

**DEPARTMENT OF HEALTH AND HUMAN SERVICES**

**NATIONAL INSTITUTES OF HEALTH**

**NATIONAL LIBRARY OF MEDICINE**

**BOARD OF REGENTS**

**MINUTES OF THE 109TH MEETING**

**MAY 23-24, 1995**

**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 <sup>1/2/</sup>  
May 23-24, 1995

The Board of Regents of the National Library was convened for its one-hundred-and-ninth meeting at 9:00 a.m. on Tuesday, May 23, 1995, in the Board Room of the National Library of Medicine, Bethesda, Maryland. Dr. H. Kenneth Walker, Professor of Medicine at Emory University School of Medicine, chaired the meeting. In accordance with P.L. 92-463 and the Determination of the Director, NIH, as announced in the Federal Register, the meeting was open to the public from 9:00 a.m. to 4:15 p.m. on May 23 and from 9:00 to 11:30 a.m. on May 24. The meeting was closed from 4:15 to 4:45 p.m. on May 23 for the review, discussion, and evaluation of grant applications. A Board roster is enclosed under Attachment A.

**Board members present were:**

Dr. H. Kenneth Walker, Chair  
Ms. Pamela Q.J. Andre  
Ms. Beverly E. Allen  
Dr. Marion Ball  
Ms. Naomi Booker  
Dr. Mary E. Clutter (5/24)

Dr. Edwin Cortez  
Dr. Michael DeBakey  
Dr. Carol M. Newton  
Dr. George H. Nolan  
Dr. Steven J. Phillips  
Dr. James A. Zimble

**Alternates to ex officio members present were:**

Ms. Wendy Carter, representing Dr. Kenneth W. Kizer.  
Lt. Col. Kristen Raines, representing Lt. Gen. Alcide M. LaNoue.  
Capt. David S. Kemp, representing Vice Adm. Donald F. Hagen.  
Dr. Kathleen A. McCormick, representing Dr. Audrey F. Manley.  
Dr. Richard Rowberg, representing Dr. James H. Billington (5/23).  
Col. Theodore F. Yurkosky, representing Lt. Gen. Edgar R. Anderson.

**Board Members Absent:**

Dr. Robert J. Joynt

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. This procedure applies only to individual discussion of an application and not to "en bloc" actions.

2/ The Board of Regents, when considering the extramural programs of NLM, also constitutes and serves as the National 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 Schoolman, Deputy Director for Research and Education  
Dr. Michael Ackerman, Acting Associate Director, SIS  
Mr. Fernando Burbano, Director, Information Systems  
Ms. Sally Burke, Acting Executive Officer, OD  
Ms. Margaret M. Byrnes, Head, Preservation Section, LO  
Ms. Lois Ann Colaianni, Associate Director, LO  
Dr. Marjorie Cahn, Special Expert, National Information Center on Health Services  
Research and Health Care Technology, LO  
Dr. Milton Corn, Acting Associate Director, EP  
Dr. Melvin Spann, Deputy Associate Director, SIS  
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP  
Mr. Earl Henderson, Deputy Director, LHNCBC  
Ms. Betsy Humphreys, Assistant Director for Health Services Research Information  
Dr. Lawrence Kingsland III, Assistant Director for Applied Informatics  
Ms. Eve Marie Lacroix, Chief, Public Services Division, LO  
Ms. Sue Levine, Chief, Office of Financial Management, OD  
Dr. David Lipman, Director, National Center for Biotechnology Information  
Ms. Becky Lyon, Head, National Network Office, LO  
Dr. Alexa McCray, Chief, Educational Technology Branch, LHNCBC  
Mr. Robert B. Mehnert, Chief, Office of Inquiries and Publications Management, OD  
Dr. Elliot R. Siegel, Associate Director, Health Information Programs Development  
Mr. Richard T. West, Chief, Office of Program Planning and Evaluation, EP

**Others present included:**

Dr. Audrey F. Manley, Acting Surgeon General, PHS  
Dr. Philip S. Chen, Jr., Associate Director for Intramural Affairs, NIH  
Dr. Morris F. Collen, Kaiser Permanente  
Dr. Lois E. DeBakey, Professor of Scientific Communications, Baylor College of Medicine,  
Consultant to the Board of Regents  
Dr. Thomas Garthwaite, Deputy Under Secretary for Health, Dept. of Veterans Affairs  
Ms. Deidre Herman, Information Coordinator, AHCPR  
Mr. Tony Mazzaschi, AAMC  
Dr. Richard Roberts, Research Director, New England Biolabs

## **I. OPENING REMARKS**

Dr. H. Kenneth Walker, Chair, welcomed the Regents, consultants, and guests to the 109th meeting of the Board of Regents of the National Library of Medicine. He noted the presence of Dr. Thomas L. Garthwaite, Deputy Under Secretary for Health, Department of Veterans Affairs; Lt. Col. Kristen Raines, Deputy Director for Medical Education of the Army; and Ms. Pamela Q. J. Andre, Director of the National Agricultural Library.

