

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
NATIONAL INSTITUTES OF HEALTH  
NATIONAL LIBRARY OF MEDICINE  
Bethesda, Maryland

A G E N D A

81st Meeting of the

BOARD OF REGENTS

9:00 a.m., February 6-7, 1986

BOARD ROOM  
Mezzanine of  
National Library of Medicine

MEETING OPEN: All day on February 6 and from 9:00 to approx. 11:00 a.m. on Feb. 7.  
MEETING CLOSED: From 11:00 a.m. to adjournment on February 7 for the review of grant applications.

- I. CALL TO ORDER AND INTRODUCTORY REMARKS Dr. L. Thompson Bowles
- II. REMARKS BY THE DEPUTY DIRECTOR, NIH Dr. Thomas E. Malone
- III. CONSIDERATION OF SEPTEMBER MINUTES TAB I Dr. L. Thompson Bowles  
(Agenda Book)
- IV. FUTURE MEETING DATES:  
Spring Meeting: 6/17-18/1986 (T-W)--CONFIRMED  
Fall Meeting: 9/17-18/1986 (W-Th)--PROPOSED  
Winter Meeting: 1/29-30 OR 2/5-6/1987 (Th-F)--PROPOSED
- PLEASE NOTE: American Medical Association - Annual Meeting -  
June 15-19, 1986 - Chicago  
American Nurses Association - Convention -  
June 13-19, 1986 - Anaheim  
American Library Association - Midwinter Meeting -  
January 17-22, 1987
- V. REPORT OF THE DIRECTOR, NLM TAB II Dr. Donald A. B. Lindberg  
Discussion Board Members
- COFFEE BREAK
- VI. REMARKS BY THE DEPUTY ASSISTANT SECRETARY FOR HEALTH Dr. C. Everett Koop

VII. NATIONAL SCIENCE FOUNDATION ACTIVITIES TAB III

Dr. Charles N. Brownstein

Discussion

Board Members

LUNCHEON CATERED IN CONFERENCE ROOM "B" 12:15 - 1:00

VIII. SESQUICENTENNIAL ACTIVITIES

TAB IV

Mr. Robert Mehnert  
Dr. Lois E. DeBakey,  
Discussant

Discussion

Board Members

IX. PLANNING UPDATE

TAB V

Dr. Henry Riecken  
Dr. L. Thompson Bowles,  
Discussant

Discussion

Board Members

X. NOVEMBER BOARD OF SCIENTIFIC  
COUNSELORS MEETING

TAB VI

Dr. Harold M. Schoolman

XI. INSTRUCTIONAL PROGRAM ON  
TEENAGE SUICIDE

TAB VII

Dr. Jacquelyn H. Gentry  
Dr. James Woods

Discussion

Board Members

COFFEE BREAK

XII. MEDICAL SUBJECT HEADINGS (MeSH) and  
UNIFIED MEDICAL LANGUAGE SYSTEM

TAB VIII

Mrs. Lois Ann Colaianni  
Dr. Donald A. B. Lindberg

Discussion

Board Members

R E C E S S

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4:45 p.m. - Leave by Buses for Library of Congress from Main  
Entrance of the Lister Hill Center Building.

6:00 p.m. - Cocktails (Open Bar) - 6th-floor, Madison Memorial Building,  
Music by "The Capitol Hill Brass Ensemble" and Exhibit of  
DEZ (Diethyl Zinc) Model and Artist's Rendering of  
Process in Adjoining Room

7:00 p.m. - Dinner, Buffet Dining Room, Madison Memorial Building

8:00 p.m. - During Dessert: A Presentation on "The Evolution of Recorded Sound"

8:30 p.m. - Speech by The Honorable Claude D. Pepper,  
Member of the U.S. House of Representatives

9:00 p.m. - Return by Buses to NLM.

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RECONVENE: Friday, February 7, 9:00 a.m., Board Room.

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XIII. MEDLARS III REPORT AND DEMONSTRATION TAB IX

Ms. Betsy Humphreys  
Mr. John Anderson  
Mr. Russell L. Fenwick,  
Discussant

Discussion

Board Members

XIV. REPORT OF THE ACTING ASSOCIATE DIRECTOR FOR EXTRAMURAL PROGRAMS TAB X

Mr. Arthur J. Broering  
EP Subcommittee,  
Discussants

- A. EP Budget and Funding Plans
- B. Review of Board Operating Procedures  
"Guidelines for Adjustments by Staff  
in Time or Amount of Grant Award"

Discussion

Board Members

COFFEE BREAK

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MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS 11:00-11:30 A.M., FEBRUARY 7

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XV. SPECIAL APPLICATIONS (Gray Book)

- A. Split Vote TAB I
- B. Over \$100,000 TAB II

Dr. Roger W. Dahlen  
" " " "

XVI. SUMMARY STATEMENTS

- A. Research TAB III
- B. New Investigator TAB IV
- C. Resource TAB V
- D. IAIMS TAB VI
- E. Improvement TAB VII
- F. Publication TAB VIII

Dr. Roger W. Dahlen  
" " " "  
" " " "  
" " " "  
" " " "  
Dr. Jeanne L. Brand

XVII. APPOINTMENT OF NOMINATING COMMITTEE

Dr. L. Thompson Bowles

XVIII. ADJOURNMENT

Dr. L. Thompson Bowles

DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH  
NATIONAL LIBRARY OF MEDICINE

BOARD OF REGENTS  
MINUTES OF THE 81ST MEETING  
FEBRUARY 6-7, 1986

BOARD ROOM  
NATIONAL LIBRARY OF MEDICINE  
BETHESDA, MARYLAND

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
PUBLIC HEALTH SERVICE

THE BOARD OF REGENTS OF THE NATIONAL LIBRARY OF MEDICINE

Minutes of Meeting 1/ 2/  
February 6-7, 1986

The Board of Regents of the National Library of Medicine was convened for its eighty-first meeting at 9:00 a.m. on Thursday, February 6, 1986, in the Board Room of the National Library of Medicine, Bethesda, Maryland. Dr. L. Thompson Bowles, Chairman of the Board of Regents and Dean for Academic Affairs and Professor of Surgery, The George Washington University Medical Center, presided. In accordance with P.L. 92-463 and the Determination of the Director, NIH, and as announced in the Federal Register, the meeting was open to the public from 9:00 a.m. to 4:00 p.m. on February 6 and from 9:00 to 10:45 a.m. on February 7. The meeting was closed from 10:45 to adjournment at 11:45 a.m. on February 7 for the review, discussion, and evaluation of grant applications. A Board roster is enclosed under Attachment A.

Board members present were:

Dr. L. Thompson Bowles  
Dr. Lois E. DeBakey  
Mr. Russell L. Fenwick  
Dr. Albert E. Gunn  
Mr. Joseph H. Howard (Ex Officio)  
Dr. C. Everett Koop (Ex Officio)(February 6)  
Mr. John Lopez  
Dr. David O. Moline  
Dr. Ann K. Randall  
Dr. Grant V. Rodkey  
Dr. Jay P. Sanford (Ex Officio)(February 6).  
Dr. Eugene A. Stead, Jr.

Alternates to ex officio members present were:

Dr. Faye G. Abdellah, representing Dr. C. Everett Koop.  
Dr. Charles N. Brownstein, representing Dr. David T. Kingsbury.  
Capt. Noel Dysart, representing Vice Admiral Lewis H. Seaton.  
Col. Howard E. Fauver, representing Lt. Gen. Quinn J. Becker.  
Mr. James M. Hahn, representing Dr. John W. Ditzler.  
Mr. William J. Welsh, representing Dr. Daniel J. Boorstin.

Unable to attend:

Brig. Gen. Thomas P. Ball  
Dr. Edward N. Brandt, Jr.

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1/For the record, it is noted that members absent themselves from the meeting when the Board is discussing applications from their respective institutions (interpreted to mean the entire system of which a member's institution is a part) or in which a conflict of interest might occur. Only when an application is under individual discussion will the Board member absent himself. This procedure does not apply to "en bloc" actions.

2/The Board of Regents, when considering the extramural programs of NLM, also constitutes and serves as the National Medical Libraries Assistance Advisory Board.

National Library of Medicine staff members attending this meeting included:

Dr. Donald A. B. Lindberg, Director  
Mr. Kent A. Smith, Deputy Director  
Dr. Harold M. Schoolman, Deputy Director for Research and Education  
Mr. John Anderson, Director, Information Systems, OD  
Mr. Harry D. Bennett, Deputy Director for Operations, OCCS  
Dr. Jeanne Brand, Chief, International Programs Branch, EP  
Mr. Arthur J. Broering, Acting Associate Director for Extramural Programs  
Mr. Kenneth Carney, Executive Officer, OD  
Ms. Lois Ann Colaianni, Associate Director for Library Operations  
Mr. John Cox, Deputy Director for Development, OCCS  
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP  
Mr. B. Earl Henderson, Acting Director, Lister Hill National Center for  
Biomedical Communications  
Ms. Betsy L. Humphreys, Deputy Associate Director for Library Operations  
Dr. Henry M. Kissman, Associate Director for Specialized Information  
Services  
Mr. Sheldon Kotzin, Chief, Bibliographic Services Division, LO  
Ms. Eve-Marie Lacroix, Chief, Reference Services Division, LO  
Mr. Robert B. Mehnert, Chief, Office of Inquiries and Publications  
Management, OD  
Mr. Stanley J. Phillips, Deputy Executive Officer, OD  
Dr. Henry Riecken, Associate Director for Planning and Evaluation  
Mr. Arthur Robinson, EEO Officer  
Mr. Mark J. Rotariu, Chief, Office of Financial Management, OD  
Dr. Elliot R. Siegel, Special Assistant for Operations Research, OD  
Dr. John Starkweather, Special Assistant to the Deputy Director for Research and  
Education, OD  
Mr. Richard T. West, Chief, Office of Program Planning and Evaluation, EP

Others present included:

Dr. Thomas E. Malone, Deputy Director, NIH  
Dr. Shervert H. Frazier, Director, National Institute of Mental Health  
Dr. Jacquelyn H. Gentry, Chief, Science Communications Branch,  
National Institute of Mental Health  
Mrs. Ileen Stewart, Executive Secretary, Special Study Section, DRG, NIH

Members of the public present:

Mr. Joseph Leiter, Private Citizen  
Ms. Joan Metrich, Reporter, Washington Post

## I. OPENING REMARKS

Dr. L. Thompson Bowles, Chairman, welcomed the Regents to the 81st meeting of the Board of Regents. He welcomed the new ex officio members--Mr. Joseph H. Howard, Director of the National Agricultural Library, and Dr. Jay P. Sanford, Dean of the Uniformed Services University of the Health Sciences. Dr. Bowles commented that the Board will be concerned for years to come with the Gramm-Rudman legislation and its effect on the Library and on biomedical communications. Possible future budget constraints must be considered as we look at such things as the long-range plan that will be discussed at this meeting and presented to the Board at its next meeting. The Library and the Board will be faced with difficult decisions, for example, in the grants area, when programs must be weighed one against the other to see where the funding priorities lie.

## II. REMARKS BY THE NIH DEPUTY DIRECTOR

Dr. Thomas E. Malone said he was impressed with the long-range planning process set in motion by NLM, and is looking forward to the report. He was gratified by the growing intramural research being conducted within the Lister Hill Center; the Library has become the national focus for medical informatics research. The leadership being displayed by the Library in developing a unified medical language system is also noteworthy. Dr. Malone emphasized the importance of NLM's 150th anniversary celebration this year and NIH's 100th, next year, as an opportunity for letting the nation know about the work of these institutions. Dr. Wyngaarden is planning to have a 4- to 7-part television series produced about the National Institutes of Health for airing during the centennial. Echoing Dr. Bowles, Dr. Malone commented on the potential effects of Gramm-Rudman. NIH has taken a 4.3 percent (\$236.2 million) reduction in its budget authority for 1986, applied uniformly to all research components. NLM, on the other hand, has fared relatively well, with a 2.2 percent increase. Similarly, in 1987, NLM will be one of the few NIH components on the plus side of the budget change. Dr. Wyngaarden has taken special care to see that the Library receives all possible consideration in the budget process. Not connected with the budget process, there will be major problems in the staffing levels for NIH: There has been a substantial reduction from 15,600 (1985) to about 13,000 (1986). The mark for 1987 is 12,649. Dr. Malone reported briefly on a series of other important topics: The Health Research Extension Act (passed last November) which changed in important ways the authorities for NIH components; a number of interagency reports that NIH has helped to prepare, for example, bioethics, animal welfare, and health of the elderly; the growing animal welfare movement legislation in this area; and the recent report issued by the HHS minority research taskforce.

## III. CONSIDERATION OF MINUTES OF PREVIOUS MEETING

The Regents approved the minutes of the September 17-18, 1985, meeting without change.

#### IV. DATES OF FUTURE MEETINGS

The Board will meet next on June 17-18, 1986. The proposed dates for the fall meeting, September 17-18, were confirmed. January 29-30, 1987, were tentatively set for next winter's meeting.

#### V. REPORT OF THE DIRECTOR, NLM

Dr. Donald A. B. Lindberg, commenting on Dr. Malone's presentation, said that NLM has received favorable treatment from NIH and that he was pleased that NLM is being referred to as a major research and development component of the NIH. Using slides, Dr. Lindberg briefed the Regents on the NLM budget and the effect of cuts resulting from Gramm-Rudman. The effect of the Gramm-Rudman 4.3% reduction on the NLM FY 1986 budget has been an across-the-board decrease of \$2,486,000, bringing the total 1986 budget to \$55,322,000. Agencies were given no discretion in applying the cuts; these are to be applied to all budget mechanisms.

Extension of the Superfund Act, which provides money for certain important projects in NLM's Toxicology Information Program, is uncertain. The Director reported that the Medical Library Assistance Act was reauthorized at the welcome levels of \$12, \$13, and \$14 million (for FY 1986-88). This legislation also included the addition of the two new ex officio members of the NLM Board of Regents introduced earlier by the Chairman. On the subject of animal welfare, new legislation requires the Secretary of Agriculture to establish an information service at the National Agricultural Library that shall cooperate with the NLM. The Director reported briefly on his testimony before a House Subcommittee chaired by Rep. Glenn English on the subject of electronic collection and dissemination of information. Rep. English believes that the courts should in the past have taken the view that MEDLARS files are agency records under the Freedom of Information Act and therefore available to the private sector at the cost of reproducing them. The courts did not so view this issue, nor does NLM. Related to this, Dr. Lindberg said, NLM is cooperating with the private sector to encourage the development of MEDLINE on CD-ROM (compact disc) by providing the NLM database at no cost to private companies that will attempt to develop and market such discs.

The Director noted that a revised preservation policy resulting from a thorough study of preservation issues at NLM is being presented to the Board for its approval. Dr. Lindberg discussed the new and extensive information services that will be required in the field of biotechnology. For example, immense databanks will be required to map human DNA sequences. NLM is considering whether and how it should become involved in the development of such databases. Finally, on the subject of the OMB Circular on the Management of Federal Information Resources, previously reported to and discussed by the Board, the Director announced that the final version of the Circular is vastly improved over the earlier draft and is acceptable to the Library. It clearly endorses a pricing policy that is consonant with NLM practice.

Following Dr. Lindberg's presentation, the Chairman opened for discussion the subject of the draft revised preservation policy. The Board voted unanimously to approve the policy (Attachment B).



Mr. Joseph Howard, Director of the National Agricultural Library (NAL) commented that the animal welfare legislation referred to by Dr. Lindberg is part of a farm bill that requires the Secretary of Agriculture to establish an information service at NAL. This information service would, in cooperation with NLM, provide information pertinent to the use of animals in research. No money has been attached to the bill, and it is unclear exactly what will be done. Some cooperative actions could probably be accomplished with existing resources. NAL will be preparing a report with recommendations in a few weeks.

## VI. PLANNING UPDATE

Dr. Henry Riecken, NLM Associate Director for Planning and Evaluation, briefed the Regents on progress being made in developing a long-range plan for NLM. The five planning panels have each had several meetings and are preparing to have draft reports ready by March 1. For example, Panel 2 (on access to medical information), which met yesterday, spent considerable time on surveying the nature of the future user population of NLM's services. Panel 4, on Medical Informatics, has already drafted a number of the sections for their report. Panel 5 (information technology and health professions education) has a preliminary set of recommendations and position statements are now being drafted. Panel 3 (obtaining factual information from databases) has been making progress despite problems in scheduling its meetings; a fourth meeting will probably be required for this panel. Panel 1 (building and organizing the NLM collections) will be consolidating its recommendations at its third meeting which will take place next week.

Dr. Riecken commented on the process itself--the tradeoffs that were necessary. The planning is being done in a relatively short time; this has generated enthusiasm and momentum. Also, because the composition of the panels is fairly large and heterogeneous, there is a broad spectrum of advice being offered. On the down side, it has been a very demanding process, requiring those who are not familiar with NLM to learn a lot about the institution in a relatively short time. Also, the large panels have required a fair amount of staff time to organize and to arrange meetings. A draft summary report and drafts of all the panel reports will be ready for the next Board meeting in June.

Dr. Riecken mentioned several points that underlie the panels' discussions: It is assumed that health-care delivery will be organized more on a collective and corporate basis than it is now; it is assumed that full-text electronic publication will become much more prevalent; it is assumed that medical diagnosis and therapy will become increasingly scientific and effective; and, finally, it is assumed that there will be continued growth of medical information paralleled by an expanded capacity to handle it. The panels will suggest several new directions for NLM: a strong endorsement of the Unified Medical Language System with the recommendation that it be pursued vigorously; an endorsement of NLM support for "centers of excellence" in medical informatics; support for NLM in improving the technology of bibliographic access to biomedical information; and a variety of recommendations about NLM improving clinical decision-making systems by supporting research.

Following Dr. Riecken's presentation, Mr. Welsh enumerated a number of public sector/private sector issues that must be addressed in the coming years in the context of the long-range plan: the future of hard copy, high-definition video, and "fee versus free." He also said that NLM must find a way to get the message to the biomedical community and the general public that biomedical research is a vital foundation for America's health and that NIH and the Library funding must not be cut mindlessly under Gramm-Rudman. The Regents must discuss these issues at future Board meetings.

## VII. NATIONAL SCIENCE FOUNDATION ACTIVITIES

Ex officio Regent, Dr. Charles N. Brownstein, Director of the Division of Information Science and Technology of the National Science Foundation (NSF), described NSF's activities. He reviewed briefly the budget picture for NSF and several of its components. Overall, the Foundation's budget has grown from \$1 to \$1.5 billion in the last five years.

Engineering research is the fastest growing sector of the budget, followed by biotechnology. Other major areas of emphasis this year are research in advanced computing and computational science/engineering. Computing and information science (about \$130 million this year) is also a major effort of NSF, divided into a Division of Computer Research, a Division of Science-Based Developments and Design Manufacturing and Computer Engineering, the Division of Information Science and Technology headed by Dr. Brownstein, and a service activity--the super computer access program. All these programs represent a strong commitment on the part of the NSF Director to computing activities.

In its support of information science, NSF has shifted in the last few years away from areas of library information science and dissemination and toward the support of basic research. The Foundation is planning to develop a machine-readable database on awards and research in progress which would be made available through an outside vendor. The super computer access program supports access to a number of advanced computers for the sciences in general. The development of five super computer centers around the nation has been supported by NSF. A network to access these computers from remote sites is now being supported. Expanding the capacity and availability of ARPANET (Advanced Research Projects Administration Network) is the first step in this process. The "express" program to develop modalities for document transmission is another new activity. This program is a partnership between NSF and several academic institutions and private consortia. The issue of grant support for science is usually posed in two ways: that of supporting individual investigator-initiated projects versus supporting broader programs of research, and the continuing competition between infrastructure (e.g., training and instrumentation) and individual research projects.

