the conception and development of discoveries and inventions are part of their work and that any resulting patents are to be assigned to the Foundation. In accordance with the specific contract made with a research sponsor, all patentable inventions developed by a staff member while working on a sponsored project become the property of the sponsor.

Summary

The creation of these special research organizations, as well as the patent management foundations described in the next chapter,44 and the conduct on the university campus of extensive research programs sponsored by industry, and also by government, raise a multitude of administrative and legal problems. These problems are the subject of corollary studies of university research foundations and of the administration of sponsored university research which the National Research Council is making as part of the present survey. Industrial leaders and scientists are concerned over the extent to which our storehouse of fundamental scientific information was depleted during the recent war and the need for promptly restocking the shelves. Social and national security, public and private health, and economic prosperity and well-being depend upon the constant extension of scientific knowledge and the effective application of that knowledge.

Industry and government are justified in sponsoring university research and in making financial contributions toward its support, if such action has as its primary objective thereby aiding in the adequate training of scientific and technological personnel, for subsequent employment in industrial, governmental, and educational pursuits, and fostering and accentuating fundamental research in our universities, colleges, and technological institutes. The greatest mutual benefit will accrue if the support is given without any strings and the funds are sufficient to meet the full cost of thorough and adequate performance.

The general fields of research may be designated, but the universities should not be asked to take projects which may interfere with the teaching and other responsibilities of the faculty and students. Once the funds are given, the universities should be left free to pursue the research and make the results available without dictation or interference from the sponsors. Encouragement, cooperation, and guidance should be given, especially when requested, but not direction or supervision. Nothing should be done or be prescribed that will hamper the dissemination and exchange of information, and the universities should not be made into commercial laboratories.

If sponsors are guided by these principles in giving their support to university research, the universities can more effectively perform their function and discharge their responsibility of training men, expanding the frontiers of knowledge, and fostering and stimulating the spirit of inquiry on the part of both faculty and students.

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VII

MEDICAL PATENTS

An important -- and controversial -- aspect of the patent problem in universities and medical schools is concerned with what to do with the patentable products of scientific research that affect public and individual health, especially discoveries and inventions of a medical, pharmaceutical, therapeutic or hygienic nature. Research scientists, medical men, college and university administrators, government officials, patent attorneys, and industrialists have all given considerable thought to this problem and its relation to the public welfare.

Whether patents on medicinal discoveries and foods are in the public interest was the basis of a joint symposium presented before the Divisions of Medicinal Chemistry, Biological Chemistry, and Agricultural and Food Chemistry of the American Chemical Society in 1937.[1] The American Medical Association sponsored a conference on medical patents in 1939.[2] Various other groups have given consideration to the subject through the years, and the National Research Council has on several occasions held conferences on patent problems at which medical discoveries have been an important item.

Those universities that have comprehensive patent policies usually include within the scope of general overall policies discoveries, processes, developments, and inventions which may affect individual or public health. A few provide specifically for special treatment of medical discoveries, designed to discourage patenting except when it is considered necessary in the public interest and then without consideration of profit, either to the individual or to the institution. A considerable number have no fixed policy: when cases arise, they are handled individually, usually without following any uniform pattern except, as a general rule, to discourage investigators from seeking patents.[3]

Attitudes Toward Medical Patents

The prevailing practices of educational institutions, especially those with medical faculties, are influenced to a considerable extent by the traditional attitude of the medical profession as to the ethics of patenting medicinals and medical appliances. Such an attitude, however, does not necessarily preclude the patenting of a new process or discovery in the public interest. Yet, many scientists working in this field take the position that the results of their research efforts, whether patentable or otherwise, should be shared "without fee or stipulation." In so doing they often fail to differentiate between patenting for personal gain and patenting in the public interest.

The principles of medical ethics, enunciated by the American Medical Association, say plainly that:

> It is unprofessional to receive remuneration from patents or copyrights on surgical instruments, appliances, medicines, foods,

> methods or procedures. It is equally unprofessional by ownership or control of patents or copyrights either to retard or to inhibit research or to restrict the benefit to patients or the public to be derived therefrom.[4]

Nevertheless, the American Medical Association, by action of its House of Delegates in June 1914, has given permission to the Board of Trustees of the Association "to accept, at their discretion, patents for medical and surgical instruments and appliances and to keep these patents as trustees for the benefit of the profession and the public, provided that neither the American Medical Association nor the patentee shall receive remuneration from these patents."[5]

The view has been expressed by some scientific investigators that no patents should be taken out for discoveries or inventions in the medical field which may affect individual or public health, and that the control should be left to legislative action. This aversion toward the patenting of medical discoveries is well illustrated by the following statement:

> It should not be necessary to invoke the ethical considerations which seem to many of us to be incompatible with the patenting of principles or methods involved in the maintenance of individual or public health. It seems to us probable that no code of ethics was ever developed from purely abstract considerations, and that in every case where a strong feeling of propriety of action has been transformed into a tradition of behavior, there has been behind it some tangible purpose. Standards of behavior which have developed in all things connected with medicine have sprung from a recognition that there is a sharp line of differentiation between those forms of activity which deal with health and those which are purely commercial. The invention of an improvement in the mechanism of automobiles, or of a shoe-buckle, concerns matters of convenience or luxury, and can be dispensed with easily by those who are forced to do without them. The relief of the sick and the prevention of unnecessary sorrow by the maintenance of individual and public health are matters in a different category. As soon as we are in possession of the knowledge of principles or methods which can contribute to these purposes their free utilization becomes a public necessity; and any procedure which inhibits their most rapid and effective application to the needs of the community would seem to us as unjustified as the cornering of the wheat market or the patenting of the process of making bread.[6]

Through the centuries medicine has given freely of its discoveries for the benefit of mankind and they have become the property of all who cared to employ them in the control of disease. However, as medicine has become more complex, involving specialized investigation in the fields of biochemistry, physiology, physics, and associated branches, great numbers of full-time research scientists, in the hospital and the laboratory, work with members of the medical profession but are not bound by the same ethical principles.

Many important medical preparations and technics have been developed in university laboratories, often at considerable expense to the institutions. It will be recalled that it was in the laboratories of the University of

Toronto that the possibilities of insulin as a treatment for diabetes was discovered in 1921 by a team of biochemists, physiologists, and a practicing physician. It was at Columbia University that a member of the pathology department discovered the antirachitic properties of Vitamin D. The use of the ultra-violet ray to enrich the Vitamin D content of foods and medicinal products was developed by a biochemist at the University of Wisconsin. It was also a biochemist, working in the laboratories of St. Louis University, who discovered the therapeutic properties of theelin. Similarly, iodobismitol was developed at Stanford University and thyroxine at the University of Minnesota.

Patenting such discoveries is not considered to be wrong in itself, but to be desirable if done in order to control them in the public interest. An editorial on Patenting Therapeutic Agents, which appeared in the Journal of the American Medical Association in October 1919, contains the following pertinent remarks:[7]

> . . .there are occasions when it is wise, if not necessary, to obtain a patent in the interest of the public and, in the case of surgical instruments and medicines, of the medical profession. In certain instances it is absolutely necessary that the article produced shall maintain a definite standard of quality and purity -- and, it may be added, shall be sold at a reasonable price. Enterprising pharmaceutical manufacturers have usually been ready to appropriate the results of scientific research by investigators or therapeutic measures suggested by practising physicians. Not infrequently, in such instances, the desire for financial gain has caused the marketing of such products with extravagent, if not false, claims as to their value. Yet the patent laws may be used so as to protect and to benefit the public and the medical profession. In research laboratories, work is being carried on resulting in the production of new therapeutic agents. It is important that these agents shall be so controlled that they may be made available without subordination to commercial interests. It has become practically necessary, therefore, for research workers to protect their products in the interest of the public welfare and scientific medicine. It has not been an easy matter to decide how best to bring about the desired results.

In a report on The Protection by Patents of Scientific Discoveries, made in 1934, a committee of the American Association for the Advancement of Science summarized the situation as follows:[8]

> The committee recognizes the fact that there exists in many quarters a strong feeling against medical patents. This feeling seems to be largely due to the unpleasant memories of the past exploitation of the public by means of "patent medicines" which had doubtful or decidedly harmful effects on the public health. Government regulation during recent years has eliminated a great deal of misrepresentation and false claims in regard to this class of goods. The Patent Office, moreover, now seldom issues patents for the old-fashioned type of patent medicines. It is therefore an error to class all medical patents with the former types of "patent medicines."

> The mere fact that medical patents offer the means of making profit is not a sufficient reason to condemn them entirely . . . patents have other very important uses. Moreover, we must bear in mind that it is possible to obtain profits from medical discoveries in many other ways without resorting to patents if the medical investigator is so inclined. We must, after all, depend upon the integrity and character of the investigator when important medical discoveries are involved.
>
> The ideal to strive for may perhaps be that no medical discoveries should be subject to any restrictions whatsoever. In our present commercial economic system, however, and with existing laws and business practices such an ideal is difficult to attain, since not all may live up to it. We must, therefore, guide ourselves in accordance with the economic situation that exists today and seek to attain our ideals through the existing economic machinery rather than to ignore it entirely on the ground of ethical consideration alone.
>
> The act of securing patents for medical discoveries is not unethical in itself, and such act does not necessarily mean that personal profits are sought. Under our existing laws and commercial practices dedication to the public of important medical discoveries by mere publication is not always the best procedure to follow. The public can often be best served by receiving the benefits of a new medical discovery under the control of a patent . . Through making a medical discovery it may become the duty of the investigator to make sure by means of patents that the public will actually benefit from his discovery and not be subjected to unfair exploitation by others who may commercialize his discovery.

The committee suggested further that, although in general the ethics of the medical profession may properly prohibit its members and their close associates from obtaining any monetary profits through medical patents, the following possible conditions may sometimes demand recognition:

> (a) Where in introducing the medical invention commercial large scale operation is necessary, involving expensive equipment and large personnel. In such case the manufacturer must be assured by means of patents that he will not meet with ruinous competition and thereby lose his initial investment in an enterprise for producing a new medical product or apparatus. Before placing a new product on the market a great deal of preliminary work, expensive equipment and salesmanship are necessary, requiring a considerable outlay of capital. No manufacturer would be willing to go to this expense unless he knew that he could obtain an adequate return on this investment through patent protection.
>
> (b) Where the expenses incurred in developing the invention were unusually large and the funds were supplied by individual investigators or organizations without the assistance of any public funds. In such cases there is a legitimate reason for recouping the expenses involved in the research. The public should certainly be willing to pay the actual cost for what it gets.

(c) Where a medical invention has been made at a university or similar institution having limited funds for research there may be some justifications in such case for obtaining funds by means of patents for further research of the type which will ultimately inure to the public welfare.

In order to obtain a comprehensive picture of the present situation in educational institutions with regard to the handling of patents in this field, a special study[10] was made of the practices of the seventy medical schools on the approved list of the American Medical Association's Council on Medical Education and Hospitals, and of the relation of those practices to the general situation in the universities and colleges with which sixty of those schools are affiliated. It was found that:

Nine of the university-affiliated medical schools have special policies for dealing with medical patents, several of which are applicable on a university-wide basis.

Nine others conform to formalized general university policies for handling all types of patentable results of scientific research.

The other forty-two have no formal or established policy, either in the medical school or in the university at large, although many of the medical schools follow practices which are generally accepted throughout the universities with which they are affiliated.

Only two of the ten independent medical colleges have clearly defined policies; the other eight either follow informal policies or have no policy at all.

The complexity of the problem and the wide variation of procedure in handling medical discoveries are clearly indicated in the following resumé of the prevailing practices in the sixty approved university medical schools and ten independent medical colleges.

Special Patent Policies

Upon recommendation of the Faculties of Arts and Sciences, Medicine, Public Health, and Engineering of Harvard University, the following policy[11] in regard to patents on discoveries or inventions bearing on health and therapeutics has been adopted by the President and Fellows of the University, as a university and not merely a medical school policy, dealing with the subject matter of the research rather than the site of its performance:

No patents primarily concerned with therapeutics or public health may be taken out by any member of the University, except with the consent of the President and Fellows; nor will such patents be taken out by the University itself except for dedication to the public. The President and Fellows will provide legal advice to any member of the University who desires steps to be taken to prevent the patenting by others of such discoveries or inventions.

In cases as to which it may be deemed necessary to take out a patent and dedicate it to the public in order to prevent others from

> obtaining a patent for their own benefit, members of the University are asked to report to the dean of the appropriate faculty any such discovery or invention made by then, with a recommendation as to whether an application for patent should be filed, in order that, if necessary, steps may be taken to obtain and dedicate the patent.

An individual making any discovery or invention which he thinks should be patented for any other reason should so report to the dean of the Medical School, giving his reasons in full, for submission to the President and Fellows of the University.

Under the By-Laws and Regulations of the Yale Corporation, it is the policy[12] of Yale University that neither the University nor members of any of its faculties should make profits from inventions or discoveries made at the University, or in connection with its activities, and especially from inventions or discoveries which may affect the health or welfare of individuals or of the public. In 1935 the Board of Permanent Officers of the Yale University School of Medicine adopted the following resolution, based upon the premise that the patenting of discoveries applicable in the fields of public health and medicine was becoming an increasingly important and controversial problem of wide implication for the public:

> . . .it is, in general, undesirable and contrary to the best interests of medicine and the public to patent any discovery or invention applicable in the fields of public health or medicine; but if, at any time, any member of the faculty deems it necessary solely for the protection of the public, without profit to himself or the University, to control any invention or discovery by means of a patent, he shall bring the matter before the Prudential Committee for consideration before taking any steps toward patenting.[13]

The Prudential Committee of the Corporation is authorized to deal with each case according to its merits. Although no patent has been applied for by any member of the faculty of the School of Medicine during the last twenty-five years, it is the view of the faculty that this should be the basic policy of a school of medicine with respect to inventions or discoveries which affect the health of individuals, with a view to the protection of the public interest. It would be permissible however, under the regulations of the Yale Corporation, to seek a patent if it seemed necessary in the public interest, for the advancement of learning or to maintain the quality of a patentable discovery. Under these circumstances, the probability is that a royalty-free license would be granted to selected manufacturers who could be counted upon to maintain proper standards and price.

St. Louis University has generally followed a hands-off policy with regard to patents resulting from scientific research in its several schools, but a special trustee committee has had under consideration for several years the formulation of a formal patent policy for the University. However, in the School of Medicine it has been the recognized practice, since 1930, for members of the faculty and research workers to voluntarily assign, without consideration of individual benefit, their patent rights to discoveries in fields in any way related to medicine and public health to a Committee on Grants for Research created in the School of Medicine for the express pur-

pose of administering patents. This committee was established originally to administer the patent on theelin which was assigned by Dr. Edward A. Doisy and his co-workers to St. Louis University for the benefit of the School of Medicine, the eventual income from the licensing of the patent to be used exclusively for the prosecution of research in the School.[14] The procedure followed in the licensing of this patent has served as the basis for the administration of other patents handled by the committee. As in the case of theelin, the agreements with all licensees provide that "for the purpose of insuring more adequate public service and of fostering further scientific research through the product, the University desires to control the preparation and marketing of the product through its testing laboratory, thereby assuring a distribution for therapeutic purposes of preparations of dependable and uniform character."

While Johns Hopkins University also officially pursues a hands-off policy on patents resulting from scientific research in its various schools, the attitude of the faculties of the School of Medicine and the School of Hygiene and Public Health is definitely averse to the patenting of any inventions or discoveries which may affect the public health. That attitude is expressed in the following resolution, which was adopted by the Advisory Board of the Medical Faculty in 1933:

> The Advisory Board of the Medical Faculty considers it undesirable for any member of the Faculty or anyone connected with the School of Medicine to patent any invention or discovery which may affect the public health; but, in case any member thinks it desirable to secure a patent, he should bring the matter before the Advisory Board before so doing.[15]

At the University of Cincinnati it is the policy with respect to inventions, discoveries, and developments relating to medicine, therapeutics, and hygiene:

> . . . to discourage the acquisition of patents by faculty members, students or other persons connected with the teaching and research staffs or by any agency of the University, except when the control provided by patent rights appears to be necessary or desirable in relation to the public welfare. Therefore, it is strongly recommended that patentable inventions and discoveries of this type, as well as investigative work that is clearly pointed toward such patentable inventions or discoveries, be brought to the attention of the dean of the faculty to which the inventor belongs, and by the dean reported to the administrative authorities of the University, to the end that action, in keeping with the rights and wishes of the inventor and appropriate to the public responsibilities of the University, may be agreed upon. It is understood that such consultation of the inventor with University authorities shall be voluntary in the absence of prior agreement to the contrary, and that the right of the inventor to his invention shall not be prejudiced thereby.[16]

The College of Medicine at the University is guided by this policy and, with a view to discouraging the acquisition of patents, the medical college committee has in at least one instance recommended, after a careful study, that

the individual drop his plans to obtain a patent. In general, the right of absolute ownership, by a faculty member or student or other person connected with the teaching and research staffs of the University, of his own inventions or discoveries, whether or not made while using the regular facilities of the University, and the right of such persons to apply for, hold, and dispose of patents are recognized as indefeasible. Exception is made in the event that the invention or discovery was made as a direct result of a specific research project sponsored and financed by the University or by the University of Cincinnati Research Foundation or by other agencies outside of the University, under a contract with the individual concerned, specifying the abrogation of those rights as to that specific project. The facilities of the Research Foundation are available, both to the University and to the individual inventor, for the management of any patents that are taken out.

The College of Physicians and Surgeons at Columbia University observes the policy,[17] established in 1930, that no member of the faculty or staff of the College should take out a patent on any medicinal, therapeutic or health substance or process, unless required to do so under the terms of a contract with the Government or other outside sponsor. This policy differs from the general university policy,[18] which provides that in other divisions of the University patents may be obtained through University Patents, Incorporated, a patent holding agency wholly owned by the University. This agency in turn assigns the patents to Research Corporation for management under an agreement with that organization. The only patent held by anyone in the medical faculty is one on Vitamin D, obtained by Dr. Theodore F. Zucker in 1924 under an old arrangement with University Patents, Incorporated. The question of patents has been discussed from time to time by the staff of the College of Physicians and Surgeons, always with the same conclusion: that while research is a prominent part of the program of the College, there have been enough unhappy experiences with patents to make the staff unanimous in the opinion that they should not get involved with the problem.

Although procedurally in effect since 1931, a definitive policy[19] with respect to patents on inventions and discoveries, particularly those with medical or public health implications, was not formally adopted by the Trustees of the University of Pennsylvania until 1941. That policy is the result of extended studies by both the faculty and trustees, during which a committee of the faculty went on record in 1933 with the following resolution:[20]

> That inasmuch as the University of Pennsylvania, like other similar institutions, is dedicated to education and the increase of knowledge in many fields, it is and should be the policy of the University that any discoveries, inventions or improvements made by it, through the members of its faculties or otherwise, which result, in the field of medicine in the alleviation of human suffering, or in the field of science in promoting in any way the welfare of humanity, should not be restricted by the University, but should be announced to the world so that such benefits may be freely enjoyed by all, and without pecuniary profit either to the University or to any one in its service. The University does not consider it necessary to call upon those in its service to exe-

> cute formal agreements with it covering the situation, as is the case in business enterprises, as it is confidently believed that the foregoing principles constitute the incentive and inspiration for their efforts. That nothing contained in the foregoing resolution shall prevent the University taking out patents at any time in order to protect an investigation prior to the completion thereof, any such procedure to be subject, however, to the principles above set forth in regard to the results of such investigation, when completed, being dedicated to the use of the public without pecuniary profit to the University or to the investigator, and this Committee will authorize the application for such a patent upon consideration of the facts submitted to it in any instance, and when in its best judgment such protection is necessary or advisable for any particular line of investigation.

The Trustees have declared it to be the policy of the University of Pennsylvania that any invention or discovery which may in any manner affect the public health, such as a new drug, process or apparatus intended primarily for medical or surgical use, shall not be patented for profit, either by an individual in the employ of the University or by the University itself. In order to prevent the capitalization and exploitation by others of any such discoveries or inventions, and in order to protect the public it may, however, from time to time be considered advisable to patent such inventions or discoveries with the sole intention of protection without profit. It is felt that this policy, which stipulates that neither the University nor the inventor shall receive profit from an invention or discovery in the medical field, removes the profit motive from medical investigation. In the case of sponsored research it need give nothing more than a head start on his competitors to the financial supporter of the project and leaves the University in the position of being able to obstruct efforts to exploit the public.

It is the general policy of the Medical Branch of the University of Texas,[21] which is somewhat at variance with the patent policy[22] observed in the other units of the University, to allow members of the staff to make their own arrangements with regard to patents which may result from their research work. The Medical Branch, which includes the School of Medicine, will not accept grants from foundations or commercial concerns for the support of research which carry any restrictions regarding patents or any other detail of the research work, apart from its general objective. There is a general understanding that, if a patentable process develops, the individual concerned may seek the aid of an outside research foundation or patent management agency, such as Research Corporation, if he so desires. On the other hand, he is free to make patent arrangements with commercial concerns, with respect both to obtaining the patent and to administering it. It is also understood that, if a patent is obtained by an individual as a result of research in one of the Medical Branch laboratories and royalties are involved, a proportion of the royalties shall be allocated to meet research expenses in the laboratory concerned. However, this principle is followed on an individual basis.

The Medical College of Alabama does not permit patents to be taken out on discoveries of any drugs, therapeutic agents or appliances by members of the faculty of the school. In this respect the policy is generally applicable throughout the University of Alabama, of which the College is a divi-

sion. Under the general university patent policy,[23] provision is made for the handling of other types of discoveries and inventions through a University Patent Committee. In the event that a member of the faculty of any division of the University makes an invention which is patentable, the University waives all claim to a share in the royalties unless the University has made a substantial contribution in institutional time, money or facilities toward the production of the invention. If the University's contribution is two hundred dollars or less, the inventor is under obligation to reimburse the University for such contribution if he derives sufficient profits from the invention to do so, even though the patent rights remain the sole property of the inventor. If the University's contribution is in excess of two hundred dollars, the invention becomes the property of the University and a percentage of the net profits derived from the sale or exploitation of the invention is allotted to the inventor.

General University Policies

The patent policy of the University of Arkansas School of Medicine does not differ from that of the University,[24] which was adopted in 1945. In formulating that policy the University recognized that it has a responsibility to the state for discoveries and inventions made by members of the staff while engaged in research work as a regular part of their University duties. Such inventions and discoveries, including those which may have commercial application or should be patented in the public interest, are controlled by the University through a Committee on Patents which makes an equitable division of any royalties or profits that may be derived from their sale or licensing arrangements. The adoption of the general university policy was the result of the only experience the University has had with the patent problem, when a member of the medical faculty developed a new method of producing xanthopterin which was thought to have commercial value but which eventually was not patented.

The University of California has a general university patent policy,[25] adopted in 1943, which applies to all employees of the University, including those in the Medical School. All matters relating to patents in which the University is in any way concerned are administered by a University Board of Patents which has full powers, subject to approval by the Regents of the University, to examine the merits of each potentially patentable project, to recommend the action to be taken, to facilitate patent applications, to protect both the University and the inventor, to arrive at an equitable determination of the rights of all concerned, to accept assignment of patent rights, and to administer them in accordance with the best interests of the University, the inventor, and the public. Assignment to the Regents of whatever rights the inventor or discoverer may possess in a patent or appointment of the Board as agent of the inventor or discoverer is optional on the part of the faculty member or employee. Any net income accruing to the Regents is devoted, first, to promotion of research within the University and, second, to general university purposes.

