needed to bring the inventions into use. It seeks, through these means, to effect the prudent management of its portfolio of patent applications and patents, to introduce its inventions into public use, to protect the public interest, and to provide reasonable and fair royalty returns for the benefit of the institutions, and their inventors, and for its own charitable purposes.

As soon as the patent application has been filed, the patent staff selects as potential licensees qualified firms in the appropriate fields. Factors in this selection are adequacy of research and development facilities, specialized technological and marketing capabilities, financial responsibility, and willingness to commit the necessary funds and efforts for development. As industrial interest is developed, Research Corporation negotiates appropriate license agreements.

License Terms

The terms of the licenses negotiated vary with the circumstances, but the general philosophy behind them is clear and uniform:

. . . Licenses are designed to bring about effective commercial development, wide public use of the product or process, and a reasonable royalty inflow.

. . . Licenses are issued only to technically competent and reputable licensees which have a genuine interest in the subject matter.

. . . Licenses are preferably non-exclusive, as reasonable competition results in product economy and improvement, lower prices, and wider public use. It is also important that the licensor retain freedom to issue additional licenses to meet changing conditions. Where it is clear that a licensee will incur substantial expense and risk in reducing the invention to commercial practice and market acceptance, the license offered may be exclusive for a limited period of time to compensate partially for the licensee's commitment to undertake the unusual

risks. Typical periods of exclusivity in such cases are from three to five years from date of first commercial sale, the exact term varying with the circumstances and being negotiated in each case.

. . . Royalty rates, while subject to negotiation, are set at reasonable levels so that their impact will not make the licensee reluctant to work the invention thoroughly or discourage the public from full use of the invention. Licenses provide, by detailed requirements and through minimum royalties, that the licensee be diligent in the development and utilization of the invention.

. . . Licenses do not require licensing back to the foundation of improvement inventions made by the licensee. In certain cases, the license may require the licensing of patents on such inventions to other licensees at reasonable royalties.

Royalties received by the foundation during the past seven years totaled $ 15,689.426. The year-by-year breakdown is detailed in the following table:

Year	Gross Royalties Received	Royalties Repaid to Inventors, Institutions	Royalties Available for Grants
1967	$ 1,186,319	$ 133,183	$ 601,609
1968	1,306,308	119,279	568,562
1969	1,523,638	124,743	515,710
1970	3,751,136	1,057,236	1,791,807
1971	2,538,357	670,582	566,754
1972	2,312,573	380,375	645,796
1973	3,071,095	710,665	1,028,023
Totals	$15,689,426	$3,196,063	$5,718,261

During the same period payments to inventors and institutions amounted to $3,196,063, and after deducting Patent Programs expenses, $5,718,261 was made available for the grants programs of the foundation.

Management of this Program

The proposed program will be under the overall management of a principal investigator. Direct liaison with ETIP will be handled by a program director. Contacts with the cooperating institutions will be through members of the technical staff of Research Corporation, all of whom will be involved in the conduct of the lecture-seminars and personal interviews.

Principal Investigator

The principal investigator for this proposal will be Dr. Willard Marcy, who is Vice President - Patents for the foundation.

A summary of his educational background and professional experience is as follows:

S.B. in Chemical Engineering, Massachusetts Institute of Technology

Ph.D. in Organic Chemistry, Massachusetts Institute of Technology

U.S. Army Chemical Corps Technical Command, Edgewood Arsenal, Maryland -
Four years experience in the design and operation of pilot plants for the manufacture of a variety of war gases.

Amstar Corporation (formerly American Sugar Co.)
Twenty years experience in production, pilot plant, full-scale plant design and initial plant operation in cane sugar refining.

Research Corporation
Ten years management experience in evaluation, patenting and licensing of inventions from educational and scientific institutions.

Publications include -
Two patents and several papers on sugar refining and the commercial utilization of new inventions.

Program Director and Liaison with ETIP

Robert Goldsmith, Associate, will act as Program Director and provide liaison with the contracting office and headquarters of the Experimental Technology Incentives Program.

Supporting Staff

The entire professional staff of Patent Programs will be involved with this proposal in varying degrees. The staff

[illegible] associate will act as Program Director

consists of:

H. Gordon Howe	Manager - Licensing
James S. Fulleylove	Manager - Evaluations
Robert H. Ritchings	Senior Associate
Richard A. Bock	Associate
Hans A. Eckhardt	Associate
Robert Goldsmith	Associate
Bernard M. Kosloski	Associate
Robert Marchisotto	Associate
Lowell R. Patton, Jr.	Associate
Morton Schwarcz	Associate
Michael Suber	Associate
Robert M. Williams	Associate

The resumes of the supporting staff are detailed on the following pages.

James S. Fulleylove, Manager - Evaluations

B.S. in Engineering Physics, Lehigh University

U.S. Navy.
Two years electronics technician.

Hazeltine Corporation
Eleven years experience in electronic equipment design, engineering and project management.

Teleprompter Corporation
Two years experience in systems design, audio-visual group communications systems and project management

Research Corporation
Twelve years experience in evaluating, patenting and licensing inventions from educational and scientific institutions.

H. Gordon Howe, Manager - Licensing

B.S. in Chemical Engineering, Cornell University

M.S. in Industrial Engineering, Stevens Institute of Technology

U.S. Navy
Three years wartime service in Pacific Theatre.

Bakelite Corporation
Six years experience in plastics technology, particularly in thermosetting resins and plastics.

Research Corporation
Twenty-one years experience in evaluating, patenting and licensing invention from educational and scientific institutions.

Richard A. Bock, Associate

B.A. in Electrical Engineering, City University, New York

M.A. in Business Administration in Management, Baruch College, City University, New York

G.C. Dewey Corporation
Participated in the development of electronic communications and navigation equipment.

PDR Electronics
Electronic design and development of highly complex computer controlled automatic test equipment for a wide range of electronic instruments.

Research Corporation
Five years specializing in evaluation and licensing of Nuclear Medicine instrumentation, x-ray instrumentation, medical electronic devices and instruments and acoustic/electronic devices.

Hans A. Eckhardt, Associate

Humanistisches Gymnasium, Muenchen-Pasing, Germany

B.S. and M.S. in Mechanical-Electrical Engineering,
Technical University, Muenchen, Germany

Kabelwerk Duisburg A.G., Duisburg, Germany
Technical Service and marketing of mechanical and electrical products.

Bayerische Kabelwerke A.G., Roth, Germany
Development of new manufacturing processes and equipment therefor; involvement in patent applications.

Essex Wire Corporation
Development of improved electrical processes and mechanical equipment required therefore; research of state-of-the-art.

Werner & Pfleiderer K.G., Stuttgart, Germany
Development and testing of improved extrusion machinery.

Werner & Pfleiderer Corporation, New York, New York
Introduction to industry of novel extrusion machinery, involvement in state-of-the-art searches.

Engineering Consultant (self-employed)
Evaluation of new concepts regarding patentability and commercial potential of mechanical and electrical equipment; preparation and prosecution of patent applications in mechanical arts.

Research Corporation
Five years evaluation and licensing in the U.S. and Europe of new technology in machinery, instruments and processes.

Werner & Pfleiderer K.G., Stuttgart, Germany

Robert Goldsmith, Associate

Bachelor of Aeronautical Engineering, New York University

Graduate School of Business Administration, New York University - One year of study.

U.S. Navy
Two years experience in evaluating flight instrument systems.

Simmonds Aeronautical Corp., Kollsman Instrument Co., & John Reiner & Co.
Five years experience in project and sales engineering on instrumentation in the aeronautical and industrial field.

Avien, Inc.
Five years experience in corporate planning and marketing of aircraft instrumentation systems to agencies of the United States Government.

Robert Goldsmith Co.
Four years experience as owner of sales and engineering organization in the aeronautical and industrial instrumentation field.

Associated Test Laboratories, Inc.
Eleven years experience as Vice President - Marketing for aerospace and commercial testing laboratory.

Identimation Corporation
One year as Vice President - Sales of new method for personal identification.

Research Corporation
Three years experience in evaluating, patenting and licensing inventions from educational and scientific institutions.