## VIII. SESQUICENTENNIAL ACTIVITIES

Mr. Robert Mehnert, Chief of NLM's Office of Inquiries and Publications Management, briefed the Regents on recent activities related to the Sesquicentennial. Among these was the recently signed Presidential proclamation declaring 1986 the Sesquicentennial Year of the Library, and last night's ceremony in the Congress in honor of the Library. Regents have received a copy of a new brochure about NLM produced specifically for the anniversary, and a poster

based on its cover is also available. On February 5, the Library held an all-day seminar entitled "Online for Medicine and the Media." It was attended by 116 members of the professional and lay press and was, by all early accounts, very successful. GRATEFUL MED received its first public debut at the meeting, and copies of the new MEDLINE access program were offered to the attendees. Also, during the seminar, Mr. Andy Rooney of CBS' "60 Minutes" visited NLM and the Library with Mr. Mehnert. His visit was arranged by Dr. Lois DeBakey. NLM is hopeful that he will soon devote one of his on-air items, or perhaps one of his syndicated newspaper columns, to NLM. Recent articles about NLM appeared in IBM's magazine, Think, and the newsletter issued by TYMNET for its users. Mr. Mehnert also reported briefly on and showed a videotape clip from a 2-way satellite broadcast on cardiovascular disease between the U.S. and Moscow. The U.S. portion of the broadcast, sponsored by the USIA, originated from the Lister Hill Center Auditorium. Plans are proceeding for the two one-day special symposia being sponsored by NLM: Medicine and the Arts (April 22) and Space Medicine (November). Mr. Mehnert also played for the Regents a videotape about John Shaw Billings, done for the "American Portrait" series on CBS.

Dr. Lois DeBakey, who attended the Science Writers Seminar yesterday, said the program was superb; the science writers were fascinated by the demonstration and description of NLM systems. Dr. David Moline, who also attended, said the seminar was remarkable and of immense value to the Library and its effort to make the NLM better known. Dr. Bowles commented on the value of the Joint Congressional Resolution and the Presidential Proclamation to the Library's public image. Before yesterday's Congressional reception in the Capitol, he said, there was a meeting of the Board of Governors of the Friends of the National Library of Medicine. This will be a most useful organization to NLM.

#### IX. BOARD OF SCIENTIFIC COUNSELORS

Dr. Harold M. Schoolman, NLM Deputy Director for Research and Education, reported on the November 4-5 meeting of the Board of Scientific Counselors. This Board oversees NLM intramural research and development activities. Dr. Schoolman briefly described recent changes in the composition of the Board. The Counselors reviewed in some detail three current projects of the Lister Hill Center. The first was the Electronic Document Storage and Retrieval System (EDSR). The Board discussed technical problems of image resolution for the EDSR, and was particularly interested in the application of EDSR techniques for preservation purposes. They asked that there be a restructuring of the project to get answers to such questions as costs involved, classifying the extent of deterioration and determining the percentage of the deteriorating collection that might be amenable to this type of preservation, determining how many work stations would be required to capture the deteriorating material. The Board of Scientific Counselors will hear reports on these matters at their next meeting in March.

The second project reviewed was the development of the visual library on microanatomy, a collaborative project between Dr. Charles Bridgman and Dr. Frank Allen. The Counselors were impressed with the resolution and clarity of the videodisc-based histopathology images. The Board recommended that the project be continued with the goal of producing a usable atlas of microanatomy, and that staff begin to investigate how best to analyze and index the stored

information. The third project discussed was NLM's Carnegie-Mellon contract in knowledge representation--how to formalize relationships in indexing and vocabulary with the goal of producing machine aids for NLM indexing and cataloging. There was considerable enthusiasm by the Counselors for the project and some discussion about plans for having it tested in settings outside of NLM. Dr. Schoolman concluded his report by saying that there was also discussion about having the Chairman of the Board of Scientific Counselors report each year on the state of NLM's research and development efforts to the Board of Regents.

#### X. MEDICAL SUBJECT HEADINGS AND UNIFIED MEDICAL LANGUAGE SYSTEM

Dr. Lindberg briefly introduced the broad subject of medical terminology--NLM's existing Medical Subjects Headings (MeSH) activity and the planned development of a Unified Medical Language System. A multidisciplinary team, with representatives from within NLM and from NIH, has been created to oversee the development of the Unified Medical Language. Following this introduction, Lois Ann Colaianni, NLM Associate Director for Library Operations, described the general theory of controlled vocabularies and, in some detail, the history, development, and present status of NLM's controlled vocabulary, MeSH. It is this 14,000-word thesaurus, bolstered by some 32,000 cross references, that is the basis for NLM indexing, cataloging, and machine retrieval of bibliographic records.

Following Mrs. Colaianni's presentation, Dr. Lindberg gave his conception of a Unified Medical Language System (UMLS). Such a system would provide a high level of intellectual organization and integration of the concepts and vocabularies of clinical health care, biomedical scientific literature, and health sciences education. The system would ideally provide a means to make available to users explicit definitions of terms, relationships between terms, and relationships between concepts. The user would be able to interact with the system in normal language, using terms ranging from those of the novice in a field to the precise language of the expert. Dr. Lindberg emphasized that NLM is not trying to standardize or in any way limit medical vocabulary, but hopes to build a system that understands "natural" scientific language. In its initial form, the UMLS will facilitate access to the biomedical literature for the purpose of assisting in clinical decision making. Thus, NLM expects the system to accept carefully chosen queries in the language of patient record-keeping and to utilize these queries directly as search statements to retrieve and display relevant information.

The Director gave an interim report on what has been done so far. This includes feasibility studies to examine the language, the literature, and clinical records, and experiments to map clinical words and existing thesauri. Is clinical terminology really a babel of tongues? Analyses of words and phrases used on clinical charts in clinical settings reveal that these terms correspond to a very high degree to those used in the clinical literature. These words and phrases can be mapped to MeSH and to SNOMED (another standard vocabulary), often at a comparable level of specificity. Dr. Lindberg gave some examples of this. Clinical terminology cannot be mapped accurately to ICD (International Classification of Diseases); unfortunately ICD is the classification schema on which HCFA payments are based. MeSH itself can be mapped to other medical thesauri, such as SNOMED. There are several short-term improvements to MeSH

already under way, for example, expanding the number of alternative terms mapped to MeSH terms. He said that there have been discussions about whether it would be desirable for a user to be able to log into a system as a novice and have all terms explained in simple language, or alternatively, log on specifying that the user is highly sophisticated and thus will interact with the system at a much higher level. Dr. Lindberg believes such an approach is inappropriate because each health care professional may be expert in a given field but have very superficial knowledge in the next area. GRATEFUL MED may be viewed as a component in the development of UMLS, Dr. Lindberg said. Such features as automatic log-on, using natural language, assisting the use with search strategy, are all related to the UMLS concept. There are also possible improvements in the overall MEDLARS system, in the area of vocabulary and interactivity, that would contribute to the UMLS. Full-text storage and retrieval is another factor, now being explored by others, that will have an important bearing on the development of the UMLS. The development of a standard medical abstract is something that can be done in the near future that would be important to the overall effort; two publishers are ready to work with NLM to develop such a standard abstract. In the same vein, it would be tremendously helpful if we could standardize the medical record. In the long term, NLM foresees automated interactive interpretation of user queries. This means, for example, having a clinical chart in machine readable form and using this information--including symptoms, tentative diagnosis, etc.--directly as a search argument into an automated information system.

Following Dr. Lindberg's presentation, there was discussion among the Regents about the need for such a system. There was general agreement that a successful Unified Medical Language System would be of enormous benefit to the nation; several voiced the caveat that there are several forces (for instance, HCFA and other third party payers) pushing us in that direction and that such a system should accommodate, but not be captured by, those forces.

#### XI. REMARKS BY THE DEPUTY ASSISTANT SECRETARY FOR HEALTH

Dr. C. Everett Koop said that we are in for some surprises with the new HHS Secretary, the first physician ever to hold that position. There are still a number of high-level vacancies within the Department. There will be activity within the Department in some new areas this year, for example, malpractice insurance and insurance against catastrophic medical bills. As a result of Dr. Koop's deep concern for child abuse, elder abuse, and televised violence, he has taken a number of steps in this area, including meeting with high-level representatives of the three major television networks; the networks have appointed a liaison with Dr. Koop's office. Dr. Koop reported briefly on a recent conference in Leesburg, Virginia, on interpersonal violence as a public health problem. Workshops of the conference came up with 153 recommendations in such broad areas as increased cooperation between the Department of Justice and HHS, dealing with family violence within the Public Health Service programs that are controlled by HHS, and increasing health professions education and training programs on dealing with violence. Dr. Koop mentioned briefly a number of upcoming conferences and workshops on various aspects of violence. Just within the last week, Dr. Koop said, he has been given two additional responsibilities: He has been asked by the Attorney General to provide information for the President's Committee on Pornography, and President Reagan has ordered the Surgeon General to prepare a report for the nation on AIDS.

## XII. INSTRUCTIONAL PROGRAM ON TEENAGE SUICIDE

Dr. Jacquelyn Gentry, Chief of the Science Communications Branch, National Institute of Mental Health, and Dr. James Woods, of the Lister Hill Center, demonstrated a prototype computer-controlled videodisc program on teenage depression and suicide. Dr. Woods gave some background on this collaborative project between the National Institute of Mental Health and NLM's Lister Hill Center. The LHC became involved because staff were interested in cooperating in exploring the use of computer and videodisc technology in a mental health area. This is one of several videodisc projects in the area of patient simulation that the Lister Hill Center is involved with. The interactive videodisc technology is rapidly spreading as an instructional medium throughout the health science education community, he said. Original concerns about the schools not having hardware to use the programs have been allayed.

Following Dr. Woods' introduction, Dr. Gentry described how the development of the prototype was organized (she briefly outlined the relationships of NIMH, NLM, a contractor, and a multidisciplinary national advisory panel). A pretest of the program will go into Washington area medical schools later this month. Distribution of the finished products to medical schools will be made this summer. There are three such products, she said: a compilation of scientific information on adolescent suicide, the first model for this kind of curriculum in the health field, and the videodisc-based simulation itself. There are four cases dramatized in the prototype: a post-mortem case; "John," a depressed teenager; "Sherry," seen in the emergency room, emphasizes interview techniques; and "Lisa," who has real-life family problems and pressures. Dr. Gentry demonstrated the videodisc that dealt with John. In responding to questions after the demonstration, she said that a student would spend 2-3 hours going through the entire program; the total cost was about \$350,000. There was a general discussion among the Regents about this form of instruction, especially about how students evaluate their performance in using it.

## XIII. MEDLARS III REPORT AND DEMONSTRATION

Mr. John Anderson, Director of NLM Information Systems, began this report, on the development of individual professional workstations for MEDLARS III, by saying that the system has hit a number of new one-day highs recently: 1240 connect hours; 2,000 different people logged on and off the system; 199,000 transactions against the system; 3 1/2 million disc to computer interactions; 80 million characters (261,000 references) sent over the network; and 1.6 seconds average response time. He mentioned the new IBM 3081 mainframe computers that have been delivered and that are being installed. They are three times more powerful than the present MEDLARS computers. Mr. Anderson brought the Regents up to date about the contractor's progress in developing MEDLARS III.

Following Mr. Anderson's presentation, Ms. Betsy Humphreys, Deputy Associate Director for Library Operations, briefed the Regents about deficiencies in existing automated support for NLM's processing systems that will be improved under MEDLARS III. Chief among these is the fragmentation of bibliographic information among many different files which forces users to enter multiple searches for the same information. Other deficiencies are the duplication of

information in different processing systems which leads to costly rekeying of the same data, unnecessary burden of manual quality control procedures, inability of the cataloging system to accept records produced by other systems, the lack of automated support for collection maintenance and inventory functions, and the difficulty of maintaining and upgrading present software and systems. Ms. Humphreys described how MEDLARS III will address these problems and, following her presentation, Ms. Sally Sinn of the Library Operations staff, using an IBM PC-XT, demonstrated the database management software and micro-computer workstation developed by the contractor for MEDLARS III.

Following the demonstration, Mr. Welsh expressed his concern about the security of the file, and there was a discussion about who was authorized to create, maintain, and change the processing records. There was also discussion, led by Mr. Fenwick, about scheduling problems and delays encountered in the MEDLARS III contract. Although disturbing, these problems are not unusual in a project of this magnitude, he said. The challenge now is one of project control and he feels that the task-by-task arrangements now being made will be adequate to ensure that MEDLARS III is successfully completed.

#### XIV. REPORT OF THE ACTING ASSOCIATE DIRECTOR FOR EXTRAMURAL PROGRAMS

Mr. Arthur J. Broering announced that Dr. Rodkey has accepted Dr. Lindberg's invitation to assume the chairmanship of the Extramural Programs Subcommittee and that he chaired his first meeting Wednesday afternoon.

Mr. Broering continued with a discussion of the Extramural Programs budget. As a result of the 4.3% Gramm-Rudman reductions for all Extramural Program areas, which will go into effect on March 1, the total budget for the Medical Library Assistance Act (MLAA) allocations would be reduced by \$335,000, from \$7,790 million to \$7,455 million. Similarly, Medical Informatics, which is authorized under Section 301 of the Public Health Service Act, would be reduced by \$199,000 to \$4,437 million. Reductions for the total Extramural Programs budget would amount to \$534,000, leaving \$11,892 million for FY 1986. New competing awards would be reduced to \$1,607 million under the MLAA, and to \$520,000 under Medical Informatics. Available funds for new awards in FY 1986, therefore, would amount of \$2,147 million. The average total of available funds for new awards in previous years, with the exception of 1985, had also been around \$2.0 million.

#### Board Operating Procedures

As required annually, Mr. Broering presented for review the Board Operating Procedures--"Guidelines for Adjustments by Staff in Time or Amount of Grant Award." The Board reaffirmed the guidelines with one minor change which involved the elimination of arbitrary language (Attachment C).

In conclusion, Mr. Broering announced the upcoming Extramural Programs' Week, as part of the Library's Sesquicentennial Year, which is scheduled for the second week in March. During the first part of the week five Training Grant Directors and their students will meet at the Library to discuss programs and to present progress papers on the trainees' investigations. This will be followed on Wednesday by the second IAIMS (Integrated Academic Information Management Systems) Symposium. Finally, the regular Biomedical Library Review Committee meeting is scheduled for Thursday and Friday.

XV. OTHER BUSINESS

The Chairman asked that the Board take a few minutes to discuss the issue of quality control of MEDLARS databases in the hands of outside vendors. Quality control has not been a problem to date, since NLM has dealt only with large vendors. Now that small information vendors will become involved, what is NLM's responsibility to insure the quality of the retrieval of NLM's vendor-operated databases? NLM will retain the right to determine what information may be included in the disc. However, how does NLM insure the quality of the retrieval through frequent updating. While NLM processes updates monthly, there is no guarantee at this time that the vendor will do the same. It was suggested that licensing agreements either include validation of updates by NLM or assurance that the user is informed of the last update by the vendor. The Chairman suggested that a Board group on quality control be formed, consisting of Dr. Lindberg, the Chairman of the Board, and NLM staff who would report back to the Board with specific recommendations either in June or September of this year.

XVI. APPOINTMENT OF THE NOMINATING COMMITTEE

Dr. Bowles appointed a nominating committee for the selection of next year's Board Chairman, consisting of Mr. Welsh, Chair, Dr. Abdellah and Captain Dysart.

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MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS, 10:45 A.M., FEB. 7, 1986  
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XVII. REVIEW OF PENDING APPLICATIONS

Before proceeding with the consideration of pending applications, Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP, informed Board members of confidentiality and conflict-of-interest procedures and reminded them to sign, at the conclusion of the grant application review, the statement that they had not participated in the discussion of any application where conflicts of interest might occur.

The Board reviewed 54 applications of which 27 were recommended for approval, and 27 for disapproval. Grant applications recommended for approval by the Board are listed in the summary actions (Attachment D). Interim actions taken by the Extramural Programs staff since the September Board meeting were noted.

XVIII. ADJOURNMENT

The meeting was adjourned at 11:45 a.m., Friday, February 7, 1986.



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Wednesday, February 5, 1986, 3:00 to 3:30 p.m.  
(EP Subcommittee--List of Attendees under Attachment E)  
Thursday, February 6, 1986, 9:00 a.m. to 4:00 p.m.  
Friday, February 7, 1986, 9:00 a.m. to 11:45 a.m.


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ACTIONS TAKEN BY THE BOARD OF REGENTS

1. The Board recommended for approval the revised NLM Preservation Policy (Attachment B).
2. The Board reaffirmed the Board Operating Procedures with one minor change (Attachment C).
3. The Chairman appointed a nominating committee for the selection of next year's Board Chairman, consisting of Mr. Welsh, Chair, Dr. Abdellah and Captain Dysart.
4. The Board concurred with 54 recommendations of the Extramural Programs Subcommittee. Grant applications for approval are listed in the summary actions (Attachment D).

\*\*\*\*\*

I hereby certify that, to the best of my knowledge, the foregoing minutes and attachments are accurate and complete.

  
 Donald A. B. Lindberg, M.D. (Date)  
 Executive Secretary

 5-5-86  
 L. Thompson Bowles, M.D., Ph.D. (Date)  
 Chairman

CHAIRMAN

BOWLES, L. Thompson, M.D., Ph.D. (8/3/86)  
 Dean for Academic Affairs and  
 Professor of Surgery  
 The George Washington University  
 Medical Center  
 2300 I Street, N.W. #713  
 Washington, DC 20037 202-676-3501

BRANDT, Edward N., Jr., M.D., Ph.D. (8/3/89)  
 Chancellor  
 University of Maryland at Baltimore  
 520 West Lombard Street  
 Baltimore, MD 21201 301-528-7002

DeBAKEY, Lois E., Ph.D. (8/3/86)  
 Professor of Scientific Communications  
 Baylor College of Medicine  
 1200 Moursund Street  
 Houston, TX 77030 713-790-3185

FENWICK, Russell L. (8/3/88)  
 Senior Vice President  
 Facilities and Contingency Planning  
 Bank of America  
 Dept. 3629  
 P.O. Box 37000  
 San Francisco, CA 94137 415-622-4935

GUNN, Albert E., M.D. (8/3/87)  
 Associate Dean for Admissions,  
 The University of Texas Medical School  
 at Houston, and  
 Medical Director, Rehabilitation Center  
 University of Texas/M.D. Anderson  
 Hospital and Tumor Institute  
 6723 Bertner Avenue 713-792-3580 a.m.  
 Houston, TX 77030 713-792-4711 p.m.