## **II. REPORT FROM THE ASSISTANT SECRETARY FOR HEALTH**

Dr. Audrey F. Manley, Acting Surgeon General of the Public Health Service, reported on the "reinventing" of government now taking place under the leadership of Vice President Gore. The Department of HHS, previously the largest department, is smaller as of March 31, 1995, when the Social Security Administration became an independent agency. Each PHS agency is being asked to downsize and reinvent itself, that is, to identify each of its functions, ask whether the function is essential, whether it can be discontinued, whether it can be done privately, or whether it can be done at a different level of government. Dr. Manley gave the Regents copies of articles from *The Washington Post* that outlined the general direction of the HHS downsizing effort. She described in some detail how one of the downsizing proposals will be accomplished: to merge the Office of the Assistant Secretary for Health with the Office of the HHS Secretary. She also brought the Board up to date on the much-publicized effort to get a new PHS Surgeon General on board. A series of conferences have been held with the far-flung members of the PHS Commissioned Corps to keep them apprised of issues affecting the Corps and to receive their suggestions. Dr. Manley noted a few unheralded tasks of the Commissioned Corps, including responding to Hurricane Andrew, the floods in the midwest, the poison gas incident in Japan, and the Oklahoma bombing.

Following Dr. Manley's presentation, Dr. James Zimble of the Uniformed Services University of the Health Sciences strongly supported the Commissioned Corps and its role in responding to public health challenges, whether man-made or natural disasters.

## **III. REPORT FROM THE NIH DIRECTOR'S OFFICE**

Dr. Philip Chen, NIH Associate Director for Intramural Affairs, reported to the Board on the activities of his office and on a recent study of NIH intramural research that was conducted by an external advisory body. The report was prompted by a leveling off of the overall NIH budget and the possibility that the resources needed to keep the intramural program viable might not be forthcoming. There was also the realization that the NIH Clinical Center--its 500-bed

research hospital--was 40 years old and in great need of modernization. Dr. Chen noted that the part of NLM's intramural research of interest to the external advisory group is that carried on by the National Center for Biotechnology Information. Dr. Carol Newton, member of the Board of Regents, will be the liaison between the NIH Director's office and the Board concerning implementation of the group's recommendations. One of the issues looked at closely by the external advisory group was how NIH scientists are reviewed; one recommendation was that appointment authority for members of scientific review boards, such as the NCBI's Board of Scientific Counselors, be at a higher level--namely the NLM Director, with the NIH Office of the Director also involved in the appointment process. There is also a requirement that all tenured NIH scientists be reviewed at least once every four years; those on the tenure track must be reviewed twice during the period of their evaluation. Dr. Chen described in some detail for the Regents the NIH postdoctoral program, permanent staff scientists, the tenure track system, and the Senior Biomedical Research Service. He also described new methods of communicating among NIH scientists, for example, increased use of the Internet and e-mail, computer bulletin boards, the "Catalyst" newsletter, lecture series, seminars for scientists, roundtable discussions with the NIH Director, and special interest groups. Several recommendations of the external advisory group dealt with technology transfer; one result was the elimination of the "reasonable pricing clause" from CRADAs (Cooperative Research and Development Agreements). Dr. Chen's office is also involved in issues concerning allegations of scientific misconduct--he carries the title "NIH Intramural Research Integrity Officer." He noted that most of the cases that come to his attention involve authorship disputes, broken promises, etc. Other responsibilities of his office concern human subject research, laboratory animal care and welfare, and the PHS Commissioned Corps. Following his presentation, Dr. Chen answered questions about the prospects for upgrading the Clinical Center (uncertain), the percentage of approved grant applications that are funded (less than one-quarter), the prospects for NIH staffing levels (current plans call for a 15% reduction over 5 years), and the amount of discretionary funds at the NIH Director's disposal (1%).

#### **IV. CONSIDERATION OF MINUTES OF PREVIOUS MEETING**

The Regents approved the minutes of the January 24-25, 1995, meeting, with a correction in the first sentence of the last paragraph of the Report on International Programs, as follows: Following Dr. Siegel's presentation, Ms. Beverly Allen commented that the Atlanta-Tblisi partnership (which Dr. Siegel had mentioned) is a many-pronged program sponsored by the American International Health Alliance, Morehouse School of Medicine and Emory University Medical School.

## VII. FUTURE MEETING DATES

The Board will meet next on September 26-27. Next winter's meeting will be January 23-24, 1996. The proposed dates of May 21-22, 1996, were accepted and confirmed for next spring's meeting.