Bernard M. Kosloski, Associate

B.S. in Chemical Engineering, University of Pennsylvania

M.B.A. in Management and Marketing, New York University

American Sugar Company
For fourteen years was active in various technical areas ranging from Process Engineer to Sugar Technologist.

Research Corporation
Six years experience in licensing and evaluating inventions in the chemical and pharmaceutical area.

Morton Schwarcz, Associate

B.S. in Chemistry, University of Illinois

Additional and Graduate studies at the University of Chicago, Princeton University and The Massachusetts Institute of Technology

Edwal Laboratories
Research Chemist, Director of Research, photographic and fine chemicals, agricultural and pesticidal chemicals.

Ringwood Chemical
Director of Research, Director of Development, Patent Liaison fine chemicals, pharmaceutical, rocket fuels.

Motomco Inc.
Technical Director, design, operation of plant to manufacture pesticidal chemicals.

Shulton, Inc.
Director of Research - food and aromatic chemicals, consumer products. Vice President of pharmaceutical subsidiary. Economic and market studies.

Additional and Graduate

M & T Chemicals
Director of Research; Chemical Division. Economic studies, development of plastic additives, pesticides, specialty ceramics. Patent liaison.

Research Corporation
Four years licensing and evaluating inventions in the fields of food chemicals, chemical processes in waste treatment, pharmaceuticals.

Robert Marchisotto, Associate

B.S. in Pharmaceutical Chemistry, Long Island University

M.S. and Ph.D. in Pharmaceutical Chemistry, Purdue University

Johnson & Johnson
Five years experience in development of pharmaceutical and dermatological drug products.

Bristol-Myers
Director of International Laboratories, Products Division. Directed development of proprietary drug and cosmetic products.

Richardson-Merrell
Three years experience as Director of Scientific Information and EDA coordinator for the Vick Division.

Schering Corporation
Three years experience as Director of Research and Development for the Pharmaco Division. Engaged in development of wide range of drug products and administered complete research program for division.

Research Corporation
Three years of licensing and evaluation experience on pharmaceutical inventions in broad health area applications.

Robert H. Ritchings, Senior Associate

B.S. in Mechanical Engineering, Cornell University

M.S. in Mechanical Engineering, Massachusetts Institute of Technology, Stevens Institute of Technology

The Goodyear Tire & Rubber Company
Three years in research, development and testing of new rubber products - including prototype construction - with particular reference to mechanical characteristics and requirements.

U.S. Plywood Corp.
Three years in new product development and testing in area of high-performance wood laminates.

Research Corporation
Twenty-five years in patenting and licensing inventions of a mechanical character (broadly defined), maintain contact with and develop agreements for new institutions requesting patent assistance services.

Michael J. Suber, Associate

B.S. in Chemical Engineering, Bucknell University

Graduate courses, SUNY/Buffalo

Olin Corporation
Six years development and supervision of new manufacturing processes for industrial chemicals.

Carborundum Company
Project surveys; chemical process design and justification.

for new institutions requesting patent assistance

Cities Service Company
Nine years technical and economic analysis of internal and external research proposals in petrochemicals; planning and preparation of venture programs; project leader for government-sponsored research contract.

Research Corporation
Four years evaluation and licensing of applied chemical technology, including new chemicals, polymers, medical devices, and instruments; emphasis on separation processes and environmental control; water treatment, oil removal, sulfur recovery and waste utilization.

Robert M. Williams, Associate

B.S. and M.S. in Electrical Engineering, University of Pennsylvania

Ph.D. in Physics, University of Pennsylvania

R.C.A. Laboratories
Technical Staff Member working in the fields of superconductivity, transistor development, microwave computers and computer logic.

American Institute of Physics
Computer-based information retrieval system for physics.

Research Corporation
Six years evaluating and licensing of electrical, electronic and computer technology.

Section H

Appendixes

Appendix A

Institution Selection

In an effort to provide a relatively broad base on which to base the analysis of the results of the proposed program, fifteen institutions were selected as prospective candidates. Those fifteen institutions were first contacted by telephone and given a very brief description of the program. The telephone contact was followed by a formal letter requesting the reaction of the institutions and an indication of a willingness to be included in the program. A copy of a sample letter and a listing of the institutions are included herewith.

Using those institutions which expressed both a desire as well as a willingness to participate, the following eight institutions were selected.

University of Georgia
Athens, Georgia

University of Maryland
College Park, Maryland

University of Michigan
Ann Arbor, Michigan

University of Washington
Seattle, Washington

Case Western Reserve University
Cleveland, Ohio

Princeton University
Princeton, New Jersey

Polytechnic Institute of New York
Brooklyn, New York

Virginia Polytechnic Institute
& State University
Blacksburg, Virginia

Our initial selection was designed to select institutions having a relatively high level of Government sponsored research.

In addition we endeavored to select institutions that would fall into one or more of the following areas:

- Universities with attached medical or health science centers.
- Large state supported institutions.
- Universities with schools of agriculture.
- Large private institutions.
- Principally technology schools.

Various other factors were also considered, including the amount of total sponsored research, the academic standing of the institution and the breadth of research activities.

The following data was utilized in our selection of universities. The data was obtained from the National Science Foundation in advance of its publication.

FEDERAL OBLIGATIONS FOR RESEARCH AND DEVELOPMENT - FY 1972
(All amounts in thousands of dollars)

Institution	Total	HEW	NSF	DOD	NASA
Univ. of Washington	48,241	26,715	9,953	5,412	980
Univ. of Michigan	44,481	17,242	7,705	8,131	5,333
Univ. of Maryland	17,785	5,661	4,000	2,100	2,329
Case Western Res Univ	14,833	9,184	2,706	1,422	565
Princeton Univ.	14,456	2,515	4,184	2,312	2,903
Univ. of Georgia	7,310	2,519	1,652	288	16
Virginia Poly Inst & St Univ.	5,477	764	1,021	429	549
Poly Inst of New York	2,876	378	713	1,672	55

Initial Candidate Institutions

University	Name of Person Contacted
University of Michigan	Dr. Charles G. Overberger cc: Dr. Howard Finkbeiner
University of Maryland	Dr. Wilson H. Elkins cc: Dr. Michael J. Pelczar, Jr.
University of Pennsylvania	Mr. Martin Meyerson cc: Mr. Regan A. Scurlock
The Johns Hopkins University	Mr. Robert C. Bowie cc: Mr. Alfred P. Ashton
Cornell University	Dr. W. Donald Cooke cc: Mr. Tom Rogers
Purdue University	Dr. Ralph Davis
Columbia University	Dr. William J. McGill cc: Dr. Ralph Halford
Harvard University	Mr. Daniel Steiner
University of Georgia	Dr. Fred C. Davison cc: Mr. William O. Burke
Polytechnic Institute of New York	Dr. George Bugliarello cc: Mr. Jerome Fox
Illinois Institute of Technology	Dr. James J. Brophy
Virginia Polytechnic Institute & State University	Dean Randal M. Robertson
Princeton University	Professor Sheldon Judson cc: Mr. Richard A. Rossi Mr. Raymond J. Woodrow
Case Western Reserve University	Dr. Allen C. Moore
University of Washington	Dr. Ernest M. Conrad cc: Mr. Wallace C. Treibel

Appendix B

Institutional Visit Costs

University of Georgia

Air Fare (Round Trip)	$ 145.00
Motel	15.00
Meals	15.00
Misc. Ground Transportation	25.00
	$ 200.00

Princeton University

Car Rental	$ 30.00
Motel	15.00
Meals	16.00
Misc. Ground Transportation	---
	$ 61.00

Case Western Reserve University

Air Fare (Round Trip)	$ 90.00
Motel	17.00
Meals	16.00
Misc. Ground Transportation	15.00
	$ 138.00

University of Washington

Air Fare (Round Trip)	$ 380.00
Motel	17.00
Meals/Day	15.00
Misc. Ground Transportation	8.00
	$ 420.00

University of Michigan

Air Fare (Round Trip)	$ 105.00
Motel	16.00
Meals/Day	15.00
Misc. Ground Transportation	15.00
	$ 151.00

University of Maryland

Air Fare (Round Trip)	$ 55.00
Motel	16.00
Meals/Day	16.00
Misc. Ground Transportation	15.00
	$ 102.00

Virginia Polytechnic Institute
& State University

Air Fare (Round Trip)	$ 100.00
Motel	13.00
Meals	15.00
Misc. Ground Transportation	40.00
	$ 168.00

Meals/Day 16.00

Polytechnic Institute of New York

Local Transportation	$ 30.00
Meals	15.00
	$ 45.00

Average Cost of One Day's Travel
To and From an Institution

University of Georgia	$ 200.00
Princeton University	61.00
Case Western Reserve University	138.00
University of Washington	420.00
University of Michigan	151.00
University of Maryland	102.00
Virginia Polytechnic Institute & State University	168.00
Polytechnic Institute of New York	45.00
Total	$ 1,285.00

Average Visit Cost: $\frac{\$\ 1,285}{8}$ = $ 161.00

APPENDIX 1

STIMULATING INVENTION DISCLOSURES

BY FACULTY RESEARCHERS

... A Guide for the University Invention Administrator

By

Research Corporation
Invention Administration Program
405 Lexington Avenue
New York, N.Y. 10017

Dr. Willard Marcy
Principal Investigator

October 1978

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Any opinions, findings, conclusions or recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of either of the sponsoring agencies.