LOPEZ, John K. (8/3/87)  
 Senior Vice President  
 SUMMA Medical Corporation  
 4272 Balloon Park Road, N.E.  
 Albuquerque, NM 87109  
 Mailing Address:  
 Box 2312  
 Stanford, CA 94305 415-659-0400

MOLINE, David O., D.D.S. (8/3/86)  
 Asst. Professor of Dentistry  
 Dept. of Hospital Dentistry  
 University of Iowa  
 Hospital and Clinics  
 Iowa City, IA 52242 319-356-2743

RANDALL, Ann K., D.L.S. (8/3/89)  
 Professor and Chief Librarian  
 The City College of CUNY  
 5333 North Academic Center  
 138th Street and Convent Avenue  
 New York, NY 10031 212-690-4271

RODKEY, Grant V., M.D. (8/3/88)  
 Assoc. Clinical Professor of Surgery  
 Harvard Medical School  
 25 Shattuck Street  
 Boston, MA 02115 617-742-4180  
 Mailing Address:  
 15 Parkman Street, Suite 134  
 Boston, MA 02114

STEAD, Eugene A., Jr., M.D. (8/3/88)  
 Prof. Emeritus of Medicine  
 Duke University  
 Duke Hospital - P.O. Box 3910  
 Durham, NC 27710 919-684-6587

EX OFFICIO MEMBERS

Primary

BECKER, Quinn H., Lt. Gen., MC, USA  
 The Surgeon General  
 Department of the Army  
 Washington, DC 20310-2300 202-697-1295

Alternate

FAUVER, Howard E., Col., MC, USA  
 Chief, Graduate Medical Education Branch  
 Education and Training Division  
 U.S. Army Medical Department (SGPE-EDG)  
 Personnel Support Agency  
 Washington, DC 20324-2000  
202-475-1334

Board of Regents Roster (Continued)

<u>Primary</u>	<u>Alternate</u>
<u>BOORSTIN</u> , Daniel J., Litt. D. Librarian of Congress Library of Congress 10 First Street, S.E. Washington, DC 20540 <u>202-287-5205</u>	<u>WELSH</u> , William J., LL.D. Deputy Librarian of Congress Library of Congress James Madison Memorial Bldg., Room 608 10 First Street, S.E. Washington, DC 20540 <u>202-287-5215</u>
<u>BRAILLAR</u> , Max B., Lt. Gen., USAF, MC Surgeon General Department of the Air Force Bolling Air Force Base Washington, DC 20332-6188 <u>202-767-4343</u>	<u>BALL</u> , Thomas P., Jr., Brig. Gen., USAF, MC Commander Malcolm Grow Medical Center Andrews Air Force Base, MD 20331-5300 <u>301-981-3001</u>
<u>DITZLER</u> , John W., M.D. Chief Medical Director Veterans Administration Dept. of Medicine and Surgery 810 Vermont Avenue, N.W. Washington, DC 20420 <u>202-389-2596</u>	<u>HAHN</u> , James M. (142) Director Continuing Education Resources Services Veterans Administration 810 Vermont Avenue, N.W., Room 875D Washington, DC 20420 <u>202-389-2581</u>
<u>HOWARD</u> , Joseph H. Director, National Agricultural Library U.S. Department of Agriculture 10301 Baltimore Boulevard Beltsville, MD 20705 <u>301-344-4248</u>	
<u>KINGSBURY</u> , David T., Ph.D. Asst. Director for Biological, Behavioral, and Social Sciences National Science Foundation 1800 G Street, N.W., Room 506 Washington, DC 20550 <u>202-357-9854</u>	<u>BROWNSTEIN</u> , Charles N., Ph.D., Director Division of Information Science and Technology National Science Foundation 1800 G Street, N.W. Washington, DC 20550 <u>202-357-9572</u>
<u>KOOP</u> , C. Everett, M.D. Surgeon General, PHS; and Deputy Assistant Secretary for Health 200 Independence Avenue, S.W. Washington, DC 20201 <u>202-245-6467</u>	<u>ABDELLAH</u> , Faye G., Ed.D., Sc.D. Deputy Surgeon General, and Chief Nurse Officer, PHS Parklawn Building, Room 18-67 5600 Fishers Lane Rockville, MD 20857 <u>301-443-4000</u>
<u>SANFORD</u> , Jay P., M.D. Dean, Uniformed Services University of the Health Sciences F. Edward Hebert School of Medicine 4301 Jones Bridge Road Bethesda, MD 20814-4799 <u>301-295-3013</u>	
<u>SEATON</u> , Lewis H., Vice Adm., MC, USN Surgeon General Office of the Chief of Naval Operations (OP-093) Department of the Navy Washington, DC 20350-2000 <u>202-697-0587</u>	<u>DYSART</u> , Noel, Capt., MC, USN Director, Medical Education and Training Division (OP-939) Department of the Navy Washington, DC 20350-2000 <u>202-653-1752</u>

EXECUTIVE SECRETARY

LINDBERG, Donald A. B., M.D.  
Director  
National Library of Medicine  
Bethesda, MD 20894  
301-496-6221

## Proposed Revision to Preservation Policy

### I. PRESERVATION OF THE BIOMEDICAL LITERATURE

In accordance with the terms of the NLM Act and the clearly expressed intent of Congress, the fundamental responsibility of the National Library of Medicine is to preserve permanently the content of books, periodicals, and other library materials pertinent to medicine. The determination of what is pertinent to medicine shall be based on the guidelines for selection of literature for the NLM collection as described in the Collection Development Manual of the National Library of Medicine, which is revised periodically to reflect the information needs of the biomedical community. NLM's principal responsibility is to ensure the preservation of the core biomedical literature as defined in that document.

Means of preservation may include: (1) preservation of the original; (2) acquisition of materials in archival formats; and (3) replication of materials in archival formats. NLM staff shall monitor developments in preservation techniques to ensure the use of the most effective methods available and shall participate in research, development, testing, and evaluation of preservation technology. Operational guidelines and procedures for selecting items to be preserved and choosing preservation techniques shall be developed, reviewed, and if necessary amended, from time to time in a manner to be determined by the Director.

While the preservation of NLM's own collection is a major step toward the preservation of the entire scholarly biomedical record, NLM also has a responsibility to assist the preservation of important biomedical literature held by other U. S. institutions. NLM's preservation efforts are to be coordinated with those of other national libraries, research libraries, and biomedical libraries.

Much of the preservation problem can be stopped at its source if the scholarly record is published on archival media that are not predisposed to rapid deterioration. To lessen the need for preservation treatment of prospective publications, NLM shall actively encourage the publishing industry to use more durable materials in the production of the biomedical literature.

OPERATING PROCEDURES

GUIDELINES FOR ADJUSTMENTS BY STAFF  
IN TIME OR AMOUNT OF GRANT AWARD

1. Staff is authorized to exercise its judgment and responsibility for downward revision of the budget from the Board recommendation:
  - (a) Where activities or items can be adequately accomplished at a smaller cost than that recommended by the Board;
  - (b) Where statute, regulation, or policy requires elimination of certain items of expenditure; or
  - (c) Where the applicant voluntarily restricts the scope of the project to less than that recommended by the Board.
  
2. Staff is authorized to exercise its judgment and responsibility for upward revision of the budget from the Board recommendation:
  - (a) Provided the scientific context or scope of the project are not altered; and
  - (b) Provided such revision is limited to those factors which deal with administrative adjustments in budget, such as orderly termination, institution-wide salary increases, and pro-rata adjustment of budgets to accommodate changes in project period dates.
    - There should be no arbitrary limitation, either as a dollar amount or percentage of approved grant, on staff negotiation.
  
3. Staff will report all budget adjustments in excess of \$1,000 to the Board at the next available meeting to permit review of the effect of these guidelines. Board confirmation of each administrative action will not, however, be required.

Adopted:	11/06/64	Reaffirmed and	
Reaffirmed:	6/24/66	amended:	1/27/83
Reaffirmed and		Reaffirmed:	1/27/84
amended:	6/20/68	Reaffirmed:	1/24/85
Reaffirmed:	11/21/69	Reaffirmed and	
Reaffirmed:	11/20/70	amended:	2/7/86
Reaffirmed:	11/23/71		
Reaffirmed:	11/21/72		
Reaffirmed:	11/30/73		
Reaffirmed:	12/06/74		
Reaffirmed:	11/26/75		
Reaffirmed:	1/28/77		
Reaffirmed:	5/26/78		
Reaffirmed:	1/26/79		
Reaffirmed:	1/25/80		
Reaffirmed:	1/30/81		
Reaffirmed:	2/05/82		

APPLICATIONS APPROVED BY COUNCIL  
 (ARRANGED NUMERICALLY BY PROGRAM)  
 PROG. CLASS: COUNCIL DATE: JAN./FEB. 1986  
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
2 R01 LM03710-06	CADUCEUS: A COMPUTER BASED DIAGNOSTIC CONSULTANT	06 150,500 07 162,708 08 169,602
1 R01 LM04399-01A1	DUALS SECONDARY REVIEW: MH MENTAL HEALTH POLICY IN ENGLAND, ONTARIO AND THE U S: 19	01A1 45,600
1 R01 LM04445-01A1	THE HISTORY OF THE ISLAMIC HOSPITAL	01A1 26,296 02 34,659 03 39,688
1 R01 LM04451-01	KNOWLEDGE SEEKING BEHAVIOR OF CLINICAL PROFESSIONALS	01 196,616 02 122,352 03 122,270
1 R01 LM04505-01	FRANCESCO TORTI AND THE EARLY HISTORY OF CINCHONA	01 14,740 02 14,471 03 14,245
1 R01 LM04508-01	THE EARLIEST ILLUSTRATED ANATOMICAL MANUAL	01 18,878 02 23,800 03 25,781
1 R01 LM04516-01	TROPICAL MEDICINE AND PARASITOLOGY: CLASSICS III AND IV	01 37,000 02 28,850
1 R01 LM04525-01	REVIEW OF PHYSICAL AND BIOLOGICAL PROPERTIES OF COSOLVEN	01 11,937 02 1,100

APPLICATIONS APPROVED BY COUNCIL  
 (ARRANGED NUMERICALLY BY PROGRAM)  
 PROG. CLASS: COUNCIL DATE: JAN./FEB. 1986  
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R01 LM04529-01	DUALS SECONDARY REVIEW: CA	01 158,024
	COMPUTER AIDED DIAGNOSIS OF LYMPH NODE DISEASES	02 167,107
		03 157,001
1 R01 LM04530-01	DUALS SECONDARY REVIEW: HS	01 30,159
	BIOTECHNOLOGY AND HEALTH IN DEVELOPING COUNTRIES	02 35,067
1 R01 LM04532-01	INDUSTRIALIZATION AND THE HISTORY OF TUBERCULOSIS IN SOU	01 31,296
		02 8,775
1 R01 LM04534-01	FOUNDATIONS AND BIOMEDICAL RESEARCH, 1920-1940	01 30,434

APPLICATIONS APPROVED BY COUNCIL - DUAL REVIEW  
(ARRANGED NUMERICALLY)  
COUNCIL DATE: JAN./FEB. 1986  
INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE  
PROG. CLASS:

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R24 RR03122-01	DUALS SECONDARY REVIEW: LM	01 113,140
	DEVELOPING INTERNIST-1 KNOWLEDGE BASE INTO A RESOURCE	02 118,128
		03 123,417



APPLICATIONS APPROVED BY COUNCIL  
(ARRANGED NUMERICALLY BY PROGRAM)  
PROG. CLASS:

COUNCIL DATE: JAN./FEB. 1986

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R23 LM04484-01		01 31,838
		02 35,906
	COMPUTER-BASED KNOWLEDGE NETS FOR MEDICAL INFORMATION	03 37,474
1 R23 LM04504-01		01 37,439
		02 32,694
	UTILITY OF COMPUTERIZED SYSTEM FOR DRUG INFORMATION	03 37,326
1 R23 LM04517-01		01 37,500
		02 37,000
	COMPUTER GRAPHIC AIDS FOR MEDICAL MENTAL MODELS	03 32,500

APPLICATIONS APPROVED BY COUNCIL  
 (ARRANGED NUMERICALLY BY PROGRAM)  
 PROG. CLASS: COUNCIL DATE: JAN./FEB. 1986  
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 G08 LM04520-01	HYPNET - COMPUTER NETWORKING IN WEST TEXAS	01 61,712
1 G08 LM04521-01	INTEGRATED ONLINE LIBRARY SYSTEM FOR UNIVERSITY OF TENNE	01 193,426
1 G08 LM04533-01	ACOG INTEGRATED ACAD. INFO MGT SYSTEMS: PLANNING PHASE	01 136,678 02 144,331
1 G08 LM04537-01	IAIMS PLANNING - NLM RESOURCE GRANT PROGRAM	01 141,695 02 156,333

APPLICATIONS APPROVED BY COUNCIL  
 (ARRANGED NUMERICALLY BY PROGRAM)  
 PROG. CLASS: COUNCIL DATE: JAN./FEB. 1986  
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 G07 LM04364-01A1	MEDICAL LIBRARY RESOURCE IMPROVEMENT GRANT	01A1 4,350
1 G07 LM04512-01	MEDICAL LIBRARY RESOURCE IMPROVEMENT GRANT	01 4,000
1 G07 LM04518-01	MEDICAL LIBRARY RESOURCE GRANT APPLICATION	01 4,000
1 G07 LM04522-01	MEDICAL LIBRARY RESOURCE IMPROVEMENT GRANT	01 4,250
1 G07 LM04526-01	MEDICAL LIBRARY RESOURCE IMPROVEMENT GRANT	01 4,000
1 G07 LM04547-01	N C DEPARTMENT OF CORRECTION	01 12,000
1 G07 LM04553-01	MEDICAL LIBRARY RESOURCE IMPROVEMENT GRANT	01 27,827

B O A R D O F R E G E N T S

EXTRAMURAL PROGRAMS SUBCOMMITTEE MEETING

February 5, 1986

A T T E N D E E S

Subcommittee Members Present:

Dr. Albert E. Gunn  
Dr. Ann K. Randall  
Dr. Grant V. Rodkey  
Dr. Eugene A. Stead, Jr.

NLM Staff Present:

Mr. Arthur J. Broering, Acting Associate Director, EP  
Mrs. Ruth Bortz, Grants Management Specialist, EP  
Dr. Jeanne L. Brand, Chief, International Programs Branch, EP  
Mr. Peter Clepper, Program Officer, EP  
Mrs. Karin K. Colton, Committee Management Assistant, EP  
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP  
Mrs. Frances E. Johnson, Program Officer, EP  
Mrs. M. Kathleen Nichols, Grants Management Specialist, EP

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
NATIONAL INSTITUTES OF HEALTH  
NATIONAL LIBRARY OF MEDICINE  
Bethesda, Maryland

A G E N D A

82nd Meeting of the

BOARD OF REGENTS

9:00 a.m., June 17, 1986  
8:30 a.m., June 18, 1986

BOARD ROOM  
Mezzanine of  
National Library of Medicine

MEETING OPEN: All day on June 17 and from 8:30 a.m. to 11:45 a.m. on June 18.

MEETING CLOSED: From 11:45 a.m. to adjournment on June 18, 1986.

- I. CALL TO ORDER AND INTRODUCTORY REMARKS Dr. L. Thompson Bowles
- II. REMARKS BY THE ACTING ASSISTANT SECRETARY FOR HEALTH Dr. Donald I. Macdonald
- III. REMARKS BY THE DIRECTOR, NIH Dr. James B. Wyngaarden
- IV. CONSIDERATION OF FEBRUARY MINUTES TAB I Dr. L. Thompson Bowles  
(Agenda Book)
- V. FUTURE MEETING DATES

Fall Meeting: September 17-18 (W-Th)--CONFIRMED

Winter Meeting: January 29-30, 1987 (Th-F)--CONFIRMED

Spring Meeting: May 28-29 OR June 4-5, 1987 (Th-F)--PROPOSED

PLEASE NOTE: American Library Association Winter Meeting  
January 17-22, 1987--Chicago  
USUHS Graduation, May 16, 1987--Bethesda  
American Assoc. for Medical Systems and In-  
formation (AAMSI) Annual Meeting - May 12-15,  
1987--San Francisco  
Medical Library Association Annual Meeting  
May 15-21, 1987--Portland  
National League for Nursing Biennial Meeting  
May 31-June 3, 1987--Indianapolis  
Special Libraries Association Annual Meeting  
June 6-11, 1987--Anaheim

COFFEE BREAK

VI. REPORT OF THE DIRECTOR, NLM TAB II Dr. Donald A. B. Lindberg  
Discussion Board Members

VII. NLM LONG-RANGE PLAN

A. Introduction Dr. Henry Riecken  
B. Report by Chairman of Panel 1  
"Building and Organizing the  
Library's Collection" Dr. Robert M. Hayes  
C. Report by Chairman of Panel 2  
"Locating and Obtaining Medical  
Scientific Literature" Dr. Nancy M. Lorenzi  
Comments Board Planning Group

(Photographs to be taken of Board members  
on front steps of Library.) 12:24-12:55

LUNCHEON CATERED IN CONFERENCE ROOM "B" 12:55- 1:45

VII. NLM LONG-RANGE PLAN continued:

D. Report by Chairman of Panel 3 Dr. Ruth M. Davis  
"Obtaining Factual Information  
from Data Bases"  
E. Report by Member of Panel 4 Ms. Nina W. Matheson  
"Research in Medical Informatics"  
F. Report by Chairman of Panel 5 Dr. G. Octo Barnett  
"Assisting Health Professions  
Education Through Information  
Technology"

COFFEE BREAK

Comments Board Planning Group  
Discussion of Long-Range Plan Board Members

VIII. REPORT OF THE NOMINATING COMMITTEE Dr. William J. Welsh

IX. PRESENTATION OF AWARDS

- A. Regents' Award for Scholarship and Technical Development Dr. L. Thompson Bowles
- B. NLM Director's Award Dr. Donald A. B. Lindberg
- C. Recognition of Retiring Members Dr. Donald A. B. Lindberg

R E C E S S       \* \* \* \* \*

R E C O N V E N E: Wednesday, June 18, 8:30 a.m.

\* \* \* \* \*

- X. REPORT ON BOARD OF SCIENTIFIC COUNSELORS' MARCH MEETING Dr. Morris F. Collen  
Dr. Harold M. Schoolman
- Discussion Board Members

TAB III

- XI. UPDATE ON STATUS OF MEDLARS III Mr. John Anderson  
Mr. Russell L. Fenwick  
Discussant
- Discussion Board Members

TAB IV

COFFEE BREAK

- XII. ASSOCIATION OF AMERICAN PUBLISHERS ELECTRONIC MANUSCRIPT PROJECT Mrs. Lois Ann Colaianni
- Discussion Board Members

TAB V

- XIII. BIOTECHNOLOGY WORKSHOP Dr. Henry M. Kissman
- Discussion Board Members

TAB VI

- XIV. REPORT OF THE ACTING ASSOCIATE DIRECTOR FOR EXTRAMURAL PROGRAMS Mr. Arthur J. Broering  
EP Subcommittee,  
Discussants
- A. Funding Status Tab A
- B. MERIT and FIRST Awards Tab B
- C. Standards of Conduct Tab C
- Discussion Board Members

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MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS 11:45-12:30 - JUNE 18

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XV. SPECIAL APPLICATIONS

(Gray Book)

- A. Previous Board Deferral
- B. Split Votes  
and Over \$100,000

TAB I  
TAB II

Dr. Jeanne L. Brand  
Dr. Roger W. Dahlen

XVI. SUMMARY STATEMENTS

- A. Research
- B. New Investigator
- C. Research Career Development
- D. Resource
- E. IAIMS
- F. Improvement
- G. Publication

TAB III  
TAB IV  
TAB V  
TAB VI  
TAB VII  
TAB VIII  
TAB IX

Dr. Roger W. Dahlen  
" " " "  
" " " "  
" " " "  
" " " "  
" " " "  
Dr. Jeanne L. Brand

XVII. ADJOURNMENT

Dr. L. Thompson Bowles



DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH  
NATIONAL LIBRARY OF MEDICINE

BOARD OF REGENTS  
MINUTES OF THE 82ND MEETING  
JUNE 17-18, 1986

BOARD ROOM  
NATIONAL LIBRARY OF MEDICINE  
BETHESDA, MARYLAND

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
PUBLIC HEALTH SERVICE

THE BOARD OF REGENTS OF THE NATIONAL LIBRARY OF MEDICINE

Minutes of Meeting 1/ 2/  
June 17-18, 1986

The Board of Regents of the National Library of Medicine was convened for its eighty-second meeting at 9:00 a.m. on Tuesday, June 17, 1986, in the Board Room of the National Library of Medicine, Bethesda, Maryland. Dr. L. Thompson Bowles, Chairman of the Board of Regents and Dean for Academic Affairs and Professor of Surgery, The George Washington University Medical Center, presided. In accordance with P.L. 92-463 and the Determination of the Director, NIH, and as announced in the Federal Register on May 8, 1986, the meeting was open to the public from 9:00 a.m. to 4:45 p.m. on June 17 and from 8:30 to 11:00 a.m. on June 18. The meeting was closed from 11:00 to adjournment at 11:20 a.m. on June 18 for the review, discussion, and evaluation of grant applications. A Board roster is enclosed under Attachment A.

Board members present were:

Dr. L. Thompson Bowles  
Dr. Edward N. Brandt, Jr.  
Dr. Lois E. DeBakey  
Mr. Russell L. Fenwick  
Dr. Albert E. Gunn  
Mr. Joseph H. Howard (Ex Officio)  
Dr. David O. Moline  
Dr. Ann K. Randall  
Dr. Eugene A. Stead, Jr.

Alternates to ex officio members present were:

Dr. Charles N. Brownstein, representing Dr. David T. Kingsbury on June 17.  
Comdr. Mark Jacobs, representing Vice Admiral Lewis H. Seaton.  
Ms. Karen Renninger, representing Dr. John W. Ditzler.  
Brig. Gen. James B. Sanders, representing Lt. Gen. Murphy A. Chesney  
Mr. William J. Welsh, representing Dr. Daniel J. Boorstin.