In dealing with discoveries and inventions in the medical and pharmaceutical fields the Division of Biological Sciences at the University of Chicago, in which is included the School of Medicine, is governed by the general patent policy[26] of the University as adopted by its Board of Trustees and incorporated in the statutes of the University:

> The University of Chicago's basic policies include complete freedom of research and the free, unrestricted dissemination of information. In view of these policies, the University will not profit financially from research by means of patents, royalties, or licensing agreements. Members of the staff will not be permitted to receive direct or indirect financial returns from patents based on work performed during the period of their employment by the University, or to make arrangements for such returns which take effect after such period. The University will cooperate with industrial organizations by conducting fundamental research projects financed by grants from such organizations, and will make research reports to the grantors, but it will retain the right to publication of the results. The University will not permit its name or the names of its investigators to be used in advertising.

The Division of Biological Sciences had been operating essentially under this policy for several years before the official university policy was adopted in 1943. It was applied in the fields of biology and medicine before that time because of the belief that income through patent royalties should not accrue to the University or its staff from discoveries which have a bearing on the prevention or treatment of disease or the preservation of health. It is recognized, of course, that the patenting of some discoveries may be necessary or desirable for the protection of the public interest or for other reasons. Depending upon circumstances the inventor may, with University approval, take out a patent and dispose of it by assignment to an individual, firm or organization who has supplied the funds for support of research or to some agency independent of the University, such as Research Corporation. This is done by free assignment, without financial return to the University or the inventor.

The patent policy of the University of Illinois College of Medicine is identical with that of the University,[27] but as a general practice applications for patents are discouraged in the College, although a patent may be sought for the purpose of controlling the quality of a patentable product. Under the general university policy the principle is recognized that the results of experimental work carried on by or under the direction of the scientific or teaching staffs of the University, the expenses of which are paid from University funds or from funds under the control of the University, belong to the University and to the public, and should be used and controlled in ways to produce the greatest benefit to the University and to the public. The practice is therefore followed of taking out patents on valuable discoveries and inventions which may be expected to have a basic relation to other discoveries or inventions or commercial importance. The patents are assigned to the Board of Trustees of the University for a nominal consideration and the Board administers the rights under the patents in ways to suit the conditions, dedicating the patent to the public or licensing its use. The facilities of the University of Illinois Foundation[28] may be used in the commercial exploitation of the patent rights. The patentee is paid a share of any sum above a nominal royalty that may be received by the University.

Although the University of Kansas School of Medicine has not had any experience with patent problems, the School would follow the general pol-

icy[29] of the University and utilize the facilities of the University of Kansas Research Foundation.[30] Under that policy anyone who believes that an invention resulting from a research project sponsored by the University should be patented would present the matter to a faculty advisory committee, appointed by the Chancellor of the University, which would determine whether or not the Foundation should prosecute a patent application on the invention. In the event that any sum over and above the cost of obtaining a patent should be obtained by the Foundation, a fair share of the profits (at least fifteen per cent) would be paid to the patentee, and the remainder of the profits would be used to finance the activities of the Foundation and to sponsor further research in the University. In the case of cooperative research sponsored in part by an outside agency, the written contract between the University and the cooperating agency would include a statement that all the results, including inventions, belong to the University and would be so used and controlled as to produce the greatest benefit to the public. If all the costs are paid by an outside sponsor, he would be entitled to have all patents assigned to him, the University reserving only the right to publish all fundamental data of value to science and technology.

The University of Louisville School of Medicine follows the general university patent policy,[31] adopted in 1935, which includes provisions covering both (1) the administration of patents and possible income from such patents and (2) the conditions which should attend inventions or discoveries made by members of the staff of the University. An Administrative Board of Patents, established by and subject to the direction and control of the Board of Trustees of the University, has authority "to accept for and on behalf of the University by assignment or otherwise, either directly or through trustees or holding corporations, patent applications, royalties, licenses, or gifts therein governing discoveries, inventions or processes, when produced by members of the staff of the University by use of University laboratories or otherwise." A patent assigned to the University is administered by the Board in such manner as it may determine, provided that, if the patent is sold or royalty for its use is received, one-half of the money thus realized by the University would be paid to the patentee and the other half assigned to the University.

A definite patent policy[32] for the entire university, adopted by the Board of Regents of the University of Nebraska in 1946, applies to the College of Medicine as well. That policy was established for the purpose of stimulating inventive genius, encouraging the disclosure for the public benefit of discoveries and new inventions made at the University by its faculty personnel and employees, and defining the rights of the University in returns from resulting patents. The title to a patent on any discovery or invention belongs to the employee and he is free to develop or handle it in any manner he sees fit, provided that when total net royalties or other compensations are less than $1,000, no payment to the University is required, but when they amount to more than $1,000 and less than $5,000 per year, ten per cent of the excess of such royalties or other compensations above the sum of $1,000 and less than $5,000 shall be paid to the University, and when they amount to more than $5,000 per year, the royalty to be paid to the University shall be ten per cent on all the amount above $1,000 and less than $5,000 and twenty per cent on all amounts above $5,000. In the absence of a specific contract to the contrary, the provisions of the

policy are incorporated in the employment agreements of faculty personnel and other employees of the University.

The Stanford University School of Medicine follows the general university policy[33] in handling the patentable results of scientific research in relation to medical and pharmaceutical discoveries. Whenever any member of the staff or other person making use of the laboratories or other facilities of the University makes a discovery or invention, or otherwise believes a valuable invention may result from his research, he is required to communicate that fact to the executive head of his department or school. The matter is then referred to the Patent Committee of the University which examines into the nature of the discovery or invention and if, in the opinion of the committee, it should be protected by patenting, recommends its assignment to the University. The University reserves the right, in its discretion, to so manage and exploit all patents assigned to it in the public interest and in such manner as it considers consistent with the best interests of the public and the University. Ten per cent of any gross royalties or other revenues received by the University is paid to the patentee, except when the patentee is a member of an organization whose ethics deny the right of its members to receive such revenues or when the patentee is employed or assigned to work upon a specific investigation. After meeting all proper expenses, the remainder is appropriated to the department or school in which the discovery was made, for research in the same or related fields. Any revenue in excess of the reasonable needs of such research is placed in a patent pool fund for allocation to the support of other research by the Board of Trustees on recommendation of the President of the University.

The University of Utah Medical School follows the general policy[34] of the University, adopted in 1944, which provides that patents should be administered in such a way that the public receives the maximum benefit. In order that the patents may be put to work and developments under them made available to the public, all patent matters, including those arising in the Medical School, are handled by a University Patent Committee. It is believed that the public can best be benefited, in some instances by actual transfer of patent ownership from the University to supporting companies or agencies and, in other instances, through licensing arrangements where the control is left with the University. Either exclusive or non-exclusive licenses may be issued , depending upon the circumstances. Ten per cent of the net royalties or other revenues received from patents by the University are paid to the inventor, except in cases where some other division of the income is considered more appropriate. The remainder, after meeting all proper expenses, is allocated to the University Research Fund. The University feels that, in the handling of patents, it should be activated by a desire to benefit the largest number of individuals in the most economical and effective way.

Generally Accepted Practices

Certain of the medical schools, affiliated with universities which do not have formal patent policies, follow the general practices of those universities in permitting faculty members and other employees to exercise their own judgment in handling the patentable results of their research efforts but encourage them to utilize the facilities of special research

foundations, independently incorporated but closely related to the institutions. These foundations, such as the Cornell Research Foundation, the University of Tennessee Research Corporation, and the Wisconsin Alumni Research Foundation, are available to act as patent management agents for the universities concerned, their medical schools and the individual inventors, through the voluntary assignment of patent rights.[35]

As in the rest of the University, patent matters arising in the Cornell University Medical College are handled through the Cornell Research Foundation. The Foundation was established in 1931 with "power to act in all matters concerned with the acceptance, promotion, management, and protection of all patents in which Cornell University may be interested, with power to take or acquire assignments of patents, to permit commercial development of the same through sales, licenses, or the like, and to receive gifts and devices which may be offered in aid of research through the activities of such Foundation."[36] Since 1945 it has been the general policy[37] of the University in making contracts with grantors or sponsors of research programs not to agree to give the grantor or sponsor more than a non-exclusive license under any patents that may result from the research. However, in cases in which the grantor or sponsor pays all expenses of the research, including overhead, the University may in exceptional cases agree to grant an exclusive license or to assign all rights in the patent to him.

Patents resulting from research in the University of Tennessee College of Medicine are handled through the University of Tennessee Research Corporation,[38] founded by the University in 1935. The main purposes of the Corporation are the holding of title to patents issued on research work by members of the University staff and the promotion of the use of the inventions and discoveries covered by these patents. The University has no formalized patent policy but all members of the faculty, including those in the College of Medicine, are encouraged to use the facilities of the Corporation to relieve them from all concern with the administrative and commercial aspects of patent management. It is believed that the major benefits come from the fact that the Corporation serves as a means of protecting results of research from selfish exploitation or suppression by interests which might gain control in some way. Also, the Corporation provides a link between the laboratory and the field of practical application.

In the University of Wisconsin Medical School, as in the rest of the University, the individual research worker is privileged to handle the patentable results of his scientific research in any manner he sees fit. Some have assigned their inventions and discoveries to the Wisconsin Alumni Research Foundation[39] as their agent and have permitted such profits as have accrued from these discoveries to be compounded through this agency. The Foundation was organized in 1925 "to promote, encourage, and aid scientific investigations and research at the University and to assist in providing the means and machinery by which the scientific discoveries and inventions of the staff may be developed and patented, and the public and commercial uses thereof determined; and by which such utilization may be made of such discoveries and inventions and patent rights as may tend to stimulate and promote and provide funds for further scientific investigation and research within said University."[40] When patentable ideas developed by university faculty members are voluntarily turned over to the Foundation, efforts are made to commercialize them, with the understanding that after the cost of

development has been recouped, any remaining moneys are to be employed in the support of research in the natural sciences. With respect to medical discoveries and inventions, the attitude is taken that patents should be secured where a lack of control in the use of the patented article might result in undue exploitation of the public, in lack of uniformity of standardization, or in confusion of the public mind as to the inherent values of the product. In certain types of medical discoveries, the Foundation considers itself obligated to administer the patents without thought of any financial return other than that required to safeguard and control the proper use of the product and to provide funds for clinical and scientific work in connection with the discovery.[41]

The College of Medicine of Ohio State University follows the general practice of the University in using the facilities of the Ohio State University Research Foundation[42] in the handling of patent matters, as well as sponsored research projects. Except in connection with research projects conducted under contracts made by the Foundation, the University has no formalized patent policy other than the provisions in the State Statutes that all rights accruing from patentable discoveries resulting from investigations carried out in the University laboratories with the use of University facilities are the property of the University and that the University may assign and transfer its rights or grant licenses as desired. It has been the general practice for the University not to apply for patents in the field of medical research, but rather to disseminate the results of such work in the widest possible way for the greatest public benefit. Patents in this field would be applied for only in those special cases in which the medical profession felt that it was necessary for the protection or welfare of the public.

At Duke University it has been the practice in the School of Medicine, since 1937, to assign patents to nonprofit research committees named by the President of the University, and to use the revenue from royalties for the support of further research work at the School. Essentially, the plan provides for handling each case on its merits and in a manner that seems best, the procedure generally followed throughout the University. If an investigator has something that should be patented, the legal department of the University draws up an agreement for the assignment of the patent. Any royalties received are deposited to the credit of a special fund and expenditures from that account are made on the written recommendation of the research committee but not for the benefit of any individual.[43]

The University of Minnesota Medical School follows the general practice of the University, under which all patentable discoveries are referred to a University Committee on Patents, established in 1938. That committee is authorized to receive and consider applications from staff members desiring to secure patents, at University expense and with University control and participation in profit, and recommends to the Board of Regents agreements with staff members for the assignment of patents and arrangements covering the licensing of the patents. One-fourth of all royalties are given to the staff member when the patent is in the general field of his employment, and one-half when it is outside that general field and University funds and facilities were not used in the development of the patent.[44]

It is the concensus of the executive faculty of the School of Medicine

of the Tulane University of Louisiana that professional standards would be violated if either the inventor or the School derived financial profits from patentable devices and processes. Several years ago, when a faculty member who had developed an instrument sought advice on patent procedure, it was decided that neither he nor the School should hold the patent or enter into any arrangement through which there would be a monetary return. Accordingly, the specifications of the instrument were turned over to a reputable manufacturer under an agreement that the price would be held to a minimum. One item in the agreement, under which the inventor relinquished all claim to royalties, was that a reduction corresponding to potential royalties be made in the cost to the buyer. Three instruments have been developed by this faculty member and all three have been handled in the same manner, each with a different manufacturer. The precaution regarding cost of the manufactured instrument was taken in the public interest. The University itself, exclusive of the School of Medicine, has no patent policy except in relation to grants awarded through the University Council on Research. It is understood that, if a project supported by a grant from the Council yields any income, whether from patentable devices or processes or as royalties on books, such income up to the amount of the grant is to be returned to the research fund.[45]

The Washington University School of Medicine has for many years observed the general policy that no pecuniary profit should accrue to any individual or stock corporation from a patent on a scientific discovery originating in the School. For the protection of the public a patent may on occasion be taken out, provided the rights are assigned to some non-profit organization. Any profits that might accrue from such a patent would be used for the support of scientific education and research, and not for any other purpose. The University does not have any formal over-all patent policy, although the question has been under study for some time, and the policy of the School of Medicine differs materially from the practices currently followed in the rest of the University, especially in the School of Engineering.[46]

It has been the general practice of Indiana University and of its School of Medicine, neither of which has a formal patent policy although the question has been under study for some time and considerable work has been done on the formulation of a definite statement of policy, not to permit applications on the products of individual or school supported research. In 1936 a separately incorporated body, the Indiana University Foundation,[47] was established to finance research, handle patents, aid the University in undertakings for which funds were not otherwise available, and generally perform such functions as the University, being a state institution, could not do for itself. Many of the contracts made by the University, in connection with research grants, contain clauses relative to the ownership of the inventions that may develop as a result of the grant. In most of these contracts the University has the option of retaining ownership of the invention in its own name or in the name of the Indiana University Foundation. Some also provide that the donor have a royalty free license for the manufacture and use of the discovery. Members of the faculty have also been permitted to sign contracts with commercial organizations furnishing financial support and to agree in the contract as to the patent rights, with the returns from royalties going directly to the research worker in some instances. It is felt that this plan is not objec-

tionable and is broad enough to encourage substantial support of research studies by commercial organizations, and that a stricter policy "would undoubtedly remove considerable support of research programs and would deny medical and graduate students the opportunity of gaining valuable research experience."[48]

While deciding each case on its individual merits, the Western Reserve University School of Medicine follows, as a general rule, the practice of not patenting discoveries in the field of medicine. However, where it seems necessary in the public interest, patents may be taken out on a non-profit basis. When such patents result from research financed by a commercial concern, the sponsoring concern is given a non-exclusive royalty-free license in its field for a limited time before other firms are granted licenses.[49]

The University of Virginia School of Medicine is in general opposed to the patenting of inventions or discoveries by members of the medical faculty. In the only instance where the question has arisen during the past ten years the inventor of a minor surgical instrument was advised against taking steps toward securing a patent.[50] At Temple University it is the feeling of the management, as well as the faculty of the Medical School, that patents should not be sought, but that the worthwhile results of their research work should be given freely to the profession.[51]

Each Case Handled Individually

At the University of Rochester School of Medicine and Dentistry it is felt that it is usually best to resolve each particular problem as it arises, with a view to protecting the good name of the University and doing everything possible to obviate any criticism that the cost of the patented product to the ultimate consumer or patient was increased because of financial benefit to the University or the inventor.[52]

Although the University of Colorado has no written patent policy, its School of Medicine has in the past followed the unwritten policy of patenting nothing and publishing freely the results of all research and development. It is likely that, in recognition of the attitude of the medical faculty, provision will be made for the licensing of certain patents on a non-exclusive royalty-free basis, as part of a general university policy which is presently under consideration.

At several of the other medical schools each case is handled individually as it arises and, in the absence of a general university or special medical school policy, an attempt is made to work out an equitable solution in each instance. This is the situation in the schools of medicine at Georgetown, George Washington, and New York Universities. At the New York University College of Medicine, in accordance with a general procedure[53] followed throughout the University, final action is taken only after consultation with the dean of the executive faculty and the secretary of the University.

The practice is followed at Vanderbilt University, both in its School of Medicine and in the University generally, of bringing inventions and other apparently patentable material to the attention of a University Patent

Committee which reviews each case individually and recommends to the administration of the University specific action and procedure for each case.

Neither the University of Michigan Medical School nor the University as a whole has a clearly defined patent policy, except with respect to contractual research conducted in or through the Department of Engineering Research. Outside of such research projects, each case is decided in the light of its own circumstance.

In the one instance where a product of research in the University of Pittsburgh School of Medicine was found to have commercial value, a patent was obtained and the trustees of the University accepted the assignment of the patent rights, the income from royalties to be used to support further research without financial gain to the inventor personally.[54]

While the University of Georgia does not have any specific patent policy, proceeds on the sale of several inventions made by members of the medical faculty are added to the budget for equipment and supplies for research in two departments of the School of Medicine.

Neither the Syracuse University College of Medicine nor the University itself has formulated a policy in regard to the handling of patentable results of scientific research. However, in connection with the activities of the recently organized Syracuse University Institute of Industrial Research,[55] any industrial corporation for which research is conducted at the University in cooperation with the Institute will retain patent rights growing out of such research.

At the University of Maryland, which is at present working on a university-wide patent policy, which will apply to the School of Medicine as well, it is contemplated that the recently created State Institute for Industrial Research[56] affiliated with the University will act as the patent management agency and will recognize the inventors among the faculty through royalty payments or some share in the income from patents.

A number of the other medical schools, associated with universities and colleges which do not have formal patent policies, have not had any occasion to develop separate policies or as yet to crystallize their thinking along these lines. The patent problem has never arisen at the medical schools of Baylor, Emory, Louisiana State, and Marquette Universities, of the Universities of Oklahoma and Oregon, and of Tufts College and at the Bowman Gray School of Medicine, a division of Wake Forest College.

If the question should arise, the Emory University School of Medicine would follow whatever general university policy is adopted as the result of a current study being made by a committee of the university faculty. Should it become necessary to establish a patent policy for the University of Oregon Medical School, which at present has none, it would be developed in collaboration with the State Board of Higher Education as an overall policy for the other units of the University as well as Oregon State College, which are all under the same governing board.

At Northwestern University a special trustee committee is currently giving consideration to a general university patent policy which will in-

clude medical patents and problems related to the Medical School. A similar situation exists at Loyola University, where the formulation of a university patent policy, that will apply to its School of Medicine as well, is in the discussion stage. A university committee is in the process of setting up such a policy for the University of Vermont, which does not have a definitely formulated patent policy at present, either for the University itself or for its College of Medicine. The same is true at the University of Southern California, where the subject has been under consideration for some time, both on a university-wide basis and with respect to the School of Medicine.

In the other seven university-affiliated medical schools no definite policies for the handling of the patentable results of scientific research have as yet been established, either for the universities themselves or for the medical schools, although the question has been under discussion from time to time at most of them. Included in this group are Boston, Creighton, Howard, and Wayne Universities, the State University of Iowa, the University of Buffalo, and the Albany Medical College, which is embraced with Union College in the Union University System.

Independent Medical Schools

Of the ten independent medical colleges on the approved list of the American Medical Association only two have definite patent policies, although several of the others follow informal policies or general practices. Two of them -- the College of Medical Evangelists and Hahnemann Medical College -- handle patent matters through separately incorporated nonprofit foundations. The patent question has arisen at most of the other schools and has been under discussion from time to time without any definite policy action being taken. On the occasions when the problem has been acute, each case has been settled on its individual merits. At the present time most of these independent medical colleges are giving consideration to the formulation of definitive policies or the revision of existing practices.

At Southwestern Medical College, under a policy[57] adopted in 1945 by the Trustees of the Southwestern Medical Foundation, the corporate body under which the College operates, any salaried faculty member who desires to take out a patent on an original discovery has the option of either dedicating it to the public or assigning it to the trustees of the Foundation without consideration of personal profit. It is contemplated that the Foundation will not grant exclusive licenses on any patentable discoveries assigned to it. The policy has been under study with a view to having certain of the royalties returned to the College, but so far the trustees have taken no action. The question of whether the research worker making the original discovery should receive any benefit from the royalties is also under discussion.

Meharry Medical College has adopted a definite policy[58] concerning patents in connection with a recently initiated research program and the establishment of the Meharry Biological Research Fund, under the direction and control of a special research committee, for the stimulation and development of research at the institution. Under this policy the discoverer receives a percentage (not less than ten per cent) of the profit from any patent, the exact amount depending upon the overall cost of development. The

balance, after the Research Fund has been reimbursed for its investment in the investigation, is held in the Fund for use in the support of further research or for allocation to the College for general educational purposes. The College has not as yet had any experience with patents and does not anticipate in the foreseeable future any patentable products from research now under way.

The Woman's Medical College of Pennsylvania has an informal policy which opposes the patenting, either by the College or by a member of the staff, of any medical appliance or any medical prpparation. This is merely an expression of opinion by the faculty; no formal resolution has ever been adopted by the faculty or administration of the College.

The College of Medical Evangelists has no written policy regarding patents resulting from scientific research within the institution by members of the staff, but there is a general understanding that full-time employees should not profit personally from medical discoveries. In a number of instances patentable instruments developed by members of the staff have been turned over to the Alumni Research Foundation of the College of Medical Evangelists,[59] a nonprofit corporation organized in 1943 primarily for the purpose of raising funds to aid the College in its research program.

In a reorganization which is now under way at Hahnemann Medical College some thought has been given to patent matters and the revision of existing practices. The College has had since 1939 a separately incorporated Hahnemann Research Foundation,[60] organized to accept the assignment of patents resulting from research done under its auspices and to acquire patents by voluntary assignment or gift. In the disbursement of the net income from patents a predetermined share is given to the inventor. The Foundation handles all relations with industrial organizations involving patents, but the College also has, separate and distinct from the Foundation, a research committee made up of members of the college council (seventeen members of the major faculty) to consider, act upon, and approve all matters relative to research. Any research problems, including those which may involve patents, that may arise within the college faculty are referred to this committee for study. All questions of law and legal relations are within the sole jurisdiction of the trustees of the College.

While the New York Medical College has no fixed patent policy, it is the present practice, when accepting research grants from outside sponsors, to refer problems which may involve patents to their legal department before the contracts are approved or disapproved by the Research Committee of the College. Generally commercial firms have been protected in their patent rights.

The other four independent medical colleges have no established patent policies, although at Jefferson Medical College the question is at present under study by the board of trustees. At the Long Island College of Medicine the problem has been discussed from time to time and at the Medical College of Virginia possible policies have been suggested at various times, but without any definite action being taken at either institution. The Medical College of the State of South Carolina has as yet developed no policy for handling the results of scientific research conducted at the College.

Dartmouth College and the Institutum Divi Thomae are two other educational institutions included in the survey which have had experience with medical patents. On the suggestion of the senior members of the staff of the Dartmouth Eye Institute, while it was an associated organization of Dartmouth College, all members of the staff of the Institute executed inventor's agreements providing for the assignment of patents to the College, on the general understanding that any income from the patents would be used by the College for further research. Under this plan the College owned and administered various patents in the field of physiological optics. In 1946 the Institute was organized as a separate nonprofit organization with independent sponsorship.[61]

Under the patent policy of the Institutum Divi Thomae, a scientific research center and graduate school of science with which certain other Catholic educational institutions are affiliated, no individual may benefit directly from patents resulting from research conducted in the Institutum or its affiliated schools. The director and all the faculty and staff members of the institution, as well as students and technicians, assign all patent rights to the Institutum Divi Thomae Foundation, the fiscal agent for the Institutum and its affiliates.[62]

Summary

The patent question is currently under review at more than half of the seventy approved medical schools, at a number of them as part of new or revised general university policies. Obviously the patent problem is not a settled one in the medical schools and a wide difference of opinion exists among their faculty members as to the ethics of patenting a medical discovery but in many of those schools, as in educational institutions generally, the question is being given thoughtful consideration at the present time. Much of the stimulation for the establishment of definitive patent policies stems from problems growing out of research projects sponsored by outside agencies, especially commercial firms. Frequently such practices as are currently followed are concerned solely or mainly with the results of scientific research conducted under grants from these outside sponsors.