TABLE OF CONTENTS

		Page
I.	ABOUT THIS MANUAL	1
II.	PATENTS: THE HIDDEN RESOURCE	4
III.	ESTABLISHING A PROGRAM TO STIMULATE INVENTION DISCLOSURES	6
A.	Setting a Goal	
1.	Analysis of the Institution's Objective	6
2.	Potential Disclosure Output	7
3.	Utilization of Program Results	7
4.	Faculty/Administration Interface	8
B.	Creating the Organization	
1.	The Patent Committee	10
2.	The Patent Policy	11
3.	The Budget	12
4.	The Office of Invention Administration	16
5.	The Invention Administrator	18
C.	The Program	
1.	Inventor Identification	21
2.	Written Communications	24
3.	Seminars	31
4.	Inventor Follow-up	38
5.	Simplifying Disclosures	40
6.	Handling Disclosures	41
7.	Disclosure Evaluation	42
8.	Patenting and Licensing	43
IV.	SUMMARY AND CONCLUSIONS	44

Appendix A: Invention Seminar Outline
Appendix B: University of Maryland Invention Seminar Week
Appendix C: Invention Questionnaire
Appendix D: Patents' Benefit to Inventor, University, and Society Stressed In Seminar Series

I. ABOUT THIS MANUAL

"Patents? I'm not interested in patents. I'm a research scientist, and a researcher's job is to search out new knowledge and make it widely -- and freely -- available. Patenting is inconsistent with this. Besides, it just means a lot of red tape and paperwork. Let the university's administrators and lawyers worry about patents".

If the faculty at your institution is in any way typical, then you are very likely familiar with this attitude. We at Research Corporation encountered it repeatedly during a three-year study for the National Science Foundation and the National Bureau of Standards that was completed in December 1977. Conducted by Research Corporation's Invention Administration Program group at eight selected academic institutions across the United States, the study revealed that faculty researchers are, by and large, unaware of the importance of the patent system in transforming their research results into products and processes that will benefit the public. The study revealed a considerable lack of information, as well as a number of important misconceptions, such as "I can't patent because the government supports my research" and "I want to publish, and, if I patent, I can't publish."

The import of these attitudes is that inventors often fail to recognize when they have made an invention, patentable or otherwise. Consequently, their inventions are unlikely to be brought to the attention of those university officials charged with evaluating patent potential in time for effective action to be taken. The result: Many inventions by faculty investigators on Federally-supported projects are left unpatented and frequently remain undeveloped for the public benefit.

This manual is intended as a guide for university administrators who wish to set up in-house programs to help faculty members in the recognition of inventions and to increase the flow of their disclosure. Aimed at both senior administrators and those personnel who are charged with the actual implementation of such programs, the manual presupposes little or no prior experience with the handling of invention disclosures at academic institutions.

However, it will not treat in detail the evaluation of disclosures for their patentability, the filing or prosecution of patent applications, or the licensing of issued patents. For reasons that will be explained, most institutions are likely to find that these steps are best left to outside specialists. Rather, the manual draws upon the experience gained during the recent Research Corporation study, where an intensive, continuing program of seminars and individual meetings with "invention-

prone" faculty was tested and found successful in increasing patent awareness and overcoming the kinds of misconceptions mentioned above. Where the program was accepted with enthusiasm and a sincere effort was made to carry it through, a substantial increase in disclosures occurred. We believe the program can be readily adapted to the needs of other institutions.

II. PATENTS: THE HIDDEN RESOURCE

At the outset, it is important to recognize the benefits of patenting, not only because these benefits provide the administrative justification for initiating a program to increase disclosures, but, also, because they must be communicated to a generally skeptical and/or unaware faculty. Briefly:

* In many fields (pharmaceuticals being a striking example), prospective manufacturers find it economically unjustified to undertake the development of an invention unless they are assured the protection for their extensive investment that only a patent can provide. Thus, rather than being incompatible with research and teaching, patenting is often the best and, perhaps, the only means by which a university inventor can see the fruits of his or her research developed into a useful product or process for the public.

* Patenting offers the inventor and the institution a way to prevent social abuses to which an invention may be subjected.

* Since research supported by Federal granting agencies carries both a responsibility and an obligation for making formal invention disclosures in order to make discoveries available to the public, reporting of inventions resulting

from the research becomes an important obligation of every inventor and every institution.

* The transfer of technology to industry through licensing patents increases a faculty researcher's exposure to that industry and its needs, thus benefitting both the investigator, his institution, and the industry.

* Financially successful inventions will return funds to a university that can then be applied toward the support of further research in the inventor's area of interest or those of other faculty researchers. (Note that $100,000 annual royalty income is equivalent to the interest on $1.0 to $1.5 million in unrestricted endowment funds, for instance.)

III. ESTABLISHING A PROGRAM TO STIMULATE INVENTION DISCLOSURES

A. Setting A Goal

1. Analysis of the Institution's Objective

Before embarking on the establishment of a Program to stimulate invention disclosures, the institution should consider exactly what it wishes to accomplish under the Program and should review the factors having a major bearing on the structure and size of the organization needed.

A liberal arts college will not have the potential to generate the same number or as broad a scope of invention disclosures as will a university which includes such entities as a Health Science Center, a College of Dentistry, a College of Engineering or an Agricultural Experiment Station in addition to the usual science departments.

Consideration should also be given to the level to which the administration wants to become involved in the research efforts of its faculty.

Decisions on these basic concepts will determine many of the steps that must be taken in establishing a Program that will

function effectively at each institution at the optimum level of activity.

2. Potential Disclosure Output

Several organizations involved in the handling of inventions from academic institutions have found that, as a rule of thumb, one should expect to have one invention disclosure surface for every $1,000,000 per year of contract or grant money received. Based on this criterion the institution should probably consider establishing a Program to accomplish the minimum levels to be described later. Unless the institution's research budget is over $20,000,000 annually, it may not be able to sustain the operation of a complete Program.

3. Utilization of Program Results

The minimum results obtained from this Program should be a substantial increase in the number of invention disclosures generated, and, correspondingly, the number of patents obtained and licensed. This Program can:

* Make the fruits of academic research available to industry and the public through the patent system more effectively than through scholarly publication alone.
* Increase the scope and depth of the interface between the academic research community and industry through the licensing of academic inventions.

* Provide a potential source of revenue to both the faculty inventor and the institution.

* Provide a mechanism for compliance with the invention disclosure requirements of sponsored research grants and contracts.

Each institution should review these probable results to determine the relative merits of each and whether the institution wishes to place greater emphasis on any one or another of them. Some institutions consider the need for professional recognition to outweigh any possible financial gain and therefore place little emphasis on developing disclosures for patenting and licensing. Conversely there are institutions whose royalty income has reached significant levels. The decision involves certain trade-offs which must be carefully weighed.

4. Faculty/Administration Interface

In establishing the Program an Administrator must be charged with the responsibility for its performance. This individual will, of necessity, have to establish effective communication with many faculty researchers. As a minimum, the Administrator serves merely as a focal point receiving invention disclosures, arranging for their evaluation, and reporting results to sponsors and faculty inventors. As a maximum, the Administrator becomes involved intimately with the researcher, asking questions, requesting written disclosures, and, in general, following

closely all research projects from which potential inventions may arise from their inception to their final disposition.