Unable to attend:

Dr. Faye G. Abdellah  
Col. Howard E. Fauver  
Dr. David T. Kingsbury  
Dr. C. Everett Koop  
Mr. John K. Lopez  
Dr. Grant V. Rodkey  
Dr. Jay P. Sanford

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1/For the record, it is noted that members absent themselves from the meeting when the Board is discussing applications from their respective institutions (interpreted to mean the entire system of which a member's institution is a part) or in which a conflict of interest might occur. Only when an application is under individual discussion will the Board member absent himself. This procedure does not apply to "en bloc" actions.

2/The Board of Regents, when considering the extramural programs of NLM, also constitutes and serves as the National Medical Libraries Assistance Advisory Board.

National Library of Medicine staff members attending this meeting included:

Dr. Donald A. B. Lindberg, Director  
Mr. Kent A. Smith, Deputy Director  
Dr. Harold M. Schoolman, Deputy Director for Research and Education  
Mr. John Anderson, Director, Information Systems, OD  
Mr. Harry D. Bennett, Deputy Director for Operations, OCCS  
Dr. Jeanne Brand, Chief, International Programs Branch, EP  
Mr. Arthur J. Broering, Acting Associate Director for Extramural Programs  
Mr. Kenneth Carney, Executive Officer, OD  
Ms. Lois Ann Colaianni, Associate Director for Library Operations  
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP  
Mr. Charles M. Goldstein, Chief, Health Professions Application Branch, LHCBC  
Mr. B. Earl Henderson, Acting Director, Lister Hill National Center for  
Biomedical Communications  
Ms. Betsy L. Humphreys, Deputy Associate Director for Library Operations  
Dr. Henry M. Kissman, Associate Director for Specialized Information  
Services  
Mr. Sheldon Kotzin, Chief, Bibliographic Services Division, LO  
Dr. Daniel R. Masys, Director-designate, Lister Hill National Center for Biomedical  
Communications  
Mr. Robert B. Mehnert, Chief, Office of Inquiries and Publications  
Management, OD  
Mr. Stanley J. Phillips, Deputy Executive Officer, OD  
Dr. Henry Riecken, Associate Director for Planning and Evaluation  
Mr. Arthur Robinson, EEO Officer  
Mr. Mark J. Rotariu, Chief, Office of Financial Management, OD  
Dr. Elliot R. Siegel, Special Assistant for Operations Research, OD  
Dr. John Starkweather, Special Assistant to the Deputy Director for Research and  
Education, OD  
Mr. Richard T. West, Chief, Office of Program Planning and Evaluation, EP

Others present included:

Dr. Donald J. Macdonald, Acting Asst., Secretary for Health, HHS  
Dr. Robert E. Windom, Asst. Secretary for Health-designate.  
Dr. James B. Wyngaarden, Director, NIH  
Dr. Morris F. Collen, Chairman, Board of Scientific Counselors, NLM.  
Mrs. Ileen Stewart, Executive Secretary, Special Study Section, DRG, NIH

Members of the public present:

Dr. G. Octo Barnett, Dir., Laboratory for Computer Science, Mass. Gen. Hospital  
Dr. Ruth M. Davis, Pres., Pymatuning Group, Inc., Arlington  
Dr. Robert M. Hayes, Dean, Graduate School of Library and Info. Science,  
University of California, Los Angeles  
Dr. Nancy M. Lorenzi, Assoc. Sr. Vice Pres., Medical Info. & Science, University  
of Cincinnati Medical Center  
Ms. Nina W. Matheson, Dir., Welch Medical Library, Johns Hopkins University

## I. OPENING REMARKS

Dr. L. Thompson Bowles, Chairman, welcomed the Regents to the 82nd meeting of the Board of Regents. He greeted new ex officio alternate Regents--Ms. Karen Renninger (Veterans Administration), Brigadier General James B. Sanders (Air Force) and Commander Mark Jacobs (Navy)--and introduced several guests including Dr. Donald I. Macdonald, Acting Assistant Secretary for Health, Dr. Robert E. Windom, Assistant Secretary for Health-designate, and the Chairmen of the various planning panels.

## II. REMARKS OF THE ACTING ASSISTANT SECRETARY

Dr. Donald I. Macdonald brought greetings to the Board on behalf of the Department of HHS. He noted that he would be in this position until Dr. Windom was confirmed by the Senate which is expected shortly. Dr. Bowen, the new HHS Secretary (and first physician in the job), is sympathetic to the needs and aims of the health agencies. Dr. Macdonald thanked the Regents for their work on behalf of the Library.

## III. CONSIDERATION OF MINUTES OF PREVIOUS MEETING

With the correction of five figures on page 11, the Regents approved the minutes of the February 6-7, 1986, meeting.

## IV. DATES OF FUTURE MEETINGS

The Board will meet next on September 17-18. The proposed dates for the winter 1987 meeting, January 29-30, were confirmed. May 28-29, 1987, were confirmed for next spring's meeting.

## V. REPORT OF THE NLM DIRECTOR

Dr. Donald A. B. Lindberg reported first on personnel matters, introducing Dr. Richard Hsieh, Assistant Director for International Programs; Ms. Cassandra Allen, Head of the Collection Access Section of the Public Services Division; Mr. Charles R. Kalina, Special Expert in the Office of the Director; and Dr. Daniel R. Masys, Director of the Lister Hill National Center for Biomedical Communications. As to budget matters, Dr. Lindberg reported that since the last meeting, the Gramm-Rudman-Hollings Act has reduced NLM's 1986 appropriation by 4.3% (\$57,808,000 to \$55,322,000). Library Operations will bear the brunt of the reduction, with acquisitions being reduced and unavoidable cataloging and indexing backlogs. The 1987 President's budget calls for an increase of 1.8% for NLM. NLM's budget, in fact, is the only one at NIH not facing a 1987 cut. The Director also reported briefly on the

budget hearings in the House and Senate and a meeting held at NLM about information services for the nursing profession.

Dr. Lindberg discussed a newly released report from the Subcommittee on Government Information, Justice, and Agriculture of the House Operations Committee. The report, titled "Electronic Collection and Dissemination of Information by Federal Agencies," was issued and followed a series of hearings this spring held by Subcommittee Chairman, Rep. Glenn English. The Committee argues that there are serious shortcomings in the way NLM's MEDLARS tapes are made available, stemming largely from what the Committee believes to be an "erroneous decision" in the case of SDC v. Mathews. This case upheld NLM's practice of leasing database tapes at costs that exceed their mere duplication. The court found that the tapes could not be construed as government "records" under the Freedom of Information Act. The Subcommittee in its report argued that NLM was in effect exercising a sort of copyright control over Government information that could not be copyrighted. NLM is studying how best to respond to the report.

Another subject discussed by the Director, briefly, was that of the "gateways," i.e., an open connection between two information systems. This usually involves a physical device and software that allows two computer systems to talk together. One potential way to increase access to NLM information would be the installation of such gateways. NLM is now investigating the possible use of gateways for its systems--both internally between NLM systems and externally between NLM and outside systems. There will be a report on the subject at a future Board meeting. On another matter, Dr. Lindberg reported that NLM is now formulating new quality standards for those who use NLM's databases to create new information products and services so that these products will be of high quality and reflect well on the Library. When health professionals rely on a service that is based on MEDLARS, for example, the Library's reputation is at stake, even if the actual service or product is being provided by a commercial vendor. The Director also noted that the Health Research Extension Act of 1985 requires that the NIH Director submit a biennial report to Congress by July 1, 1986. The overall NIH report will include, among other things, a report from each of the NIH components. The law also permits each advisory council (such as the Board) to prepare a section for inclusion in the report [see item XII in these minutes]. Finally, Dr. Lindberg brought the Regents up-to-date on a number of Sesquicentennial events, including the Open House and Leiter Lecture (April 22), the highlighting of the NLM by HHS Secretary Bowen at the World Health Organization meeting in Geneva (May 5), and the celebration at Ford's Theatre (June 16).

Following Dr. Lindberg's presentation, Dr. Albert Gunn congratulated the Director on his testimony before the various Congressional bodies on the Library's budget and other matters. From his own review of the reports of the testimony, Dr. Gunn said that it was clear that Dr. Lindberg had accurately reflected the Board's thinking. Other members, including the Chairman, supported these sentiments.

## VI. REPORT OF THE NIH DIRECTOR

Dr. James B. Wyngaarden complimented the Library on last evening's celebration at Ford's Theatre which he called "splendid." The NIH itself is planning a celebration of its Centennial in 1987. One of the highlights of the year will be a four-part television series about medical research on PBS in the fall of 1987, to be accompanied by a book. There will also be traveling exhibits, a variety of events on the campus during the year, and special recognition of NIH on the part of U.S. and foreign medical research institutions. On the appropriations front, Dr. Wyngaarden said that the NIH budget has increased by about 50 percent between 1982 and 1986. Over the past year, however, the NIH lost \$236 million through Gramm-Rudman sequestration. The President's proposal for 1987 is \$5.1 billion in terms comparable to last year's budget (which was \$5.5 billion, reduced further by Gramm-Rudman). The NIH is conscious of its responsibility to protect components that do not have strong public and Congressional constituencies, such as NLM, in the budget battles. The new Friends of the Library organization will be helpful in arranging testimony for and representing the Library to the Congress.

## VII. NLM LONG-RANGE PLAN

The Chairman introduced the discussion of the long-range plan by noting that one year ago at their meeting the Regents asked the Library to prepare a draft of a long-range plan to be presented at this meeting. Reports from the five planning panels of external expert consultants have now been received by the Regents; today's discussion will consist of presentations by the panel chairmen. Dr. Henry Riecken, NLM Associate Director for Planning and Evaluation, who coordinated the year-long effort, described briefly the process and then introduced the first panel chairman.

Panel 1: Building and Organizing the Library's Collection. Chairman Robert M. Hayes, Ph.D., said that, although the panel as a whole has not had a face-to-face discussion of the last draft of their report, there was substantial agreement in its preparation. The report is divided into three main sections--background, context, and summary. Dr. Hayes first concentrated on the context, with three main aspects: a general picture of the U.S. society and economy, a somewhat detailed look at the national information infrastructure, and a close inspection of the electronic media as they are affecting libraries, including NLM. As to the summary, Dr. Hayes described the report's coverage of NLM's mission, a vision of the future, major issues and future directions, and, concluded with its formidable array of 45 recommendations. Among the report's points emphasized by the chairman: Although the direct use of information services by the ultimate user would grow in importance, there was a continuing and crucial role for intermediaries in providing information services; the NLM should not be responsible for collecting and exercising bibliographic control over consumer or lay-oriented

health information; although some predict a paperless society, paper-based information will continue to be of prime importance; databases, especially text and graphical databases, and audiovisual materials will become increasingly important to libraries. Dr. Hayes briefly outlined the recommendations, grouping them in categories, such as advancement of medical librarianship, application of technology, international programs, and forms of publication. He concluded by identifying six "windows of opportunity," activities that NLM should undertake now so as not to lose the opening: archival copies of electronic formats, standards for patient records, focused collections of landmark papers, international activities, gateways and linkages and new communications systems and networks.

Following Dr. Hayes' presentation, there was discussion by the Regents about the future of paper-based information, the function of NLM as an acquirer/preserver of the literature versus provider of services, the feasibility of putting the 45 recommendations in priority order, and distributed access to information.

Panel 2: Locating and Gaining Access to Medical and Scientific Literature. Nancy M. Lorenzi, Ph.D., who chaired panel 2, said that this panel framed its charge as two questions: (1) Who are and who should be the users of NLM? (2) What is the infrastructure necessary to facilitate access? The panel concluded that much of the existing information infrastructure would serve well for the future; it needs to be "leveraged" to build on the strengths that are now in place. There need to be large-scale networking and linking services and sources, including the establishment of gateways. Two current initiatives strongly supported by the panel are the Unified Medical Language System and the Integrated Academic Information Management Systems. The future of research, education, medical practice, administration, library and information science, the Regional Medical Library Network, and other aspects of the infrastructure were all considered. As to the users of NLM, the panel created a graphic "model" (presented by Dr. Lorenzi as a slide) of users, the nature of their information needs, and the nature of NLM's services/collections. She summarized the panel's recommendations in two categories. For maintaining and developing the information infrastructure, the recommendations dealt with access to all forms of literature, access to electronic information, updating the RML program, support of IAIMS and the Unified Medical Language System, entering into cooperative ventures with database producers and information suppliers, encouraging basic and applied research, and developing expert systems. Among the recommendations to support user access are: to study the needs of health professionals for biomedical information and then to provide them with access to it, to study the public's need for health information, to establish programs to train information professionals, to help professionals in other countries have access to health information, and to study the impact of electronic technology on how health professionals gain access to information.

Following Dr. Lorenzi's presentation, the Regents discussed various aspects of the report, including the training of health information providers, the need to involve other parts of the Public Health Service in carrying out many of the recommendations, the international aspects of NLM's programs and services and, especially, the question of NLM assuming responsibility for consumer- or lay-oriented materials.

Panel 3: Obtaining Factual Information from Databases. Ruth M. Davis, Ph.D., who chaired panel 3, said that the principal focus of the panel was from the NLM out to its user community, emphasizing the institutional and societal considerations (such as problems of liability, database credibility and integrity, and the roles of industry and government) that would affect the Library's decisions. She described in some detail both the range and nature of factual databases that the panel considered, and the assumed nature of the information milieu and market 20 years hence. The report recommends that the NLM take action in the following areas (there are several recommendations in each area): practice-linked factual databases, patient records, research-oriented factual databases, and factual database technologies. The panel provided a summary of estimated resources necessary to carry out the recommendations: \$6.175 million spread over the first five years and \$840,000 per year thereafter. Dr. Davis concluded by saying that the National Library of Medicine, with its long history of successful involvement with medical databases and providing efficient information services, is the logical organization to undertake these tasks.

Panel 4: Medical Informatics. Ms. Nina W. Matheson represented Dr. Shortliffe, the chairman of panel 4. She said that the panel members shared several assumptions: Medical informatics is a young foundation science, NLM is the natural leader for fostering this science; and an unusual opportunity now exists to identify the goals and means for ensuring that the new science matures. Four assumptions about the future were that information retrieval would be in "real time;" users would contribute to the systems and be responsible for their quality; information systems will support care management at all levels; and it is unlikely that a single, authoritative database would ever be constructed--files would be linked. The panel considered the research needs in eight major areas: knowledge representation, knowledge and data acquisition, medical decision making, the cognitive aspects of decision support, human machine interface, information storage and retrieval, technology transfer and dissemination, and supporting technologies and enabling activities. There were nine broad goals formulated by the panel that Ms. Matheson briefly discussed: NLM should assume leadership in the medical informatics area, become a "National Institute for Medical Informatics;" the Unified Medical Language System should be developed under NLM leadership; NLM should work toward the development of a national computer network in the medical sciences that would be linked with the national networks of scientists; "centers of excellence"--15 in the next decade--should be developed; training in medical informatics should be encouraged in schools of the health



professions; commercially marketed decision support systems should be widely available and accepted--achieved through support of research in cognitive science and decision modeling. Continuing with the goals enunciated by the panel, Ms. Matheson said that medical libraries should serve as gateways and promoters of many new forms of information exchange--issues of knowledge representation, storage and retrieval will have to receive substantial research support for this to happen. NLM should sponsor research and coordinate with academic computer science departments to see that specialty-oriented computer work stations are developed and integrated by networks. The final goal was that informatics research should put more emphasis on evaluation studies and on validating medical knowledge bases and support systems. As to resources required to implement panel 4's recommendations, Ms. Matheson said \$30 million and 34 staff people would be required annually over the next decade.

Panel 5: Assisting Health Professions Education Through Information Technology. Octo Barnett, M.D., panel chairman, emphasized that the members considered the health professions education broadly, not just physician education. The panel saw three areas of opportunity: widespread and ever more powerful technology; the openness of the educational establishment to technological innovation; and the introduction of computer technology into the practice of medicine. The panel's recommendations were distilled into four areas: the Unified Medical Language System; the "centers of excellence" concept for medical informatics--especially the development of a consortium of such centers; educational technology; and the development of knowledge management systems, or electronically represented knowledge bases. Overall, the panel believed that what NLM had done and was now doing for health professions education was important and should be continued; there is an opportunity to engage in further stimulating activities. Because no other NIH component is concerned about R&D in medical education, NLM should take over a leadership role in this area.

Following Dr. Barnett's presentation there was a discussion by the Regents about several issues pertaining to all the reports. Dr. Stead made the comment and other Regents agreed, that the funding recommended by the panels for implementation was too little (note: not all panel reports included budget projections). The Board asked that a realistic budget review be done that includes a timetable for accomplishment. They also asked that where overlap or redundancy exists, the recommendations be consolidated. Mr. Welsh was joined by several Regents in recommending against the establishment of a "National Institute for Medical Informatics." Dr. Moline commented that the individual health professions and specialties are better equipped to conduct information programs for the health education of the general public than is NLM. The Chairman commented that that position seemed to be a consensus of the Regents. Dr. Bowles gave his enthusiastic personal endorsement to the five panel reports; the Board is grateful to the panel members and to the NLM staff who prepared them. The next step

is to prepare a synthesis. Dr. Riecken proposed that a draft synthesized report be prepared and presented at the next Board meeting in September. The panels would each go over their reports one more time; budget and staff resources required to implement the recommendations will be one area the panels will review carefully. Dr. Riecken then briefly outlined the order of appearance of what the synthesized plan might contain: foreword by Board Chairman, preface by NLM Director, executive summary, an outline similar to that of the present reports--vision of the future in biomedical information, role of the NLM, long-range goals, opportunities ahead of us, and the consolidated recommendations. The Regents unanimously adopted a motion declaring that the Board had received and discussed the draft preliminary report and that the Regents agreed with Dr. Riecken's timetable for the next draft to be presented in September, and a final report by the end of calendar 1986. The motion included an expression of appreciation to the members of the panels for their excellent work in preparing the plan.

#### VIII. REPORT OF NOMINATING COMMITTEE

Before the committee reported, Dr. Lois DeBakey, on behalf of all the Regents, expressed appreciation to Dr. Bowles for his superb leadership of the Board the last two years. Mr. Welsh, chairman of the Board committee to nominate a chairman to replace Dr. Bowles, then put forward the name of Dr. Albert Gunn as chairman. Dr. Gunn absented himself and was then unanimously elected chairman by his colleagues.

#### IX. PRESENTATION OF AWARDS

Dr. Bowles presented the 1986 Regents Award for Scholarship or Technical Achievement to Dr. William Harless of the Lister Hill Center. Dr. Harless was cited for his development of the Technological Innovations in Medical Education (TIME) program, thus "demonstrating to many colleagues the important roles that interactive technologies and instructional simulations can play in health professions education."

Dr. Lindberg presented the 1986 NLM Director's Award to Mr. Mark Rotariu, NLM Budget Officer. Mr. Rotariu was cited for his exceptional financial management skills, for outstanding service to the Library in formulating the budget, and for helping to prepare senior NLM staff for testifying before the Congress.

Dr. Lindberg also presented mementos from the Library to the three retiring Regents. This is the last meeting as members for Dr. Bowles, Dr. DeBakey, and Dr. Moline.

## X. REPORT ON BOARD OF SCIENTIFIC COUNSELORS MEETING

Dr. Harold M. Schoolman, NLM Deputy Director for Research and Education, introduced the topic by reminding the Regents of a new NIH regulation that gives NIH advisory committees a limited role in reviewing intramural research. To comply with this regulation, the chairman of the NLM Board of Scientific Counselors will report once a year to the Regents. Dr. Schoolman introduced Dr. Morris Collen, Chairman of the Counselors, who would make his report to the Regents at this meeting. Dr. Schoolman briefly described the major topics discussed at the last meeting of the Board of Scientific Counselors; the proceedings of that meeting were included in the agenda book.

Dr. Collen characterized the charter of the Board of Scientific Counselors as one of advising, consulting, and making recommendations about the intramural research and development activities of the Lister Hill Center. He said that at their last meeting, the Counselors heard a progress report on the Unified Medical Language System (UMLS). Much of the progress to date on the UMLS is intramural; future activity will be more extramurally oriented. Dr. Collen also referred to the intramural projects relating to online full-text retrieval and to the videodisc projects relating to dermatology and orthopedics, all of which were of great interest to the Counselors. He said that members had often commented about the competence and commitment of the Lister Hill Center staff and investigators who have made presentations to the Board. The Board of Scientific Counselors, with its eight members, represents a good mix of scientific disciplines and expertise. The Board has issued uniform review criteria for use in looking at LHC projects that are presented to the Board. These guidelines should also be helpful to staff in preparing presentations for the Board of Scientific Counselors.