Despite the present wide diversity of practice in the handling of patentable discoveries and inventions that affect public and individual health, the trend toward the clarification of those practices and the formulation of definitive research and patent policies, both in medical schools and in educational institutions generally, is a healthy sign and is to be encouraged and facilitated especially insofar as medical discoveries are concerned. The protection of the public interest, as well as the interests of the institutions themselves and the inventors, requires that existing differences be resolved and that some agreement be reached among all the parties concerned.

That there is a movement in this direction is apparent from the current interest in the problem shown by professional groups, scientific societies, and individual research workers, as well as among the medical schools and the universities. The American Medical Association is considering the desirability of holding another conference on medical patents, similar to the one it held in 1939, and various industry groups are concerned over the matter. In its consideration of the need for promoting and financing medical and related scientific research in the war against disease, the committee appointed

by President Roosevelt, to review the information, techniques, and research experience developed by the Office of Scientific Research and Development and their application to peacetime conditions, recognized the patent problem and its bearing on the extension of such research.[63] The President's Scientific Research Board, in its study of the nation's medical research facilities and needs, also encountered this problem and included it in the formulation of an expanded and well-balanced program in the interest of the public welfare.[64]

If the proper safeguards are established, our universities and particularly our professional and technological schools can contribute, even more extensively than they have in the past, to the furtherance of general and medical science through the most effective utilization of their research facilities and the present short supply of scientific and technical personnel.

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VIII

PATENT MANAGEMENT PROCEDURES

Patent management is a complicated business and is expensive. It requires a high degree of legal competence, administrative astuteness, and promotional zeal -- a combination of talent not always readily available in an educational institution. The patent search is a specialized technical service. The preparation and processing of patent applications are exacting work for legal counsel. The administration of patent rights demands careful attention to intricate details and constant watch for infringement and interference. The exploitation and disposal of patents, through sale or licensing agreements, require salesmanship of a high order.

Existing Practices

It is natural, therefore, that most educational institutions make every effort to avoid becoming directly involved in the intricate legal and commercial aspects of patent management. Some endeavor to accomplish this by adopting a hands-off policy and refusing to handle patents. Others, for legal or fiscal reasons, have established or have encouraged the organization of separately incorporated patent management foundations, independent of but closely allied to the institutions by the terms of their charters and by the membership of trustees, administrative officers, and faculty on the foundations' boards of directors. Still others have entered into agreements with Research Corporation, an independent nonprofit patent management foundation, to handle patentable discoveries in their behalf, with full protection of their interests and those of the inventors and the public.

A few attempt to handle patents as a part of the routine duties of already established administrative units, such as the comptroller's or business office. Others handle them through specially designated committees responsible directly to the administration or to the trustees of the university. A number have faculty committees on patents, which exist primarily for the purpose of ensuring that pertinent institutional regulations are observed. Often these committees serve as advisory bodies and are charged with recommending action on matters that range from the desirability of taking out a patent to the determination of equities.

Even at those institutions which leave to the individual inventor the responsibility for handling any patents that may result from his research activities, and also among many of those which observe laissez-faire policies, the faculty or staff member who believes that he has made a discovery or invention that has patentable possibilities is required to bring the matter to the attention of the administration either directly or through an appropriate committee. Determination is then made by the administration or by the committee whether the institution has an interest in the discovery or invention and what procedure should be followed.

This procedure is frequently specified in formal patent policies and provision made for the establishment of a standing patent committee or board

to deal with all such matters. Such a committee or board may also advise and aid faculty members on questions of patentability, the prosecution of patent applications, the commercialization of the patents when issued, and occasionally the general business aspects of patent management. In this way the institutions may also be protected against the appropriation and exploitation, by personal and private interests, of the results of scientific research performed in the laboratories of the institutions, the cost of which may have been paid with institutional funds or from funds under institutional control. In many instances affiliated research foundations, where they exist, perform these functions in behalf of the institutions.

The disposition of patent rights and their protection present many and varied perplexing business problems. Unless they are secured for dedication to the public or merely to prevent outside interests from appropriating and patenting the discoveries or inventions in their own names, to the possible detriment and complication of further research in the field, patents are saleable assets. In many instances the educational institution has a heavy investment in the discovery or invention and in the patent issued on it, and promotional effort is necessary to sell or license the patent. Placing it in commercial production, introducing it to the public, and gaining its acceptance and use require additional investment in money and services on the part of the licensees. Administrative supervision must be exercised by the institution to insure maintenance of the quality of the finished product and to see that it is made available to the public at a fair price. Patent management, if effectively performed, is a highly involved and often a very expensive business operation.

As Vice President William T. Middlebrook of the University of Minnesota, in discussing Universities and Patents recently before a group of university business officers, has said:

> Any real assistance on the part of the university in securing and administering patents must flow from an expressed willingness to establish machinery to aid in determining the novelty and the usefulness of a discovery, to provide funds under stated conditions for the employment of competent patent counsel and for the prosecution of the patent application, to accept assignment from the staff member of the patent application and/or the patent, to undertake itself directly or through an allied agency the licensing and the other responsibilities incident to the administration of patents, and to assume custody and disposition of any royalties arising from patents not dedicated to the public.
>
> To become effective any expressed willingness to assist must take the tangible form of establishing administrative machinery and an overall policy for general guidance. Effective machinery and a comprehensive policy are not developed over night.[1]

Within the Institution

Many institutions, including both those which have formalized patent policies and those which in the absence of such policies observe generally accepted practices, have set up administrative machinery within the institution to take care of the preliminary phases of patent management. These

matters are usually handled through patent committees or boards, established by trustee, administrative or faculty action. The following examples will illustrate the functions performed internally by such committees or boards, some of which are on a continuing basis while others are specifically set up for each case.

At the University of Minnesota, which does not have a formalized patent policy and does not require compulsory assignment of inventions by staff members, the Board of Regents, under the wide latitude of powers which it enjoys, manages directly patents voluntarily assigned to it like any other University business. Patentable discoveries and inventions are first considered by a Committee on University Patents, established by the Regents in 1938. That committee will receive and consider applications from staff members without regard to whether the patent was developed by the staff member in or outside his general field of University employment and without regard to whether the patent was developed with or without the use of University facilities and funds, and also from non-staff members under special circumstances and to authorize the patent counsel to make formal application for patents under specific approval by the Board of Regents. The committee is charged by the Regents with the following responsibilities:

a. To receive and consider applications from staff members desiring to secure patents at University expense and with University participation in profits and control.

b. To appoint sub-committees of the staff to advise on technical phases of patent applications under consideration.

c. To consider the business aspects of such applications.

d. To authorize the patent counsel of the University to make formal applications for patents.

e. To consider and recommend to the Board of Regents agreements covering licensing under patents secured.

f. To consider and recommend to the Board agreements with staff members relative to the assignment of patents by the staff members to the University.[2]

A number of other institutions, many of them state universities, have patterned their procedure after that of the University of Minnesota. For example, a faculty Committee on Patents, created in 1945 under the patent policy of the University of Arkansas, is charged by the Board of Trustees of that institution with responsibilities similar to those of the University of Minnesota Committee on University Patents and, in addition, "to determine the amount of University time, equipment, and funds used in developing the idea; whether or not funds used in the development of the idea were all Federal or donated funds; and whether or not the invention is in the interest of and should be patented for the general good of the public."[3] It is the policy of the University that any invention, formula or process developed or discovered by a staff member in the course of his regular duties shall be controlled by the University, but that equitable division of royalties on profits derived from the sale or license of an invention, formula or pro-

cess patented at University expense will be made by the University Committee on Patents.

Through a Committee on Patents, as well as through University Patents, Inc.,[4] a patent holding company wholly owned by the University, and also Research Corporation, with whom the University has an agreement whereby that Corporation acts as patent management agent, Columbia University provides means by which staff members may secure advice and aid on patent proposals and may arrange to share with the University the returns from any patent rights. With the exception of patentable medical discoveries made by members of the Faculty of Medicine, the right of staff members of other divisions of the University to secure patents on their inventions is recognized and, in accordance with the patent policy[5] of the University, there is no compulsion on them to assign their patent rights to the University. The Committee on Patents not only acts as a policy-making group on University patent procedures, subject to approval of the Trustees of the University, but also in an advisory capacity to staff members, calling, when desirable, upon experts in various fields of research and patent law for advice, and recommending to the staff member and to the University authorities suitable action in specific cases.

At the time of the adoption of the Massachusetts Institute of Technology patent policy in 1932 a faculty Committee on Patent Policy was created, to receive and act upon reports of inventions from members of the staff, to determine question of inventorship, dates of conception, disclosure, reduction of the invention to practice, and the equities of the Institute, the inventor and other interested parties, and to recommend inventor participation in any financial returns from the exploitation of the patent rights. In 1942 the functions of this committee were divided between two new committees, a Committee on Patent Management and a Patent Committee. An agreement had previously been made with Research Corporation under which that independent foundation handles all legal and commercial aspects of patent management in the interests of the Institute, the inventor, and the public. While the policy of the Institute has always rested and continues to rest upon a basis of voluntary cooperation of staff members, the Institute encourages but does not require its staff to enter into formal agreements in regard to patent assignment, except in certain cases of industrial and other contractual research. When a disclosure is made of a discovery which may comprise patentable invention, the Patent Committee determines probable invention and inventorship, recommends inventor participation in possible returns, and refers the case to the Committee on Patent Management. The latter committee then reviews the case and recommends either that patent protection be sought through Research Corporation or some other agency or that the Institute waive all rights or equity in the invention in favor of the inventor.[6]

Princeton University, which also has an agreement with Research Corporation for that organization to act as patent management agent, follows a similar procedure. In 1946 a Committee on Project Research and Inventions was established for the purpose of coordinating and planning on a broad scale the activities of the University in entering into outside contracts or other financial arrangements for the sponsoring of research in science and engineering, and also for the purpose of establishing and implementing policies on patents and inventions which arise through work of members of the

University, replacing in this respect a former Patent Committee. A member of the University staff is free to bring any patentable invention to the attention of the Committee, whether or not it resulted from his academic duties, preferably prior to the initiation of the patent application but in any case at least as soon as a patent has been issued. When the question of patenting a particular invention is brought to the attention of the Committee, the Committee will decide upon the soundness of the scientific basis of the invention and upon the advisability of patenting according to the University policy. If the Committee reaches a negative conclusion, it will turn the matter back to the inventor to handle as he sees fit. If the Committee reaches a positive conclusion, or is in doubt, it will refer the matter to Research Corporation to ascertain its opinion and whether the Corporation desires to accept assignment of the invention. If the Corporation is unwilling to accept such an assignment, the Patent Committee will decide whether the matter should be turned back to the inventor or other steps be taken. If the Corporation desires to accept the assignment, the Committee will recommend to the inventor that he assign the invention to the Corporation and enter into an agreement with the Corporation, in accordance with the general plan adopted by the Corporation and the University.[7]

All matters relating to patents in which the University of California is in any way concerned are administered by an agency known as the University of California Board of Patents. Members of the faculty and non-academic employees are required to advise the Board with regard to any patentable project developed in the course of their work, even though assignment to the Regents of whatever rights the inventor or discoverer may possess in the patent or appointment of the Board as the agent of the inventor or discoverer is optional on the part of the faculty member or employee. Subject to the approval of the Regents, the following powers and duties are exercised by the Board:

a. Appoint a committee of experts to examine the merits of each potentially patentable project which may be submitted to it or which may come to its attention, and to cause such committee to report its findings to the Board.

b. Report and recommend to the Regents in each instance the action to be taken by the Board.

c. Reach agreement with the inventor or discoverer upon whatever financial interest, if any, the Regents or a cooperating agency, if one is involved, may have in the project, and upon distribution of royalties, the respective equities in the light of conditions leading to the invention, the amount of income that reasonably may be expected to result therefrom, and the services assumed by the University in obtaining and administering the patent.

d. Execute, through the appropriate University officer or officers, all documents necessary to define the rights agreed upon by the Board, a cooperating agency, if any, and the inventor or discoverer.

e. Recommend, in the case of patents in which the University may be found to have an equity or in which the Board has been asked

to act for the inventor, whether the Regents shall have it patented at their expense or release it entirely to the inventor for whatever independent action he may care to take.

f. Retain patent counsel in association with the University Attorney in connection with matters pertaining to the filing of patent applications, approved by the Regents, the prosecution thereof, and the litigation which may arise therefrom.

g. Negotiate through the appropriate University officer for licensing and other agreements covering the manufacture and sale of patented articles or processes resulting from patents on inventions submitted to it, in which the Regents have an interest, and to arrange for and direct the collection of royalties and the distribution thereof to those entitled thereto.

h. Obtain from cooperating agencies assignment of patent rights to inventions or discoveries made as the result of research carried on under special grants.[8]

Whenever an invention or discovery is made at Carnegie Institute of Technology, which falls within the purview of the Institute's patent policy, the inventor is required to inform the President of the Institute in writing, through the department head or director concerned, regarding the circumstances of the case. A special Committee on Patents is then appointed, if either the President or the inventor feels that the case requires review. Each such committee is composed of representatives of the trustees, administration, and faculty, also students if involved. The committee will determine, subject to review by the President and the Executive Committee of the Trustees, whether the Institute has an interest in the patent and if so, the specific proportion in which the proceeds are to be shared between the inventor and the Institute, the legal title being held by the Institute or its nominee for purposes of orderly administration.[9]

At California Institute of Technology a Committee on Patents, selected by the faculty, has responsibility for recommending what inventions should be patented by the Institute, adjudicating uncertain cases such as those involving "line of duty" versus "own time" inventions, making recommendations in regard to patent provisions in industrial contracts, and acting in an advisory capacity with regard to patents owned by the Institute. Any proposal to deviate from the general policy of the Institute is referred to the Committee for recommendation. In order to make the Institute's patent policy effective and uniform in its application, all the members of the research and instruction staff of the Institute at the time of the adoption of the policy have been requested and all new employees are required to sign a patent agreement, formulated and approved by the Committee on Patents and by counsel, assigning their rights to patents and inventions made in line of duty or with Institute facilities to the Institute or to its nominee. While Research Corporation serves as the patent management agency of the Institute in certain instances, the recently established California Institute Research Foundation will be the Institute's nominee in most cases for the assignment and administration of patent rights connected with inventions made by members of the Institute staff. In its operations the Foundation will adhere to the patent policy of the Institute.[10]

At Lehigh University, where any member of the scientific or teaching staff who has made a valuable discovery or invention as the direct result of his regular duties on University time and at University expense is required to patent his discovery or invention, the expenses connected therewith to be borne by the University, application for a patent to cover such discoveries or inventions shall be made in such cases as are recommended by the Executive Board of the Lehigh Institute of Research and approved by the Board of Trustees of the University. The Institute, which was originally organized in 1924, is an administrative division of the University. If a patent is issued, the patentee shall assign the patent to the Board of Trustees of the University for a nominal consideration. While the University does not wish to be in the business of owning and exploiting patents, a patent thus assigned will be administered by the Board of Trustees in such manner as it may determine. If the patent is sold or a royalty for its use is paid, one half of the money thus realized by the University will be paid to the patentee, and the other half assigned to the Lehigh Institute of Research for the furtherance of research within the University.[11]

Several of the medical schools have established special committees to handle patents growing out of research in their laboratories. A Committee on Grants for Research was created in the St. Louis University School of Medicine in 1930, originally to administer the patent on theelin assigned to the School by the discoverers but subsequently to handle other patents similarly assigned.[12] An Insulin Committee administers the patents on insulin assigned to the University of Toronto and exercises control over the quality of the manufactured product.[13] It is the practice in the Duke University School of Medicine to assign patents to nonprofit research committees named by the President of the University and to use the revenue from royalties for the support of further research work at the School.[14] In accordance with both formalized patent policies in some medical schools, as well as in the universities with which they are affiliated, and generally accepted practices in others, discoveries and inventions, whether or not they are to be patented, are reported through administrative channels.[15]

Use of Research Corporation

A number of institutions presently have agreements with Research Corporation to utilize the facilities of that independent nonprofit foundation as their patent management agent. Others either provide for it in their patent policies and procedures or have such an arrangement under contemplation, while still others encourage their staff members to avail themselves of the services of the Corporation through the voluntary assignment of patents issued in their names.

Research Corporation[16] was established in 1912 when Dr. Frederick G. Cottrell, a scientist and successful inventor, arranged for the transfer of valuable rights in his patents in the field of electrical precipitation to the Corporation. It was set up as a nonprofit organization embodying the ideal of utilizing the proceeds derived from applied research to the further advancement of science and technology. The Corporation's charter requires that its net earnings be contributed to the Smithsonian Institution and such other scientific and educational institutions and societies as its board of directors may from time to time select, to enable such institutions and societies to conduct technical and scientific investigation, research, and

experimentation. The Corporation's capital stock, all of which it holds in its own treasury by statutory permission, cannot bear dividends.

For many years the returns on the Cottrell patents provided the sole source of income which made Research Corporation grants in aid of scientific research possible. For some fifteen years the management of other patents and new inventions has been undertaken, through agreements with institutions and individuals, and the Corporation's share of the returns from these has augmented the available funds and extended the research support more widely and into other fields of science.

Survival of the ideal and its embodiment through the difficult years of establishment and early growth is tribute to the practicability of the concept and to the vision of those who contributed to it. In any listing of the major achievements of modern science those in the development of which Research Corporation has participated would occupy an important place. A random selection includes the cycoltron, the Van de Graaf high voltage generator and X-ray equipment, utilization of solar energy, computing machines, the synthesis of vitamin B_1, and pantothenic acid.

In addition to the patent management services rendered educational and other nonprofit organizations, Research Corporation maintains a division concerned with Cottrell electrical precipitation, the income from which is also used for the encouragement and support of fundamental scientific research. This division is in the business of applying electrical precipitation to the gas cleaning problems of industrial companies, particularly in the metallurgical and chemical fields, by contracting for the design, furnishing, and erection of precipitation installations. In pursuing these activities, the division has become a substantial enterprise on its own and has been the primary source of funds supporting the Corporation's grants-in-aid program. Through another division concerned with making grants-in-aid the Corporation expends the income derived from its engineering and patent management operations in the support of scientific research, mainly in the physical sciences. Over the years more than three million dollars have been so disbursed, approximately three-quarters of a million during the last fiscal year.

Under its agreement with an educational institution to serve as its patent management agent, Research Corporation agrees to handle the patent management and commercial aspects of the exploitation of such patentable discoveries and inventions as the institution may offer or cause to be offered to the Corporation, as are acceptable to the Corporation under its charter, and as should, in the belief of the Corporation, be patented either in the broad public interest or as revenue-producing possibilities. Each agreement is tailor-made, to fit the institution's individual situation, but follows a fairly uniform pattern, which has been developed over the years.

The faculty inventor assigns his patent rights to the Corporation under a set form of contract. The patent search is undertaken and the patent application is prepared and prosecuted by one of the firms of patent attorneys retained by the Corporation. Meanwhile, through its extensive industrial connections and on the basis of its experience with such matters, the Corporation proceeds to enlist the interest of possible commercial users with a view to their becoming licensees. While it recognizes the special equi-

ties of a sponsor who has made a large financial commitment to the original research or of a licensee who may have to spend a great deal of money in reducing the invention to commercial practice or in installing expensive production equipment, the Corporation usually issues non-exclusive licenses. The royalty rates are fixed by two principles: they should never be so high that their reflection in the final price of the product would have any influence on its acceptance by the ultimate user, and they should yield some revenue for the purposes of the Corporation.[17]

A contract-set percentage of all income from each patent so managed is paid to the inventor. The remainder is divided on a fifty-fifty basis with the university, unless, as happens occasionally, the university wants no return. The Corporation bears all patent prosecution and management expenses from its share. Some of the earlier agreements provide for the payment of forty per cent of the remainder to the institution and sixty per cent to the Corporation, after deducting the inventor's percentage and reimbursing the Corporation for special expenses incurred, for protection and development purposes, as prescribed in the agreement. When the total payments to the Corporation as a result of this division of income equals its total general expenses in connection with all inventions handled for the institution the remaining income is divided on the basis of sixty per cent to the institution and forty per cent to the Corporation.

Under this plan the institution is relieved of all patent and administrative problems involved in the exploitation and commercialization of the inventions. Similarly, when an individual inventor makes an agreement with the Corporation to handle a personally-owned patent for him, he is relieved of these problems and responsibilities. Such portion of the Corporation's share of the income from all the patents which it handles, as become surplus, is applied, in the discretion of its board of directors, for the support of scientific research through its grants-in-aid program.

Affiliated Patent Management Foundations

The establishment and use of special nonprofit foundations and corporations, independent of but closely affiliated with educational institutions, for the management of the patentable results of university research is a comparatively recent development in American higher education. A few, such as University Patents, Inc., at Columbia University and the Wisconsin Alumni Research Foundation at the University of Wisconsin, have been in existence more than twenty years, but the majority have come into being during the past five or six years. While they are located in all parts of the country and at all types of institutions, a considerable number are to be found in affiliation with state universities and land-grant colleges. In many instances they have been created to relieve the administrative staffs of the institutions of the complicated and time-consuming legal and commercial aspects of patent management and to perform functions which the institutions prefer not to undertake themselves, for legal or fiscal reasons, or which they do not have adequate technically qualified personnel to handle. Many of these foundations also serve as the institution's agents in contractual relations with sponsors of university research, while several are concerned with the general development of new sources of financial support for the institutions. There are at present at least fifty of these foundations performing, or authorized to perform, patent management functions.

University Patents, Inc., was organized in 1924, as a patent holding corporation wholly owned by Columbia University, with authority to apply for, take out, and hold patent rights, to accept by assignment patents, patent rights, royalties, licenses, and other rights covering discoveries, inventions, and processes, whether produced by members of the teaching staff of the University by the use of University facilities or otherwise, and to use, dispose of, and make arrangements for the licensing of the patents it holds and make such division of the proceeds as its board of directors may approve. Under an agreement with Research Corporation, that agency acts for the University in the management of patents, securing the patents, administering them, and disposing of the rights through licenses. The assignment of discoveries or inventions by staff members to University Patents, Inc., or to Research Corporation is normally on a purely voluntary basis and University Patents, Inc., and Research Corporation, in turn, reserve the right to refuse to cooperate in securing a patent, or to accept an assignment, if, in their opinion, it is not in their interest to do so.[18]

The Wisconsin Alumni Research Foundation, organized in 1925 by a group of alumni of the University of Wisconsin under the authority of the Board of Regents of the University, was the pioneer among university-affiliated nonprofit patent management agencies. Financially the most successful of these foundations, the inception of the idea grew out of the offer by Dr. Harry S. Steenbock, a professor at the University, of a patent then pending on his discovery of the anti-rachitic properties of the ultra-violet ray in the enrichment of the Vitamin D content of foods and medicinal products. In recognition of the possibilities of commercial exploitation of patentable results of university research and the utilization of the profits in the public interest through the support of scientific research, especially in a state university, the Foundation was created with the following objectives, as stated in its charter:

> To promote, encourage, and aid scientific investigations and research at the University and to assist in providing the means and machinery by which the scientific discoveries and inventions of the staff may be developed and patented and the public and commercial uses thereof determined; and by which such utilization may be made of such discoveries and inventions and patent rights as may tend to stimulate and promote and provide funds for further scientific investigation and research within said University.[19]

Through its administration of the Steenbock patents and others voluntarily assigned to it by members of the University faculty, the Foundation has over the years contributed substantial sums to the University for the advancement of research in the natural sciences. These grants have been made out of the income on the accumulated earned royalties, which have been conservatively invested by the Foundation in order to insure permanent steady income. In addition to the support of specific research projects, the Foundation has assisted the University in the retention of faculty members in times of financial stress, especially during the depression years, through grants of emergency aid. When a patent is assigned to the Foundation, a standard contract is made with the inventor, under which he (or his estate) is paid a fifteen per cent royalty on the net avails derived from the patent, after the expenses of securing, maintaining, and defending it have been repaid to the Foundation. The remaining eighty-five per cent of the net returns ac-

cruing to the Foundation is invested as part of the Foundation's endowment, the income from which is turned over to the University for the support of scientific research. The contributions to the University are made annually without restriction as to their specific use; their administration is the responsibility of the University. By far the larger part of the aid which has been given to the University has been used for the support of specific projects proposed by the several departments in the field of the natural sciences. These projects are administered entirely through the University Research Committee of the Graduate School and the selection of the approved projects is in no way controlled by the Foundation.