With these extremes in mind the institution's administration should decide whether it wishes to:

* Take whatever steps are necessary to insure that the greatest number of invention disclosures is generated promptly and handled effectively to final disposition;
* Take a completely passive stance merely offering minimum service in handling invention disclosures in compliance with the requirements of the funded grants and contracts; or,
* Take an intermediate position between these two extremes.

The establishment of any Program will require some expenditure of money, the amount depending on the scope of the program and how it is to be implemented. It is important to remember that the initial financial return on academic inventions is relatively small and subject to relatively long time lags. Ten to fifteen years of financial input may be required before break-even will occur. Since one or two out of one thousand invention disclosures will produce more than $50,000 in royalty income per year after initial marketing, the financial input must be related to this possible return.

B. Creating the Organization

Before proceeding with this portion of the guide we believe it would be advisable for the reader to obtain and review some recent publications prepared by the National Association of College and University Business Officers. (1) This association has compiled in three specific documents information that can be of great value to an institution interested in either instituting or revising a program to further the disclosure of inventions. These brochures are entitled:

Patent and Copyright Policies at Selected Universities
Patents at College and Universities; ADMINISTRATIVE SERVICE/ Supplement 2:4:1
Survey of Institutional Patent Policies and Patent Administration; ADMINISTRATIVE SERVICE/Supplement 2:4:2

1. The Patent Committee

A formal institution-wide Patent Committee, consisting of representatives from both faculty and administration, is essential to an effective Invention Stimulation Program. The Committee should be responsible for the following activities:

* Formulation and periodic review of an institutional patent policy.

(1) National Association of College and University Business Officers, One DuPont Circle (Suite 510), Washington, D.C. 20036

* Reviewing and deciding matters dealing with ownership rights in inventions made by faculty members.

* Providing general guidance to the Invention Administrator.

The Patent Committee should not be expected to undertake the actual evaluation of invention disclosures.

2. The Patent Policy

A formal institution-wide patent policy is also essential to an effective Invention Stimulation Program. This patent policy, best developed jointly by faculty and administration, reviewed by the university counsel, and approved by the institution's governing bodies, should provide for at least the following:

* The establishment of an Office of Invention Administration under the direction of an Invention Administrator.

* Specifying precisely the percentage of royalty income that will actually return to the inventor himself.

* Clearly spelling out conditions of patent ownership.

* The release to the inventor of any inventions where the institution has determined that no ownership rights are vested in the institution.

* How the institution will employ its share of the income.

* A procedure for evaluation, patenting and licensing of inventions.

The patent policy should be printed and widely distributed to the entire faculty and other employees to be covered by the

governing bodies, should provide for at least the following:

policy. Acceptance in writing of the patent policy and agreement to be bound by it should be required, particularly of new faculty members, as one of the conditions of employment.

3. The Budget

The establishment of an Office of Invention Administration under the responsibility of a designated Invention Administrator requires financial obligations proportionate to the expected level of activity. Funding for this office should be included in the institution's annual budget.

The amount of funding necessary will depend on basic decisions made by the institution's governing board. The most important decision concerns the type and level of activity expected of the Administrator. Is the office to be merely an information center; is it to furnish a complete service to faculty inventors; or is it to function at some intermediate level between these extremes?

A second fundamental decision is whether the services of an outside patent management group (or individual) are to be used, whether the management of inventions is to be handled solely by institution personnel, or by some combination of the two.

A third decision concerns the depth and breadth of the activity the Administrator is to enter into in developing an awareness of inventions inherent in faculty research results and an understanding of the proper use of the patent system. If this is to be an active endeavor, rather than passive, a higher level of funding will be necessary.

When these basic decisions have been made, a realistic, detailed budget can be drawn up. Drawing up the budget should involve both the Administrator and the institution's business office.

Since this report is directed primarily to setting up and operating an invention and patent awareness program, expense items for handling submitted invention disclosures are of lesser interest. Nevertheless, it is important to have an understanding of the magnitude of these other costs, since the Office of Invention Administration will be obligated to administer submitted disclosures through the patenting and licensing steps.

Approximate costs in 1978 dollars for an Office of Invention Administration are given in Table I. In developing this table the assumption was made that a strong invention and patent awareness program would be developed, and that practically all of the follow-up needed to patent and license disclosures would be done using in-house staff, except for filing and prosecuting

patent applications themselves, which would be done by patent attorneys or patent agents in private practice. It has also been assumed that about 10% of the disclosures received will be accepted for patenting and licensing, a ratio which appears to be about average for most institutions.

The costs have been estimated at three levels of overall activity: 20 or fewer invention disclosures received annually, 21 to 50, and 51 or more. Recalling the previous correlation of one disclosure per year per million dollars of funding, these three categories represent annual funding levels of up to $20 million, $20 to $50 million, and over $50 million, respectively.

The estimated budgets include these specific cost items necessary to undertake a reasonably active invention and patent awareness program, but do not include general overhead:

* Invention Administrator salary.
* Supporting secretarial and clerical staff salaries.
* Fringe benefits.
* Publication writing, printing and distribution expense.
* Travel costs.
* Telephone, telegraph and office supplies.
* Professional society memberships, journal subscriptions, and attendance fees for professional meetings.
* Office space and equipment.

The additional item for patent application filing and prosecution, and for patent maintenance is included primarily for informational purposes.

Table I

OFFICE OF INVENTION ADMINISTRATION

ESTIMATED ANNUAL BUDGETS

Number of Invention Disclosures Submitted:	Under 20	21 - 50	51 and Over
Salaries:			
Patent Administrator	$12,000	$ 24,000	$ 36,000
Supporting Staff	10,000	20,000	30,000
Fringe Benefits	7,000	14,000	22,000
Total Salaries	$29,000	$ 58,000	$ 88,000
Travel	5,000	10,000	15,000
Patent application filing and prosecution, and patent maintenance	25,000	50,000	75,000
Association memberships including attendance at meetings	500	500	500
Printing and distribution of internal public relations material	1,000	1,000	1,000
Telephone, stationery, reproduction, etc.	1,000	1,000	1,000
Office space and equipment	3,000	3,000	3,000
TOTALS	$64,500	$123,500	$185,500
Amount of time for Inventions Administrator:	1/3	2/3	Full time
Number of full-time supporting staff:	1	2	3
Approximate number of inventions per year on which patents will be filed:	2	4	6

4. The Office of Invention Administration

The primary responsibility for the implementation of the patent policy of the institution should reside with this Office. The Office provides the interface between the faculty researcher - inventor and the institution administration relating to inventions. Additionally, it performs a similar function between the faculty and the Grants and Contracts Office in those cases where sponsored research and development grants include patent clauses.

Generally speaking the objectives of the Office of Invention Administration are to:

* Provide an available and easily used communications center for receiving and processing invention disclosures.
* Provide accurate and complete information about the patent policy of the institution, the functions of the Office and the benefits accruing to both faculty and institution by complying with the patent policy of the institution.
* Act as liaison between faculty researchers, institution administrators, funding sources, and any other necessary internal and external organizations and individuals in matters relating to ownership of inventions and patent rights.

The Office should act as quickly and decisively as possible on each invention disclosure submitted. Whatever action is taken

by the Office on such submissions should be reported promptly to the inventor within four weeks of receipt, if possible.

For the benefit of the faculty inventor the Office should include:

* A centralized location for receiving and handling questions about the institutional patent policy.
* A receiving point for invention disclosures submitted for evaluation.
* A centralized source of information on the status of both disclosures and accepted inventions.
* A person who can assist in complying with the reporting of inventions to agencies providing grants and contracts.

Depending on the scope of activity placed by the administration on the Office, it should be charged with providing some or all of these services:

* Implementation of the procedures developed by the Patent Committee.
* Continuing contact with any outside patent management organizations.
* Selecting patent attorneys in those cases where the institution handles its own inventions.
* Providing a communications link between inventors and patent attorneys during filing and prosecution of patent applications.
* Selection of potential licensees and negotiation of licenses.
* Monitoring of existing licenses to assure licensee compliance with license terms.

* Advising on the administrative handling of any litigation problems.