## XI. UPDATE ON MEDLARS III

Mr. John Anderson, NLM Director of Information Services, reminded the Regents of the MEDLARS III workstation demonstration they saw at their last meeting. Since that time, the situation with LOGICON, Inc., the MEDLARS III contractor, has deteriorated markedly. Mr. Anderson briefly reviewed the history of the project since its inception some years ago. He showed the contractor's projected schedule: Although tested software for Phase 1 was to have been delivered to NLM by late 1985, an extension was granted until March 1986. It has not been delivered nor is there much prospect of it being delivered before the contract's end (September 4, 1986). A private consultant, engaged by NLM to assess the problem, has recommended that NLM evaluate the incomplete software that has been developed by the contractor and set an attainable goal for some useful subset of the software, with documentation, to be delivered.

Following Mr. Anderson's presentation, Mr. Russell Fenwick, who has been following the project on behalf of the Board, said that the situation was bad, but could be worse. He believes that the Library can cut its losses, salvage a usable product, and "gain control of its own destiny." The

emphasis has to be on getting as much documentation as possible of what has already been done.

After both presentations, the Regents asked a number of questions about the nature of the contract and the options open to the Library for redress. Dr. Bowles said that it is clear NLM is in a situation of "damage control," and he offered the Board's help as appropriate. It seemed the consensus of the Board that the Library is taking the only reasonable course.

## XII. ASSOCIATION OF AMERICAN PUBLISHERS ELECTRONIC MANUSCRIPT PROJECT

Mrs. Lois Ann Colaianni, NLM Associate Director for Library Operations, reported about a project of the Association of American Publishers (AAP) to develop generic coding for authors to use in preparing manuscripts for publication. It was estimated (in 1980) that 35 percent of articles in American scientific journals were electronically composed. This number was projected to increase to 60 percent by 1985. It obviously would be of great advantage to publishers to be able to take a manuscript composed electronically by the author and to turn it into typeset galleys without rekeying the manuscript. The question was how to obtain electronically prepared manuscripts from authors in a form that most publishers can use. Manuscripts created on a personal computer or word processor typically require that additional information be interspersed within the text to aid in any subsequent computer processing. That additional information is called "mark-up." Usually the mark-up is specific to a particular publisher's system or printing device. However, if there were a universal, standardized, widely used method of marking up an electronic manuscript, great benefits would accrue to scientific publishing. Such a Standard Generalized Mark-up Language (SGML) was proposed by the Electronic Manuscript Project. NLM saw advantages in the adoption of such a system for libraries and information centers, and the Library agreed to work with the AAP. NLM assembled and chaired a task force to identify and define the document types and the bibliographic elements that should be tagged in each type. Three basic document types--books, serials, and articles--were identified by the task force. There have been three basic outcomes of the project. First, there is a series of five publications and guides--the standards themselves, an authors' guide, a publishers' reference manual, and two volumes dealing with marking up mathematical and scientific notation and tabular material. Second, eleven sites were selected to evaluate the SGML; comments from the field have been very helpful. And third, the National Information Standards Organization (Z-39) is establishing a subcommittee to develop standards for the syntax for the SGML. Because the NLM would save substantial time and money if bibliographic data could be received electronically as a result of SGML, the Library continues to cooperate with the AAP and others in testing and, eventually, promoting the standards. Following Mrs. Colaianni's report, there was a brief discussion among the Regents about the proposed system. Among the points of discussion was the ease of learning the necessary coding on the part of authors and secretaries, and the need to work with

microcomputer and software manufacturers to see that products are developed for SGML implementation.

#### XIII. REGENTS REPORT TO THE CONGRESS

The Regents discussed the draft report to the Congress from the Regents that is to be included in the overall Biennial Report of the Director, NIH, briefly described yesterday by Dr. Lindberg. Dr. Brandt, Dr. Gunn, Ms. Renninger, and Dr. Randall made suggestions for changes and additions that were agreed to by the Board. It was suggested that Dr. DeBakey be asked to give the document a final editing; she agreed.

#### XIV. BIOTECHNOLOGY WORKSHOP

Dr. Henry Kissman, NLM Associate Director for Specialized Information Services, reported about an NLM-sponsored National Academy of Sciences Workshop on information activities and needs in biotechnology. The workshop was held on May 5-6. Dr. Kissman listed a number of NLM interests in biotechnology: information about the adverse effects of the products of biotechnology; GenBank, an important data resource for biotechnology being cosponsored by NLM with other NIH institutes; the human genetics database being developed by the Lister Hill Center in collaboration with Dr. Victor McKusick; and the many journals and books in biotechnology now being processed by the Library. Thus, NLM has a continuing interest in the nomenclature, organization, and the location of information resources in this new field. The NLM Toxicology Information Program is now beginning to address such questions as to what extent will toxicology as a science deal with the potential effects of, for example, engineered microorganisms? What are the information infrastructures of biotechnology? How will adverse effects of these products be reported? How will usage and effects be reported? These and other questions were addressed at the workshop. The workshop was organized into four panels: bibliographic resources, database and computational resources, intellectual property rights, and vocabulary/nomenclature. Dr. Kissman gave a brief summary of the discussion in each area. There was a general consensus among the participants that NLM should play a leadership role in several important areas of biotechnology information. A formal report of the workshop will be available in August and made available to the Regents in September.

#### XV. REPORT OF THE ACTING ASSOCIATE DIRECTOR FOR EXTRAMURAL PROGRAMS

Mr. Arthur J. Broering discussed the effect of the 4.3% Gramm-Rudman-Hollings reductions on the FY 86 Extramural Programs budget. The initial Extramural Programs budget was reduced by \$534,000 to \$11.892 million. The balance that remains for competing awards for FY 86 is \$1.609 million. An internal transfer of \$212,000 to the Medical Informatics Research Projects Grants area increased that program to \$855,000 of available funds in this fiscal year.

Mr. Broering then informed the Board of two new award mechanisms introduced recently by NIH:

1. FIRST Award stands for "First Independent Research Support and Transition Award." A comprehensive announcement of that award, recently published in the NIH GUIDE FOR GRANTS AND CONTRACTS, was included in the agenda book.

Mr. Broering noted that the FIRST Award is replacing the present New Investigator Award, and he pointed out some of the differences between the two awards. While the New Investigator Award was a three-year nonrenewable grant, the FIRST Award is a five-year nonrenewable award with a commensurate increase in the budget. NLM's experience with the New Investigator Award has been on a small scale, typically no more than two awards annually. It is not known, of course, at this point how the program enhancements will affect the number of FIRST applications that will be received in the future.

2. MERIT (Method to Extend Research in Time) Award provides long-term support to investigators whose competence and productivity are superior and are likely to continue in that vein. The intent is to foster creativity by relieving the investigator of the administrative burden of applying for continuation applications every three or five years and also to decrease the workload of the initial review group and staff. The duration is up to ten years--a five-year grant followed by a three- to five-year extension.

The basis for a nomination for a MERIT Award is a favorable recommendation of a new or competing continuation application by the Biomedical Library Review Committee and an excellent priority score. NLM staff then prepares a resume justifying the consideration of a candidate to the Board of Regents. The Board may also initiate candidacies. An investigator, however, may not apply for a MERIT consideration. The rationale for the MERIT Award is less persuasive for the NLM programs. The current NLM data shows that in the last ten years only two awards have been made that extend beyond an eight-year period. Of 167 applications received by NLM since 1968, only 15% or 25, have been for five years and of these only 3% have been funded, Mr. Broering concluded. Therefore, it would not be judicious for NLM to modify its current practice to encourage five-year awards. Given these circumstances, NLM's participation in the MERIT Award will be minimal but still proportionate to the other institutes.

As a last item, Mr. Broering reviewed the recent changes made to the rules and regulations of Standards of Conduct for consultants, concerning a waiver by the Secretary, HHS, permitting reviewers from one campus of certain multi-campus institutions to review applications and proposals from

other campuses of the same institution. The reasoning behind this waiver was that when experts and consultants perform services for HHS, while they are also affiliated with those multi-campus institutions of higher education, their interests in matters affecting campuses other than those where they are employed are too inconsequential and too remote to affect the integrity of services performed. This waiver, when combined with the earlier exemption ruling, provides the current criteria for determining conflict of interest (Attachment B).

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MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS, 11:00 A.M., 6/18/86  
-----

**XVI. REVIEW OF PENDING APPLICATIONS**

Before proceeding with the consideration of pending applications, Dr. Jeanne L. Brand, Chief, International Programs Branch, EP, informed Board members of confidentiality and conflict-of-interest procedures and reminded them to sign, at the conclusion of the grant application review, the statement that they had not participated in the discussion of any application which presented a conflict of interest.

The Board reviewed 58 applications of which 26 were recommended for approval, and 32 for disapproval. Grant applications recommended for approval by the Board are listed in summary actions (Attachment C). Interim actions taken by the Extramural Programs staff since the September Board meeting were noted.

**XVII. ADJOURNMENT**

The meeting was adjourned at 11:20 a.m., Wednesday, June 18, 1986.

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Monday, June 16, 1986, 2:00 to 3:30 p.m.  
(EP Subcommittee--List of Attendees under Attachment D)  
Tuesday, June 17, 1986, 9:00 a.m. to 4:45 p.m.  
Wednesday, June 18, 1986, 8:30 to 11:20 a.m.


\*\*\*\*\*


ACTIONS TAKEN BY THE BOARD OF REGENTS

1. The Board discussed and accepted the preliminary report of the long-range plan and expressed its appreciation to the members of the planning panels for their excellent work in the preparation of the plan.
2. The Board expressed appreciation to outgoing Chairman, Dr. Bowles, for his superb leadership during the last two years.
3. The Board unanimously elected Dr. Albert E. Gunn Chairman for the coming year.
4. The Board concurred with 58 recommendations of the Extramural Programs Subcommittee. Grant applications for approval are listed in the summary actions (Attachment C).

\*\*\*\*\*

I hereby certify that, to the best of my knowledge, the foregoing minutes and attachments are accurate and complete.

  
Donald A. B. Lindberg, M.D. (Date)  
Executive Secretary

  
L. Thompson Bowles, M.D., Ph.D. (Date)  
Chairman



BOARD OF REGENTS OF THE NATIONAL LIBRARY OF MEDICINECHAIRMAN

BOWLES, L. Thompson, M.D., Ph.D. (8/3/86)  
 Dean For Academic Affairs and  
 Professor of Surgery  
 The George Washington University  
 Medical Center  
 2300 I Street, N.W. #713  
 Washington, DC 20037 202-676-3501

BRANDT, Edward N., Jr., M.D., Ph.D. (8/3/89)  
 Chancellor  
 University of Maryland at Baltimore  
 520 West Lombard Street  
 Baltimore, MD 21201 301-528-7002

DeBAKEY, Lois E., Ph.D. (8/3/86)  
 Professor of Scientific Communications  
 Baylor College of Medicine  
 1200 Moursund Street  
 Houston, TX 77030 713-790-3185

FENWICK, Russell L. (8/3/88)  
 Senior Vice President (Retired)  
 Bank of America  
 260 Country Club Drive  
 Novato, CA 94947 415-382-8319

GUNN, Albert E., M.D. (8/3/87)  
 Associate Dean for Admissions,  
 The University of Texas Medical School  
 at Houston, and  
 Medical Director, Rehabilitation Center  
 University of Texas/M.D. Anderson  
 Hospital and Tumor Institute  
 6723 Bertner Avenue 713-792-3580 a.m.  
 Houston, TX 77030 713-792-4711 p.m.

LOPEZ, John K. (8/3/87)  
 Box 2312  
 Stanford, CA 94305 415-948-4440

MOLINE, David O., D.D.S. (8/3/86)  
 Asst. Professor of Dentistry  
 Dept. of Hospital Dentistry  
 University of Iowa  
 Hospital and Clinics  
 Iowa City, IA 52242 319-356-2743

RANDALL, Ann K., D.L.S. (8/3/89)  
 Professor and Chief Librarian  
 The City College of CUNY  
 5333 North Academic Center  
 138th Street and Convent Avenue  
 New York, NY 10031 212-690-4271

RODKEY, Grant V., M.D. (8/3/88)  
 Assoc. Clinical Professor of Surgery  
 Harvard Medical School  
 25 Shattuck Street  
 Boston, MA 02115 617-742-4180  
 Mailing Address:  
 15 Parkman Street, Suite 134  
 Boston, MA 02114

STEAD, Eugene A., Jr., M.D. (8/3/88)  
 Prof. Emeritus of Medicine  
 Duke University  
 Duke Hospital - P.O. Box 3910  
 Durham, NC 27710 919-684-6587

EX OFFICIO MEMBERSPrimary

BECKER, Quinn H., Lt. Gen., MC, USA  
 The Surgeon General  
 Department of the Army  
 Washington, DC 20310-2300 202-697-1295

Alternate

FAUVER, Howard E., Col., MC, USA  
 Chief, Graduate Medical Education Branch  
 Education and Training Division  
 U.S. Army Medical Department (SGPE-EDG)  
 Personnel Support Agency  
 Washington, DC 20324-2000  
202-475-1334

Board of Regents Roster (Continued)

Primary

Alternate

BOORSTIN, Daniel J., Litt. D.  
Librarian of Congress  
Library of Congress  
10 First Street, S.E.  
Washington, DC 20540 202-287-5205

WELSH, William J., LL.D.  
Deputy Librarian of Congress  
Library of Congress  
James Madison Memorial Bldg., Room 608  
10 First Street, S.E.  
Washington, DC 20540 202-287-5215

CHESNEY, Murphy A., Lt. Gen., USAF, MC  
Surgeon General  
Department of the Air Force  
Bolling Air Force Base  
Washington, DC 20332-6188 202-767-4343

SANDERS, James G., Brig. Gen., USAF, MC  
Commander  
Malcolm Grow Medical Center  
Andrews Air Force Base, MD 20331-5300  
301-981-3001

DITZLER, John W., M.D.  
Dept. of Medicine and Surgery  
Veterans Administration  
Dept. of Medicine and Surgery  
810 Vermont Avenue, N.W.  
Washington, DC 20420 202-389-2596

RENNINGER, Karen  
Chief, Library Division 142D  
Veterans Administration  
810 Vermont Avenue, N.W.  
Washington, DC 20420  
202-389-2781

HOWARD, Joseph H.  
Director, National Agricultural Library  
U.S. Department of Agriculture  
10301 Baltimore Boulevard  
Beltsville, MD 20705 301-344-4248

KINGSBURY, David T., Ph.D.  
Asst. Director for Biological, Behavioral,  
and Social Sciences  
National Science Foundation  
1800 G Street, N.W., Room 506  
Washington, DC 20550 202-357-9854

BROWNSTEIN, Charles N., Ph.D., Director  
Division of Information Science  
and Technology  
National Science Foundation  
1800 G Street, N.W.  
Washington, DC 20550 202-357-9572

KOOP, C. Everett, M.D.  
Surgeon General, PHS, and  
Deputy Assistant Secretary for Health  
200 Independence Avenue, S.W.  
Washington, DC 20201 202-245-6467

ABDELLAH, Faye G., Ed.D., Sc.D.  
Deputy Surgeon General, and  
Chief Nurse Officer, PHS  
Parklawn Building, Room 18-67  
5600 Fishers Lane  
Rockville, MD 20857 301-443-4000

SANFORD, Jay P., M.D.  
Dean, Uniformed Services University  
of the Health Sciences  
F. Edward Hebert School of Medicine  
4301 Jones Bridge Road  
Bethesda, MD 20814-4799 301-295-3013

SEATON, Lewis H., Vice Adm., MC, USN  
Surgeon General  
Office of the Chief of Naval  
Operations (OP-093)  
Department of the Navy  
Washington, DC 20350-2000 202-697-0587

JACOBS, Mark, Commander, MC, USN  
Asst. for Professional Training  
Office of the Chief of Naval  
Operations (OP-939D)  
Department of the Navy  
Washington, DC 20350-2000 202-653-1752

EXECUTIVE SECRETARY

LINDBERG, Donald A. B., M.D.  
Director  
National Library of Medicine  
Bethesda, MD 20894 301-496-6221

Institutions that are Separate Organizations Under 18 U.S.C. 208(a) and  
Multicampus Institutions where Conflict of Interest Prohibitions Do Not Apply  
(Standards of Conduct Regulations, 45 CFR Part 73, Amended)

ALABAMA

The University of Alabama System and other Alabama State owned institutions of higher education.

Multicampus Institutions

The University of Alabama system consisting of the University of Alabama, the University of Alabama in Birmingham, and the University of Alabama in Huntsville.

CALIFORNIA

The California Community Colleges, the California State Universities and Colleges, and the University of California.

Multicampus Institutions

The campuses of the University of California.

COLORADO

The Colorado State University, University of Colorado, and other Colorado State owned institutions of higher education.

Multicampus Institutions

The system consisting of Colorado State University, the University of Southern Colorado, and Fort Lewis College.

CONNECTICUT

The Connecticut Community Colleges, Connecticut State University, the Connecticut Technical Colleges, and the University of Connecticut.

ILLINOIS

The Illinois Community Colleges, Illinois State University, Southern Illinois University, the University of Illinois, and Western Illinois University.

**Page 2 - Institutions that are Separate Organizations under 18 U.S.C. 208(a) and Multicampus Institutions where Conflict of Interest Prohibitions Do Not Apply (Standards of Conduct Regulations, 45 CFR Part 73, Amended)**

**INDIANA**

The Indiana University and the other Indiana State owned institutions of higher education.

**Multicampus Institutions**

The Indiana University system consisting of eight universities on nine campuses, with the exception of the system-wide schools: the School of Business; the School of Dentistry; the School of Medicine; the School of Nursing; and the School of Public and Environmental Affairs.

**IOWA**

The Iowa State University, and the University of Iowa.

**KANSAS**

Fort Hays State University, Kansas State University, the Kansas Technological Institute, Pittsburgh State University, the University of Kansas, and Wichita State University.

**LOUISIANA**

Louisiana State University, and other Louisiana State owned institutions of higher education.

**MASSACHUSETTS**

The University of Massachusetts, and other Massachusetts State owned institutions of higher education.

**MICHIGAN**

Michigan State University, the University of Michigan, and Wayne State University.

**MINNESOTA**

The Minnesota Community College system, the Minnesota State University system, and the University of Minnesota.

**MISSOURI**

The University of Missouri, and other Missouri State owned institutions of higher education.

**Page 3 - Institutions that are Separate Organizations Under 18 U.S.C. 208(a) and Multicampus Institutions where Conflict of Interest Prohibitions Do Not Apply (Standards of Conduct Regulations, 45 CFR Part 73, Amended)**

**NEBRASKA**

The University of Nebraska, and other Nebraska State owned institutions of higher education.

**Multicampus Institutions**

The University of Nebraska system consisting of the University of Nebraska-Lincoln, the University of Nebraska at Omaha, and the University of Nebraska Medical Center.

**NEW YORK**

The City University of New York system, and the State University of New York system.

**Multicampus Institutions**

The campuses of the State University of New York.

**NORTH CAROLINA**

North Carolina State, the University of North Carolina, and other North Carolina State owned institutions of higher education.

**OREGON**

**Multicampus Institutions**

The Oregon system of higher education consisting of the University of Oregon, Oregon State University, Oregon Health Sciences University, Portland State University, Western Oregon State College, Southern Oregon State College, Eastern Oregon State College, and the Oregon Institute of Technology.

**PENNSYLVANIA**

Lincoln University, Pennsylvania State University, Temple University, the University of Pittsburgh, and the other State owned colleges and universities in Pennsylvania.

**TENNESSEE**

**Multicampus Institutions**

The campuses of the University of Tennessee.