An outgrowth of an all-University Department of Research Relations with Industry established at Purdue University two years previously, the Purdue Research Foundation[20] was organized in 1930 as an agency for encouraging, promoting, and conducting both fundamental scientific investigations and industrial research at the University, and for assuming legal and financial responsibilities not clearly falling within the powers of the governing board of the University. While its major activity is in connection with contractual relations involved in the extensive industry-sponsored research program of the University, the Foundation also serves as patent management agent for the University. Patent problems arising on the Purdue campus are handled by the Foundation, whether in connection with sponsored research or patents voluntarily assigned to the Foundation by faculty members. Royalties received from licenses issued by the Foundation are used for the support of further research at the University, after rewarding the faculty member or student responsible for the patented discovery or invention.

While, as a matter of general policy, Cornell University does not require the assignment of patents by members of its staff, the facilities of the Cornell Research Foundation have been used for the administration of patents voluntarily assigned to the University, including those resulting from research in the state colleges embraced in the University system. The Foundation was created in 1932 as a stock corporation, empowered "to act in all matters concerned with the acceptance, promotion, management and protection of all patents in which Cornell University may be interested, with power to take or acquire assignment of patents, to permit commercial development of the same through sales, licenses or the like, and to receive gifts and devises which may be offered in aid of research through the activities of such Foundation."[21] While separately incorporated, the Foundation is a wholly-owned subsidiary of the University, subject to the control of the Board of Trustees of the University in matters of general policy. At the time of its organization, all the stock of the Foundation was turned over to the University in return for patents then held by the University. The directors of the Foundation are officers, trustees, faculty members, and alumni of the University, but the Foundation is a separate business enterprise and, as such, has no connection with the research activities of the University. Royalties earned on its patent holdings are made available to the University for furtherance of research in the various colleges of the University. Recently the University entered into an agreement with Research Corporation for that independent foundation to act as patent management agent in certain cases.

Under its patent policy,[22] Pennsylvania State College may use the facilities of the Pennsylvania Research Corporation, or any similar agency

for the administration and exploitation of patents, the assignment of which have been accepted by the Board of Trustees of the College, on recommendation of the President after prior study by the College Council on Research. The Corporation was formed in 1934 "for the purpose of fostering and advancing scientific research, and, as incidental to this general purpose, for the purpose of creating, purchasing, holding and selling patent rights for inventions and designs, with the right to issue licenses for the exercise of rights relative to said inventions and designs, and to receive payment therefor, and to use and apply all moneys thus or otherwise received solely for the fostering and advancement of such scientific research."[23] The relationship of the Corporation to the College is covered in a memorandum of agreement under which the College may refer its patent problems to the Corporation. At the time of his appointment every member of the faculty signs a memorandum of agreement which includes acceptance of the provisions of the patent policy of the College.

The University of Tennessee does not have a formalized patent policy, but members of the faculty and staff are encouraged to use the facilities of the University of Tennessee Research Corporation. The Corporation is legally independent but in effect is a subsidiary of the University organized in 1935,

> . . . to promote, encourage and aid scientific, social and/or educational investigation and research and to provide or assist in providing the means and machinery by which scientific, social and/or educational discoveries, publications, inventions, processes, trade-marks, trade names, brands and/or labels may be developed, applied, patented, copyrighted and/or registered and the public and commercial uses thereof determined, and by which such utilization or disposition may be made of such discoveries, inventions, processes, trade-marks, trade names, brands, labels, and/or publications, and patent rights, registrations, or copyrights of interests therein, as may tend to stimulate and promote and provide funds for further scientific, social, and/or educational investigations and research.[24]

Under its charter the Corporation has very broad powers, enabling it to conduct many activities which may be considered outside the usual program of the University. Faculty members have been willing to assign patents and pending patent applications to the Corporation because of its policy to share liberally with the inventor whatever income may be received.

Patent matters arising at the Virginia Polytechnic Institute are handled by the V. P. I. Research Foundation, which also serves as the fiscal agent of the Institute in contracting with outside parties and in administering funds for research and development work to be performed at the Institute. The Foundation was established in 1935 with purposes practically identical with those of the University of Tennessee Research Corporation. In the division of income from patents administered by the Foundation, it is recognized that the inventor is entitled to a share, the remainder being devoted to the furtherance of scientific research at the Institute.[25]

At Ohio State University, which does not have a formalized patent policy, the facilities of the Ohio State University Research Foundation[26] are

utilized both in the administration of patent matters and in the handling of contractual relations in connection with sponsored research projects. The Foundation was incorporated in 1936, its purposes and plan of organization patterned very largely after those of the Purdue Research Foundation. While its efforts are concentrated largely on the development of the University's industrial research program, the Foundation also aims to make available to the public the benefits of scientific and technological research under arrangements which will encourage and support further research at the University.

Many of the more recently established university-affiliated foundations, especially those at state universities and land-grant colleges, have been organized along much the same lines as these earlier foundations and follow, in general, similar patent management practices, modified in specific instances to meet local situations. Where state laws permit, they have been created with broad powers, to enable them to engage in a wide range of activities, of which patent management is only one. Some, such as the University of Illinois Foundation, the Indiana University Foundation, and the University of Nebraska Foundation, are empowered to and do promote the interests of their respective universities through a wide variety of services, including the development of new sources of revenue, not only in support of research but also for the endowment and current expenses of the institutions. A few may even maintain manufacturing plants and other business operations.

Summary

The management of patents growing out of university research involves both internal and external problems, many of which are complicated and perplexing. The internal problems are usually handled through patent committees or patent boards, established by trustee, administrative or faculty action, either on a continuing or an ad hoc basis. The external problems require specialized talent and wide experience to deal effectively with the legal and commercial aspects of patent management. Few institutions have qualified personnel available to handle these problems or much experience in patent management. In order to relieve already overburdened administrative staffs of these responsibilities and also to perform functions which the institutions are unable or prefer not to undertake themselves, many have either entered into agreements with Research Corporation or utilize the facilities of affiliated but independently incorporated nonprofit foundations to handle for them the administration and exploitation of patents.

A more detailed analysis of the organization and operation of these university-affiliated foundations, their objectives, programs, patent policies, and experience with patents, than is present in this chapter is the subject of a corollary study which the National Research Council is making as part of the present survey. The trend toward the development and use of such organizations has raised many questions as to their potentialities and place in the educational scene.

References

1. Middlebrook, W. T., Universities and Patents, Minutes of the Thirty-Fourth Annual Meeting of the Central Association of University and College Business Officers, page 73 (February 1945); also see page 23

2. Ibid., page 74

3. See Appendix, page 124

4. See page 104

5. See Appendix, page 131

6. Policies and Procedures, Massachusetts Institute of Technology (revised to 1 November 1947), pages 32-37; also see page 18 and Appendix, page 148

7. See Appendix, page 155

8. See Appendix, page 126

9. See Appendix, page 128

10. See Appendix, page 124

11. See Appendix, page 146; also pages 19 and 64

12. Also see page 76

13. Also see page 27

14. Also see page 85

15. See chapter on Medical Patents, page 71 ff

16. Grants in Aid of Scientific Research and Fields of Patent Interest, Research Corporation, pages 5-11 (1947)

17. Davis, A. S., Jr., Patent Policies for Universities (to be published in the Journal of the American Society for Engineering Education)

18. Certificate of Incorporation of University Patents, Inc., 10 December 1924; also see page 98 and Appendix, page 131

19. A Decade of Service, Wisconsin Alumni Research Foundation, page 1 (1935); also see pages 26 and 84

20. Purdue Research Foundation, Its Organization and Purpose, Bulletin No.1, (revised 1944); also see pages 27 and 66

21. Excerpt from Minutes of Board of Trustees, Cornell University, 15 June 1931

22. See Appendix, page 152

23. Articles of Incorporation of the Pennsylvania Research Corporation, 26 February 1934; also see page 19

24. Charter of Incorporation of the University of Tennessee Research Corporation, 31 December 1934; also see pages 26 and 84

25. Research Publications 1942-1944, Bulletin of the Virginia Polytechnic Institute, January 1945, page 52; also see page 30

26. Articles of Incorporation of the Ohio State University Research Foundation, 2 November 1936; also see pages 25, 66 and 85

IX

PATENT REVENUE

University research is seldom conducted with a view to the patentability or the commercial application of the results. Yet, frequently discoveries and inventions do evolve which are patentable and have commercial value. In such instances, the educational institution has a responsibility to the public and to the inventor, as well as to itself and those who support it, to see that the patents are so administered and controlled that they will produce the greatest benefit to all concerned. Financial rewards are not essential objectives in obtaining patents.

It is the exception, rather than the general rule, that substantial returns accrue from patentable results of university research. The few instances of patentable discoveries, such as the Steenbock process at the University of Wisconsin and insulin at the University of Toronto, which have been highly successful commercially and remunerative to the holders of the patents, lead some university administrators and scientists to hope for similar profitable patents to bring in large sums of money which may be used for the support of research or other educational activities, as well as for personal gain. The expense of prosecuting the patent application, commercializing the patent when issued, and protecting it against infringement and interference cut heavily into many otherwise lucrative patent holdings.

It is not fair, according to one writer, who has had considerable experience in the patent field, to hold up patents as a royal road to fortune. A distressing minority, he says, pay as much as one cent. He suggests that the following warning should be attached to each and every patent issued by the Patent Office:

> Inventor, beware! This patent is only a license to sue. It does not insure any monetary reward. It does not vouch for the commercial value of the invention. It may ultimately prove to be not valid. What the courts will do to it is beyond prediction. While you were before the Patent Office we tried to regard you as a benefactor of society. But from now on you're on your own. Allah be with you![1]

However, when a patent is assigned to it and an educational institution assumes responsibility for administration and control of the patent rights, it is also responsible for the determination of the equities involved and for the distribution of such revenue as may be received.

Some institutions recognize the rights and interests of the inventor and share the proceeds with him, either under a prior contractual arrangement or by mutual agreement, but there is no uniformity in the division of the financial return from patents between the inventor and the institution. In some institutions the amount given the inventor is specified in accordance with a general policy, with a wide variation among institutions in the proportion allotted to the inventor. In others the inventor's share is de-

termined in each case after consideration by a special faculty or administrative committee.[2]

Inventor Participation

At Lehigh University, and also at the University of Louisville, provision is made in the patent policy of the institution th t, if a patent is sold or roy lty for its use is paid, one half of the money realized by the University be paid to the patentee.[3] On the other hand, at Stanford University ten per cent of the gross royalties or other revenues received by the University are paid to the patentee,[4] and at California Institute of Technology the inventor may, on recommendation of the faculty Committee on Patents, "receive from the Institute fifteen per cent of the gross sum of money which has accrued or shall thereafter accrue to the Institute from his patent."[5]

The patent policies of Kansas State College and the University of Kansas provide that, in the event that any sum over and above the cost of obtaining a patent should be obtained, "a fair share of the profits (at least fifteen per cent) shall be paid to the patentee."[6] The Auburn Research Foundation, in its administration of patents in beh lf of Alabama Polytechnic Institute, will pay to the inventor or inventors at least "fifteen per cent of the profits from said patents, after all expenses have been paid."[7]

Ten per cent of the net royalties or other revenues received from patents by the University of Utah shall be paid to the patentee, except in a case where some other division of income is considered more appropriate.[8] At the University of Connecticut a minimum of twenty per cent of the net proceeds "shall be paid to an employee who solely conceived or made the invention, and shall be paid in shares to two or more employees who jointly made the invention, in such respective proportions as the board (of trustees) may determine."[9]

When a staff member of the Iowa State College agrees to assign a patent to the College, or its patent management agency, he will receive " a bonus in a sum equal to fifteen per cent of the net receipts from the licensing of the patent, such bonus to be paid annually as accrued, accompanied by a detailed statement of receipts and expenditures on account of the licensing of that patent."[10] If the return to the University is "in excess of the cost of such patent", the Research Council of the University of Florida shall recommend "the payment of a just compensation to the discoverer or inventor from the net proceeds, which in no case shall be less than twenty-five per cent."[11]

The patent agreement signed by each employee when accepting a position at the Michigan College of Mining and Technology contains a provision that "the College shall pay to me, at least quarterly, fifteen per cent of the net proceeds of the earnings or yield of such patents arising from any source, whether from license fees, royalties or from sale."[12] A few institutions include patent provisions in their contracts of employment, in some instances for all faculty members but more often limited to members of the staff whose entire or major responsibility is research, especially contractual research. This situation prevails particularly in state agricultural and engineering experiment stations and in special research institutes.[13]

Inventors, whose patents are handled by Research Corporation, either under personal arrangement or under the agreements their institutions have with that independent patent management foundation, receive a contract-set percentage, usually seven per cent, of all income received.[14] This arrangement applies at the University of Arizona, Case Institute of Technology, Cornell University, Columbia University, Massachusetts Institute of Technology, Princeton University, and Reed College, among others, and is specifically stated in some of their patent policies.[15]

Without specifying the amount or percentage of inventor participation, a number of institutions include in their patent policies provision for the inventor to share in patent revenues. At the University of Illinois, for example, "in the event that any sum above a nominal royalty is received by the University for the use of the patent, a proper share of it shall be paid to the patentee."[16] Similarly, if Pennsylvania State College should dispose of a patent "on such terms as to yield a return in excess of the cost of such patent, then the Board of Trustees, or the designated representatives of the Board, will consider a just compensation to the discoverer or inventor from the net proceeds."[17] In most instances determination of the inventor's share or compensation is made by a faculty research or patent committee; in others it is made by administrative or trustee action.

Under a formal patent policy, applicable only to the teaching members of its Department of Chemistry, Fordham University offers the faculty member two ways for disposing of a discovery having commercial possibilities. If it is estimated that they would be $6,000 or less, the inventor is the sole owner and administrator of the patent and is required merely to reimburse the university for the facilities used. If the discovery is of major importance and it is estimated that the proceeds would exceed $6,000, the ownership and administration of the patent, as well as the division of the proceeds, are subject to determination by a research committee appointed by the President. If the University pays for the patent, its share is to be 85 per cent; if the inventor pays, his share is 85 per cent; if the cost of the investigation is shared equally, the proceeds are divided equally between the University and the inventor.[18]

At the University of Minnesota the division of royalties, after deducting the cost of securing the patent, is 25 per cent to the staff member, and 75 per cent to the University in those cases where the patent is in the general field of the staff member's employment and University funds and facilities have been used in the development of the patent, or fifty per cent to the staff member and fifty per cent to the University where the patent is outside the general field of the staff member's employment and University funds and facilities are not used in the development of the patent. Where the patents are outside the general field of the staff member's employment or University funds and facilities are not used for the development of the patents, the division of royalties is somewhere between 25 and 50 per cent to the staff member and the balance to the University.[19]

It is a general practice, sometimes specified in the formal patent policy, that if the institution or its patent management agent does not file a claim for a patent assigned to it or act upon a case referred to it within a reasonable time, all rights and title to the patent revert to or remain in the name of the inventor. In some instances a definite time is prescribed.

At Alabama Polytechnic Institute it must be "within the period of one year from the date a written report describing the patentable invention was presented."[20] At Pennsylvania State College, as at the University of Maine, it must be "within one year after the discovery is announced to the College."[21] At the University of Florida it must be "within 120 days after the discovery or invention is announced to the Research Council,"[22] and at Michigan College of Mining and Technology it must be "within 30 days after notification in writing by the inventor that he desires the College to make its decision in the matter."[23]

Summary

Despite the lack of uniformity in the extent and manner in which the inventor participates in any revenue that may accrue, there is a general disposition to recognize his rights in a patentable discovery and to make provision for him to share in such proceeds as may be received. In some instances a definite or minimum percentage is specified, either under a formal policy or by general practice; in others, the inventor's share is subject to determination in the light of circumstances surrounding the discovery.

References

1. Byers, J. H., Criteria of Patentability, 62 Scientific Monthly 439 (May 1946)

2. See chapter on Patent Management Procedures, page 95 ff

3. See Appendix, page 146

4. See Appendix, page 159

5. See Appendix, page 124

6. See Appendix, pages 144 and 145

7. See Appendix, page 119

8. See Appendix, page 162

9. See Appendix, page 135

10. See Appendix, page 142

11. See Appendix, page 138

12. See Appendix, page 150

13. See chapter on Sponsored Research, page 53 ff

14. See pages 102-103

15. See Appendix, page 122

16. See Appendix, page 140

17. See Appendix, page 152

18. Regulation Regarding Patents, Fordham University Department of Chemistry; also see page 31

19. Middlebrook, W. T., Universities and Patents, Minutes of the Thirty-Fourth Annual Meeting of the Central Association of University and College Business Officers, page 78 (February 1945); also see page 97

20. See Appendix, page 119

21. See Appendix, pages 152 and 148

22. See Appendix, page 138

23. See Appendix, page 150

X

SUMMARY AND TENTATIVE CONCLUSIONS

The preceding chapters contain a preliminary report on the findings of the survey of the policies, practices, and procedures of educational institutions in the handling of patentable discoveries and inventions growing out of scientific research, which the National Research Council has been conducting. The material presented in those chapters, as well as in the Appendix,[1] is largely factual and is based for the most part upon information obtained directly from the institutions themselves and the other agencies concerned with the problem. Such analyses and interpretations as have been made of specific aspects of the problem, including the background discussion of patents and university research,[2] are drawn from the factual data obtained during the course of the survey.

General Resumé

As revealed through the survey, there is a wide diversity of practice among the various institutions, limited experience with patents and their exploitation, growing interest in the problem, recognition of the need for formulating effective methods for handling patent matters, and a definite desire to develop mutually satisfactory research and patent policies. The current concern with the problem is the result of an increased interest in research on the university campus and a more general realization of its importance in the overall educational program. Further stimulus comes from a recognition of the possibilities of cooperative research, the opportunities for more extensive and more useful public service by educational institutions and the need for the encouragement and more adequate support of university research, particularly in scientific and technological fields.

While patents are usually fortuitious by-products, rather than conscious or inevitable objectives, of scientific investigation conducted on the university campus, many new ideas, discoveries, and inventions, the result of experiments undertaken with quite a different purpose in view, may have valuable commercial application or require protection and control in the public interest. Differences of opinion exist as to the propriety of patenting products of university research, especially those which affect public or individual health, and whether, in view of their public service function and tax-free status, educational institutions should be concerned with patents.

Nevertheless, it is generally recognized that recourse to patenting may be necessary in the interest of scientific and technological progress, as well as the protection and recognition of the various interests and equities involved. If patents are obtained, the educational institutions have responsibility for seeing that the patent rights are so administered that the greatest benefits may be enjoyed by all concerned. The handling of the patent rights and the distribution of any financial returns that may accrue introduce the question of patent management with all its complicated problems and intricate obligations.

The establishment of practices and procedures for the proper and effective handling of patentable results of scientific investigation on the university campus and the bearing of those practices and procedures on the realization of the primary objectives of higher education are matters of direct concern to administrators and scientists engaged in the formulation and conduct of university research programs. Over the years most of the institutions with active scientific research programs have been giving thoughtful consideration to the problem. Yet, relatively few have formulated definite policies, and then usually when faced with situations requiring immediate action. Many of these formal policies, as well as most of the prevailing practices, are under review, in order to bring them in line with current overall educational policies and programs.[3]

The problem of patent rights in connection with university research may arise under a wide variety of conditions. These range from those involved in investigations undertaken by an individual faculty or staff member, or student, in connection with his own scholarly interest and largely on his own initiative, on his own time and his own expense, even though using the facilities and equipment of the institution, to those involved in larger projects sponsored by the institution and financed by institutional funds or funds under the control of the institution. These latter projects may be regular activities provided for in the university's budget or may be supported by special funds from outside sources. Therefore, no single procedure may be offered in all cases and there must be sufficient flexibility to meet different situations and circumstances. Existing practices are discussed in the analytical chapters on personal research, institutionally-supported research, and sponsored research.[4]

Many institutions, particularly those with affiliated medical schools, give special consideration to patentable products of scientific research that may affect public or individual health. Discoveries and inventions of medical, pharmaceutical, therapeutic or hygienic nature are usually treated differently from other results of university research. Some institutions incorporate their attitude toward such discoveries and inventions in their general policies, others have special methods for handling them.[5]

Whether an educational institution should handle patents directly or through some outside agency is an unsettled problem. Patent management is a complicated business and is expensive. Nevertheless, the institution has a responsibility to protect the interests of the public, the inventor, the sponsor when one is involved, and the institution itself. Most institutions endeavor to avoid becoming directly involved in the intricate legal and commercial aspects of patent management. Some endeavor to accomplish this by adopting a hands-off policy and refusing to handle patents. Others have established, or have encouraged the organization of, separately incorporated patent management foundations, independent of but closely related to the institution by the terms of their charters and by the membership of trustees, administrative officers, and faculty on the foundation's boards of directors. Still others have entered into agreements with Research Corporation for that independent foundation to act as their patent management agent. A few attempt to handle patents as a part of the routine duties of already established administrative units, such as the comptroller's or the business office, or through specially designated committees responsible directly to the administration or to the trustees of the university.[6]

Some institutions recognize the rights and interests of the inventor and share the proceeds with him, either under a prior contractual arrangement or by mutual agreement, but there is no uniformity in the division of the financial return from patents between the inventor and the institution. In some institutions the amount given the inventor is specified in accordance with a general policy, with a wide variation among institutions in the proportion allotted to the inventor. In others the inventor's share is determined in each case after consideration by a special faculty or administrative committee. A few institutions include patent provisions in their contracts of employment, in some instances for all faculty members but more often limited to members of the staff whose entire or major responsibility is research, especially contractual research.[7]

Pertinent Considerations

While this preliminary report is designed primarily to present a factual picture of prevailing policies, practices, and procedures, it would not be complete without at least a brief discussion of the pertinent considerations in the formulation of a university patent policy. With so many of the existing policies and prevailing practices under review and the question under study or new policies in the process of formulation at so many institutions, such a discussion is particularly desirable and has been requested in conferences and conversations with those concerned.

Many patent policies have been hastily drawn, without adequate analysis of all aspects of the problem. Often they are the product of a superficial study of such existing policy statements and other data as may be conveniently obtained. In many instances the resulting policy is a composite of features of a number of policies of other institutions, with inevitable inconsistencies and conflicting provisions. Occasionally the new policy is patterned after that of another institution and adopted without essential change or with only slight modification. The result has been constant revision, frequent misunderstanding, and general dissatisfaction. The material contained in this report should be helpful in any study of the problem and should indicate items to be covered in a university patent policy.