* Maintaining appropriate liaison between Federal granting agencies and the institution.

* Reviewing clauses in contracts and grants dealing with ownership rights and making a preliminary determination of their acceptability.

* Making certain that the terms in contracts and grants relating to ownership rights are fulfilled.

5. The Invention Administrator

An institution cannot expect effective results from the operation of an Invention Administration Office if it asks an already overburdened administrator to "fit" this additional activity in among numerous other responsibilities. Done right, the job of administering the Program requires -- at a minimum -- one professional spending one-third of his or her time supported by a full-time secretary, whether the institution is a narrowly based technical school or a broadly based university.

The Invention Administrator need not be an attorney, patent or general, because the temptation might be great to engage personally in patent prosecution and licensing. These are complex activities and are best left to highly trained and experienced outside specialists with adequate time for concentrating on these specific problems.

A background in some scientific or technical area is desirable, and prior industrial experience is helpful. The Administrator should feel comfortable when talking with technically oriented people. In addition, he should be familiar with administrative protocol since he acts as a communications link between faculty inventors, top level institutional administrators, government bureaucrats and industrial administrators and executives.

The principal role of the Invention Administrator involves:

* Informing faculty members about the institutional patent policy.
* Convincing faculty members that the institution has an equitable and workable policy for handling patentable inventions.
* Demonstrating that he is able, willing and competent to assist inventors with administrative matters so that their paths may be as smooth as possible throughout the disclosure, patent application filing and prosecution processes.

In carrying out his role the Invention Administrator should be reasonably familiar with current industrial practices, particularly with regard to marketing, and have the ability to establish good rapport with faculty inventors, helping them recognize when they have made inventions and exploring with them the various options they might then pursue for the development of their inventions for public use. The Administrator should not wait passively for invention disclosures to cross his desk, but

should seek out and actively assist potential inventors. At the same time, however, he should not be so "pushy" as to antagonize them.

The position of Invention Administrator is not a good one for someone on the verge of retirement, whom the university simply wants to "take care of". Even an experienced administrator will find this a job with a long learning cycle, as he must become involved in the entire evaluation, patenting and licensing process. He must develop maturity and judgment as well as an equanimity which would enable him to handle crisis situations expeditiously and effectively. This can take five or more years and could well be a "second career" position.

Since faculty inventors are usually the younger faculty members, Invention Administrators who relate well to their juniors seem to have an easier time establishing the necessary close rapport. Mental flexibility, a high degree of curiosity, enthusiasm and a confident manner are highly desirable qualities for the Administrator to have.

Hiring of a retired business executive or administrator to fill the position, while attractive, should be approached with great caution in order to avoid the possible introduction of inflexible positions and stereotyped ideas often possessed by such individuals.

C. The Program

1. Inventor Identification

The key to the success of any Invention Stimulation Program resides in the ability of the Invention Administrator to locate and arouse the interest of that small percentage of the faculty that may produce patentable inventions. In general, the faculty-inventors will be those individuals who are engaged in scientific research, engineering or medicine, but not those doing theoretical research, or, on the other hand, merely making and recording observations. Research leading to inventive concepts is that which leads to something "new, unobvious and useful", solves a problem, satisfies a need, provides a better way of doing something, or is an improvement on an existing development.

It is not easy to find "invention-prone" individuals. Indeed they have difficulty recognizing themselves as inventors. They will rarely come by and introduce themselves. Instead, they will be plugging away at their principal jobs: research and teaching. Fortunately, however, they reveal their presence in one way --through their publications -- and the "publish or perish" syndrome strongly encourages publication. The academic information process generates a vast amount of literature, and the best advice is that this source be tapped and vigorously used.

Each institution, as well as each school and department within the institution, is operated differently. In general, the following kinds of publications can be extremely valuable in helping to identify potential inventors. So, an Invention Administrator should get on the distribution list for:

* Annual reports and catalogs of the institution and its various individual divisions or schools. (These provide an encyclopedic and up-to-date overview of on-campus research and funding. They should be among the first documents to be reviewed.)

* Department publications. (These list the past and present research interests of departmental faculty.)

* Computer printouts of research projects. (Watch particularly for holders of substantial research contracts in science, public health and engineering.)

* Faculty newsletters, notices of departmental seminars, and analogous periodic public relations efforts.

* Reprints of scientific and technical journal articles and other research publications of faculty members.

* Bibliographies. (Departmental bibliographies of journal articles and degree dissertations provide useful leads, although they don't reveal funding.)

* Project descriptions. (Some schools and divisions require faculty investigators to write brief summaries, in plain English, of each funded proposal. These can be extremely useful guides to inventive research.)

Skimming the above publications can lead to promising people. But the trick, of course, is to learn to penetrate the academic jargon with which inventive content is frequently disguised. For instance, where an industrial trade magazine might headline a report on a new transistor unequivocally: "New trans-

istor design gives 50% boost in switching speeds," the same invention might be described in the university world as follows:

* List of departmental grants: "Semiconductor research, $50,000."
* PhD Thesis: "Integral equation solution of transistor-base resistance in three dimensions."
* Seminar Announcement: "Recent progress in transistor modeling."
* Journal article: "Frequency switching characteristics of bipolar transistors with thin lightly-doped bases."

After a while, the knack will be attained of skimming these information sources, red pencil in hand, and circling the names and departments of authors who seem promising and worth visiting. A fixed time each day or week should be devoted to such activity and to visiting. As experience is developed a departmental newsletter can be reviewed in a few minutes, and a university-wide catalog or research survey, with several hundred abstracts, within one hour.

REMEMBER: The trick is not to read every technical abstract or article. It's a skimming operation, where you simply look for promising names, along with the department name, and opening questions for a personal visit.

A visit with a dean or department chairman will be a necessity at this stage. Explain that people whose research may develop inventive concepts need to be identified, by going through the department catalog or annual report. This

important exercise will distinguish those faculty members whose work seems promising from those whose work seems unlikely to lead to inventions; who has left or is planning to leave the university; who is involved in interdisciplinary research; and similar pertinent information. Most importantly, the chairman may well be persuaded to agree to serve as icebreaker in setting up personal meetings with promising people.

2. Written Communications

A good set of written documents is invaluable in communicating with the faculty about the Office of Invention Administration, the institution's patent policy, and the services offered by the Invention Administrator. Since faculty members will be bound by the terms of the institution's patent policy, this should probably be the first publication to be prepared.

Most academic institutions will have printed their patent policy as a separate booklet or as a section of a faculty "handbook" and will have distributed it to new faculty members when they sign their employment contracts. Some institutions even review the policy every three to five years in a faculty publication. Unfortunately, this relatively straightforward procedure appears to be largely ineffectual. It has been our observation that:

* Most faculty members don't know what is in their institution's policy.

* Many are unaware a policy even exists.

* Very few realize there is an administrator responsible for implementing that policy and to whom they can turn for assistance.

The Invention Administrator position may be a box on the organization chart, but that doesn't assure that his existence as a person is registered in faculty minds! The reasons for this lack of knowledge are quite obvious:

* New faculty members are unlikely to wade through pages of quasi-legal jargon at a moment in their careers when inventions and patents seem to bear little or no interest for them.

* There is a natural gulf between the administration and the faculty that is enhanced in the case of patents by administrators who often take a completely passive approach to the job, preferring to sit back and wait for inventors to send them disclosures.

* A widespread bias toward, and disinterest in, patenting makes faculty members less receptive to efforts to stimulate invention disclosures.

As a result, the Patent Administrator must publicize his or her presence. At a large institution, with several thousand faculty members, the most efficient way to do this appears to be through:

* Notices in the university newspaper, faculty bulletin or other campus publication (See Appendix D).

* A brief, one-page mailing to every faculty member.

If a simple mailing is used, it should serve to introduce the Administrator to the faculty and, in so doing, to remind it that the institution has a patent policy. The first message to get across is, essentially: "I'm here; I'm here to help faculty inventors, to administer the university's patent policy, and to help unravel any red tape you may encounter in adhering to the policy."

The second message is that the patent policy includes certain points of special interest to faculty members. These should be summarized briefly.

Finally, an explanation is needed for why the university wants to encourage patenting. Restate some of the reasons in Box I and, if there's still room, dispel some of the prominent "myths" about inventing (see Box II). See Pages 28 and 29.