**Page 4 - Institutions that are Separate Organizations under 18 U.S.C. 208(a) and Multicampus Institutions where Conflict of Interest Prohibitions Do Not Apply (Standards of Conduct Regulations, 45 CFR Part 73, Amended)**

**TEXAS**

East Texas State University  
Lamar University System  
Midwestern University  
North Texas State University  
Pan American University  
Stephen F. Austin State University  
Texas A&M System  
Texas Southern University  
Texas State University System  
Texas Tech University  
Texas Woman's University  
University of Houston System  
University of Texas System  
University System of South Texas  
West Texas State University

**Multicampus Institutions**

The separate universities comprising the University of Texas systems.

**UTAH**

Utah State University and the University of Utah.

**WISCONSIN**

**Multicampus Institutions.**

The separate universities comprising the University of Wisconsin system.

APPLICATIONS APPROVED BY COUNCIL  
(ARRANGED NUMERICALLY BY PROGRAM)

MAY 1986

COUNCIL DATE:

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED <u>1/</u>
1 G07 LM04415-01A1	MEDICAL LIBRARY RESOURCE IMPROVEMENT GRANT	01A1 4,000
1 G07 LM04567-01	MEDICAL LIBRARY RESOURCE IMPROVEMENT GRANT	01 3,992
1 G07 LM04590-01	MEDICAL LIBRARY RESOURCE IMPROVEMENT GRANT	01 44,184
1 G07 LM04600-01	MEDICAL LIBRARY RESOURCE IMPROVEMENT GRANT	01 34,524

1/Approval recommendations are not final but are the basis upon which subsequent BID determinations and negotiations will determine final awards.

APPLICATIONS APPROVED BY COUNCIL  
(ARRANGED NUMERICALLY BY PROGRAM)  
INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE  
COUNCIL DATE: MAY 1986

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 K04 LM00086-01	STUDIES IN THE THEORY OF MEDICAL DECISION MAKING	01 47,520 02 47,920 03 49,820 04 50,720 05 51,120



APPLICATIONS APPROVED BY COUNCIL  
 (ARRANGED NUMERICALLY BY PROGRAM)  
 PROG. CLASS: NATIONAL LIBRARY OF MEDICINE

COUNCIL DATE: MAY 1986

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 G08 LM04417-01A1	HOSPITAL ADMINISTRATION LITERATURE ORIGINAL RECORDS	01A1 55,500 02 11,100
1 G08 LM04446-01A1	LIBRARY/DRUG INFORMATION SERVICE EXTENSION (LIS/DIS)	01A1 77,250
1 G08 LM04476-01A1	LEARNING RESOURCE CENTER ENHANCEMENT	01A1 47,643 02 30,000 03 15,000
1 G08 LM04575-01	NEW JERSEY HEALTH INFORMATION NETWORK	01 200,000 02 182,049
1 G08 LM04585-01	AMERICAN INSTITUTE OF THE HISTORY OF PHARMACY COLLECTION	01 39,192
1 G08 LM04594-01	SOUTHEAST IDAHO HEALTHCARE AUDIOVISUAL PROJECT	01 61,291

APPLICATIONS APPROVED BY COUNCIL  
(ARRANGED NUMERICALLY BY PROGRAM)  
PROG. CLASS:

COUNCIL DATE: MAY 1986

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R01 LM04384-01A1	MEDICAL JOURNALS AND JOURNALISTS IN 18TH CENTURY FRANCE	01A1 11,832 02 12,906
1 R01 LM04395-01A1	A SOCIAL HISTORY OF PATIENTHOOD	01A1 39,909 02 39,527
1 R01 LM04433-01A1	MEDICAL FLORA OF SOUTH AMERICA	01A1 20,405 02 20,249
1 R01 LM04488-01A1	THE ORIGIN OF STRUCTURE IN THE MEDICAL LEXICON	01A1 97,015 02 101,376 03 112,287
1 R01 LM04491-01A1	DESIGN OF ACTIVE TEXT SYSTEMS FOR FACT RETRIEVAL	01A1 128,750 02 121,815 03 128,805
1 R01 LM04556-01	PARTIAL PUBLICATIONS COSTS FOR TICKS OF EASTERN AFRICA	01 13,325
1 R01 LM04563-01	DIABETIC PREGNANCY AND CONGENITAL MALFORMATION	01 21,300
1 R01 LM04572-01	INVESTIGATION IN KNOWLEDGE MANGEMENT	01 317,776 02 344,399 03 370,382
1 R01 LM04514-01	TRANSLATION OF SANSKRIT MEDICAL TEXT ASTANGA SAMGRAHA	01 19,136 02 20,775

APPLICATIONS APPROVED BY COUNCIL  
 (ARRANGED NUMERICALLY BY PROGRAM)  
 COUNCIL DATE: MAY 1986  
 PROG. CLASS: NATIONAL LIBRARY OF MEDICINE  
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE  
 APPLICATION NUMBER PROJECT TITLE AMOUNTS  
 RECOMMENDED

1 R23 LM04584-01		01	55,570
		02	34,930
		03	56,976

A COMPUTER CONSULTANT FOR OPTIMAL NMR IMAGING

APPLICATIONS APPROVED BY COUNCIL - DUAL REVIEW  
(ARRANGED NUMERICALLY)

COUNCIL DATE: MAY 1986

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R01 DA04260-01	DUALS SECONDARY REVIEW: LM DEVELOPMENT OF A COCAINE ANNOTATED BIBLIOGRAPHY	01 68,213
1 R01 HS05558-01	DUALS SECONDARY REVIEW: LM DERIVED THRESHOLDS IN MEDICAL DECISION MAKING	01 40,000

APPLICATIONS APPROVED BY COUNCIL  
 (ARRANGED NUMERICALLY BY PROGRAM) COUNCIL DATE: MAY 1986  
 PROG. CLASS:

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE	APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
	1 R01 LM04577-01	BIOLOGY AND GENDER IN TRADITIONAL CHINA: 1600-1900	01 28,316
	1 R01 LM04583-01	EXPERT AND NOVICE INTENSIVE CARE DECISION MAKING	01 157,689 02 156,092 03 167,227
	1 R01 LM04596-01	DUALS SECONDARY REVIEW: CA DEVELOPMENT OF A PROTOCOL WRITER FOR INVESTIGATIONAL CAN	01 205,704 02 219,171 03 230,249

BOARD OF REGENTS

EXTRAMURAL PROGRAMS SUBCOMMITTEE MEETING

June 16, 1986

ATTENDEES

Subcommittee Members Present:

Dr. Lois E. DeBakey, Chairman  
Dr. Albert E. Gunn  
Dr. Ann K. Randall  
Dr. Eugene A. Stead, Jr.

NLM Staff Present:

Mr. Arthur J. Broering, Acting Associate Director, EP  
Mrs. Ruth Bortz, Grants Management Specialist, EP  
Dr. Jeanne L. Brand, Chief, International Programs Branch, EP  
Mr. Brian Campbell, Grants Management Officer, EP  
Mr. Peter Clepper, Program Officer, EP  
Mrs. Karin K. Colton, Committee Management Assistant, EP  
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP  
Mrs. Rose Marie Holston, Program Analyst, Office of Program Planning and  
Evaluation, EP  
Mrs. Frances E. Johnson, Program Officer, EP  
Mrs. Kathleen Nichols, Grants Management Specialist, EP  
Mr. Richard T. West, Chief, Office of Program Planning and Evaluation, EP  
Mr. Randall Worthington, Program Officer, International Programs Branch, EP

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
NATIONAL INSTITUTES OF HEALTH  
NATIONAL LIBRARY OF MEDICINE  
Bethesda, Maryland

A G E N D A

83rd Meeting of the

BOARD OF REGENTS

9:00 a.m., September 17-18, 1986

Board Room  
Mezzanine of  
National Library of Medicine

MEETING OPEN: All day on September 17 and from 9:00 a.m. to 12:00 noon on September 18.

MEETING CLOSED: From 12:00 noon to adjournment on September 18 for the review of grant applications.

- . CALL TO ORDER AND INTRODUCTORY REMARKS Dr. Albert E. Gunn
- I. REMARKS BY THE ASSISTANT SECRETARY FOR HEALTH Dr. Robert E. Windom
- II. REMARKS BY THE DEPUTY DIRECTOR, NIH Dr. William F. Raub
- V. CONSIDERATION OF JUNE MINUTES TAB 1 Dr. Albert E. Gunn  
(Agenda Book)
- . FUTURE MEETING DATES: Dr. Albert E. Gunn

Winter Meeting: January 29-30, 1987 (Th-F)--CONFIRMED  
Spring Meeting: May 28-29, 1987 (Th-F)--CONFIRMED  
Fall Meeting: October 1-2 OR October 8-9, 1987 (Th-F)--PROPOSED

PLEASE NOTE POTENTIAL CONFLICTS WITH OCTOBER DATES: American Society for Information Science, Annual Mtg. 10/4-9/87, Boston  
Assoc. of Academic Health Centers (AAHC) Fall Mtg., 10/7-10/1987, Pt. Claire, AL  
American College of Surgeons Annual Mtg., 10/11-16/1987, San Francisco

COFFEE BREAK

I. REMARKS BY THE DIRECTOR, NLM Discussion	<u>TAB II</u>	Dr. Donald A. B. Lindberg Board Members
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II. PRESERVATION Discussion	<u>TAB III</u>	Mr. Charles R. Kalina Board Members
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LUNCHEON CATERED IN CONFERENCE ROOM B 12:00-12:45

III. NLM LONG-RANGE PLAN Discussion	<u>TAB IV</u>	Dr. Henry Riecken Board Planning Group, Discussants Board Members
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X. GATEWAYS STATUS Discussion	<u>TAB V</u>	Mr. John Anderson Dr. Robert E. Kahn Board Members
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COFFEE BREAK

. MEDLARS CENTERS IN EGYPT AND THE PEOPLES REPUBLIC OF CHINA	<u>TAB VI</u>	Dr. Richard K. C. Hsieh
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I. SESQUICENTENNIAL	<u>TAB VII</u>	Mr. Robert Mehnert Dr. Lois E. DeBakey, Discussant
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R E C E S S                    \* \* \* \* \*

EVENING CELEBRATION: FESTIVE PROGRAM AND BARBECUE ON NLM GROUNDS  
SPONSORED BY THE FRIENDS OF THE LIBRARY.  
5:00 to 8:00 p.m.

\* \* \* \* \*

R E C O N V E N E: Thursday, September 18, 9:00 a.m.

\* \* \* \* \*



- XII. UNIFIED MEDICAL LANGUAGE SYSTEM TAB VIII  
 Discussion Dr. Donald A. B. Lindberg  
Dr. Harold M. Schoolman  
Ms. Betsy Humphreys  
  
Board Members
  
- XIII. BIOTECHNOLOGY WORKSHOP FINAL REPORT TAB IX  
 COFFEE BREAK Dr. Henry Kissman
  
- XIV. LISTER HILL NATIONAL CENTER FOR BIOMEDICAL COMMUNICATIONS TAB X  
 Discussion Dr. Daniel R. Masys  
Dr. Edward N. Brandt, Jr.  
Discussant  
  
Board Members
  
- XV. REPORT OF THE ACTING ASSOCIATE DIRECTOR FOR EXTRAMURAL PROGRAMS TAB XI  
Mr. Arthur J. Broering  
EP Subcommittee,  
Discussants

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MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS, 12:00-12:30 P.M., SEPT. 18

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- XVI. SUMMARY STATEMENTS (Gray Book)
  - A. Over \$100,000 TAB I Dr. Roger W. Dahlen
  - B. Research TAB II " " " "
  - C. Resource TAB III " " " "
  - D. IAIMS TAB IV " " " "
  - E. Improvement TAB V " " " "
  - F. Publication TAB VI Dr. Jeanne L. Brand
  
- XVII. ADJOURNMENT 12:30 P.M. Dr. Albert E. Gunn

DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH  
NATIONAL LIBRARY OF MEDICINE

BOARD OF REGENTS  
MINUTES OF THE 83RD MEETING  
SEPTEMBER 17-18, 1986

BOARD ROOM  
NATIONAL LIBRARY OF MEDICINE  
BETHESDA, MARYLAND

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
PUBLIC HEALTH SERVICE

THE BOARD OF REGENTS OF THE NATIONAL LIBRARY OF MEDICINE

Minutes of Meeting 1/ 2/  
September 17-18, 1986

The Board of Regents of the National Library of Medicine was convened for its eighty-third meeting at 9:00 a.m. on Wednesday, September 17, 1986, in the Board Room of the National Library of Medicine, Bethesda, Maryland. Dr. Albert E. Gunn, Chairman of the Board of Regents and Associate Dean for Admissions, The University of Texas Medical School at Houston, presided. In accordance with P.L. 92-463 and the Determination of the Director, NIH, and as announced in the Federal Register on July 31, 1986, the meeting was open to the public from 9:00 a.m. to 3:45 p.m. on September 17 and from 8:30 a.m. to 11:00 a.m. on September 18. The meeting was closed from 11:20 a.m. to adjournment at 11:45 a.m. on September 18 for the review, discussion, and evaluation of grant applications. A Board roster is enclosed under Attachment A.

Board members present were:

Lt. Gen. Quinn H. Becker (Ex Officio) (September 17)  
Dr. Edward N. Brandt, Jr.  
Lt. Gen. Murphy A. Chesney (Ex Officio) (September 17)  
Mr. Russell L. Fenwick  
Dr. Albert Gunn  
Mr. Joseph H. Howard (Ex Officio)  
Dr. C. Everett Koop (Ex Officio) (September 17)  
Mr. John K. Lopez  
Dr. Ann K. Randall  
Dr. Grant V. Rodkey  
Dr. Jay P. Sanford (Ex Officio)  
Dr. Eugene A. Stead, Jr.  
Vice Adm. Lewis H. Seaton (Ex Officio) (September 17)

Alternates to ex officio members present were:

Dr. Faye Abdellah, representing Dr. C. Everett Koop.  
Dr. Charles N. Brownstein, representing Dr. David T. Kingsbury.  
Comdr. Mark Jacobs, representing Vice Admiral Lewis H. Seaton.  
Ms. Karen Renninger, representing Dr. John Gronvall.  
Brig. Gen. James B. Sanders, representing Lt. Gen. Murphy A. Chesney.  
Dr. William J. Welsh, representing Dr. Daniel J. Boorstin.

Consultants present were:

Dr. L. Thompson Bowles (Sept. 17)  
Dr. Lois E. DeBakey  
Dr. Edward A. Feigenbaum (Sept. 17)  
Ms. Nina W. Matheson

Unable to attend:

Col. Howard E. Fauver

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1/For the record, it is noted that members absent themselves from the meeting when the Board is discussing applications (a) from their respective institutions or (b) in which a conflict of interest might occur. Only when an application is under individual discussion will the Board member absent himself. This procedure does not apply to "en bloc" actions.

2/The Board of Regents, when considering the extramural programs of NLM, also constitutes and serves as the National Medical Libraries Assistance Advisory Board.

National Library of Medicine staff members attending this meeting included:

Dr. Donald A. B. Lindberg, Director  
Mr. Kent A. Smith, Deputy Director  
Dr. Harold M. Schoolman, Deputy Director for Research and Education  
Mr. John Anderson, Director, Information Systems, OD  
Ms. Duane Arenales, Chief, Technical Services Division, LO  
Dr. Jeanne Brand, Chief, International Programs Branch, EP  
Mr. Arthur J. Broering, Acting Associate Director for Extramural Programs  
Mr. Kenneth Carney, Executive Officer, OD  
Ms. Lois Ann Colaianni, Associate Director for Library Operations  
Dr. George J. Cosmides, Deputy Associate Director, SIS  
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP  
Dr. Richard K. C. Hsieh, Assistant Director for International Programs  
Ms. Betsy Humphreys, Deputy Associate Director for Library Operations  
Mr. Charles R. Kalina, Special Project Officer, OD  
Dr. Henry M. Kissman, Associate Director for Specialized Information Services  
Dr. Daniel R. Masys, Director, Lister Hill National Center for Biomedical  
Communications  
Mr. Robert B. Mehnert, Chief, Office of Inquiries and Publications Management, OD  
Mr. Stanley J. Phillips, Deputy Executive Officer, OD  
Dr. Henry Riecken, Associate Director for Planning and Evaluation  
Mr. Arthur Robinson, EEO Officer  
Mr. Mark J. Rotariu, Chief, Office of Financial Management, OD  
Ms. Susan Slater, Senior Program Analyst, OD  
Dr. Elliot R. Siegel, Special Assistant for Operations Research, OD  
Mr. Richard T. West, Chief, Office of Program Planning and Evaluation, EP

Others present included:

Dr. Robert E. Windom, Asst. Secretary for Health, HHS  
Dr. William F. Raub, Deputy Director, NIH  
Dr. Robert E. Kahn, Pres., Natl. Research Initiatives, Consultant to NLM  
Dr. Vinton Cerf, Vice Pres., Natl. Research Initiatives, Consultant to NLM

## I. OPENING REMARKS

Dr. Albert E. Gunn, Chairman, welcomed the Regents to the 83rd meeting of the Board of Regents. Before making his opening remarks, Dr. Gunn turned to Dr. Lindberg for two special messages. The NLM Director read a telegram from the French National Institute for Medical Research congratulating the Library on its Sesquicentennial. Following that, Dr. Lindberg read a letter from President Reagan to Dr. Gunn complimenting him on his election to Chairman of the Board.

Dr. Gunn introduced two new members of the Board--Ms. Nina Matheson, Director, William H. Welch Medical Library, at the Johns Hopkins University School of Medicine, and Dr. Edward A. Feigenbaum, Professor of Computer Science at Stanford University--and noted that for the first time all surgeons general of the uniformed services were present. He also noted with pleasure the presence of two former Regents, Dr. L. Thompson Bowles and Dr. Lois DeBakey. Dr. Gunn said that there were a number of high-priority issues to be discussed at this meeting. Preservation of printed collections, a subject of great concern to the Library of Congress and others, will be addressed by Mr. Charles R. Kalina and Dr. William J. Welsh. The Board will also address the NLM long-range plan, now in its penultimate form. Another topic of great importance is that of biotechnology, and a bill that would authorize the Congress to establish a National Center for Biotechnology Information at NLM. This topic will be addressed by Dr. Daniel R. Masys, Director, Lister Hill National Center for Biomedical Communications. Other subjects on the agenda at this meeting were: the status of gateways to the NLM databases, the Library's sesquicentennial observances, and the development of a Unified Medical Language System.

## II. REMARKS OF THE ASSISTANT SECRETARY FOR HEALTH

Dr. Robert E. Windom said that he visited the NLM last month and was taken on a tour by the Director. The Library is a valuable institution that needs to make the American medical community aware of its resources and services. The Assistant Secretary characterized his current concerns as "A-B-C-D." "A" is AIDS, the number-one issue today. "B" is the concern with budgets and the difficult problem of how to cut back budgets but not the quality of our services. Communication, "C," is of special interest to him, he said, especially enhancing communication with those outside the government. "D" represents the concern of the Administration with drugs, including abuse, testing, and tampering. In conclusion, the Assistant Secretary said that he is impressed with the dedication and commitment of the staff of the Public Health Service with whom he works.

## III. CONSIDERATION OF MINUTES OF PREVIOUS MEETING

The Regents approved without change the minutes of the June 17-18 meeting.

## IV. DATES OF FUTURE MEETINGS

The Board will meet next on January 29-30, 1987. The proposed dates for the spring 1987 meeting, May 28-29, were confirmed. October 1-2, 1987, were the dates selected for the fall 1987 meeting.

## V. REPORT OF THE NLM DIRECTOR

Dr. Donald A. B. Lindberg said that a number of issues stem from the long-range plan that the Board will consider later at this meeting. These include new foreign MEDLARS centers, the proposed center on biotechnology information, preservation, gateways to other information systems, and the Unified Medical Language System (UMLS). The Director elaborated on the last item, noting that the UMLS has received special funding from the Congress. He said the goal was to create a computing system that reflects the relationship between medical words and concepts internally in the machine; the information seeker would use "ordinary" language in requesting information and be oblivious to how the UMLS transforms that language in going out to different electronic sources that contain the sought-after information. The project to develop the UMLS, said Dr. Lindberg, is a long-term and relatively costly one. NLM will not be working alone, however; the National Cancer Institute, the AMA, and six universities will be among those collaborating with the Library to develop the UMLS. Finally, before making his formal report, the Director drew the attention of the Regents to the remarks of FDA Commissioner Frank Young at the NLM banquet on September 16. Dr. Young addressed the question of the FDA's role in regulating medical software, a matter in which NLM and other NIH components have an interest. The Commissioner described a spectrum--from those areas in which the FDA has a vital interest in regulation to those in which there is little or no regulatory role. The operative factor in this spectrum is primarily the extent to which a physician can exercise judgment independent of the medical software to make a diagnosis or determine treatment.