Fundamental in the formulation of a policy are the aims and objectives of the institution, its statutory and organic structure, the character of its educational program, and the available research facilities. The policy should be broad enough to cover all types of research, the constituent elements of the university group, and the various problems that might arise. This does not necessarily mean that the policy statement should be lengthy and detailed, merely that it should be comprehensive, clear and definitive. It should be flexible enough to meet unusual and special circumstances, and provision should be made for the clarification of issues, determination of equities, and settlement of moot questions.

Where contractually-arranged sponsored research is contemplated, specific procedures should be prescribed for the handling of contractual relations with sponsors, the conduct of the projects, the ownership and control of the findings, the disposition of patent rights, and the recognition of the several equities involved. In some instances, because of the extent of this type of research program, it may be necessary to set up special machinery for its administration and to develop special procedures.

Similarly, in the case of research having medical, therapeutic, pharmaceutical or hygienic implications, if such research and its results are to be handled differently from the general research and patent policy of the institutions, such differences should be specifically covered in the policy, whether or not a medical school is affiliated with the institution.

Sound patent management procedures should be developed, whether the institution plans to administer patent rights directly or to utilize the facilities of a special patent management agency. In this connection, it must be recognized that the mere establishment or designation of machinery for handling patent rights does not necessarily insure efficient or effective management. Specialized knowledge and extensive experience in the exploitation and commercialization of patents are essential.

Financial return from patents should not be the primary objective nor should it be counted upon as a source of support of further research or the other programs of the institution. Nevertheless, definite provision should be made for the determination of equities in any revenue that might accrue and for the protection of the interests involved.

Although the final adoption of a policy is legally the responsibility of the governing board of the institution, the most satisfactory procedure to follow in formulating one is to have the preliminary study conducted and the initial statement prepared by the faculty, with such advice and assistance from the administration as may be needed. The policy should then be submitted for administrative approval before consideration and adoption by the board of control. Such a procedure will prevent some of the unhappy situations that have developed in institutions which have adopted policies in a different way.

Once the policy is adopted, it should be committed to permanent form, preferably printed, and made available to all those concerned in its operation and execution. It should be brought periodically to their attention and discussed, and should be subject to review and revision whenever circumstances require. All too frequently existing policies and prevailing practices are not generally known or not understood, even by older members of the faculty and staff.

This brief discussion of pertinent considerations in the formulation of a university patent policy is admittedly superficial and general, but it does offer suggestive answers to questions which have been raised by administrators and scientists during the course of the survey. Critical study of the material contained in this report is recommended, also careful analysis of local circumstances and problems. The director of the survey is ready to assist those concerned with the formulation or reformulation of a patent policy, through advisory or consultative services or review of tentative policy statements, as he has already done in a number of instances. However, in the last analysis, the policy adopted for a particular institution must be made to fit its own individual situation.

As revealed by the survey, no two policies or practices are or need be exactly alike. Yet, the need for the formulation of a comprehensive patent policy, incorporating the various items discussed in this report, is eminently desirable. This report is released for the information and guidance

of those concerned with the problem. At this time no definite conclusions are drawn from the findings of the survey. These will evolve from further studies of the problem, more intensive analysis of the data already assembled, additional information to be obtained on the experiences of individual institutions, and the conferences and symposia on research and patent problems which are planned for the ensuing year.

Refinement and amplification of the information gathered during the course of the present survey and the further studies and conferences which are contemplated will make possible the early publication of a definitive report on the subject as it applies both to educational institutions and to other nonprofit research organizations.

References

1. See Appendix, page 119 ff

2. See chapter on Patents and University Research, page 5 ff

3. See chapter on The Present Situation, page 15 ff; also subsequent chapters, pages 37 - 112

4. See pages 37 ff, 45 ff, and 53 ff

5. See chapter on Medical Patents, page 71 ff

6. See chapter on Patent Management, page 95 ff

7. See chapter on Patent Revenue, page 109 ff

APPENDIX

FORMALIZED PATENT POLICY STATEMENTS

The following thirty-seven verbatim statements of formalized patent policies are presented to supplement and illustrate the references made to these policies in the text of the report, and to serve as examples of the exact style and phraseology used in the formulation of a university patent policy statement.

Many of these policies are currently under review to meet changing postwar conditons in the institutions, but as of the time of this report these formalized statements represent the existing situation. Some of the more recently adopted policies are patterned after those of other institutions, particularly the University of Illinois, Pennsylvania State College, Lehigh University, and Massachusetts Institute of Technology.

Most of the policies have been established through trustee action, usually based upon extended prior study by special faculty committees and administrative approval and recommendation. In many instances the policy statements have been incorporated in the official by-laws and regulations of the institutions concerned; in other instances they are to be found only in the minutes of meetings of the boards of control. The patent policies of several of the state institutions have been established by legislative action and are part of the organic laws of the states. In one instance the patent policy of an affiliated research foundation serves as the policy of the institution.

Certain of the policy statements have been published in booklet form, frequently as part of general research and other faculty regulations, but a number exist only in mimeographed or other semi-permanent form. The statements vary in length and also in the extent to which they provide for the various possibilities that might arise and delineate the procedure to be followed. In practice the policies are all subject to and are given local interpretation, in conformance with institutional regulations and other pertinent considerations.

The date of its adoption is given for each policy and also the source of the statement when it is available in printed or other definitive form. Where the source is not indicated, the statement is available only in mimeographed or typed form and has been obtained, for the purpose of the survey, through correspondence.

ALABAMA POLYTECHNIC INSTITUTE
(adopted 1945)[1]

1. Patents which may develop from departmental research carried on by one or more faculty members which has met with the approval of the head of the department and/or the dean of the school, and which was initiated for the purpose of the professional advancement of the faculty and the department,

and to which neither the Alabama Polytechnic Institute nor the Auburn Research Foundation has subscribed a substantial amount of time, space or funds; such patents will become the property of the inventor or inventors. The right of ownership includes the right to sell, assign or otherwise dispose of these rights.

2. Patents which may develop from research as described above but which may have been aided by funds obtained from some source outside the Alabama Polytechnic Institute or the Auburn Research Foundation, such as grants by a professional society, a philanthropic or industrial organization, etc., such patents will become the property of the inventor or inventors with all the rights as describe above.

3. Patents obtained under sections 1 and 2 above may be assigned to the Auburn Research Foundation.

4. (a) Patents which may develop from research financed by the Alabama Agricultural Experiment Station are to be assigned to the Auburn Research Foundation. The Auburn Research Foundation will pay the cost of obtaining such patents. If the Foundation has not filed claim for a patent within the period of one year from the date a written report describing the patentable invention was presented to its Board of Directors all patent rights on said invention revert to the inventor or inventors.

(b) Patents which may develop from research financed wholly or in part by the Engineering Experiment Station, Alabama Polytechnic Institute, are to be assigned to the Auburn Research Foundation. The Auburn Research Foundation will pay the cost of obtaining such patents. If the Foundation has not filed claim for a patent within a period of one year from the date a written report describing the patentable invention was presented to its Board of Directors, all patent rights on said invention revert to the inventor or inventors.

5. Patents which may develop from research sponsored and financed by the Auburn Research Foundation are to be assigned to the Auburn Research Foundation. The Auburn Research Foundation will pay the cost of obtaining such patents. If the Foundation has not filed claim for a patent within the period of one year from the date a written report describing the patentable invention was presented to its Board of Directors all patent rights on said invention revert to the inventor or inventors. Faculty members and others whose research is wholly, or in part, supported by the Auburn Research Foundation may be asked to sign an agreement with the Foundation whereby the above may be put in force.

6. The Auburn Research Foundation will apply for patents for members of the faculty, members of experiment station staffs, and other under the conditions set forth below:

a. Any action will be at the discretion of the Board of Directors of the Auburn Research Foundation.

b. A written agreement between the inventor or inventors and the Foundation will be executed assigning the patent to the Foun-

dation before the Foundation makes formal application for the patent.

c. The Foundation will bear all expense in obtaining the patent and in any subsequent legal action which the Foundation may deem advisable to protect the patent.

d. The Foundation will pay to the inventor or inventors fifteen per cent of the profits from said patents, after all expenses have been paid.

e. The Board of Directors of the Auburn Research Foundation may at its discretion, grant additional amounts in excess of the fifteen per cent (in 6d above) to an inventor or inventors whose inventions, in the opinion of the Board, appear to warrant additional compensation.

f. Any profits accruing from the ownership of patents by the Auburn Research Foundation will be used in aiding and/or initiating research in the Alabama Polytechnic Institute as set forth in the charter of the Auburn Research Foundation.

7. The action of the Board of Directors of the Auburn Research Foundation in making grants to members of the faculty or departments for research purposes is not to be based on the expected development of a patentable idea from such research.

UNIVERSITY OF ALABAMA
(adopted 1945)

I Patent Committee. The University has established a Patent Committee consisting of three members of the faculty appointed by the President.

II Policy in Regard to Patents. The University's policy in regard to inventions which can be patented is as follows:

(1) In the event that any member of the faculty makes an invention which is capable of protection under the patent laws, the invention shall be the property of the inventor, unless the University has made a substantial contribution in time, money, or facilities to the production of such an invention.

(2) If the University makes a substantial contribution in time, money, or facilities to the production of any patentable invention made by a member of the faculty, the invention shall be the property of the University. The University will, however, assign to the inventor a percentage of the net profits which it may derive from the sale or exploitation of such invention.

(3) If the University makes a contribution of two hundred dollars or less in money to the production of any patentable invention made by a member of the faculty, the invention shall be the property of the inventor. But the inventor shall be under an obligation to reimburse the University for

such contribution if the inventor derives sufficient profits from the invention to do so. Any contribution, in money, in excess of two hundred dollars shall be considered a substantial contribution within the provisions of Section II, Part 2.

(4) In the event that any person is expressly employed for the purpose of devoting all or a specific part of this time to research, any patentable invention made by such person in the performance of his duties for the University shall be the property of the University. In such a case the procedure of Section II, Part 2 shall apply.

(5) If a patentable invention is made by a member of the faculty, and substantial contributions are made to the production of the invention by both the University and some person or firm not connected with the University, the ownership of the patent, and the inventor's rights, shall be the subject of special agreement.

(6) If a patentable invention is made by a student who is not employed by the University, the invention shall be the property of the student.

UNIVERSITY OF ARIZONA
(adopted 1939)[2]

1. A Fund for the Promotion of Research shall be established by the Board of Regents of the University. In it shall be deposited all monies received by the University from financially profitable patents granted for inventions made by members of its staff or student body, as herewith provided.

2. A Patent Committee of the Faculty to consist of five persons shall be appointed by the President. Additional members may be temporarily added by the Chairman at any time to consider a particular invention if their advice is needed.

3. If and when the Fund for the Promotion of Research reaches such a size as to make it desirable to do so, another committee to consist of three persons appointed by the President shall be created to consider and recommend grants of money in support of research on the campus and the creation of research fellowships, both to be financed from this Fund.

4. Except as otherwise stated, no inventor shall be compelled to submit an invention to the Patent Committee or allow the Research Corporation of New York to apply for a patent on it and commercialize the patent. If an inventor does desire to take advantage of the facilities herein outlined, such action shall be purely voluntary. If he wishes to apply for a patent at his own expense and to sell such patent, or an interest in the same, or otherwise use it in such a way as to yield financial returns to himself, he shall be free to do so, but he must then pay into the Fund for the Promotion of Research ten per cent of all monies received by him from his invention in recognition of the fact that University laboratory and other space and equipment, together with library facilities, were doubtless used in developing the invention.

5. The Patent Committee may recommend to the Board of Regents that the con-

contribution of the aforementioned ten per cent of gross earnings to the Fund be waived or reduced if it seems evident to it that University facilities and time were not used in developing an invention, or were used to such a slight extent that a ten per cent contribution might be considered exhorbitant.

6. If the University Patent Committee decides that an invention is meritorious and probably new, and, if the process or article is such as may probably be marketed profitably, or if it seems desirable to make the invention available to industry and the public on a reasonable basis, it will submit the invention to the Research Corporation of New York. If the Corporation accepts the invention, the inventor will assign all his rights therein to the Research Corporation which will pay for having a search of the Patent Office records made. If the invention is found to be patentable, the Research Corporation will pay all the expense of procuring a patent or patents, the cost of defending or prosecuting infringement suits, and the expense of marketing the invention.

7. The Research Corporation will pay to the inventor seven per cent of the gross profits accruing from his invention.

8. The Research Corporation will pay to the University, to be placed in the Fund for the Promotion of Research, forty per cent of the net profits accruing from the invention after the inventor has received his portion, until all expenses incurred by Research Corporation in connection with an invention have been refunded to it; thereafter, the University shall receive sixty per cent of the net profits.

9. If an employee of the University, either on full or part time, develops an invention as a result of research work for which he is paid by the University, on University time, the inventor must submit his invention to the Patent Committee and assign it to the Research Corporation, if both the Committee and Corporation approve.

> NOTE: It is understood that the Research Corporation of New York is not interested in securing patents on and marketing small articles, such as it terms "gadgets", or relatively unimportant processes. The University will be unable to assist in the patenting and marketing of such things until adequate funds are available to justify the adoption of a plan of procedure different from that herein set forth.

10. Should some person, group of persons, firm or organization pay in whole or in part for the investigation of some problem at the University, and should an invention be developed as a result of such a cooperative enterprise, then the ownership of the patent shall be determined by the terms of the agreement entered into between the University and such cooperating person, group of persons, firm or organization.

11. If the Patent Committee or the Research Corporation reports adversely on any invention, or if no report is received by the inventor within ninety days of the date the invention is submitted to the Patent Committee, the inventor shall be free to handle it as seems best to him.

UNIVERSITY OF ARKANSAS
(adopted 1945)[3]

1. Any invention, formula and/or process developed or discovered by a staff member in the course of his regular duties shall be controlled by the University.

2. An equitable division of royalties on profits derived from the sale or license of an invention, formula or process patented at University expense will be made by the University Committee on Patents.

3. The Trustees hereby authorize the establishment of a faculty committee on University patents.

4. Funds may be appropriated as required for financing the work of this committee.

The Committee on Patents is charged with the following responsibilities:

1. To determine the amount of University time, equipment and funds used in developing the idea.

2. To determine whether or not funds used in the development of the idea were all Federal or donated funds; and whether or not the invention is in the interest of and should be patented for the general good of the public.

3. To receive and consider applications from staff members desiring to secure patents at University expense and with University participation in profits and control.

4. To appoint sub-committees of the staff to advise on technical phases of patent applications under consideration.

5. To consider the business aspects of such applications.

6. To obtain specialized legal counsel to handle patent applications.

7. To consider and recommend to the Board of Trustees agreements covering licensing patents secured.

8. To consider and recommend to the Board agreements with staff members relative to the assignment of patents by the staff members of the University.

CALIFORNIA INSTITUTE OF TECHNOLOGY
(adopted 1945)[4]

1. Certain of the inventions which may be made by employees in line of duty or with the use of Institute facilities should be patented in order to protect the Institute and the public. These patents should be assigned to the Institute and all costs involved in obtaining the patents borne by the Institute.

2. In general it should be the policy of the Institute that no revenue in

excess of administrative costs should be received from patents or inventions made by employees in line of duty or with Institute facilities, but it is recognized that such a policy if rigidly adhered to may be too limiting on the activities of the Institute and employees. In each case where this policy is deviated from, the inventor should then receive from the Institute fifteen per cent of the gross sum of money which has accrued or shall thereafter accrue to the Institute from his patent.

3. In order to make the above policy effective and uniform in its application, the Trustees should request all members of the staff of research and instruction to sign a patent agreement assigning their rights to patents and inventions which they may make in line of duty or with Institute facilities to the Institute or its nominee. Such an agreement should be required of all new employees.

Such an agreement has been formulated and has been approved by the faculty Committee on Patents and by counsel.

4. Employees who elect to work on governmental or industrial projects undertaken by the Institute should sign such supplemental agreements as are necessary to enable the Institute to fulfill its contractual obligations in regard to patents.

5. All employees should immediately report to the Institute any idea or discovery which they believe to be of a patentable nature and which arises in line of duty or as the result of the use of Institute facilities; this obligation shall in no way interfere with the prompt publication of research results.

It is not intended that the research staff should be burdened by having constantly to scrutinize research results for minor patentable features. However, inventions of obvious social or commercial value should be reported promptly in order to obtain the desired protection.

6. Inventions and discoveries made by an employee in his own time and without the aid of Institute facilities are the sole property of the inventor.

(1) Patents from such inventions should be administered so as not to involve the Institute name or to discredit the Institute.

(2) Time spent in administering such patents should conform to the Institute policy on outside activities by staff members.

(3) In general faculty members should not patent such inventions which are in the specific field of an Institute research program without permission of the Institute.

7. Patent licenses granted by the Institute should in general be non-exclusive. In some cases involving high developmental expenditures by the licensee, or for other special reasons, an exclusive license may be given subject to a suitable cancellation clause.

8. In general it should be the policy of the Institute that the sponsors of research work done by the Institute should not receive any patents as a

result of this work. When this is deemed impractical, patent rights may be granted to the sponsors; if patents are assigned to the sponsors they shall be required by contract to license others under these patents on the basis of reasonable royalties and terms.

9. A committee selected by the Faculty should be charged with the following responsibilities:

(1) Recommending what inventions should be patented by the Institute.

(2) Adjudicating uncertain cases such as those involving "line of duty" versus "own time" inventions.

(3) Making recommendations in regard to patent provisions in industrial contracts.

(4) Acting in an advisory capacity with regard to patents owned by the Institute.

10. Any proposal to deviate from the general policy as expressed in Article 2 above shall be referred to the Faculty Committee on Patents for recommendation.

UNIVERSITY OF CALIFORNIA
(adopted 1943)[5]

1. All matters relating to patents in which the University of California is in any way concerned shall be administered by an agency known as the University of California Board of Patents.

2. Members of the faculty or non-academic employees shall advise the Board of Patents with regard to any patentable project developed in the course of their work.

3. Assignment to the Regents of whatever rights the inventor or discoverer may possess in the patent or appointment of the Board as the agent of the inventor or discoverer shall be optional on the part of the faculty member or employee.

4. The Board of Patents shall be appointed by the Regents. It shall have full power of organization, subject to the provision that it meet at least once each year, and the members shall serve, without compensation, at the pleasure of the Regents.

The Board shall consist of nine persons selected from the faculty, the administration of the University, and such other groups as the Regents may determine, but of this number the Chairmen of the Committees on Research, Northern and Southern Sections of the Academic Senate, shall be ex-officio members. The Board shall be instructed to provide, upon organization, for the discharge of members thereof at the termination of staggered terms of service, without prejudice, however, to the right of retiring members to accept reappointment.

5. Subject to the approval of the Regents, the following powers and duties shall be exercised by the Board:

a. Appoint a committee of experts to examine the merits of each potentially patentable project which may be submitted to it or which may come to its attention, and to cause such committee to report its findings to the Board.

b. Report and recommend to the Regents in each instance the action to be taken by the Board.

c. Reach agreement with the inventor or discoverer upon whatever financial interest, if any, the Regents or a cooperating agency, if one is involved, may have in the project, and upon distribution of royalties, it being recognized that in instances where the University as well as the inventor may be found to possess rights in an invention, the respective equities therein shall be determined in the light of conditions leading to the invention, the amount of income that reasonably may be expected to result therefrom, and the services assumed by the University in obtaining and administering the patent.

d. Execute, through the appropriate University officer or officers, all documents necessary to define the rights agreed upon by the Board, a cooperating agency, if any, and the inventor or discoverer.

e. Recommend, in the case of patents in which the University may be found to have an equity or in which the Board has been asked to act for the inventor, whether the Regents shall have it patented at their expense or release it entirely to the inventor for whatever independent action he may care to take.

f. Retain patent counsel in association with the University Attorney in connection with matters pertaining to the filing of patent applications, approved by the Regents, the prosecution thereof, and the litigation which may arise therefrom.

g. Negotiate through the appropriate University officer for licensing and other agreements covering the manufacture and sale of patented articles or processes resulting from patents on inventions submitted to it, in which the Regents have an interest, and to arrange for and direct the collection of royalties and the distribution thereof to those entitled thereto.

h. Obtain from cooperating agencies assignment of patent rights to inventions or discoveries made as the result of research carried on under special grants.

6. Any net income accruing to the Regents shall be devoted to -- First: the promotion of research within the University. Second: general University purposes.

CARNEGIE INSTITUTE OF TECHNOLOGY
(adopted 1944)[6]

I Ownership of Inventions

A. In cases involving the Institute and an outside agency, patent rights shall be specified in a special contract approved by the Institute and covering the research.

B. An invention or discovery shall be the sole property of the Institute if the Institute has substantially completely supported the research out of which it has emerged.

C. The Institute shall have no equity in an invention or discovery if the Institute has made only an inconsequential contribution or no contribution whatever to the research leading up to it. All such cases, however, shall be reported in accordance with II-A below.

D. In cases lying between categories B and C above, the legal title to the invention or discovery shall be in the Institute, for purposes of orderly administration, but the inventor shall be entitled to a share in the returns (if any) from it, commensurate with the respective contributions of the inventor and the Institute, the proportions in any case to be determined by a Committee on Patents subject to review by the President and the Executive Committee of the Trustees.

II Administration of Policy

A. Where an invention or discovery coming within the purview of this Statement of Patent Policy has been made, the inventor shall inform the President in writing, through the department head and director concerned, regarding the circumstances of the case.

B. In each particular case requiring review, a special Committee on Patents shall be appointed by the President with the approval of the Executive Committee of the Trustees. A case shall be deemed to require review if either the President or the inventor so determines.

C. Each Committee on Patents shall be composed of representatives of the trustees, administration and faculty, and students (if involved).

D. The functions of a Committee on Patents shall be

(1) to determine, subject to review by the President and the Executive Committee of the Trustees, whether the case under consideration lies in category B, C or D above and if in category D, the specific proportions in which the proceeds are to be shared between the inventor and the Institute; and

(2) to review and make recommendations to the President regarding any other issue that may arise concerning the particular case assigned to it.

E. The final decision on matters coming within the purview of this Statement of Patent Policy shall rest with the President and the Executive Committee of the Trustees.

F. If it shall be determined that an invention lies in category B or D, above, and that the Institute desires to obtain patent protection thereon, the inventor shall, upon request, execute such applications, assignments and other lawful papers, and do such other lawful acts, as may be deemed necessary or desirable by counsel for the Institute, to vest legal title to the invention and any patents thereon (both for the United States and foreign countries) in the Institute or its nominees and to aid in obtaining patent protection therefor, all without expense, however, to the inventor.

G. If it shall be determined that an invention comes within category B or D, above, and that the Institute does not desire to obtain patent protection thereon, the President and the Executive Committee of the Trustees, if they deem it to the best interest of the Institute to do so, may convey some or all of the Institute's rights in the invention to the inventor, with such reservations for the protection of the Institute as they may deem proper.

H. If it shall be determined that an invention comes within category B, above, and that the Institute desires to obtain patent protection thereon, the President and the Executive Committee of the Trustees, if they deem it to the best interest of the Institute to do so, may provide that the inventor share in the returns (if any) from the invention to the extent determined by the President and the Executive Committee of the Trustees.

III Applicability of Policy to Students

All graduate students who spend substantially full time at the Institute in any combination of study, research and teaching, will be required to indicate in writing their acceptance of the provisions of this policy. The rights of the Institute, if any, in inventions made by any other students under the sponsorship of the Institute or employing its facilities will be subject to determination, unless otherwise expressly agreed, by the applicable law relating to ownership of inventions, implied licenses and shop-rights.

UNIVERSITY OF CHICAGO
(adopted 1943)[7]

The University of Chicago's basic policies include complete freedom of research and the free, unrestricted dissemination of information. In view of these policies, the University will not profit financially from research by means of patents, royalties or licensing agreements. Members of the staff will not be permitted to receive direct or indirect financial returns from patents based on work performed during the period of their employment by the University, or to make arrangements for such returns which take effect after such period. The University will cooperate with industrial organizations by conducting fundamental research projects financed by grants from such organizations, and will make research reports to the grantors, but it will retain the right to publication of the results. The University will not permit its name or the names of its investigators to be used in advertising.