IMPORTANT NOTE: Be sure to include heads of departments in all mailings. They need special personal letters because their cooperation is essential to the success of any program to stimulate disclosures. If the department chairman can be convinced of the wisdom of Invention Stimulation and its potential benefits to his department, his individual faculty members and the institution, he will be a valuable ally in stimulating disclosures.

After an appropriate period of time, usually two months, a second more comprehensive mailing should be sent out to a more limited cross section of the faculty. This second mailing should

be addressed to people who are working in science and technology and, presumably, are familiar with the general concept of inventing and patenting. It can address them directly as potential inventors. As a minimum, this communications "package" should include no more than a two-or-three-page letter summarizing clearly:

* The benefits of patenting (see Box I.)
* The myths of patenting (see Box II.)
* The fact that the institution has a patent policy.
* The Administrator's role in implementing policy and in helping faculty members to make invention disclosures and having them evaluated in accordance with it.
* An invitation to contact the Administrator for answers to any questions about patenting in general or simply to arrange a personal meeting to discuss specific research results.

BOX I

BENEFITS OF PATENTING

Expedites availability to the public of new products, new processes, or new uses for old products.

Helps prevent inventions from being buried, at one extreme, or improperly exploited to the detriment of the public, at the other.

Disseminates beneficent knowledge through detailed descriptions provided in issued patents.

Stimulates further research by others.

Provides financial return to university and to individual inventor.

BOX II

COMMON MISCONCEPTIONS ABOUT PATENTING

THE MYTH	THE REALITY
If you publish, you can't patent; if you wish to patent, you can't publish.	Absolutely untrue;by following a proper time sequence, you can and should do both.
Inventions made during work on a government grant or contract aren't worth patenting because anything you discover belongs to the Federal government.	Not necessarily so. Many agencies, including HEW, DOD, NSF, NASA, and in most cases, DOE, have arrangements providing for the university to acquire title, obtain and license patents, and retain royalty income within certain restrictions set by the government agency.
Patents are only granted for "hardware", not for a new process or a new use for an old compound.	Wrong, again. An invention is anything "new, unobvious and useful" that solves a problem, satisfies a need, provides a better way of doing something, or improves an existing product or process.
Publishing is the way to make certain an invention will be dedicated to the public good.	Not so. Many companies, especially the medium-sized and smaller ones, need temporary protection against fierce early competition to protect the often substantial investment necessary to bring an invention to the marketplace.

In addition, the package should include a brochure that summarizes and explains -- in plain English -- the institution's patent policy. Since many faculty members are unaware that the policy exists for their protection as well as the institution's, such a brochure should not only clarify an inventor's obligations under the policy, but it should also stress matters with which faculty inventors will be particularly concerned. These are:

* Their share of any income.
* Provisions for patent ownership.
* The extent to which the institution's share of royalty income can be earmarked for their academic discipline or department.
* Whether or not the institution has patent agreements with government agencies that give it and the inventor a right to share in any income from inventions made as part of federally-supported research.

Another brochure should also stress the importance of timely disclosure of inventions and describe the procedure for this, including:

* Kinds of records that must be kept.
* The various ways in which the disclosure can be made, including printed forms if these are used.
* Where to send the disclosure.

The "audience" will narrow down rapidly to fewer than half of the technical faculty. The likeliest inventors will be found in:

* Engineering (mainly chemical, mechanical, electrical and environmental)
* The Sciences (particularly chemistry, biochemistry and applied physics)
* Food technology
* Pharmacology
* Dentistry
* Medicine
* Veterinary medicine

3. Seminars

Purpose and Format of Lecture-Seminars

The Patent Administrator at one large university flatly states: "There is no substitute for face-to-face interaction with the faculty to identify inventions on a timely basis." This is good advice for an institution with only a few potential inventors, the simplest and most effective plan is to meet each and every one of them individually, relying on an initial broadside communication to be a satisfactory introduction.

However, at a medium to large institution it will be more practical to employ departmental seminars, aimed specifically at the faculty of promising (for inventions) departments or disciplines. Holding lecture-seminars is an efficient way to:

The Patent Administrator at one large ... flatly

* Overcome misconceptions and lack of information that prevent faculty from recognizing when they have made inventions in the legal sense and from disclosing such inventions in a timely manner.

* Identify individuals who have either made an invention recently or who have a good chance of doing so in the near future. Such people are prime candidates for early meetings with you.

Essentially, the seminar should involve a short (15-20 minutes) lecture followed by a question period of 30 to 40 minutes. An outline of a sample lecture is provided in Appendix A. While the lecture should be adapted to the needs of each particular faculty, at least the following points should be covered:

* Definition of an invention, an invention disclosure, and a patent. How these relate to the overall innovation process by which inventive concepts become products and processes that serve the public.

* How to recognize an invention when it has been made.

* The importance of keeping good records.

* How to disclose an invention.

* The difference between publishing, disclosing, and patenting, and the danger inherent in publishing before filing a patent application.

* The benefits of patenting.

* The various invention "myths."

* The criteria by which a disclosure will be evaluated.

* A closing appeal to attendees to review any of their publications that are less than eight months old for possible inventions and to disclose immediately any they find.

Definition of an invention, an invention disclosure,

CAUTION: Make certain that faculty and administrators are reassured that investigators are not being asked to structure their research so as to produce inventions. This is anathema, particularly among the science purists. The faculty should understand that academic inventions are fortuitous fallouts; the faculty researchers are only to look for and learn to recognize inventions if and when they occur, and to take appropriate and timely action to report them.

Organizing the Lecture-Seminar

In many ways organizing the lecture-seminar is harder than conducting it. But, time spent on following the details of this check list will more than pay off by assuring a substantial attendance at the seminar:

a. Gain the cooperation of department heads and administrative personnel.

(1) Communicate to members of the university patent committee, deans, provosts, and appropriate department heads the nature, purpose, scope, and potential benefits of the seminar. This should be done about three months prior to the time you would like to hold the seminar. (See Box II.)

(2) Meet personally with department heads (and other administrators as necessary). Describe the content of your talk and give them copies of any materials you plan to distribute.

REMEMBER: Success of the Program in a particular department will depend greatly on how enthusiastic the department head is about it.

(3) Agree with the department head on time and place of lecture-seminar. To ensure maximum turnout, hold the seminar in the same building in which the department is located and at the same time as some generally accepted, regular departmental faculty gathering (the monthly faculty meeting or "brown bag" lunch, for example).

a. Gain the cooperation of [illegible]

(4) Ask department heads to help plan the seminar publicity and stimulate attendance by:

* Announcing the seminar a week or month in advance at a regular departmental meeting.

* Posting timely announcements on departmental bulletin boards.

* Reminding faculty on the day of the seminar, possibly by an announcement over the department's intercom system, or by flyers in the mail.

NOTE: Since "patents" may be a "dirty" word to many faculty members, try to minimize use of it in any publicity. Stick to "invention."

While graduate students should not be excluded from attending, they should not be encouraged either since they are rarely sole inventors, and their presence seems to inhibit senior faculty from asking vital questions.

b. Prepare for the lecture-seminar.

(1) Plan and disseminate seminar publicity.

(2) Develop and confirm a schedule based on meetings with department heads. (See Appendix B.)

(3) Reserve lecture-seminar room and slide projector, check lighting, and perform other similar housekeeping details.

(4) Arrange for the printing and distribution of agreed upon publicity material.

(5) Send final reminder letter to department heads.

(6) Check on equipment and physical location of lecture-seminar.

(7) Arrive at seminar location five or ten minutes ahead of time and plan to remain for an hour or so after the question period is over for possible personal interviews.

Post-Lecture Questions

Questions that follow the lecture will be many and varied. But it is likely that the most prevalent ones will fall into three categories:

1. What is an example of an invention made at a university like ours? What kinds of discoveries in this research area can be patented? Can a process be an invention? Is a new use for an old compound patentable?

2. What is the university's patent policy? Do I share in any income? Does my department or the university share? What does gross and net income consist of?

3. What percentage of disclosures that your office receives ever result in patents? How much money does the typical inventor realize?