Dr. Lindberg briefly reviewed the NLM budget--Fiscal Year 1986 ended at a level of \$55.3 million. For 1987, the House allowed \$61.5 million, the Senate \$62 million. Either budget would allow NLM to catch up on basic operations and to expand certain of the new initiatives. The 1988 budget is now being put together. As to staffing levels, NLM presently has a ceiling of 504 full-time equivalents. This is lower than the Library requires for optimum operation. As to individual staff actions: Lloyd Wommack retired as head of the Indexing Section; Belia Ceja has come on the staff as a special assistant to the NLM Director; and Margaret Byrnes has been appointed head of the Preservation Section. Dr. Lindberg drew the attention of the Regents to a new exhibit on the history of American contributions to cardiovascular medicine; the exhibit brochure mentions Board member Dr. Eugene Stead as a prominent contributor to that history.

The proposal by Rep. Claude Pepper in H.R. 5271 to establish a National Center for Biotechnology Information, mentioned earlier by the Chairman, is a true "window of opportunity" that has emerged from the long-range plan. Dr. Daniel Masys and Dr. Henry Kissman of the NLM staff have put together a description of the biotechnology information activities that could be undertaken by NLM in collaboration with microbiologists at NIH and elsewhere. There are perhaps a dozen major computerized information sources in molecular biology; there needs to be an explicit, rationalized relationship among these databases. NLM could provide the management for such an effort. Finally, Dr. Lingberg mentioned several matters briefly: The Government Information Act of 1986, introduced into the Congress by Rep. George Brown, which would establish a Federal agency responsible for managing Federal scientific and technical information; NLM's comments submitted for a study of alternatives to privatizing the National Technical Information Service; and the results of hearings held by Rep. Glenn English about the pricing of NLM databases.

## VI. REPORT FROM THE NIH DEPUTY DIRECTOR

Dr. William Raub, newly appointed Deputy Director of NIH, said that the theme at NIH these days is "doing more with less." Line managers at every level of the department are concentrating on such issues as resource allocation, setting priorities, and productivity. Paradoxically, NIH is faced with big opportunities in biomedical science, big expectations on the part of the scientific community and the public, and big deficits and the resulting effort to circumscribe Federal programs. Under these circumstances, NIH is committed not merely to cope, but to do well. Perhaps the most visible instance of this at NIH is the problem of full-time equivalents (FTEs). Over the last four years, NIH's FTE allocation has dropped by more than 1,000. Nevertheless, programs have continued to mature, new programs have been launched, and the quality of NIH programs has been maintained. Today, there is serious concern at NIH about further erosion in FTEs. Program managers are now faced with harsh trade-offs--if a program is to be expanded, or a new one begun, some existing program will have to suffer. A corollary of this is the requirement to coordinate among NIH programs, and a concern for overlap, duplication, and territorial imperative. In principle, it makes sense to undertake cooperative enterprises; in fact it is a labor-intensive venture to create and maintain such enterprises. Historically, the NIH components have prized their individuality--each has its own constituencies and opportunities. This style has been successful, as has been the notion of asynchrony in the progress of the NIH entities. Recently, there has been the expectation that there should be a greater degree of synchronization among the NIH efforts so as to maximize productivity and available resources. AIDS is one example of an issue that fosters this expectation. Resource sharing is another corollary of the call for more coordination. On another subject, Dr. Raub said that he believes the time is right for the biotechnology information initiative. Not only is NLM the appropriate focus for such activity, but other entities of NIH are ready to cooperate in this effort. Although there will be debate as to whether incremental resources are needed, or whether existing resources should be used, it is clear that we cannot turn away from the challenge of improving biotechnology information resources.

Following Dr. Raub's presentation, there was a discussion about conserving FTEs at NIH by contracting out services; there is a considerable amount of contracting for services in certain areas (including the Library).

## VII. APPOINTMENT OF SUBCOMMITTEES

Dr. Gunn appointed Regents to subcommittees as follows:

Extramural Programs: Dr. Rodkey (Chair), Ms. Matheson, Dr. Randall, Dr. Sanford, and Dr. Stead.

Lister Hill Center: Dr. Brandt (Chair), Dr. Abdellah, Dr. Feigenbaum, Dr. Kingsbury, and Mr. Lopez.

Program Outreach: Mr. Lopez (Chair), Dr. Abdellah, Mr. Cathcart, Ms. Renninger, and Dr. DeBakey (consultant).

Pricing of NLM Services: Mr. Fenwick (chair), Mr. Howard, Mr. Lopez, and Dr. Welsh.

PLANNING GROUP: Dr. Stead (Chair), Mr. Fenwick, Dr. Welsh, and Dr. Bowles (consultant).

Dr. Gunn appointed himself as ex officio to all the subcommittees.

#### VIII. NLM LONG-RANGE PLAN

Dr. Eugene A. Stead, Chairman of the Planning Group, said that the group had reviewed the draft plan and found it unusually well done. He recalled that at the last meeting the Regents had recommended that NLM staff review the proposed budget in the plan and had also requested that the entire report be synthesized into one document for presentation at this meeting. The Regents now have that document before them, which includes a revised budget. The Planning Group now recommends that an overview be added to the plan that includes a vision of the future.

Following Dr. Stead's comments, Dr. Henry Riecken, NLM Associate Director for Planning and Evaluation, reviewed very briefly the process by which the plan was formulated and he described the work done since the last Board meeting--the changes made in the five panel reports, the consolidating of recommendations, and the preparation of a synthesis document. Dr. Riecken said there still remain a few stylistic matters to be attended to, but essentially the plan is complete and will be readied for final publication prior to the convening of the 1987 Congress. The final product will consist of seven documents: the five planning panel reports, a revision of the overall report presently before the Regents, and an even briefer executive summary.

Dr. L. Thompson Bowles, former Board chairman and now a consultant to the Library, commented that the synthesis is an admirable consolidation of the five panel reports and reflects accurately the original mandate of the Board in initiating the entire planning process. He recommended that the Board approve the report, with the understanding that the way it is "packaged" will play an important role in how it is accepted by the variety of interested parties whose support is crucial--the Congress, Chief Executive Officers in the private sector, and others.

Dr. William Welsh commented that the plan is extraordinary. He recommended, however, that the Board establish priorities in the plan. Certain recommendations--such as those relating to the collection itself, the Unified Medical Language System, biotechnology, and preservation--are clearly more important than others. If the Library is to have flexibility in dealing with the Congress and Administration in matters of budget, it must have a clear sense of priorities. Dr. Welsh described how having set priorities at the Library of Congress was of great help in dealing with recent budget cuts. Dr. Brandt agreed that it was important to have a clear set of priorities for the Library; he recommended that the NLM staff prepare priorities for review and monitoring by the Board. Mr. Lopez commented that priorities are important for short-term goals and operations, but that rapid advances in technology would make it useless to attempt to put long-term recommendations in priority order. The plan as written, he said, meets the charge to take a long-term outlook. Dr. Sanford agreed, but noted that there are a number of recommendations in the plan that may be characterized as "short term"--as near as FY 1990. Such recommendations might usefully be put in priority order by the staff, he said. Dr. Rodkey commented on the excellence of the plan and said he thought both



long-term and short-term projections were required; the Board should be involved in increasing Congressional support for the Library. He raised the issue of whether the Library should be relieved from legal liability, perhaps by a law, on the part of those who use its information services. Dr. Gunn agreed that this merited looking into and said the Board should schedule the subject for the January meeting. The Board might at a later date appoint a subcommittee on risk management.

Mr. Fenwick suggested that the plan needed a clear statement of purpose and language that conveyed the significance and importance of the planning process to the Library and to the health community. On the subject of priorities, Mr. Fenwick said that one approach would be to have priorities built into the basic document. Another, preferable approach would be to use the plan as a strategy document with priorities addressed in year-to-date tactical plans that would be prepared by the NLM administration. There was more discussion by various Regents on this subject, the consensus being an agreement with Mr. Fenwick's suggestion not to address priorities in the basic plan. Dr. Feigenbaum said that the document is a superb achievement. He commented that because short-term activity tends to drive out long-term views, the Library must be careful to invest substantial sums for the long run, even though the short run seems to be pressing. Dr. Abdellah suggested that the Library not neglect to involve the private sector in helping to achieve the goals of the plan.

Following discussion, Dr. Gunn restated the motion: to approve the long-range plan as stated in the draft synthesis; to have the NLM staff repackage the entire plan as needed; and for the Board to review and adopt the final plan in January 1987. The motion was passed unanimously.

## IX. PRESERVATION

Mr. Charles R. Kalina, NLM Special Projects Officer, reported on the implementation of that portion of the preservation policy recently adopted by the Board of Regents which notes that much of the problem of preservation of the biomedical literature can be stopped at its source by encouraging the publishing industry to use more durable materials in the production of biomedical literature. Mr. Kalina explained how paper manufacturing chemistry adopted in the middle of the 19th century introduced acids into the papermaking process which, over time, cause deterioration of the paper and thereby threaten the permanence of documents published since then. Use of acid-free paper which is now available for document publishing could alleviate much of the problem. He outlined how paper is manufactured, where acid is introduced in the process, and what the alternatives are to the use of acid-based processes in paper manufacturing. Economic and environmental considerations are conducive to expansion of acid-free paper manufacturing capacity, but because the paper industry is capital-intensive and oriented toward producing a high-volume commodity using a highly efficient but conservative technology, it changes slowly. Acid-free paper represented some 4.4 percent of sheet paper production in 1984. Availability of acid-free paper relative to demand does not appear to be a barrier to its use in publications. Of the 18 acid-free paper manufacturers, 14 make publication-grade paper. Four publication-grade manufacturers make coated paper suitable for journal publishing, accounting for one half of total acid-free paper capacity. Of seven other manufacturers surveyed, one plans to convert a large mill within a year to make acid-free but not publication-grade paper.

During the initial exploration with eight selected publishers of how to increase the use of acid-free paper, it became apparent that awareness among them of the need for paper permanence was variable and that the publishers' selection of paper is heavily influenced by aesthetic and economic considerations. On that basis, acid-free paper is competitive with acidic stock in the higher quality grades. The pilot project of encouraging selected publishers to use acid-free paper will be expanded by identifying additional candidate publishers through a program of testing the paper of incoming publications and providing suggestions on conversion of those for which acidic stock is used. The focused experience of the pilot project will be applied to development of approaches for broader-based campaigns of awareness of the problem and further need to act.

Following Mr. Kalina's presentation, Dr. Welsh commented that libraries, whose purchases account only for a small amount of the nation's paper output (less than 1 percent), are not a driving force in the marketplace. It is certainly a worthwhile undertaking to encourage conversion to acid-free paper, but NLM must recognize several problems, such as that of selecting which works are to be on acid-free paper, foreign versus domestic paper utilization practices, and the considerable costs to manufacturers of converting the papermaking process to acid-free. Dr. Welsh discussed alternative solutions to the problem of deteriorating collections. The mass deacidification project of the Library of Congress should come online in the 1990s. NLM will be allotted a portion of the deacidification facility's capacity. The various archival videodisc projects at the Library of Congress, NLM, and elsewhere are another approach. Microfilming is the traditional response to the problem, but it is quite expensive.

Mr. Lopez mentioned that at yesterday's meeting of the Program Outreach Subcommittee the topic of how to further encourage the use of acid-free paper was discussed. The Subcommittee is proposing to the Regents that the Board hold a hearing on that topic on January 27, 1987. The intent would be to broaden awareness of the need to publish on archival media and to provide a forum in which to openly discuss the problem and means to achieve the desired goal. Participants would include publishers, paper manufacturers, distributors, printers, biomedical researchers, and other professionals concerned with preserving the biomedical literature. One possible outcome of the meeting is the creation of a task force as an expression of the Library's responsibility to keep abreast of progress in acid-free paper use and production, develop recommendations, and mobilize and maintain a sense of urgency for further action.

There was a general discussion of the problems of preservation, including the wisdom of placing emphasis on an "old" preservation technology in the face of new information media. Several Regents expressed support for investigating both the preservation of paper and the utilization of new information storage technologies. Dr. Lindberg assured the Regents that both the new NLM Preservation Plan and the Long-Range Plan place great emphasis on the need for information storage based on modern technology. The concern with paper permanence represents only one aspect of the overall problem of preserving the biomedical literature.

Following discussion, the Chairman announced that the Board would meet as a "committee of the whole" on January 27, 1987 (before the next scheduled Regents meeting) to receive information and conduct hearings on promoting the use of permanent paper. Subsequently, the Board may hold additional hearings on the role of new information storage media in preservation. He said that when the

Board meets as a "committee of the whole," three members would constitute a quorum. Dr. Gunn appointed a hearing agenda working group to be chaired by Mr. Lopez, with Dr. Welsh, Dr. Feigenbaum, Dr. DeBakey (consultant) and Dr. Lindberg as members.

## X. GATEWAYS

Dr. Lindberg introduced Dr. Robert E. Kahn, who he characterized as "probably the most knowledgeable person in the world about telecommunications systems," having designed and built the Department of Defense ARPANET system. Dr. Kahn is serving as a consultant to the Library on the subject of "gateways," working primarily with Mr. John Anderson, NLM Director of Information Systems. Dr. Kahn discussed what the library of the future might look like, taking into account "gatewaying" or interconnectivity among different systems. Using visuals to make his points, he focused on a system with the temporary acronym, ABIDE--Access to Biomedical Information Databank Exchange. There are five requirements for such a system: identify needed information, locate the information, plan a retrieval strategy, execute the strategy, and integrate and present the retrieved information. Dr. Kahn briefly described several new technological opportunities that make this a favorable time to plan for such a system. These are the new powerful and inexpensive workstations, print and display technologies, multiprocessors that will allow processing power many times greater than today's, and natural language systems for interacting with computers. He showed several diagrams that graphically portrayed how ABIDE would be structured--including the creators, enhancers, manipulators, and distributors of medical information. There are a number of desirable attributes of the system's architecture: Existing databanks should be included retaining their integrity; it should be "non-nodal" so that if any part fails, the system remains operable; the system must be available through communication networks; the system should have knowledge of its own content so it can guide users to what they seek; information in ABIDE must be represented only in a few ways; the system should accommodate new content objects and structures; users should be able to query multiple databanks--combining and manipulating them at will; the user should not have to know details of the system to be able to use it; and finally, it should be accessible by different levels of users and different levels of user hardware. Dr. Kahn illustrated how a "network of networks" might work from the point of view of a user whose query is formulated with the assistance of a workstation which then sends the query to one of several gateway processors for access to a variety of databanks. Dr. Kahn described the functional capabilities that would need to be developed to bring such a system into being. This description by Dr. Kahn was an introduction to Mr. John Anderson, who then outlined briefly several compatible near-term projects that NLM could undertake while embarking on such a long-term goal as ABIDE.

Mr. Anderson listed a number of interim functions that could be developed in the near future: online expert help--peer human and artificial intelligence communication; "meta-browsing"--information about information; query language translation--one language for access to several computers--for example, NLM could create a language so that one GRATEFUL MED query would cover MEDLINE, TOXNET and AMANET information; deferred execution for low-priority services; local data manipulation for processing citations on a PC; the creation of personal databases of both bibliographic and other information; enhancing presentation capabilities with color and graphics; simultaneous access to

multiple databases or different computers--starting with access to NLM's own databases; and finally, internal system information and statistics for NLM management. Mr. Anderson presented a "grid" that graphically portrayed how these functional tasks interrelated and how they would lay the groundwork for ABIDE.

Following Mr. Anderson's presentation, Dr. Lindberg commented on the need for such a system by noting that MEDLINE and the Hazardous Substances Data Bank--both systems of which NLM is very proud--cannot "talk" to one another. This is an unfortunate situation. The system that Mr. Anderson and Dr. Kahn have described would, at a minimum, let NLM put its own house in order. Another benefit--one among many--would involve the AMA's MINET medical communications network, which might have access to MEDLINE via a gateway system. Dr. Feigenbaum endorsed completely Dr. Kahn's proposed set of steps--what is being suggested is logical, needed, and doable.

## XI. NEW MEDLARS CENTERS

Dr. Richard K. C. Hsieh, NLM Assistant Director for International Programs, discussed the arrangements under which the two newest international MEDLARS partners--Egypt and China--have joined the network. The total number of foreign partners is now 16. Egypt is online to NLM, initially for MEDLINE only. They hope to expand their service with time. The Chinese operate a "tape" center in Beijing--they run NLM computer tapes on their own machines and provide service within the country. Chinese physicians and researchers will mail or telephone their requests to the central MEDLARS facility, where trained personnel will formulate and run the searches, mailing them to the requesters. NLM technical support was required not only to train their indexers and searchers (as was done with Egypt), but also to train their technical staff in how to mount and run the tapes. China is running the current MEDLINE file only.

## XII. UPDATE ON THE SESQUICENTENNIAL

Mr. Robert Mehnert, NLM Public Information Officer, brought the Regents up to date on activities related to the Sesquicentennial. Over the summer, Mr. Paul Harvey broadcasted three-minute syndicated radio and television items (and also published a column) extolling the Library and its services. Also, Dr. Michael DeBakey taped three public service announcements (15 seconds, 30 seconds, and one minute) about the Library for radio and TV. These are being distributed to 4400 radio and 200 television stations. Both the Paul Harvey and Michael DeBakey programs were arranged through Dr. Lois DeBakey. Mr. Mehnert played both programs for the Regents. He also briefly described other activities since the last Board meeting--the opening of a new visitors center and the special sesquicentennial program yesterday in the Lister Hill Center Auditorium, capped by a banquet. Among upcoming activities are the picnic, sponsored by the Friends of the National Library of Medicine (the evening of September 17), a special exhibit about NLM to be installed outside the HHS Secretary's office, a colloquium on Space Medicine (November 13), and a medical film festival (December 1-5).

Following Mr. Mehnert's presentation, Dr. Lois DeBakey commented that she was pleased that so many Americans have had the opportunity to hear about the Library through Andy Rooney's newspaper column (earlier in the year) and the efforts of Paul Harvey and her brother. This is only the beginning of the Library's outreach program and she hopes the momentum generated during the

Sesquicentennial will continue in future years. Dr. Gunn announced that a reporter for the Los Angeles Times will visit the Library tomorrow to do an article about the Library. (Note: the article was published on October 14.)

### XIII. UNIFIED MEDICAL LANGUAGE SYSTEM

Ms. Betsy Humphreys, Deputy Associate Director for Library Operations, introduced the subject by dividing the substantial and growing body of machine-readable medical information into four broad categories: published literature, clinical records, medically relevant data banks, and knowledge bases. The availability of these computerized data provides the potential for rapid automated retrieval and integration of a variety of information pertinent to a clinical or research question. To realize the potential for integrated retrieval of information, NLM must develop a mechanism for intelligent-switching and linking of the many disparate classifications currently in use in automated medical information systems. Ms. Humphreys used visuals to graphically portray the various existing paths to sources of information. There is virtually no linking of systems served by the different paths. This lack is not due primarily to technological barriers, but to the lack of intellectual links among related concepts in the different bases of information. There is no automated way to take the user's original query and frame it in the variety of different codes needed to access all the different types of relevant information. One possible solution to this problem is the development of a Unified Medical Language System. The goal is to make the myriad of classifications of medical knowledge invisible to the user and to provide one logical path to the whole range of automated biomedical information. There are a number of early steps in this process that would have immediate payoff in better health-care information services. Initial feasibility planning has been done. In the second phase, four UMLS support contracts (\$2 million total) have recently been awarded to perform background studies to obtain key information and, as a by-product of these activities, to create interim products that will have short-term payoffs to the medical community for improved information retrieval.