UNIVERSITY OF CINCINNATI
(adopted 1946)[8]

(a) The right of absolute ownership by a faculty member or student or other person connected with the teaching and research staffs of the University, of his own inventions, discoveries, writings, creations, and/or developments, whether or not made while using the regular facilities of the University (as contrasted with those devoted to specific projects as outlined below), and the right of such persons to apply for, hold and dispose of patents, copyrights and other protective rights, are recognized as indefeasible except in the event that the invention, discovery, writing, creation, or development was made as a direct result of a specific research project sponsored and financed by the University or by the University of Cincinnati Research Foundation or by other agencies outside the University, under a contract with the individual concerned, specifying the abrogation of those rights as to that specific project.

(b) It is suggested that inventors or discoverers of patentable materials, processes or ideas may find it desirable to consult with the authorities of the University or of the University of Cincinnati Research Foundation concerning policies, procedures and terms for the acquisition and exploitation of patent rights under conditions that may be advantageous to themselves and/or to the University.

(c) The policy of the University, with respect to inventions, discoveries or developments relating to medicine, therapeutics or hygiene, is to discourage the acquisition of patents by faculty members, students or other persons connected with the teaching and research staffs or by any agency of the University, except when the control provided by patent rights appears to be necessary or desirable in relation to the public welfare. Therefore, it is strongly recommended that patentable inventions and discoveries of this type as well as investigative work that is clearly pointed toward such patentable inventions or discoveries, be brought to the attention of the Dean of the Faculty to which the inventor belongs, and by the Dean reported to the administrative authorities of the University, to the end that action, in keeping with the rights and wishes of the inventor and appropriate to the public responsibilities of the University, may be agreed upon. It is understood that such consultation of the inventor with University authorities shall be voluntary in the absence of prior agreement to the contrary, and that the right of the inventor to this invention shall not be prejudiced thereby.

(d) The University may invite members of the Faculty or students or other persons connected with the teaching and research staffs to give assistance, services, advice, work and/or supervision in connection with research projects supported in whole or part by organizations or individuals outside the University, provided that, in all cases, before assistance, services, advice, work and/or supervision are rendered, a written agreement, on terms mutually satisfactory, has been made.

(e) The space and facilities of the University are provided for the purposes of giving instruction and carrying on scholarly work. Research projects supported by industries or other sponsors, from which it is contemplated that patents, copyrights, or other rights beneficial to the supporter and/or the University of Cincinnati Research Foundation will result, shall be housed

only in such space and shall be entitled only to such facilities as are not needed for instruction or other scholarly work.

(f) Should any faculty member or student or other person connected with the teaching and research staffs of the University wish, for any reason, not to agree to restrict his rights mentioned in Paragraph (a) above, and/or should he not wish to agree to provide the assistance, services, advice, work and/or supervision mentioned in Paragraph (d) above, he shall suffer no prejudice in his relations with the University because of his wish not to enter into such agreement or agreements.

(g) No faculty member or student or other person connected with the teaching or research staffs of the University shall use the name of the University for promotional purposes in connection with the ownership or disposal of patents or other such protective rights without first having obtained the written consent of the President of the University. This provision shall not apply to the copyrighting of books and articles for publication.

CLEMSON AGRICULTURAL COLLEGE
(adopted 1934)[9]

(a) The principle is recognized that the results of experimental work carried on by or under the direction of any College employee or employees, where any of the facilities of the College are used or where any part of the expense involved is paid from funds controlled by the College, belong to the College and the public and shall be used and controlled in ways to produce the greatest benefits to the College and the public.

(b) In the event of any discoveries or inventions resulting from such experimental work, the Board of Trustees shall have the right to determine what use may be made of them in the best interests of the public.

(c) The ownership of copyrights on books, or inventions or discoveries made by College employees outside of their regular duties and at their own expense shall not be in the name of the College.

COLUMBIA UNIVERSITY
(originally adopted 1924 and subsequently revised)[10]

This statement, which is designed to serve as a guide and basis in connection with patent rights and procedures, is prefaced with the comment: "As has been indicated in the preceeding discussion of research practices, it is clear that the problem of patent rights in connection with University research may arise under a wide variety of conditions. No single procedure can, therefore, be developed which may be applied to all cases."

1. Staff Members

While it is the policy of the Faculty of Medicine to discourage the patenting of any medical discovery or invention, and to forbid the patenting or exploitation of such discoveries by members of the staff, the right of staff members in other divisions of the University to secure patents on

their inventions is well recognized. Individual staff members, therefore, in general, are free to patent any device or discovery resulting from their personal researches and, of course, to make any arrangements they deem desirable in reference to patent and other rights incidental to personal arrangements for consulting and similar services.

As outlined in the next section, the University has provided through the Committee on Patents and University Patents, Inc., a means by which a staff member may secure advice and aid on patent proposals and may arrange to share with the University the returns from any patent rights.

It should also be noted that staff members or other employees of the University accepting appointment in an industrial service laboratory of the University, or in connection with cooperative researches, assign to the University the rights to any inventions they may make in connection with such employment, in order that the University may enter into the patent arrangements with the client or sponsor outlined in Sections 3 and 4 following.

Staff members or other employees so engaged will also use proper discretion in discussing such inventions with others in order that the rights of the University and the client or sponsor may be properly protected. Needless to say, such secrecy must not be permitted to prevent the discussion of ideas, possible methods, etc., with colleagues and other experts whose counsel and advice may be of importance in advancing the investigation or research in question.

2. University Patents, Inc., and the Committee on Patents

In order that staff members engaged in personal research as well as alumni and other friends of the University may assign to the University the rights which may result from their investigations, either for the encouragement of education and research or as a means of providing suitable participation by the University in such rights, there has been established a holding company known as University Patents, Inc. All the stock of this company is owned by the University, and University Patents, Inc., is authorized to accept, secure, and hold patent rights (also copyrights, trade-marks, or proprietary names) and to make arrangements for the use thereof as provided in Chapter XXXVII, Section 370, of the Statutes of the University.

Furthermore, in order to secure expert advice and assistance in the handling and administration of such patent rights, the Trustees have entered into agreement with Research Corporation, a nonprofit organization the income of which is devoted to the furtherance of scientific and engineering research and invention, to act for the University when desirable in securing patents, in administering same, and in disposing of rights through license.

The assignment of discoveries or inventions by staff members to University Patents, Inc., or to Research Corporation is normally, as above noted, on a purely voluntary basis and University Patents, Inc., and Research Corporation, in turn, reserve the right to refuse to cooperate in securing a patent, or to accept an assignment, if, in their opinion, it is not in their interest to do so.

Staff members interested in following this procedure should address the Committee on Patents, care of the Secretary, Columbia University. This

Committee not only acts as a policy-making group on University patent procedures, subject to the approval of the Trustees of the University, but also in an advisory capacity to staff members, calling, when desirable, upon experts in various fields of research and patent law for advice, and recommending to the staff member and to the University authorities suitable action in specific cases.

3. Industrial Service Research

It has been noted that certain laboratories have been granted authority under special conditions and limitations, to undertake, by direct contract, researches and investigations for various clients. In many cases no patent problems will arise in connection with such a contract, but the disposition of rights to inventions should be stated in the contract, with provision, where possible, for the University to share in such rights as provided in Section 4 following.

Researches in these laboratories may also be initiated by staff members, and it is understood, as previously stated, that they shall be free to dispose of any patent rights arising from their own personal researches and investigations, although they will, of course, be bound by such arrangements as may be made with specific clients or sponsors regarding the results of research undertaken by the laboratory under agreements or contracts.

It is clear, however, that in those cases where researches or investigations are undertaken, either in these or other laboratories, wholly at University expense and as a normal activity of the department or laboratory, the University should share in any patent rights or money values which result from such studies. Provision is made for such participation through the Committee on Patents, and University Patents, Inc., as noted in Section 2 above. The University, accordingly, reserves the right to make staff appointments in such departments or laboratories subject to such a requirement (See Section 1).

4. Cooperative Research

Cooperative research may be undertaken on the basis of partial or full support by the cooperating organization or individual.

(a) In general such cooperative research will be of a fundamental character and such patents as may arise will be of a basic type requiring much time and a large expenditure of funds in further research and development work before the discovery or invention can be manufactured and marketed. The University cannot, in general, undertake such development, and this vital part in the evolution of a discovery or product must, therefore, be undertaken by the industry.

Accordingly, when the cooperating sponsor agrees to meet all the costs of a cooperative research project, including salaries, supplies, apparatus, and a reasonable allowance for overhead expenses, the University will arrange that all staff members and other employees assign any rights to inventions to the University, which in turn will authorize the sponsor, if he so desires, to patent such discovery or invention arising from such research, and to protect such patent by securing desirable foreign rights, etc. The industry, however, shall agree to return to University Patents, Inc., for

the encouragement and support of research and other University objectives, a percentage of returns, based on sales or thruput, of any article or process covered by such patent, in such amount and under such conditions as may be mutually agreed upon. This agreement should include an understanding as to the efforts which the sponsor shall make for the realization of such patent, and provision that if the sponsor fails to meet these requirements within a specified period all rights to said patent shall revert to University Patents, Inc.

(b) If the University is convinced that the opportunities for extending fundamental scientific and technical knowledge offered by a proposed industrial research are sufficient to justify the use of University funds in meeting in part the cost of such research, it will enter into a contract whereby the costs of the research will be carried jointly by the cooperating organization or individual and the University.

While the probability of patentable rights arising from such researches is remote, it is agreed that, should such rights develop, the industry shall be free to patent the same as provided in paragraph (a) above, but should this patent prove financially productive, will return to the University not only the sum required in paragraph (a) but an additional annual amount to be agreed upon, so that at least the full expenses incurred by the University in connection with the research in question up to the time of the discovery or invention leading to the patent, shall be liquidated.

(c) Scope of Patents. In order to avoid possible misunderstandings as to the origin of any patent resulting from joint researches and investigations, and to insure at all times a free and full discussion of developments of mutual interest, it will be agreed that any patent arising from a discovery or invention within the general scope of the specific research or investigation, whether made in the University laboratories or in the laboratories or shops of the industry, or by members of the University staff, by other employees of the University or industry, or jointly by both groups, shall be regarded as meeting the requirements for joint participation as provided above.

(d) Industrial Associations or Institutes. Patent arrangements with industrial associations or institutions which are affiliated through contract with the University in educational and/or research activities shall, in general, follow the form of paragraph (a) above.

(e) Arbitration. In case of any dispute as to the details of a contract for cooperative industrial research or the participation by the University in rights resulting from any discoveries or inventions, it is agreed that the University and the industry shall each appoint a representative and that these in turn shall select a third party. The decision of this group shall be accepted as final.

(f) Participation by Staff. While a staff member engaged in University research of this cooperative or industrial type shall agree to an assignment of his patent rights, any such employee who makes an invention which, under the foregoing procedures, results in a financial return to the University, shall be eligible to receive from the University such share in these returns as may be mutually agreed upon.

(g) Publication. The University reserves all rights to the publication of data resulting from cooperative industrial research, subject to the following conditions:

i. At the written request of the cooperating industry, publication will be withheld for a reasonable period so that patent application can be filed. The industry will use its best efforts to expedite such application, but, unless specifically agreed upon, this period shall not exceed six months.

ii. Any patented or commercial products mentioned in such publication shall not be referred to by name except with the consent of both the University and the industry.

iii. While the University will submit to the industry for review and suggestions any proposed publication previous to printing same, and will endeavor to meet all reasonable requests and suggestions, the University reserves full authority as to the form, scope, and content of such publications.

UNIVERSITY OF CONNECTICUT
(adopted 1945)[11]

538h. Research Foundation. Definitions. As used in sections 539h to 545h, inclusive, "University" shall mean The University of Connecticut; "board" shall mean the Board of Trustees of the University; "foundation" shall mean the research foundation established in accordance with section 539h; "employee" shall mean any member of the faculty or staff of the University or the foundation, or any other employee thereof, "invention" shall mean any invention or discovery and shall be divided into the following categories:

(A) Any invention conceived by one employee solely, or by employees jointly;

(B) Any invention conceived by one or more employees jointly with one or more other persons;

(C) Any invention conceived by one or more persons not employees.

539h. Establishment and Management of Foundation. The board is authorized to establish and manage the foundation as provided herein. The foundation may, subject to direction, regulation, and authorization or ratification by the board: (1) receive, solicit, contract for and collect, and hold in separate custody for purposes herein expressed or implied, endowments, donations, compensation, and reimbursement, in the form or money paid or promised, services, materials, equipment or any other things tangible or intangible that may be acceptable to the foundation; (2) disburse funds acquired by the foundation from any source, for purposes of instruction, research, invention, discovery, development or engineering, for the dissemination of information related to such activities, and for other purposes approved by the board and consistent with sections 538h to 545h inclusive; (3) file and prosecute patent applications and obtain patents, relating to inventions or discoveries which the University may be justly entitled to own or control,

wholly or partly, under circumstances hereinafter defined; and receive and hold in separate custody, assignments, grants, licenses, and other rights in respect to such inventions, discoveries, patent applications, and patents; (4) make assignments, grants, licenses or other disposal, equitably in the public interest, of any rights owned, acquired or controlled by the foundation, in or to inventions, discoveries, patent applications, and patents; and to charge therefor and collect, and to incorporate in funds in the custody of the foundation, reasonable compensation in such form and measure as the board shall authorize or ratify, and (5) execute contracts with employees or others for the purpose of carrying out the provisions of sections 538h to 545h, inclusive. All property and rights of every character, tangible and intangible, placed in the custody of the foundation in accordance with said sections, shall be held by the foundation in trust for the uses of the University. The entire beneficial ownership thereof shall vest in the University and the board shall exercise complete control thereof.

540h. Ownership of Inventions. The University shall be entitled to own, or to participate in the ownership of, and to place in the custody of the foundation to the extent of such ownership, any invention, on the following conditions: (a) The University shall be entitled to own the entire right, title, and interest in and to any invention in category A, in any instance in which such invention is conceived in the course of performance of customary or assigned duties of the employee inventor or inventors, or in which the invention emerges from any research, development or other program of the University, or is conceived or developed wholly or partly at the expense of the University, or with the aid of its equipment, facilities or personnel. In each such instance, the employee inventor shall be deemed to be obligated, by reason of his employment by the University, to disclose his invention fully and promptly to an authorized executive of the university; to assign to the University the entire right, title, and interest in and to each invention in category A; to execute instruments of assignment to that effect; to execute such proper patent applications on such invention as may be requested by an authorized executive of the University, and to give all reasonable aid in the prosecution of such patent applications and the procurement of patents thereon; (b) the University shall have the rights defined in subsection (a) of this section with respect to inventions in category B, to the extent to which an employee has or employees have disposable interests therein; and to the same extent the employee or employees shall be obligated as defined in subsection (a); (c) the University shall have no right to inventions in category C, except as may be otherwise provided in contracts, expressed or implied, between the University or the foundation and those entitled to the control of inventions in category C.

541h. Employees to Share in Proceeds. Each employee who conceives any invention and discharges his obligations to the University as hereinbefore provided shall be entitled to share in any net proceeds that may be derived from the assignment, grant, license or other disposal of such invention. The amount of such net proceeds shall be computed by, or with the approval of, the board, with reasonable promptness after collection thereof, and after deducting from gross proceeds such costs and expenses as may be reasonably allocated to the particular invention or discovery. A minimum of twenty per cent of the amount of such net proceeds shall be paid to an employee who solely conceived or made the invention, and shall be paid in

shares to two or more employees who jointly made the invention in such respective proportions as the board may determine. The board in its discretion may increase the amount by which any employee or employees may participate in such net proceeds.

542h. Disagreements: Procedure. Disagreements as to the allocation of any invention to one of said categories, or as to the obligations of any employee or due performance thereof, or as to participation of any employee in net proceeds, or as to rights or obligations with reference to invention in any category, shall be disposed of as follows: (a) by voluntary arbitration of all relevant issues, if the disagreeing parties approve and agree to be bound by the decision upon such arbitration; (b) by compulsory arbitration if that be provided for in any applicable contract between the disagreeing parties; (c) by recourse to courts of appropriate jurisdiction within the state if arbitration cannot be resorted to under either subsection (a) or (b) of this section.

543h. Regulations for Arbitration. The board is authorized to establish and regulate, equitably in the public interest, such measures as the board may deem necessary for the purposes of such arbitration, and to make contracts for compulsory arbitration, in the name of the University or of the foundation.

544h. Regulations; Enforcement. The board is authorized to make and enforce regulations to govern the operations of the University and the foundation in accordance with the provisions of sections 538h to 545h, inclusive.

545h. Rights as to Products of Authorship. The provisions of Sections 538h to 545h, inclusive, shall not entitle the University or the foundation to claim any literary, artistic, musical or other product of authorship covered by actual or potential copyright under the laws of the United States; but the University and the foundation shall each be authorized to make and enforce any contract, express or implied, which it may make with reference to any such subject matter.

DREXEL INSTITUTE OF TECHNOLOGY
(adopted 1935)[12]

1. Inventions or other developments, whether or not subject to patent or copyright, resulting directly from a program of research financed entirely by the Drexel Institute, shall be the exclusive property of the Institute and the Institute shall be entitled to all benefits or rights accruing from such inventions or developments, and may acquire the title to any patents or copyrights based thereon. It shall hold and administer these rights for the ultimate benefit of the public. In cases where, after a reasonable period, the Institute does not choose to acquire rights to inventions or developments arising in this manner, provision shall be made whereby said rights or a part of them shall revert to the individuals who made the inventions or developments.

2. Inventions or developments produced by a staff member or student along lines unrelated to an Institute program of research with which the individ-

ual may be connected, and to the production and development of which the Institute contributes nothing substantial in funds, space, facilities, or time of a staff member, shall be the exclusive property of the individual producing the invention or development.

In cases where the development is produced by a student who is paying tutition, and who is utilizing for research only a reasonable amount of space and facilities, it shall be considered that the Institute is not contributing to the research, inasmuch as it is considered that such space or facilities are provided for by the tuition payment.

In cases where the student is receiving scholarship aid, the acceptance of such scholarship aid shall not be considered as changing the status of the student in regard to title to inventions or developments, since such scholarship funds have been provided primarily for the assistance of outstanding students, and are in general administered by rather than contributed by the Institute. The rights of the students or staff members under this section include the right to assign or otherwise dispose of these rights.

In those cases where a contract is made with an outside party with definite provisions for all expenses connected therewith, including overhead, it shall be considered that the Institute has no equity or claim to inventions or developments resulting therefrom.

3. In intermediate cases, where the costs of development are borne jointly by the Institute and an individual, whether student or staff member, it shall be considered that the equities are divided substantially in proportion to the contributions. Every such case shall be subject to special agreement, and in the absence of any such agreement it shall be considered that the title remains with the Institute in any cases in which the Institute has substantially contributed.

UNIVERSITY OF FLORIDA
(adopted 1944)[13]

1. Investigations financed wholly by the University, that is, sponsored by the University and carried out by public funds and by persons paid by the University. All workers on such projects shall be under contract with the Board of Control whereby, at the option of the Research Council, they may be required to patent their respective inventions and/or discoveries and assign the same to the Board of Commissioners of State Institutions of the State of Florida for the use and benefit of the State of Florida, in which event the University shall pay the cost of obtaining such patents.

If the University, with the approval of the Board of Commissioners of State Institutions, disposes of a patent, or discovery, or invention, or a part of its value, on such terms as to yield a return in excess of the cost of such patent, the Research Council shall recommend to the President for submission to the Board of Control and the Board of Commissioners of State Institutions, the payment of a just compensation to the discoverer or inventor from the net proceeds, which in no case shall be less than twenty-five per cent. If the material involved in the patent comes from research done on dissertations or connected with dissertation problems the amount

allotted to the discoverers shall be divided as follows: 66-2/3 per cent to the faculty member who has directed the research and 33-1/3 per cent to the graduate student who helped with the work. If the University fails to agree, within 120 days after the discovery or invention is announced to the Research Council, to pay the cost of obtaining a patent, all rights and titles to the patent shall remain in the name of the inventor. In case the Board of Control declines to make application for patent on the invention, then all rights to the invention shall be the property of the inventor, and the Board of Control shall not assess any costs incurred by it against the inventor. All University profits derived from patents shall go to a Research Fund which shall be used for further promotion of research.

2. Investigations financed partly by the University in material requirements or personnel service, the remainder being contributed by an organization of industrial or other character, or by an individual not connected with the University. Projects of this type shall be undertaken only in accordance with the execution of a written agreement made prior to the actual initiation of such project. Each contract shall stipulate patent and publication rights.

3. Investigations financed wholly by an organization of industrial or other character, or by an individual not employed by the University. In this case the research shall be prosecuted under a contract stating the rights and ownership of patents which may result from such research.

4. Investigations performed by an employee of the University at his own expense and on his own time. This type of investigation logically divides into two parts, Type A and Type B.

> Type A. When a discovery or invention is made outside of the field in which the discoverer or inventor is employed by the University the results of such research are obviously the private property of the investigator.
>
> Type B. When the discovery or invention is made in the field in which the investigator is employed by the University the investigator shall present to the Research Council an outline of the project and the conditions under which it was done. The Council shall then recommend a suitable policy for handling the material with respect to patent rights.

UNIVERSITY OF HAWAII
(adopted 1945)[14]

Patents and copyrights resulting from work for which the employee has been paid by the University shall, at the request of the Board (of Trustees), be assigned to the University. The Board may at its discretion claim all or part of such royalties resulting from patents and copyrights.

UNIVERSITY OF ILLINOIS
(adopted 1936)[15]

44. Patents on Discoveries or Inventions

(a) The principle is recognized that the results of experimental work carried on by or under the direction of the scientific or teaching staffs of the University, and having the expense thereof paid from the University funds or from funds under the control of the University, belong to the University and the public and should be used and controlled in ways to produce the greatest benefit to the University and the public.

(b) In case of valuable discoveries and inventions resulting from experimental work or of discoveries and inventions, which may be expected to have a basic relation to other discoveries or inventions of commercial importance, the practice is hereby established of taking out patents to be controlled by the University; and any member of the scientific or teaching staffs of the University who has made a valuable discovery or invention as the direct result of his regular duties on university time and at university expense, may be required to patent his discovery or invention, the expenses connected therewith to be borne by the University.

(c) Application for a patent to cover such discoveries or inventions shall be made in such cases as are approved by the President of the University, after consultation with the discoverer or inventor and the appropriate dean or director, and on its issue the patentee shall assign the patent to the Board of Trustees of the University of Illinois for a nominal consideration.

(d) The Board of Trustees shall administer the rights under the patents in ways to suit the conditions, dedicating the patent to the public or licensing its use. In case of license, the license shall be made with provisions for the use of the patent, which will safeguard the public during the life of the patent from unreasonable restrictions or exorbitant royalties, for the use of later patents that may depend for their usefulness on a preceding patent secured by the University.

(e) In the event that any sum above a nominal royalty is received by the University for the use of the patent, a proper share of it shall be paid to the patentee.

(f) While the results of experimental work, including patentable discoveries, carried on under the direction of the scientific staff of the University, belong to the University and to the public, it is recognized that the party who originates a research problem, brings it to the University for solution, and pays the cost of the research has an equity in the fruits of that investigation: in the case of cooperative investigations, special agreements for preferential licensing may be made with the cooperating interests, with a view to compensating in part for the financial assistance rendered in the investigation. It is recognized, also, that the University has an obligation to use its facilities to the best interest of industry as a whole and of the general public, and should, therefore, employ the most suitable and practical methods to have its laboratory discoveries made available as speedily as possible, safeguarding the public from undue exploitation while recognizing the interest of the originator and supporter of the research.