4. My research is sponsored by such-and-such agency of the U. S. Government (or by an industrial company). How does this sponsorship affect my ability to have my invention patented?

5. What effect will publishing my research findings have on my ability to patent an invention?

To answer questions in the first category, describe an actual invention at the institution or, even better, at the department whose members are being addressed. Lacking such an example, pick one of the many notable cases that illustrate how a particular idea evolved into an actual invention. For instance, a medical faculty will be interested in Waksman's discovery of streptomycin, or Kendall's corticosteroids; electrical engineers can be reminded how Charles Townes' theoretical speculations

to the maser and laser; mechanical engineers may relate to mechanical harvesting equipment; and chemists will be attracted to the discovery of polymers and agricultural chemicals.

Questions in category 2 indicate a distrust of the patent system held by many faculty members who fear patenting inhibits research and discourages the free dissemination of knowledge. These people believe inventions should be "dedicated to the public" but do not understand what this phrase means or can lead to. They feel that patenting benefits the business community more than the university, the individual inventor or the general public. While this generalized distrust of "the system" is difficult to deal with, an approach that has proved effective is to emphasize how, besides providing the economic incentive without which an invention might never reach the public, patenting gives the patent owner some control over the public uses of the invention.

Questions in category 3 are hard to answer satisfactorily because the overall statistics can sound so discouraging that the attendees might well develop a "why bother" attitude. Instead of stating that a patent management organization may only accept ten out of every 100 inventions submitted to it, and, of those ten, may be able to license only four or five, with only one producing substantial royalties, stress that the numbers depend very much upon the area of the invention. (Research Corporation, for

instance, accepts one out of every four chemical inventions submitted to it.) This said, the main thrust of the remarks should be on the benefits of disclosing. Urge the attendees to concentrate on their research as usual, but to submit all disclosures promptly, letting the burden of having the disclosures evaluated fall on the Administrator's shoulders. Remind them that there are not many places where they can send a preprint of a paper and expect that some day they may get back a royalty check!

The last two categories of questions are strictly informational. Most likely it will be necessary to expand on the definition of publication and warn further about how the chances of obtaining licensees can be jeopardized by failing to file a patent application before publication. Many faculty members are unaware that a printed abstract of a future talk, or a thesis catalogued in a university library, might be a publication in the patent sense. As for the patent policies of government agencies, which are complex and vary widely from agency to agency, it is best to recommend simply that inventors submit disclosures regardless of what they may have heard about a particular agency's policies. They should name the agency supporting the work along with the identifying contract or grant number and let the Invention Administration Office determine whether the university can obtain title to the patent rights.

4. Inventor Follow-up

After completing all the lecture-seminars the Invention Administrator will find that a number of faculty members will have identified themselves, either through their questions after the seminar or by other expressions of interest, as potential inventors. Similarly some faculty members will have removed themselves from the list. Using this input and all the information obtained from the Department Chairman and the other sources previously mentioned, the Invention Administrator can now begin to follow-up actively each viable contact with individual meetings.

THESE FACE-TO-FACE DISCUSSIONS ARE ESSENTIAL.

Although lectures and mailings can be invaluable in sensitizing faculty inventors to the value of patents, to the need for timely disclosure, and to the existence of the Invention Administration Office, nevertheless, there will be many times when the only way a researcher can be helped to recognize a particular invention, and to disclose it properly, is by meeting face-to-face for a discussion of his research in some depth. As much of the Invention Administrator's time as possible should be allotted to such meetings.

Scheduling Appointments. Have the meeting in the inventor's office rather than in that of the Administrator. (Protocol aside, a meeting on his home ground makes it harder for him to change his mind at the last minute.) If the inventor is someone being approached for the first time, don't request the meeting for the purpose of discussing "patentable inventions." Say, rather, that you wish to discuss his research. This is a friendly way to open a conversation of mutual interest. As more is learned about the research, specific details will be brought out naturally that may well include inventive concepts. Here's where an invention can be pointed out and how the public might benefit from it through proper use of a patenting and licensing program can be described.

Two other situations to watch for in such meetings:

a. Investigators who have made an invention, recognized they have made it, but don't know what to do next. Often they will be wondering whether making a disclosure will delay a pending grant application. Or, they may be hesitating because they plan to publish and fear patenting may preclude publishing. Frequently, they will be laboring under the common misconception that an invention disclosure must be a mini-thesis, complete with all experimental data. Faculty inventors often are surprised -- and pleased -- to learn, for instance, that a photocopy of their notebook pages may suffice for a disclosure. The result is that they may go about the normal academic routine of publishing and applying for grants without doing anything about patenting. If the Administrator is present at this critical juncture, any confusion can often be cleared up simply by explaining how one can publish and patent.

b. The researcher who needs impartial counsel regarding past or present negotiations with industry concerning an invention. It is not uncommon for faculty members to enter into agreements with industrial companies that they later come to regret. Having no one to whom they can turn for impartial advice, they may, for example, give up rights to all future inventions in return for a grant that allows them to pursue a particular line of research. Faculty members are frequently unaware that there may be alternatives to simply signing the consultant and patent agreements exactly as offered by companies that learn of their work. As a knowledgeable member of the administration, the Invention Administrator can be extremely helpful in such situations.

5. Simplifying Disclosures

As mentioned, many academic researchers assume an invention disclosure is equivalent to a mini-thesis. It should be explained that this is not the case, that since a disclosure can be anything in written form describing the invention and stating what is new, unobvious and useful about it, as well as how it can be used, a brief memorandum or a photocopy of laboratory notebook pages will often suffice at the outset. Or the researcher might be asked for a copy of a thesis, research proposal, or an early draft of a proposed journal article. With such documents, however, the inventor should be asked to point out where he thinks the invention is described, to save time. Since the inventor may not know what the invention is or may have overlooked another, the entire disclosure eventually needs to be studied either by the Administrator or by an experienced evaluator. Whether an inventor has written a disclosure or not,

it will simplify matters greatly if he fills out a simple questionnaire. Appendix C provides an invention disclosure questionnaire that provides space for responding to the most essential questions needed to start an evaluation.

6. Handling Disclosures

When a disclosure is received, it should be acknowledged promptly. Tell the inventor that it is being evaluated and provide some indication of how long this is likely to take. Review the rights of inventors under the institution's patent policy and explain briefly what the evaluator will look for in determining patentability. Faculty members frequently assume a disclosure will be judged in the same way as his peers examine an academic paper, the result being that they take a rejection as a reflection on the quality of their work; they should be led to understand the special criteria for determining patentability, and to realize that market potential and other non-technical factors are considered in arriving at a decision to accept.

IMPORTANT — Never sit on a disclosure. Get it off the desk and into the hands of the evaluator(s) within a day or two. Notify inventors promptly of all definitive actions, especially of a decision to apply for a patent. Keep inventors apprised of all subsequent patenting and licensing action.

Use of form letters can aid materially by saving time and reducing the cost of handling invention disclosures.

7. Disclosure Evaluation

As stressed earlier, decisions on disclosures should be reached quickly. Faculty inventors will often be preparing publication and/or grant proposals; sometimes they will have been in touch with an industrial organization. Unnecessary delays, even short ones, inconvenience and antagonize inventors.

Despite the need for prompt handling, many institutions take months to evaluate a disclosure, usually because it gets bogged down in the Patent Committee. Institutional patent committees, composed primarily of faculty members, are necessary for interpreting patent policy, judging questions of equity, and overseeing the implementation of that policy. But they are simply too cumbersome, meet too infrequently, and have inadequate expertise to review or evaluate individual disclosures effectively.

Disclosures should be evaluated by the same outside patent management organization that will handle patenting and licensing. However, if the institution wishes to have an inside evaluation prior to the outside review, then it is strongly urged that a separate evaluation group handle this rather than the Patent Committee. While this group might be made up of a few faculty members, faculty inventors often resent having their inventions evaluated by peers they know personally. Preferable is a

committee of one, able to screen a disclosure within a few days of receipt and pass it along to the outside organization through the Administrator's office. Whenever an equity problem becomes evident, the matter should be referred to the Patent Committee. The evaluator should have a technical background as well as substantial general business experience and a good knowledge of new product development and marketing. He or she must be able to communicate well with technical people in many disciplines. A legal background is not essential if the disclosures are to be evaluated further by an outside organization.