Ms. Humphreys described briefly the meeting recently held at NLM with the contractors. Their initial tasks include creating a structured file of machine-readable disease descriptions using standard terms; exploring how words and phrases used in one area of medicine can be augmented with semantic features and how a set of attributes and relationships among the terms can be defined using these semantic features; developing a frame-based standardized representation scheme for the clinical manifestations of disease and to map the terminology for signs and symptoms of disease found in INTERNIST-1 knowledge base, the HELP Hospital Information System and NLM's MeSH; expansion of micro-MeSH at the Massachusetts General Hospital; and use of expert systems software to explore the optimum structure for storing thesauri and for displaying them graphically to users. NLM itself is particularly interested in mapping MeSH to the PDQ thesaurus maintained by the National Cancer Institute. Ms. Humphreys outlined the goals of the various projects concerning thesauri, storage and display, and other aspects of the UMLS. There are several projects related to enriching and improving MeSH, NLM's own vocabulary. There are also projects with potential for improving NLM's retrieval systems, including the GRATEFUL MED front-end program. NLM looks forward to significant progress on the UMLS and will report to the Regents in the future.

Following Ms. Humphrey's presentation, Dr. Welsh asked whether the various projects have been categorized as to which are most likely to be of immediate or great benefit. Ms. Humphreys identified several avenues that held great promise for potential payoff. Mr. Howard commented about overlap in the UMLS with the vocabularies of the Library of Congress and the National Agricultural Library; as the thesauri of these libraries evolve, they should be consonant with NLM's. There was a wide-ranging discussion by the Regents about various aspects of the UMLS--its boundaries, the roles of the collaborating organizations, is there a point at which we will lose efficiency by insisting on computerization, and so forth.

#### XIV. LISTER HILL CENTER

Dr. Daniel R. Masys, Director of the Lister Hill National Center for Biomedical Communications, in reviewing the current ongoing programs of the Center, divided them into three categories: computer and information science, image engineering, and educational technology. Within the first category--computer and information science--the Center has a number of goals for its expert system projects in FY 1987. Among these are to enhance AI/RHEUM (Dr. Masys briefly described several enhancements now under way); to test AI/RHEUM methodology at clinical sites; and to develop, in collaboration with NLM's Toxicology Information Program and the CDC, an on-site emergency assistance expert system. Also within the first category are projects to create interactive access to online reference works, using Victor McKusick's Mendelian Inheritance in Man as a test bed, and several projects to develop automated classification and retrieval aids to be used at NLM for assisting indexers and others who process the medical literature.

Within the second category--image engineering--Dr. Masys described several projects related to the continuing Electronic Document Storage and Retrieval (EDSR) program, including studies of through-put costs and quality control, online document delivery via the LAN, and image transmission methods. Another component of image engineering are the Lister Hill plans to complete and evaluate its projects in x-ray imaging systems. Within the third category--educational technology--Dr. Masys briefly described plans to continue work on the TIME (Technological Innovations in Medical Education) project, to develop and test videodisk-based curriculum material--namely that connected with the basic medical pathology curriculum under development, to develop methods for archiving and indexing visual databases using a dermatology database, and to renovate and expand the National Learning Demonstration Center.

Dr. Masys then discussed new opportunities for the Library in the field of biotechnology. He defined the new term as research and development involving biological molecules--especially its central focus of DNA. Biotechnology has evolved out of the traditional science of genetics. Dr. Masys briefly outlined the history of research leading to the new science and described simply the basics of how information is encoded within molecules. It is this information, expanding at a tremendous rate as the result of research, that might benefit from the Library's experience and expertise in handling large quantities of data. Progress in many areas of biomedical research would be greatly speeded if we were to develop new computer-based methods of handling this information. A number of factual databases in the area have already been set up, designed for the most part by researchers with an avocational interest in computers. Gen-Bank, which Dr. Masys described, is perhaps the best-known database of that type. Such databanks, however, are falling further and further behind the

amount of data being generated by laboratories. According to Dr. Masys, there are three major needs: (1) to coordinate and improve the quality of data input to the bases; (2) to develop automated linkages among the databases; and (3) improve user interfaces and retrieval software. There is now a proposal put forward by Rep. Claude Pepper to establish a National Biotechnology Information Center within the Library, that would serve as a national focal point to attack these problems. Even while the establishment of such a center is pending, there are a number of steps that NLM can take in the near future. These include holding workshops on biotechnology information, developing guidelines for terminology and data exchange standards, establishing an intramural program to develop state-of-the-art retrieval software, serving as a clearinghouse for databanks and providing linkages among them, and establishing a visiting scientist program. One possible early project Dr. Masys described briefly would be to link GenBank to the Library's MEDLINE. He also told how the Lister Hill Center's online reference works project could be adapted to serve the purposes of biotechnology databases.

#### XV. BIOTECHNOLOGY WORKSHOP--FINAL REPORT

Dr. Henry Kissman, NLM Associate Director for Specialized Information Services, briefly described a recent workshop on biotechnology nomenclature and information organization held in May 1986 by the National Research Council at the request of the Library which culminated in a published report in August. The participants (from academe, industry, and government) agreed that there is a need for standardizing the information aspects of biotechnology. Among their recommendations: (1) that Federal agencies support current efforts and institute new programs in biotechnology information; (2) the Library should catalyze national and international efforts to develop a standardized subject vocabulary; (3) NLM should coordinate the establishment of a "database of databases" for biotechnology; (4) NLM should establish a cross-referencing system and a thesaurus for biotechnology; (5) NLM should arrange networks of databases utilizing common search software; (6) Federal agencies should support the development of computational resources; and (7) journals and funding agencies should encourage authors to submit data directly to designated databases.

#### XVI. REPORT OF THE ACTING ASSOCIATE DIRECTOR FOR EXTRAMURAL PROGRAMS

Mr. Arthur J. Broering reviewed the Extramural Programs budget that closes out FY 1986. He noted that it showed very little difference from the one presented to the Board at its February meeting, despite the 4.3% Gramm-Rudman-Hollings reductions. NLM was able to offset some of these reductions: \$212,000 were reprogrammed into the MedInfo area and an additional \$75,000 were rescheduled for funding under the Medical Library Assistance Act authority. In addition, the initial FY 1986 budget allocation for the IAIMS initiative was increased from \$1.403 million to \$1.932 million under the noncompeting grants category. This shift in funding was made by awarding approximately \$125,000 each to the four IAIMS institutions, Georgetown University, University of Utah, University of Maryland, and Columbia University. The action was made possible by the change in the MLAA (Medical Library Assistance Act) legislation which raised the annual dollar limitation for individual resource grants from \$200,000 to \$500,000. The awards were determined to be the most effective use of FY 1986

IAIMS funds by the Office of the NLM Director in that they would facilitate full IAIMS implementation at the four pioneering institutions and thus accelerate development of conceptual models. The Board noted that the Extramural Programs Subcommittee was in full agreement with the supplemental awards action taken.

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MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS, 11:20 A.M., SEPT. 18, 1986  
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XVII. REVIEW OF PENDING APPLICATIONS

Before proceeding with the consideration of pending applications, Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP, informed Board members of confidentiality and conflict-of-interest procedures and reminded them to sign, at the conclusion of the grant application review, the statement noting that they had not participated in the discussion of any application which presented a conflict of interest.

The Board reviewed 33 applications of which 16 were recommended for approval and 17 for disapproval. Grant applications recommended for approval by the Board are listed in the summary actions (Attachment "B"). Interim actions taken by the Extramural Programs staff since the June Board meeting were considered by the Board's Extramural Programs Subcommittee and noted and concurred with by the Board of Regents.

XVIII. ADJOURNMENT

The meeting was adjourned at 11:45 a.m., Thursday, September 18, 1986.

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Tuesday, September 16, 1986, 12:30 to 1:30 p.m.  
(Lister Hill Center Subcommittee--List of Attendees under Attachment "C")  
Tuesday, September 16, 1986, 2:00 to 3:00 p.m.  
(EP Subcommittee--List of Attendees under Attachment "D")  
Wednesday, September 17, 1986, 9:00 a.m. to 3:45 p.m.  
Thursday, September 18, 1986, 8:30 to 11:45 a.m.

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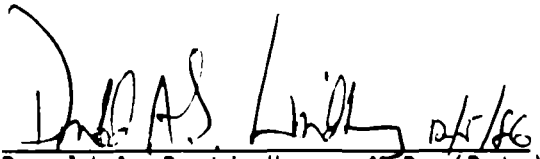


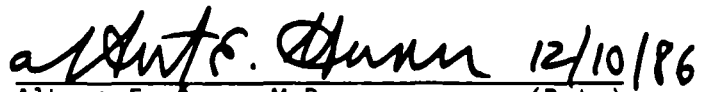
ACTIONS TAKEN BY THE BOARD OF REGENTS

1. The Board approved the long-range plan as submitted in draft, asking NLM staff to repackage the plan as necessary. The final plan to be reviewed for adoption by the Board at its January 1987 meeting.
2. The Board concurred with 33 recommendations of the Extramural Programs Subcommittee. Grant applications for approval are listed in the summary actions (Attachment B).

\* \* \* \* \*

I hereby certify that, to the best of my knowledge, the foregoing minutes and attachments are accurate and complete.

  
Donald A. B. Lindberg, M.D. (Date)  
Executive Secretary

  
Albert E. Gunn, M.D. (Date)  
Chairman

BOARD OF REGENTS OF THE NATIONAL LIBRARY OF MEDICINECHAIRMAN

GUNN, Albert E., M.D. (8/3/87)  
 Associate Dean for Admissions,  
 The University of Texas Medical School  
 at Houston, and  
 Medical Director, Rehabilitation Center  
 University of Texas/M.D. Anderson  
 Hospital and Tumor Institute  
 6723 Bertner Avenue  
 Houston, TX 77030  
 713-792-3580 a.m.  
713-792-4711 p.m.

BRANDT, Edward N., Jr., M.D., Ph.D. (8/3/89)  
 Chancellor  
 University of Maryland at Baltimore  
 520 West Lombard St.  
 Baltimore, MD 21201  
301-528-7002

RANDALL, Ann K., D.L.S. (8/3/89)  
 Professor and Chief Librarian  
 The City College of CUNY  
 5333 North Academic Center  
 138th Street and Convent Avenue  
 New York, NY 10031  
212-690-4271

FENWICK, Russell L. (8/3/88)  
 Senior Vice President (Retired)  
 Bank of America  
 260 Country Club Drive  
 Novato, CA 94947  
415-382-8319

RODKEY, Grant V., M.D. (8/3/88)  
 Assoc. Clinical Professor of Surgery  
 Harvard Medical School  
 25 Shattuck Street  
 Boston, MA 02115  
617-742-4180  
 Mailing Address:  
 15 Parkman Street, Suite 134  
 Boston, MA 02114

LOPEZ, John K. (8/3/87)  
 President  
 Medical Electrobiological  
 Diagnostic Sciences  
 Box 2312  
 Stanford, CA 94305  
415-948-4440

STEAD, Eugene A., Jr., M.D. (8/3/88)  
 Prof. Emeritus of Medicine  
 Duke University  
 Duke Hospital - P.O. Box 3910  
 Durham, NC 27710  
919-684-6587

EX OFFICIO MEMBERSPrimary

BECKER, Quinn H., Lt. Gen., MC, USA  
 The Surgeon General  
 Department of the Army  
 Washington, DC 20310-2300  
202-697-1295

Alternate

FAUVER, Howard E., Col., MC, USA  
 Chief, Graduate Medical Education Branch  
 Education and Training Division  
 U.S. Army Medical Department (SGPE-EDG)  
 Personnel Support Agency  
 Washington, DC 20324-2000  
202-475-1334

Board of Regents Roster (Continued)

<u>Primary</u>	<u>Alternate</u>
<p><u>BOORSTIN</u>, Daniel J., Litt. D.                      Librarian of Congress                      Library of Congress                      10 First Street, S.E.                      Washington, DC 20540 <u>202-287-5205</u></p>	<p><u>WELSH</u>, William J., LL.D.                      Deputy Librarian of Congress                      Library of Congress                      James Madison Memorial Bldg., Room 608                      10 First Street, S.E.                      Washington, DC 20540 <u>202-287-5215</u></p>
<p><u>CHESNEY</u>, Murphy A., Lt. Gen., USAF, MC                      Surgeon General                      Department of the Air Force                      Bolling Air Force Base                      Washington, DC 20332-6188 <u>202-767-4343</u></p>	<p><u>SANDERS</u>, James G., Brig. Gen., USAF, MC                      Commander                      Malcolm Grow Medical Center                      Andrews Air Force Base, MD 20331-5300  <u>301-981-3001</u></p>
<p><u>GRONVALL</u>, John, M.D.                      Actg. Chief Medical Director                      Veterans Administration                      Dept. of Medicine and Surgery                      810 Vermont Avenue, N.W.                      Washington, DC 20420 <u>202-389-2596</u></p>	<p><u>RENNINGER</u>, Karen                      Chief, Library Division 142D                      Veterans Administration                      810 Vermont Avenue, N.W.                      Washington, DC 20420  <u>202-389-2711</u></p>
<p><u>HOWARD</u>, Joseph H.                      Director, National Agricultural Library                      U.S. Department of Agriculture                      10301 Baltimore Boulevard                      Beltsville, MD 20705 <u>301-344-4248</u></p>	
<p><u>KINGSBURY</u>, David T., Ph.D.                      Asst. Director for Biological, Behavioral,                      and Social Sciences                      National Science Foundation                      1800 G Street, N.W., Room 506                      Washington, DC 20550 <u>202-357-9854</u></p>	<p><u>BROWNSTEIN</u>, Charles N., Ph.D., Director                      Division of Information Science                      and Technology                      National Science Foundation                      1800 G Street, N.W.                      Washington, DC 20550 <u>202-357-9572</u></p>
<p><u>KOOP</u>, C. Everett, M.D.                      Surgeon General, PHS, and                      Deputy Assistant Secretary for Health                      200 Independence Avenue, S.W.                      Washington, DC 20201 <u>202-245-6467</u></p>	<p><u>ABDELLAH</u>, Faye G., Ed.D., Sc.D.                      Deputy Surgeon General, and                      Chief Nurse Officer, PHS                      Parklawn Building, Room 18-67                      5600 Fishers Lane                      Rockville, MD 20857 <u>301-443-4000</u></p>
<p><u>SANFORD</u>, Jay P., M.D.                      Dean, Uniformed Services University                      of the Health Sciences                      F. Edward Hebert School of Medicine                      4301 Jones Bridge Road                      Bethesda, MD 20814-4799 <u>301-295-3013</u></p>	
<p><u>SEATON</u>, Lewis H., Vice Adm., MC, USN                      Surgeon General                      Office of the Chief of Naval                      Operations (OP-093)                      Department of the Navy                      Washington, DC 20350-2000 <u>202-697-0587</u></p>	<p><u>JACOBS</u>, Mark, Commander, MC, USN                      Asst. for Professional Training                      Office of the Chief of Naval                      Operations (OP-939D)                      Department of the Navy                      Washington, DC 20350-2000 <u>202-653-1752</u></p>

EXECUTIVE SECRETARY

LINDBERG, Donald A. B., M.D.  
 Director  
 National Library of Medicine  
 Bethesda, MD 20894 301-496-6221

APPLICATIONS APPROVED BY COUNCIL 1/  
 (ARRANGED NUMERICALLY BY PROGRAM)  
 PROG. CLASS: COUNCIL DATE: SEPT./OCT. 1986  
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
2 R01 LM04136-04	THERAPY-PLANNING STRATEGIES FOR CONSULTATION BY COMPUTER	04 111,154 05 135,580 06 144,838
2 R01 LM04382-02	THE NEW EPIDEMIOLOGY: ROBERT KOCH AND CHOLERA	02 14,074
1 R01 LM04385-01A1	INTERNATIONAL SURVEY ON OCCUP HEALTH & SAFETY POLICIES	01A1 9,300
1 R01 LM04461-01A1	EVALUATION AND COMPARISON OF TERM AND CITATION INDEXING	01A1 83,961 02 42,882 03 43,324
1 R01 LM04604-01	ACCESS TO KNOWLEDGE THROUGH MODELS	01 180,622 02 140,841 03 147,192 04 153,984
1 R01 LM04605-01	A COMPARATIVE STUDY OF INDEX TERMS AND FULL-TEXT	01 74,518 02 10,222
* 1 R01 LM04612-01	IMPACT ANALYSIS OF RESEARCH FUNDING: A BIBLIOMETRIC APPR	01 17,620 02 17,480
1 R01 LM04617-01	STUDIES ON COMPUTERIZED RECORD LINKAGE METHODOLOGY	01 58,242 02 60,200 03 63,811

\* AMENDED APPLICATION RECEIVED

1/Approval recommendations are not final but are the basis upon which subsequent BID determinations and negotiations will determine final awards.

APPLICATIONS APPROVED BY COUNCIL 1/  
 (ARRANGED NUMERICALLY BY PROGRAM)  
 PROG. CLASS: COUNCIL DATE: SEPT./OCT. 1986  
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R01 LM04623-01	ANALYSIS OF STUDIES OF THE PERFORMANCE OF DIAGNOSTIC TES	01 282,989 02 303,975 03 311,712
1 R01 LM04633-01	AUTOMATED DECISION-MAKING IN RADIOLOGY	01 102,510 02 104,031 03 77,861

1/Approval recommendations are not final but are the basis upon which subsequent BID determinations and negotiations will determine final awards.

APPLICATIONS APPROVED BY COUNCIL 1/  
 (ARRANGED NUMERICALLY BY PROGRAM)  
 PROG. CLASS: COUNCIL DATE: SEPT./OCT. 1986  
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 G08 LM04607-01	INTERACTIVE MEDICAL INFORMATION SYSTEM IN NEW MEXICO	01 280,075 02 146,112
1 G08 LM04611-01	ALBANY MEDICAL COOPERATIVE COMPUTERIZED LIBRARY NETWORK	01 128,985 02 75,990
1 G08 LM04613-01	IAIMS PILOT IMPLEMENTATION	01 499,483 02 499,897 03 499,371

1/Approval recommendations are not final but are the basis upon which subsequent BID determinations  
 and negotiations will determine final awards.

APPLICATIONS APPROVED BY COUNCIL 1/  
(ARRANGED NUMERICALLY BY PROGRAM)  
PROG. CLASS:

COUNCIL DATE: SEPT./OCT. 1986

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
3 G07 LM04486-02S1	MEDICAL LIBRARY RESOURCE IMPROVEMENT GRANT	02S1 4,000
1 G07 LM04609-01	MEDICAL LIBRARY RESOURCE IMPROVEMENT GRANTS	01 4,000

1/Approval recommendations are not final but are the basis upon which subsequent BID determinations and negotiations will determine final awards.

National Library of Medicine Board of Regents  
Lister Hill Center Subcommittee

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Minutes of Meeting  
September 16, 1986  
12:30 - 1:30 p.m.

Present: Members of the Lister Hill Center Subcommittee:

Edward N. Brandt, Jr., M.D., Ph.D. (Chairman)  
Faye G. Abdellah, Ed.D., Sc.D.  
Mr. John K. Lopez

NLM Staff:

Daniel R. Masys, M.D.

The meeting opened with an introduction by Dr. Masys, covering his prior experience and involvement in medical information systems. Next there was a review of each of the three major program areas of the Lister Hill Center: Computer and Information Science; Communications and Image Engineering; Educational Technologies.

There followed a period of open discussion where members of the subcommittee offered their advice and assistance to the Center and the Director.

The meeting was adjourned at 1:45 p.m.



B O A R D O F R E G E N T S

EXTRAMURAL PROGRAMS SUBCOMMITTEE MEETING

September 16, 1986

2:00 to 3:00 p.m.

A T T E N D E E S

Subcommittee Members Present:

Dr. Grant V. Rodkey, Chairman  
Dr. Ann K. Randall  
Dr. Eugene A. Stead, Jr.

NLM Staff Present:

Mr. Arthur J. Broering, Acting Associate Director, EP  
Mrs. Ruth Bortz, Grants Management Specialist, EP  
Dr. Jeanne L. Brand, Chief, International Programs Branch, EP  
Mr. Brian Campbell, Grants Management Officer, EP  
Mr. Peter Clepper, Program Officer, EP  
Mrs. Karin K. Colton, Committee Management Assistant  
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP  
Mrs. Frances E. Johnson, Program Officer, EP  
Mr. Randall Worthington, Program Officer, International Programs Branch, EP