(g) This action shall not be construed to include questions of ownership in copyrights on books, or of inventions or discoveries made by members of the teaching or scientific staffs outside of their regular duties and at their own expense.

(h) In case the University declines to bear the expense connected with taking out a patent, the discoverer or inventor may take out the patent and control it himself.

45. Policy Concerning Patents

Whereas, from time to time, members of the university staff have made patentable discoveries and inventions on university time and using university equipment, and

Whereas, the policy of the University is that in such cases where it seems best to take out a patent the staff member concerned should assign said patent to the University, and

Whereas, it is the duty of the University to conserve and advance the interest of the public in the matter of discoveries and inventions made under its auspices, as in all matters; now, therefore

Be it Resolved; that the policy of the University in such matters shall be as follows:

(1) The University will seek to insure the largest possible use of its patented discoveries and inventions. That is to say, it will endeavor in all cases to open up the use of such patents in whatever way will produce the widest and largest benefits to the public at large.

(2) The largest and widest benefits to the public at large through the most extensive use of articles and discoveries thus patented are not always to be attained by the same procedure. If a discovery is simply made public, some corporation or individual may take out a patent and monopolize the invention or discovery. Therefore, simple publication of a notice of a discovery does not insure the largest use or the largest benefit to the public. Publishing the discovery or invention does not necessarily insure giving its benefits to the public at large.

(3) There are some discoveries of such character that they should be published so that anyone who wishes to use them may do so, the University simply retaining the patent title, so as to prevent anybody else from taking out a patent and monopolizing the discovery or invention. An illustration of a discovery for which such treatment would be proper would be a fertilizer or a medicine that any manufacturer in these lines could make.

(4) There are cases, however, in which the article can be manufactured only by one or two establishments, because of the large amount of capital necessary or because the use of the new discoveries depends on the utilization of things already patented and owned by other people. In that case it is clear that the public interest will be most largely served by giving a license, even a monopoly license if necessary, for the manufacture of a patent or discovery on a royalty or cash basis.

Therefore, it is the judgment of the Board that the procedure to be followed depends upon the character of the patentable discovery or invention, and that each case must be decided on the basis of that character and a procedure adopted accordingly, in order to secure the largest benefits to the public.

IOWA STATE COLLEGE
(adopted 1938)[16]

The policy has been established at Iowa State College, of securing patents to be controlled by the College, or an agency established by it, on inventions that are the outgrowth of the research work of members of the staff, when that is believed to be for the best interests of the state. It is not the purpose to secure patents merely because there appears to be the possibility of revenue accruing, nor is the research program to be directed away from fundamental research into development work in the hope of securing valuable patents.

Administrative officers of the various divisions, stations, and departments are expected to report to the President, or a committee set up by him, inventions and discoveries that come to their attention and are believed to be sufficiently important to be patented. Any member of the staff may submit an invention or discovery to his administrative superior for consideration for patenting, or administrative officers may suggest to a staff member that he submit an invention or discovery to be considered for patenting.

The agency established by the College is to administer the patents which have been assigned to said agency, either by dedicating the patent to the public or by licensing its use, whichever is believed will best serve the public interest. In case the use of the patent is licensed, the terms of the license shall be fixed so as to safeguard adequately the interest of the state and the quality and price of the product growing out of the use of the patent.

Inventions and discoveries that are the outgrowth of researches conducted at Iowa State College in cooperation with industrial corporations may also be patented, but in that case the ownership of the patent, the licensing basis, and the details of the control of the use of such prospective patents are to be fixed by an agreement entered into with the cooperating agency before the research is undertaken. In all such cases the College shall reserve the right of publication of the results of the research and any agreement with reference to patents in such cooperative arrangements shall have in view the public interest as well as provide for shop rights to be exercised by the College. All such agreements shall be approved by the President or by his authorized representative.

When a member of the staff has assigned a patent to the College, or an agency established by it, the said staff member will receive a bonus in a sum equal to fifteen per cent of the net receipts from the licensing of the patent, such bonus to be paid annually as accrued, accompanied by a detailed statement of receipts and expenditures on account of the licensing of that patent. Net receipts will be interpreted to mean receipts after the ex-

penses of securing and licensing the patent have been earned, and the current years costs of administering the patent have been deducted from the receipts from licensing and in addition, a reserve of not to exceed five per cent of the gross receipts has been set aside in a litigation fund.

The desirability of securing a patent on a particular invention or discovery is to be investigated by a committee on patents set up by the President. The committee will consist of five members appointed by the President on such a basis that normally not more than two new members will be appointed in any year after the first. This board will determine whether the invention or discovery should be patented in order to safeguard the interests of the College and the public, taking into account among other things the relation of the invention to agriculture and the other industries in the state, and a possible relation to the life and health of the people of the state.

All patents now assigned to the State of Iowa for the benefit of Iowa State College together with all other patents and similar properties which may be so assigned in the future shall be administered by the Standing Committee on Patents and Patent Rights of the Iowa State Board of Education acting with appointees of the President of Iowa State College in accordance with the action taken by the Iowa State Board of Education at its meeting on March 17, 1946, and described in detail in the minutes of said meeting.

The Iowa State College Research Foundation, Inc. (successor to the Board of Patent Trustees of the Iowa State College Alumni Association, Inc.) is the agency provided by the College to which members of the staff may assign patents and similar properties which are directly or indirectly the outgrowth of research upon which said staff members have been engaged while in the employ of the College. The expenses of the Iowa State College Research Foundation, Inc., are to be paid from the receipts from the licensing of patents and in the event that these are insufficient, it may employ other funds that may be made available to it.

It is to be the policy of the Research Foundation to employ the net earnings from patents exclusively for the promotion of research at Iowa State College. It will allocate from such funds to specific research projects only upon the recommendation of the President or his authorized representative. Upon recommendation of the President or his authorized representative, all, or a portion, of the net earnings from patents in any year will be employed to accumulate an endowment fund, the earnings of which are to be used to promote research at Iowa State College.

This statement of policy is not to be construed to mean that a member of the staff is expected to assign to the College the patent on an invention which has been developed upon the staff member's own initiative and time and has no direct relation to any of the research work upon which he has been engaged for the College. In such cases, a patent may be secured and held by the inventor. It is furthermore contemplated that if in any case it is deemed inexpedient for the College, or its authorized agency, to hold the patent on an invention or discovery of a staff member, it will then be permissible for the staff member himself to secure a patent and to license or dispose of the same.

KANSAS STATE COLLEGE
(adopted 1941)[17]

All patents obtained on inventions resulting from College sponsored research shall be assigned to a corporation (hereinafter called the Foundation[18]), independent of the College but composed of alumni of the College and other qualified individuals, and created for the purpose of obtaining patents on inventions, receiving gifts, administering or disposing of such patents, and promoting research at Kansas State College by every proper means.

(1) Anyone who believes that an invention resulting from a research project sponsored by the College should be patented shall present the matter to an Advisory Committee consisting of faculty members, appointed by the President of the College, which will recommend whether or not the Foundation should prosecute a patent application on the invention.

(2) If the Advisory Committee should decide that the invention does not warrant patenting by the Foundation, the inventor will be free to patent it himself. In such a case, however, the College does not relinquish its right to publish any of the data obtained in the research project.

(3) In the event that any sum over and above the cost of obtaining a patent should be obtained by the Foundation, a fair share of the profits (at least fifteen per cent) shall be paid to the patentee.

(4) The remainder of any profits mentioned in Article 3 shall be used to finance the activities of the Foundation, and to sponsor further research in the College, except that a portion of such funds may be retained by the Foundation as a reserve for meeting future expenses.

(5) In the case of cooperative research sponsored in part by an outside corporation or individual, a written contract shall be made between the College and the cooperating agency. This contract should include a statement of policy substantially equivalent to that outlined below:

> It is agreed by the parties to this contract that all results of experimental work, including inventions, carried on under the direction of the scientific staff of the College, belong to the College and to the public and shall be used and controlled so as to produce the greatest benefit to the public. It is understood and agreed that if patentable inventions grow out of the investigation and such inventions have commercial value, the cooperating agency shall receive preferential consideration as a prospective licensee, with a view to compensating said cooperating agency in part for the assistance rendered to the investigation.
>
> It is further agreed that the name of Kansas State College shall not be used by the cooperating agency in any advertisement, whether with regard to the cooperative agreement or any other related matter.

(6) In the case of a research project where all costs including overhead, salary of investigator, reasonable rent on the use of equipment, etc., are

paid by an outside party, said party shall be entitled to have all patents assigned to him. Even so, the College will reserve the right to publish all data of fundamental value to science and technology.

UNIVERSITY OF KANSAS
(adopted 1943)19

All patents obtained on inventions resulting from research sponsored by the University shall be assigned to a corporation (hereinafter called the Foundation[20]), independent of the University but composed of alumni and faculty of the university and other qualified individuals, and created for the purpose of obtaining patents on inventions, receiving gifts, administering or disposing of such patents, and promoting research at the University of Kansas by every proper means.

(1) Anyone who believes that an invention resulting from a research project sponsored by the University should be patented shall present the matter to an Advisory Committee consisting of faculty members, appointed by the Chancellor of the University, which will recommend whether or not the Foundation should prosecute a patent application on the invention.

(2) If the Advisory Committee should decide that the invention does not warrant patenting by the Foundation, the inventor will be free to patent it himself. In such a case, however, the University does not relinquish its right to publish any of the data obtained in the research project.

(3) In the event that any sum over and above the cost of obtaining a patent should be obtained by the Foundation, a fair share of the profits (at least fifteen per cent) shall be paid to the patentee.

(4) The remainder of any profits mentioned in Article 3 shall be used to finance the activities of the Foundation, and to sponsor further research in the University, except that a portion of such funds may be retained by the Foundation as a reserve for meeting future expenses.

(5) In the case of cooperative research sponsored in part by an outside corporation or individual, a written contract shall be made between the University and the cooperating agency. This contract should include a statement of policy substantially equivalent to that outlined below:

> It is agreed by the parties to this contract that all results of experimental work, including inventions, carried on under the direction of the scientific staff of the University, belong to the University and to the public and shall be used and controlled so as to produce the greatest benefit to the public. It is understood and agreed that if patentable inventions grow out of the investigation and such inventions have commercial value, the cooperating agency shall receive preferential consideration as a prospective licensee, with a view to compensating said cooperating agency in part for the assistance rendered in the investigation.
>
> It is further agreed that the name of the University of Kansas shall not be used by the cooperating agency in any advertisement,

whether with regard to the cooperative agreement or any other related matter.

(6) In the case of a research project where all costs including overhead, salary of investigator, reasonable rent on the use of equipment, etc., are paid by an outside party, said party shall be entitled to have all the patents assigned to him. Even so, the University will reserve the right to publish all fundamental data of value to science and technology.

LEHIGH UNIVERSITY
(adopted 1924)[21]

(a) Any member of the scientific or teaching staff of Lehigh University who has made a valuable discovery or invention as the direct result of his regular duties on University time and at University expense may be required to patent his discovery or invention, the expenses connected therewith to be borne by the University.

(b) Application for a patent to cover such discoveries or inventions shall be made in such cases as are recommended by the Executive Board of the Lehigh Institute of Research and approved by the Board of Trustees of the University.

(c) If a patent is issued the patentee shall assign the patent to the Board of Trustees of Lehigh University for a nominal consideration.

(d) A patent thus assigned shall be administered by the Board of Trustees in such manner as it may determine; provided, however, that if the patent is sold or a royalty for its use is paid, one-half of the money thus realized by the University shall be paid to the patentee, and the other half assigned to the Lehigh Institute of Research for the furtherance of research.

(e) If a discovery or invention is developed in connection with a cooperative investigation and a patent thereon is secured in accordance with the preceding regulations, the cooperating agency will first be afforded the opportunity to purchase or lease the patent rights, or in other manner shown preferential treatment, in recognition of its financial assistance in the conduct of the investigation.

(f) These regulations shall not be construed to include questions of ownership in copyrights on books or of inventions or discoveries made by members of the teaching or scientific staffs outside their regular duties and at their own expense.

UNIVERSITY OF LOUISVILLE
(adopted 1935)[22]

I. Administration of patents and incomes therefrom, if any.

(1) There shall be a University of Louisville Administrative Board of Patents to consist of the President, the Business Manager of the University, and not to exceed five persons to be appointed by the Board of Trustees each

for a term of three years upon the recommendation of the President, these five persons to be either Trustees of the University, administrative officers, members of the teaching staff, or alumni.

(2) This Board shall have authority, subject to the direction and control of the Board of Trustees, to accept for and on behalf of the University by assignment or otherwise, either directly or through trustees or holding corporations, patent applications, royalties, licenses, or gifts therein governing discoveries, inventions or processes, when produced by members of the staff of the University by use of University laboratories or otherwise.

(3) The Board of Patents shall be also empowered to make charges on such terms and in such way as it may approve, for the use, manufacture, sale, or other disposition thereof of the rights therein, with power, subject always to the approval of the Board of Trustees, to arrange for the use or division of the proceeds thereof.

(4) The Board of Patents may not authorize any charge or other obligation upon the funds of the University or incur any liability without previous authority of the Board of Trustees.

(5) The Board of Patents shall make an annual report to the President.

II. Conditions which should attend the inventions or discoveries made by members of the staff of the University. The following regulations shall not be considered to include questions of ownership in copyrights on books or of inventions or discoveries made by members of the staff of the University outside their regular duties and at their own expense.

(1) Any member of the staff of the University of Louisville who has made a valuable discovery, invention, or who has developed material which should be copyrighted as a result of his duties in the University, may be required to patent this discovery or invention, or copyright the patent, the expenses to be borne by the University.

(2) Application for a patent to cover such discovery or inventions shall be made in such cases as are recommended by the University of Louisville Administrative Board of Patents, and approved by the Board of Trustees of the University of Louisville.

(3) If and when a patent is issued, the patentee shall assign the patent to the Board of Trustees of the University of Louisville.

(4) A patent thus assigned shall be administered by the University of Louisville Administrative Board of Patents in such manner as it may determine, provided that if the patent is sold or royalty for its use is received, one half of the money thus realized by the University shall be paid to the patentee and the other half assigned to the University.

(5) If the discovery or invention is developed in connection with a cooperative investigation, and a patent thereon is secured in accordance with the preceding regulations, the cooperative agency shall first be afforded the opportunity to purchase or lease the patent rights or in other manner be shown preferential treatment in recognition of its financial assistance in the conduct of the investigation.

UNIVERSITY OF MAINE
(adopted 1942)[23]

In the case of research workers engaged for or assigned to specific research projects, the contract of the University with such an employee may require that he patent the results of his researches, and assign the patents to the University, which shall reimburse him for expenditures incurred in obtaining such patents. In the event that the University should dispose of a patent of a discovery or invention of a member of its staff on such terms as to yield a return in excess of the cost of the patent, then the Board of Trustees, or the designated representatives of the Board, determine a just compensation to the discoverer or inventor from the net proceeds. If the University fails to pay the costs of obtaining a patent within a year after the discovery is announced to the University, then all rights and titles to the patent remain in the name of the inventor.

If the University does not require a contract with the employee, then it is understood by both parties that the law covering rights to patents shall prevail. In this case, it is generally assumed that the title remains with the inventor unless the University can show that the patent was a result of institutional investigations on which the inventor was employed, or a result of the studies made by him under the direction of the University, or with University facilities, or with a combination of these factors, which would justify the University in claiming a just proportion of the patent rights.

The cooperative nature of research partially financed by an outside agency is recognized by an equitable understanding or agreement between the University and the cooperating party or parties providing for the sharing of the proceeds from resulting patents, and specifying the terms of publication of results. In the absence of an agreement, all rights to publication and to patents remain with the University, provided this condition has been put before the cooperative agencies.

Research financed wholly by an outside organization is prosecuted under a contract determining the rights of publication and the ownership of patents which may result from such research. It is understood that, in this case, all rights to information obtained, to the publication of results, and to patents may, by agreement, be in the name of the individual or organization responsible for the financial support of the investigation.

The results of research performed by staff members on their own time and at their own expense are the private property of the investigator.

It is further recommended that a committee composed partially of faculty members and partially of representatives of the University administration be appointed by the President to pass on patent situations which may arise.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
(adopted 1932)[24]

1. Inventions or other developments, whether or not subject to patent, resulting directly from a program of research financed entirely by the Insti-

tute shall be the exclusive property of the Institute, and the Institute shall be entitled to all benefits and rights accruing from such inventions or developments and may acquire the title to any patents based thereon. It shall hold and administer these rights for the ultimate benefit of the public. In cases where, after a reasonable period, the Institute does not choose to acquire rights to inventions or developments arising in this manner, provision shall be made whereby said rights or a part of them shall revert to the individuals who made the inventions or developments.

2. Inventions or developments produced by a staff member or student along lines unrelated to any Institute program of research with which the individual may be connected, and to the production and development of which the Institute contributes nothing substantial in funds, space, facilities, or time of a staff member, shall be the exclusive property of the individual producing the invention or development.

In cases where the development is produced by a student who is paying tuition, and who is utilizing for research only a reasonable amount of space and facilities, it shall be considered that the Institute is not contributing to the research, inasmuch as it is considered that such space or facilities are provided by the tuition payment.

In cases where the student is receiving scholarship aid, the acceptance of such scholarship aid shall not be considered as changing the status of the student in regard to title to inventions or developments, since such scholarship funds have been provided primarily for the assistance of outstanding students, and are in general administered by rather than controlled by the Institute.

The rights of the student or staff members under this section include the right to assign or otherwise dispose of these rights.

In those cases where, either through the Division of Industrial Cooperation or other Institute agency, a contract is made with definite provisions for payment by the sponsor of all expenses connected therewith, including overhead, it shall be considered that the sponsor may be entitled to exclusive rights or to a limited term license in patentable invention in his own field of activity only.

3. In intermediate cases, where the costs of development are borne jointly by the Institute and another — whether student, staff member, or outside agency -- it shall be considered that the equities are divided substantially in proportion to the contributions. Every such case shall be subject to special agreement, and in the absence of any such agreement it shall be considered that the title remains with the Institute in any cases in which the Institute has substantially contributed.

4. Under special conditions it may be deemed equitable that patentable inventions arising from thesis research of fellows of the Graduate School be made available on a nonexclusive basis to donors of funds which support such fellowships and to others qualified to use such inventions. To this end, it is stipulated that any patentable invention of a graduate student arising from his assigned research under a fellowship shall be treated as if it were the invention of a staff member, including the inventor participation in gross income prescribed for staff inventors who assign patent

rights to the Institute. Patent rights thus assigned will be administered in accord with the general patent policy set forth under section 1 above.

5. The Institute will tender to the United States Government a nonexclusive, irrevocable, royalty-free license for government use of any patent to which the Institute acquires title on an invention generated in its laboratories from research which has received substantial governmental financial assistance.

MICHIGAN COLLEGE OF MINING AND TECHNOLOGY
(adopted 1935)[25]

I realize that it is or may be my duty or privilege to devote some of my time to research, and that the facilities and equipment of the College which I will be permitted to use and enjoy may greatly aid me in prosecuting research and in conceiving or devising discoveries and patentable inventions.

In consideration of my employment by the College and of the salary to be paid me by said College, and for the purpose of definitely settling any question or possible controversy which may arise as to the ownership of any patent which may be granted to me hereafter, I hereby agree that, in the event that I shall conceive, devise or work out any discovery or invention in the course of my employment, by or through the use of the facilities and equipment of the College, the same shall at the option of the College be and become the property of the College under the following terms and conditions.

1. I will disclose any such discovery or invention freely and fully to the President or other proper officer of the College.

2. Upon any such disclosure the College shall have the right and option to take over such discovery or invention or to decline to take over the same. This right and option shall terminate, however, if the College shall fail or neglect to give me notice in writing of its intention to take over such discovery or invention within a period of thirty days after I have notified the College in writing of my desire that the College make its decision in the matter.

3. If the College shall exercise its option to take over such discovery or invention, I will at its request but at the expense of the College make proper application for patent of the same and will assist in every way in preparing such application and in the proceedings toward obtaining such patent.

4. Upon request of the College I will assign such application or any patent issued on the same to the Board of Control of the College, with full and complete rights, powers and privileges of ownership, in trust, nevertheless, for the following purposes:

(a) The College shall have full power and authority to issue licenses under the same and to fix and collect royalties for the use of the same; to use the same for its own purposes, to sell or assign the same in whole or in part, and in general to deal with the same at its own absolute discretion.

(b) The College shall pay to me, at least quarterly, fifteen per cent of the net proceeds of the earnings or yield of such patent arising from any source, whether from license fees, royalties, or from sale. If such invention should have been developed by me in collaboration with, or with the assistance of any other person or persons who have entered into agreements with the College similar to this, and are entitled to participate in the proceeds of such invention, the payments hereunder shall be made to me and such other persons in such proportionate shares as we may agree upon, it being understood and agreed that the aggregate of the payments to all persons shall not exceed fifteen per cent of the net proceeds of any one invention.

(c) The College shall use the balance of such net proceeds, after paying the fifteen per cent hereinbefore mentioned, for the furtherance of research at said College and for the payment of overhead and expenses connected with such research, including the cost of securing, protecting, disposing of, or dealing with any patent developed by such research or by any person who has entered into an agreement similar to this.

5. All notice to be given by me hereunder may be given to the President or the Chairman of its Board of Control.

UNIVERSITY OF NEBRASKA
(adopted 1946)[26]

In the absence of a specific contract to the contrary, the following policy relating to patents shall obtain and be incorporated in employment agreements of faculty personnel and other employees:

The title to a patent for any discovery or invention made by an employee of the University of Nebraska belongs to the said employee and he is free to develop or handle it in any manner he sees fit, subject to the following provisos:

(a) When total net royalties, or other compensations, are less than $1,000, no payment to the University is required.

(b) When net royalties, or other compensations, amount to more than $1,000 and less than $5,000 per year, ten per cent of the excess of such royalties or other compensations above the sum of $1,000 and less than $5,000 shall be paid to the University.

(c) When net royalties, or other compensations, amount to more than $5,000 per year, the royalty to be paid to the University shall be ten per cent on the amount above $1,000 and less than $5,000 and twenty per cent on all amounts above $5,000

(d) In cases where contributions have been or may hereafter be made to research projects by private persons non-exclusive licenses on all inventions or discoveries resulting from such research shall be issued on a reasonable royalty basis without discrimina-

tion in favor of or against those making contributions in aid of such research.

UNIVERSITY OF NORTH DAKOTA
(adopted 1937)[27]

All discoveries of utility in experimentation and testing of state minerals or allied industrial resources at the School of Mines at the University of North Dakota, or at any mining experimental station or sub-station wheresoever situated in the State of North Dakota, shall be patented in the name of the inventor or discoverer and shall be by him duly assigned to the Board of Administration or its successors and assigns as trustee for the benefit of the School of Mines of the University of North Dakota.

It is hereby made the duty of the Director of the said School of Mines and the professors connected therewith and any person or persons in the employ of the said School of Mines, experimental station or sub-station to report such discovery to the Board of Administration or its successors and assigns and to make proper application for patent therefor and to duly assign the patent when obtained to the State Board of Administration or its successors or assigns as trustee for said School of Mines.

Any costs and expense necessarily incurred in securing the patents herein provided for shall be paid for out of the funds provided for the School of Mines at the University of North Dakota for the investigation and development of the mineral resources in the State of North Dakota.