8. Patenting and Licensing

How to obtain patents and carry on a licensing program is outside the scope of this study. The Invention Administration is referred to many excellent texts, journal articles and other publications which are readily available. In particular, mention should be made of the Licensing Executives Society and its periodical Les Nouvelles.

IV. SUMMARY AND CONCLUSIONS

The Administration of an institution has the ability to affect materially the number of disclosures of inventions submitted by the research faculty of the institution.

By establishing an institution-wide Patent Policy that recognizes the rights of the faculty member to receive a fair share of any royalty income and allocates a reasonable percentage of royalty income to further research, the cooperation of the faculty can be enhanced.

The Invention Administrator must be selected with care and must receive the whole-hearted support of the administration who in turn will back the Administrator in his efforts to enlist the cooperation of not only the research faculty but the department chairmen as well.

A comprehensive Program must be mounted to bring the Policy and its objectives to the attention of all the potential inventors among the faculty. This must be a continuing program to reach new faculty members each year and also to refresh established faculty members who may be embarking on new research projects.

A study of the patent policies of the various federal granting agencies should be an integral part of the Invention Administrator's duties. These policies are frequently subject to change and the institution must be alert to such changes. If HEW and NSF retain their present Institutional Patent Agreement approach, the institution may wish to apply for such an Agreement. If the method of determining rights is changed, the institution must be in a position to comply with the latest agency requirements.

There is a level of effort which will produce annually a maximum number of disclosures. This level cannot be readily determined in any given case, but we know of no institution that has appeared to have reached and maintained this maximum. Most institutions fall well below the maximum; such institutions can be well served by following the Program described in this guide.

INVENTION SEMINAR OUTLINE

Introduction

Testing an hypothesis: Patent awareness will lead to an earlier and more widespread identification of inventive concepts

Basic interest by all federal granting agencies to maximize return on investment in grants dollars

The basic assumptions:

- Inventions can arise from university research
- These inventions can be put to practical use

Techniques to be tested:

- Assist faculty to recognize and disclose inventions
- Acquaint university community with role of patents in innovation

(Slide 1)

PATENT AWARENESS PROGRAM PHASES
• Review of ongoing research
• Educational phase (seminars)
• Continuing support (monthly visits)
• Report of results

An Overview

Roles of faculty researcher: teach, acquire and disseminate knowledge

Connections between these roles and invention, patents and innovation

Definitions

- Invention — Something which never existed before
- Patent — A grant by a government to an inventor giving him the right to exclude others from making, using or selling his invention for a definite time period. In the U.S. the grant is given in exchange for a full disclosure of a new, useful and nonobvious invention
- Innovation — The introduction and use of an invention in the economy

Academic research rarely planned to produce inventions, but planned or not they will continue to occur

- There are many examples of academic inventions. Common characteristics: made at a university, covered by patents, licensed to industry, produced financial return

Key events which start innovation process

- Recognition of invention
- Disclosure to others

Recognition

- You, the researcher, are closest and have the first opportunity
- Recognition often depends upon awareness

Making a disclosure

- Provide a written description to your cognizant university office
- Disclosure does not mean telling the public

(Slide 2)

ACADEMIC INVENTION MAXIMS
• Inventions can occur • Recognition is crucial • Disclosure is a must

Recognizing An Invention

Recognition is a critical step in innovation process

Characteristics of inventions: newness, usefulness

- Either newness or usefulness should alert the researcher
- Not necessary that these characteristics coexist initially

(Slide 3)

AN INVENTION IS
Something new and useful which may be... • A solution to a problem • Something that satisfies a need • A better way of doing something • An improvement to existing development

(Slide 4)

THE PROCESS OF INVENTION INCLUDES	
• Mental act:	the "conception" (an end result and the means to obtain it)
• Physical act:	the "reduction to practice" (proving by demonstration that result is obtained)

Good records are vital

- As an aid to recognizing inventions
- As the only acceptable means to establish conception and reduction to practice

Disclosing the Invention

A disclosure is a written description of an invention

- Two functions: explain invention, state its use

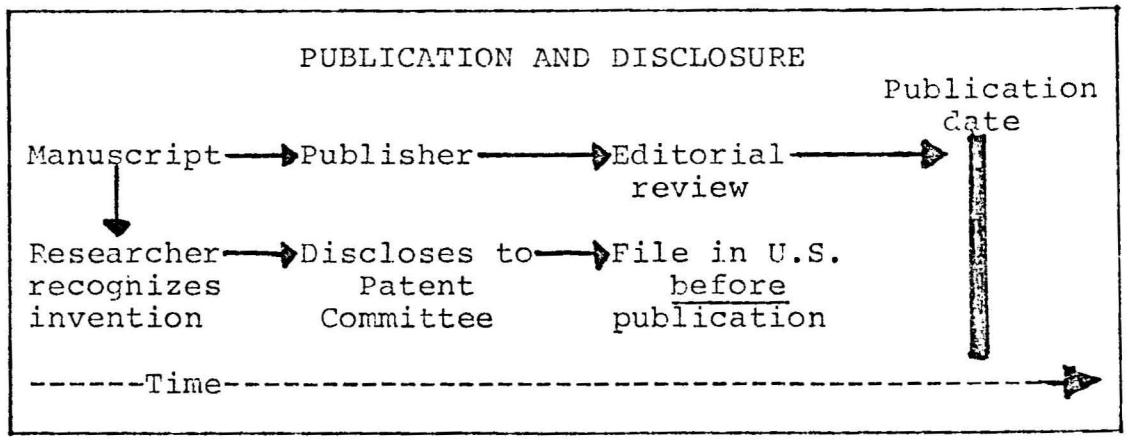
No formal requirements for disclosure

- Manuscript or article
- Written description if no manuscript
- Questionnaire

The time to disclose

- Immediately after inventive act complete
- Latest optimum: when submitting manuscript to publisher

(Slide 5)



(Slide 6)

IN PATENT LAW, A "PUBLICATION" IS

Printed and available to public, and includes:

- Article in lay or scientific press
- Book or conference proceedings
- Thesis when catalogued in library
- Abstract of talk at meeting

Authored by the inventor or others

Not regarded as publications are:

- Any private communication
- Report to sponsor
- Talk before private group

Publishing without further action means that:

- Invention becomes part of public domain
- There is no inhibition to development if costs are low
- Absence of a preferred market position may deter firm from risking capital when development costs are high

Applying for patent, then publishing, means that:

- An incentive to develop, usually required by academic inventions, can be provided to industrial firms
- The incentive to develop is a preferred marketing position assured through a time-limited exclusive license

(Slide 7)

BENEFITS OF PATENTING

- Provides incentives to industry to develop
- Gives public new products, processes not otherwise available
- May provide financial return
- Retention of control by patentee can prevent abuses
- Disseminates knowledge
- Stimulates further research by others

Misconception: "If you publish you can't patent; if you want to patent you can't publish" - not true if proper time sequence is followed

Publication before filing a patent application causes immediate forfeiture of foreign rights

- Six months after publication you lose the right to patent in West Germany and Japan
- One year after publication you lose the right to a patent in the United States

If you file first in the United States, you preserve the foreign patent rights for one year regardless of a later publication

To summarize, we have considered the recognition and disclosure of inventions, patenting and publishing, and the options open to the academic inventor

Evaluating the Invention

(Slide 8)

EVALUATIONS OF INVENTIONS

- Equity: who owns it?
- Patentability: does it satisfy criteria?
- Commercial potential: is the market significant?

Equity

- Depends upon source of funds (salary, equipment, supplies)
- Patent policy of the university

Misconception: "Inventions made under government grants are not worthwhile patenting"

(Slide 9)

RIGHTS-GRANTING AGENCIES
(HEW, DOD, NSF, NASA)

- University may retain title through deferred determination
- University, inventor may receive royalty income
- Government needs only royalty-free, nonexclusive license

Some agencies, HEW, NSF, make institutional patent agreements (IPA). This University does/does not have IPA with HEW/NSF.

(Slide 10)

RIGHTS-RETAINING AGENCIES
(USDA, USDI, EPA, AEC)

- Government takes title
- No royalty income for university or inventor
- University may receive "right to use"

(HEW, DOD, NSF, NASA)