The Board of Administration of the State of North Dakota, its successors or assigns, upon recommendation of the President of the University of North Dakota and the Director of the School of Mines of the University of North Dakota, are hereby authorized to assign, or grant permission to use any patent rights procured under the provisions of this Act, to any person, firm, association or corporation which has or which may hereafter assist the School of Mines of the University of North Dakota in making any such industrial or scientific research, upon such terms and conditions as may to the Director of the said School of Mines be deemed just and equitable.

Any person or persons engaged in experimental work as Director of the School of Mines or professor or employee of the School of Mines at the University of North Dakota, or any experimental station or sub-station, failing to comply with the provisions of this Act shall be guilty of a misdemeanor.

PENNSYLVANIA STATE COLLEGE
(adopted 1931)[28]

1. Investigations financed wholly by the College. In the case of research workers engaged for or assigned to specific research projects, the contract of the College with such an employee requires that he patent results of his researches and assign the same to the College, in which event the College will pay the cost of obtaining such patents; but if the College should dispose of a patent on a discovery or invention of a member of its staff on

such terms as to yield a return in excess of the cost of such patent, then the Board of Trustees, or the designated representatives of the Board, will consider a just compensation to the discoverer or inventor from the net proceeds. If the College fails to pay the costs of obtaining a patent within a year after the discovery is announced to the College, then all rights and title to the patent remain in the name of the inventor.

If the College does not require a contract with the employee, then it is understood by both parties that the law covering rights to patents shall prevail. In this case, it is generally assumed that the title remains with the inventor unless the College can show that the patent was a result of investigations on which the inventor was employed, or a result of the studies made by him under the direction of the College, or on College time and facilities, or with a combination of these factors, which would warrant the College in claiming the patent rights.

2. Investigations in which a part of the material requirements or personal service involved are provided at the expense of the College, the remainder being contributed by an organization of an industrial or other character, or by individuals not connected with the College. The cooperative nature of research of this category should be recognized by an equitable understanding or agreement between the College and the cooperating party or parties providing for the sharing of the proceeds from resulting patents, and specifying the terms of publication of results. In the absence of an agreement, all rights to publication and to patents should belong to the College, provided that this condition had been put before the cooperating agencies.

3. Investigations financed wholly by an organization of an industrial or other character. It is important that research of this category be prosecuted under a contract determining the rights of publication and the ownership of patents which may result from such research.

4. Investigations performed by members of the College staff on their own time and at their own expense. The results of such research are obviously the private property of the investigator.

5. Procedure in Securing Patents. A report concerning possible patentable results of research conducted under the auspices of the College shall be presented to the Council on Research by the member of the Council who has been administratively responsible for this research.

If, in the judgment of the Council on Research, consideration should be given to the desirability of protecting the results of this investigation by patent, then the Council shall appoint a committee to estimate the value of the patent rights, if granted, this committee to consist of the chairman of the Council, the Assistant to the President in Charge of Business and Finance, the Dean of the School (or the director of an administrative division of the College), and the head of the department in which the research was conducted.

This committee shall report to the Council on Research its judgment on the value of the proposed patent and the best methods of making the discovery useful to the public.

After considering this report, the Council on Research shall recommend to the President that the inventor or discoverer be authorized to apply for a patent at the expense of the College and that patent rights, if granted, be assigned to the College; or that the College shall neither request nor accept the assignment of the patent rights, if secured by the inventor personally, with the reasons in support of its recommendation.

If the Council favors the assignment of the patent to the College it shall prepare for the President a statement of the nature of the benefits that may be derived, the probable beneficiaries, difficulties that may be met in the operation of the patent, and other pertinent information.

The President may recommend to the Board of Trustees that the transfer of patent rights to the College be refused.

If the Board of Trustees, on the recommendation of the President, shall accept the assignment of the patent rights, these may then be transferred by the College to the Pennsylvania Research Corporation, or other similar agency, under the terms of an agreement between the College and the agency selected, covering the method of operating the patent.

The Board of Trustees may request a report and recommendation from the Pennsylvania Research Corporation, or other agency selected to operate the patent, before accepting the assignment of the patent from the inventor or discoverer, in order to further determine the field of usefulness of the patent, the best method of disposal of rights or licenses, and whether the agency under consideration for operating the patent can successfully administer it in the interest of the public, the College, and the inventor.

UNIVERSITY OF PENNSYLVANIA
(adopted 1941)[29]

The Trustees have declared it to be the policy of the University of Pennsylvania that any invention or discovery which may in any manner affect the public health, such as a new drug, process, or apparatus intended primarily for medical or surgical use, shall not be patented for profit, either by an individual in the employ of the University or by the University itself. However, in order to prevent the capitalization and exploitation by others of any such discoveries or inventions, and in order to protect the public, the Executive Committee of the Executive Board may consider it advisable from time to time to patent such inventions or discoveries with the sole intention of protection without profit.

Where researches in fields other than those affecting public health are carried out on University time or at University expense by special grants or otherwise, patents on inventions or discoveries may be applied for, with the approval of the President of the University, in which case the inventor shall assign his rights in the patent to the University upon the payment to the patentee of his expense in securing the patent. The University will then exercise its ownership of such patent with or without profit, with due regard for the interests of all persons concerned.

An appropriate patent release shall be signed by every employee engaged on or concerned with a research contract of the University.

PRINCETON UNIVERSITY
(adopted 1938)[30]

(1) There is a committee known as the Patent Committee[31] appointed by the President and consisting of a representative of each of the following departments at least: Biology, Chemistry, Engineering and Physics, and the Controller of the University. This Committee administers the policy in consultation with the President.

(2) The University has entered into an agreement with Research Corporation in accordance with which a member of the University may assign an invention to Research Corporation, with the understanding that Research Corporation, if it accepts the assignment, is to carry out the patenting and commercializing of the invention without any expense to the inventor; that Research Corporation is to pay to the inventor a share (ordinarily seven per cent) of the gross income which Research Corporation receives from the invention; that the balance, after the expenses in connection with the patent have been met, is to be divided between the University and Research Corporation as provided in the general agreement covering all of these cases, with the understanding that this balance is the balance for all inventions administered under this agreement, and not for each individual one.

(3) When a member of the University in the course of his academic activities makes an invention, he may consult the Patent Committee about the issuance of a patent, either through the Chairman of the Committee or the representative of his department on the Committee if there is one. If he desires to have the matter handled in accordance with section (4) below, the Committee shall proceed in accordance with this plan. If these methods of procedure would in any case involve undue delay in the securing of protection, the inventor may refer his invention directly to Research Corporation, or file an application on his own responsibility with the Patent Office.

A member of the University shall be free to bring any patentable invention of his to the attention of the Patent Committee for action under section (4) whether it has clearly resulted from his academic activities or not.

If a member of the University desires to obtain a patent on his own responsibility he may do so, whether he has consulted the Patent Committee or not, but he shall furnish to the Patent Committee a copy of the patent when issued. The Committee may raise the question of whether the University has an equity in the proceeds of the invention because of the use of its facilities. It is expected that the determination of the character and amount of the University's equity in any such invention will be established in conference between the Patent Committee and the member, or members, of the University concerned. It is expected that the same procedure will be followed in connection with any other question arising out of the patent policy.

(4) When the question of the patenting of a particular invention is brought to the attention of the Committee, the Committee will decide upon the soundness of the scientific basis of the invention and upon the advisability of patenting according to the University policy. If the Committee reaches a negative conclusion, it will turn the matter back to the inventor to handle as he sees fit. If the Committee reaches a positive conclusion, or is in doubt, it will refer the matter to Research Corporation to ascertain its

opinion and whether Research Corporation desires to accept assignment of the invention. If Research Corporation is unwilling to accept such an assignment, the Patent Committee will decide whether the matter should be turned back to the inventor or other steps be taken. If Research Corporation desires to accept the assignment, the Committee will recommend to the inventor that he assign the invention to Research Corporation and enter into an agreement with the Corporation, in accordance with the general plan adopted by the Corporation and the University.

(5) In accepting a grant from a corporation for the purpose of research, it is the intent of the University that the grant shall be used for the training of men and the extension of the boundaries of knowledge, and not for the solution of specific industrial problems in which the corporation may be interested.

If the University accepts a grant from an industrial corporation for the purpose of research in accordance with the above statement, it shall be with the written understanding that, should an invention result from this research, the University and the inventor will handle such invention in accordance with section (4), and with the further understanding that, if an invention is patented in accordance with section (4), the corporation making the grant will have special consideration. In case the corporation desires a specific definition of such "special consideration" the method to be used in establishing such "special consideration" shall be agreed upon in writing at the time the grant is made.

If such corporation prefers to proceed in a manner other than that of section (4), the Patent Committee will discuss such proposal with the corporation.

It is understood also that the foregoing policy with respect to grants for research from corporations shall not be applicable to fellowships made available to the University by corporations. The holders of such fellowships will be under the same regulations as other members of the University.

(6) Any funds coming to the University as a result of this patent policy will be used for furthering research and scholarship in the University, the awards to be made by the President, with the understanding that preferential consideration be given to the needs of the particular field of research which gave rise to the patent concerned.

RHODE ISLAND STATE COLLEGE
(adopted 1943)[32]

It is to be recognized as a guiding principle that the College, as a publicly supported institution, has as a major responsibility the promotion and protection of the public interest. In view of this responsibility, it follows that, if patentable discoveries of potential commercial value arise from research conducted at the College, such discoveries should be so controlled as to effect the greatest public benefit.

In the several divisions of the College concerned with research, two classes of research projects are recognized:

A. Projects financed wholly from institutional funds (including State and Federal appropriations);

B. Cooperative projects financed wholly or in part by special grants from government agencies or from non-institutional sources (industrial corporations, foundations, individuals, or other private interests).

In research projects financed wholly from institutional funds, all inventions or discoveries shall be the property of the College. If in such a case it is the opinion of the College Research Committee that the interests of the public will be best served under patent protection, the individual investigator who made the discovery may be required to apply for a patent, the expense to be borne by the College. At the time of filing the application for the patent, it shall be assigned to the Board of Trustees of State Colleges of Rhode Island, to be administered in the public interest. However, in case the College does not care to assume the responsibility for the patent, the investigator may be authorized to contract with a collaborating agency for the purpose of securing a patent and developing it commercially. In either case, the rights of both the investigator and the College to share in any financial returns by way of royalties or license fees shall be recognized. Any contract made with a collaborating party shall safeguard these rights.

In research projects financed wholly or in part by grants from outside sources, the contract between the College and the collaborating party shall specify the disposition of patent rights. Patents resulting from such research may be assigned either to the College or to the collaborating party, as agreed upon in advance. If a patent is assigned to the collaborating party, it shall normally be provided that the College and the investigator shall participate in the royalties and license fees resulting from such patent, the proportionate share to be specified in the contract.

RUTGERS UNIVERSITY
(adopted 1946)[33]

Research may lead to invention, whether or not that is one of the aims of the investigation. Members of the University staff, working privately or conducting research supported by University funds which are not under any restrictions with regard to patents, who make inventions, are free to apply for patents according to their own desires. If the work was done under agreement with a corporation or other organization which reserves patent rights to itself, members of the staff are then bound by the terms of the agreement. Such staff members enter into private agreements with the sponsor which assumes all responsibility for enforcing the agreement. The University is not a party to such agreements.

The University claims no interest in any invention by members of its staff, and it does not own patents nor does it accept the assignment of any patent rights. The University desires, however, that inventions made by members of the staff as a result of their research, whether done alone or cooperatively, shall be administered in an effective manner and with due regard for the public interest. A University Committee on Patents has been

appointed by the President to give assistance and advice on patent matters to members of the staff and to serve as a clearing house for information about patents applied for and secured.

Aid in applying for patents may be secured from The Rutgers Research and Endowment Foundation, a nonprofit corporation, organized under the laws of New Jersey. Among its purposes are the facilitating of patent applications, the accepting of patent assignments and the devoting of income derived from patents to research.

SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY
(adopted 1940)[34]

The South Dakota State School of Mines recognizes the principle that the results of research whose cost has been paid from School funds or funds under the control of the School, belong to the School and should be used for the benefit of the School and of the State of South Dakota.

Research workers employed by the South Dakota State School of Mines must report promptly to the President of the School any patentable discovery or invention they may make, and if requested in accordance with the procedure set forth in this statement of policy, must take out patents and assign them to the School. A clause to this effect should be included in the contract between the School and the research worker; but if no such clause has been included, then it shall be understood that the law covering the rights to patent shall prevail. In this case the title remains with the inventor unless the School can show that the patent was the result of institutional investigations upon which the worker was employed, or that it was the result of studies made by him under the direction of the School, or upon School time and with School facilities, or with some combination of these factors, making it justifiable and legal for the School to claim patent rights.

When a research worker reports a patentable discovery or invention to the President of the School, the President shall immediately appoint a faculty committee to investigate it. If this committee recommends that the invention or discovery be patented, and the Faculty of the School approves its recommendation within one year of the announcement of the discovery or invention to the President, the research worker must take out a patent and assign it to the School, and the School will pay the cost. If the Committee does not recommend patenting the discovery or invention, or the Faculty fails to act favorably upon a committee report recommending patenting, within one year from the announcement of the discovery or invention, then all rights and title to the discovery or invention remain in the name of the research worker.

Patents assigned to the School, either under the procedure outlined above or as gifts, shall be administered by a Patent Administration Committee of the Faculty, appointed by the President. The general policy of this Committee shall be to repay the School for all expenditures in connection with each patent, and to divide any profits accruing after such repayment between the School and the inventor. In the case of a cooperative investigation, the Committee shall see that all the conditions of the cooperative agreement

are met before making any division of profits. The Committee may, with the approval of the Faculty, assign a patent to a research foundation which offers satisfactory terms to the School. Whenever practicable, the Committee should see that all patent royalties within the State of South Dakota be waived.

STANFORD UNIVERSITY
(adopted 1938, amended 1939)[35]

Whenever any member of the staff or other person making use of the laboratories or other facilities of the University shall make a discovery or invention, or shall otherwise believe a valuable invention may result from his research, he shall communicate such fact to the executive head of his department or school, who upon investigation will notify the Patent Committee of the University as hereinafter provided. It shall be the duty of this Committee to examine into the nature of the discovery or invention. If in the opinion of the Committee a valuable invention has been made which should be protected by patent, the Committee shall so recommend to the President. Upon favorable action by the President, and the written agreement of the patentee to assign such patents as he may obtain to the University, patent counsel and other necessary expenses incident to securing letters patent shall be provided by the University.

In the event that the University shall notify the expectant patentee that it does not desire to finance the application for letters patent, then he may proceed as he may see fit and shall be under no obligation to assign any interest in such patent as may result to the University.

It shall be the right of the University in its discretion to so manage and exploit all patents assigned to it in the public interest and in such manner as to be consistent with the highest ideals and aims of, and to secure proper revenues to the University. It shall assign the patent or grant licenses under it as will best protect the interests of the public and the University.

Of the gross royalties or other revenues received by the University, ten per cent shall be paid to the patentee, except in the case that the patentee is a member of an organization whose ethics deny the right of their members to receive such revenues, and except in the case that the patentee is employed or assigned to work upon a specific investigation. The remainder, after meeting all proper expenses, shall be appropriated to the department or school in which the discovery was made for research in the same or related fields provided that revenues in excess of the reasonable needs of such research shall be placed in a patent pool fund, any surplus in which may be allocated for other research by the Board of Trustees on recommendation of the President.

In all cases where members of the staff or others are receiving contributions or support from others than the University in connection with any research, employment or otherwise, or in case any third party shall have or claim any right to any discovery or invention as a result thereof, such members of the staff or others shall communicate all such facts to the execu-

tive head of their department or school, who shall notify the Patent Committee of any case in which patentable discoveries are likely to be made.

The Comptroller is authroized to work out agreements with such third parties which shall be in harmony with this patent policy and which shall in general fairly assign the rights in letters patent and the proceeds thereof in proportion to the relative contributions by each party. In such cases the members of the staff or others shall assign their individual interest to the University, as hereinbefore provided, and shall be paid ten per cent of the gross revenue received by the University, except as hereinbefore provided.

A Patent Committee shall be appointed by the President, which shall be constituted as follows: the Comptroller or his representative; one member of the faculty from each of the Schools of Engineering, Medicine, and Physical Sciences; and a representative of the University expert in patent law. This Committee shall investigate all discoveries and inventions referred to it, and shall report its recommendations to the President.

AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS
(adopted 1944; amended 1945)[36]

a. It is the policy of the College that the results of scientific investigations, experimental work and research carried on by or under the direction of the scientific or teaching staffs of the College, and with the expense thereof paid from College funds or from funds under the control of the College, become the property of the College, and should be so used and controlled as to produce the greatest benefit to the College and the public.

This policy is to be followed for all such work undertaken by any branch or division of the College, whether undertaken on its own initiative or at the request of outside parties.

b. The College stands ready at all times, within the limits of its means and its responsibilities, to cooperate with any individual or corporation in helping to solve specific technical problems and to overcome difficulties or accomplish improvements in methods and processes. However, such cooperation will be undertaken only after execution of a definite written agreement, which shall include a statement of the financial contributions to be made by the outside party, and an agreement by that party that neither the name of the College nor its subdivisions nor any of its officials shall be used in any advertising matter.

All such agreements shall also contain the following clause or its substantial equivalent:

> It is agreed by the parties to this contract that all results of experimental work carried on by the College, including patentable discoveries, belong to the College and to the public and should be used and controlled so as to produce the greatest benefit to the public. It is understood and agreed that if patentable discoveries grow out of the investigation and such discoveries have commercial value, the party of the second part (outside cooperat-

ing party) shall receive preferential consideration as a prospective licensee, with a view to compensating the second party in part for assistance rendered in the investigation.

c. Conforming to this policy, the College requires patents to be taken out on any valuable discoveries and inventions resulting from research work, and the control of such patents to be vested in the College. Any member of the scientific or teaching staffs of the College who makes a valuable discovery or invention as the result of his regular duties on College time and at College expense may therefore be required to patent his discovery or invention and assign it to the College, expenses connected therewith to be borne by the College.

d. Application for a patent to cover such discoveries or inventions shall be made in such cases as are required by the President of the College, and on its issue the patent shall be assigned by the patentee to the Board of Directors of the A. & M. College of Texas for a nominal consideration.

The Board of Directors shall administer the rights under the patents in whatever manner seems most appropriate, either dedicating the patent to the public or licensing its use. In case of license, the license shall be made with provisions for the use of the patent which will safeguard the public from unreasonable restrictions or exorbitant royalties during the life of the patent.

e. While the results of experimental work, including patentable discoveries, carried on under the direction of the scientific staff of the College, belong to the College and to the public, it is recognized that the party who originates a research problem, brings it to the College for solution, and pays the cost of the research has an equity in the fruits of that investigation; in the case of cooperative investigations, special agreements for preferential licensing may be made with the cooperating interests, with a view to compensating in part for the financial assistance rendered in the investigation. It is recognized, also, that the College has an obligation to use its facilities for the best interest of industry as a whole and of the general public and therefore should employ the most suitable and practical methods to have its laboratory discoveries made available as speedily as possible, while safeguarding the public from undue exploitation and at the same time recognizing the interest of the originator and supporter of the research.

f. In case the financial return to the College from the use of a patent exceeds the cost to the College of the investigation which resulted in the patent and of obtaining the patent, a share of the excess amount received shall be paid to the patentee, this share to be not less than twenty per cent, and may be more if so determined by the Board of Directors on recommendation of the Director of the Station, or other supervisory official, and the President.

g. In case the College declines to bear the expense connected with taking out a patent, the discoverer or inventor may take out the patent and control it himself.

h. Research workers employed by the College shall agree to abide by the patent policy of the College as set forth in these regulations except for

the period during which the employee is working on projects sponsored and financed wholly or in part by the Texas A. & M. Research Foundation. During this period the employee shall abide by the patent policy of the Foundation.

i. Nothing in this regulation is intended to claim ownership or control of copyrights on books, or of inventions or discoveries made by members of the teaching or scientific staffs outside of their regular duties and at their own expense.

UNIVERSITY OF TEXAS
(adopted 1945)[37]

In the absence of a specific contract to the contrary, the following policy relating to patents shall obtain and be incorporated in employment agreements of faculty personnel and other employees.

The title to a patent for any discovery or invention made by an employee of the University of Texas belongs to the said employee and he is free to develop or handle it in any manner he sees fit, subject to the following provisos:

(a) When total net royalties, or other compensations, are less than $1,000, no payment to the University is required.

(b) When net royalties, or other compensations, amount to more than $1,000 and less than $5,000, ten per cent of the excess of such royalties or other compensations above the sum of $1,000 and less than $5,000 shall be paid to the University.

(c) When net royalties, or other compensations, amount to more than $5,000, the royalty to be paid to the University shall be ten per cent on the amount above $1,000 and less than $5,000 and twenty per cent on all amounts above $5,000.

(d) In cases where contributions have been or may hereafter be made to research projects by private persons (such as in the case of the Schoch Electrical Discharge Process) non-exclusive licenses on all inventions or discoveries resulting from such research shall be issued on a reasonable royalty basis without discrimination in favor of or against those making contributions in aid of such research.

UNIVERSITY OF UTAH
(adopted 1944)

Whenever any member of the staff making use of the laboratories or other facilities of the University shall make a discovery or invention, or shall otherwise believe a valuable invention may result from his research, he shall communicate such fact to the executive head of his department or school, who upon investigation will notify the Patent Committee of the University as hereinafter provided. It shall be the duty of this Committee to

examine into the nature of the discovery or invention. If in the opinion of the Committee a valuable invention has been made which should be protected by patent, the Committee shall so recommend to the President. Upon favorable action by the President, and the written agreement of the patentee to assign such patents as he may obtain to the University, patent counsel and other necessary expenses incident to securing letters patent shall be provided by the University or the University may, at its discretion, utilize for such purposes the facilities of Research Corporation or other suitable agencies.

Staff members pursuing research work for the University may, as a condition to the grant of research funds and the use of University facilities, be required to sign an appropriate agreement granting to the University the rights to resulting patentable discoveries in return for a share in the royalties or other income.

In the event that the University shall notify the expectant patentee that it does not desire to finance the application for letters patent, then he may proceed as he may see fit and shall be under no obligation to assign any interest in such patent as may result to the University.

It shall be the right of the University in its discretion to so manage and exploit all patents assigned to it in the public interest and in such manner as to be consistent with the highest ideals and aims of, and to secure proper revenues to, the University. It shall assign the patent or grant licenses under it as will best protect the interests of the public and the University.

Of the net royalties or other revenues received from patents by the University, ten per cent shall be paid to the patentee, except in cases where some other division of income is more appropriate. The remainder, after meeting all proper expenses, shall be allocated to the University Research Fund.

A Patent Committee shall be appointed by the President. This Committee shall investigate all discoveries and inventions referred to it, shall appoint sub-committees of the staff to advise on technical phases of patent application under consideration, shall consider the business aspects of such applications and shall report its recommendations to the President.

YALE UNIVERSITY
(adopted 1943)[38]

It is the policy of the University that it or members of its faculties should not make profits from inventions or discoveries made at the University, or in connection with its activities, and especially from inventions or discoveries which may affect the health or welfare of individuals or of the public. In any case where for the public interest or the advancement of learning it may seem desirable to apply for patents covering inventions or discoveries so made, the inventor should bring the matter to the attention of the President for report by the President to the Prudential Committee of the Corporation. The Prudential Committee is hereby authorized to deal with each case according to its merits.

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21. Circular No. 1, Lehigh Institute of Research, Lehigh University, 1924, pages 18-19

22. Excerpts from Minutes of Board of Trustees, University of Louisville, 25 September 1935.

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29. Procedures for Obtaining Support of Research Programs and Policy with Respect to Research for Private Industry, University of Pennsylvania, February 1947, unnumbered pages 12-13

30. Patent Policy Statement, Princeton University, 7 November 1938

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35. Stanford University Patent Policy, adopted 16 June 1938, amended 19 October 1939

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