## VIII. REPORT FROM THE NLM DIRECTOR

Dr. Lindberg reported that the 1996 NLM budget as requested by the President is \$139.5 million. This is a \$10 million increase over the 1995 budget, the increases being primarily in HPCC and AIDS. The request has language that specifies some \$4 million in "no-year" money--funds that do not have to be spent within the fiscal year they were appropriated. This will be helpful as NLM undertakes the lengthy process of procuring a new MEDLARS system. There is a proposal in the House to appropriate at a level 5% below 1995; a similar proposal in the Senate is pegged at 10% below 1995. Both would be extended at a flat rate to the year 2000. How the 1996 NIH (and NLM) budget will play out is uncertain at this time. Dr. Lindberg noted that Senator Hatfield has introduced an amendment that would protect the NIH appropriation. He reported on the recent Senate hearings on NIH appropriations; NIH was asked to submit its ideas about research opportunities in writing. Dr. Lindberg said that NLM's FTE level continues to decline--NLM is now at 566, down from the 596 ceiling of six months ago. A number of senior staff members have recently retired: Kenneth Carney, Executive Officer; Dr. George Cosmides of the Specialized Information Services Division; Harry Bennett of the Office of Computer and Communications Systems; and Peri Schuyler of Medical Subject Headings. Two new appointments are Dr. Alexa McCray, Chief of the Lister Hill Center's Cognitive Sciences Branch, and Dr. Mel Spann, NLM Associate Director for Specialized Information Services. In the area of legislation, Dr. Lindberg briefly reported on the Health Data Privacy and Standards bill that, among other things, calls on NLM to ensure controlled vocabularies for use in computer-based patient records, and the recently enacted Paperwork Reduction Act. This latter legislation has a serious impact on government information programs. A recent (March 8) memorandum from Vice President Gore to the HHS Secretary reiterating the importance of health data standards, privacy issues, enhanced information services for consumers, and telemedicine. The Secretary has created committees to study those four areas, Dr. Lindberg said, and NLM is represented on all. He expanded on Dr. Manley's discussion of PHS reinvention activities, saying that NLM was the first "reinvention lab" at NIH. Our approach is to focus on the hardware and software required for new computer systems that will replace NLM's venerable legacy systems. Part of this overall reinvention effort is a streamlining activity: Mr. Smith and Mrs. Colaianni are leading an effort to look at each area of the NLM with the aim to improve services. The Director noted that NLM is now beginning the process of recompeting the five-year Regional Medical Library contracts. The National Network of Libraries of Medicine, of which the RMLs are a key part, is a tremendously successful program that has been in existence since the mid-sixties. Dr.

Lindberg thanked Regents Ms. Wendy Carter, Dr. Edwin Cortez, and Dr. Steven Phillips, who have agreed to help in the review process. Finally, Dr. Lindberg reported on a recent meeting, Public Health Applications in the National Information Infrastructure, held at NLM's Lister Hill Center. Dr. Philip R. Lee, Assistant Secretary for Health, was a prime mover in arranging the meeting; NLM's Betsy Humphreys was also involved in the arrangements. Dr. Lindberg said that one result of the meeting was the realization that the public health field is not making optimum use of existing high-technology telecommunications capability. Another is that public health has drifted into being responsible for providing care for poor people--laudable but irrelevant to the basic functions of traditional public health. The importance of privacy and security, and the need for an electronic patient record were reaffirmed at the meeting. Public health professionals should become more involved in outreach and training in information technology. Dr. Zimble commented that even though public health professionals make up a minority of users of such information services as NLM's, they have the potential to have the greatest effect on the health of citizens. In response to a question from Dr. DeBakey, Betsy Humphreys said that there will be a written action plan resulting from the meeting. Also, the meeting was videotaped and the tapes will be available from NLM and the Regional Medical Libraries. Following a brief discussion by Betsy Humphreys on how the conference dealt with the health information needs of managed care, Dr. Kathleen McCormick reported that a white paper on these needs is being prepared under the aegis of the National Information Infrastructure Working Group on Health Information Applications. Dr. Walker called the attention of the Board to what he called "the outstanding summary" of the NLM's programs provided by Dr. Lindberg to the appropriation subcommittee: "It is beautifully calculated to be understood by and utilized by the Congress."

## **IX. RETIREMENT OF BOARD MEMBERS**

Dr. Lindberg presented copies of *A History of the National Library of Medicine* to retiring Board members Ms. Beverly E. Allen and Dr. H. Kenneth Walker. He also presented a gavel to Dr. Walker as a memento of his serving as Chairman of the Board.

## **X. LONG-RANGE PLANNING PANEL ON INTERNATIONAL PROGRAMS**

Ms. Susan Buyer, of NLM's Office of Health Information Programs Development, distributed to the Board the final report of the Long-Range Planning Panel on the Education and Training of Health Science Librarians. The report's recommendations are now being implemented by NLM with the help of a new extramural program. Ms. Buyer next discussed with the Board the possible need for a special planning effort for NLM's international programs. She described the process of constituting a panel of expert members to conduct the review and prepare a report. Dr. Elliot Siegel, NLM Associate Director for Health Information Programs Development, next laid out for the Board a number of policy issues on which NLM requires

guidance and that might be considered by such a panel. Dr. Siegel, whose office now has oversight of NLM's international programs along with NLM's planning function, presented at the last Board meeting a historical overview of NLM's international programs, including the 20 non-U.S. MEDLARS partners through which NLM provides MEDLINE services to health professionals around the globe. NLM receives frequent requests for the establishment of new international relationships and new MEDLARS Centers. Recent dramatic changes, for example in geopolitical boundaries, how science is conducted and communicated, and telecommunications capabilities, affect how NLM should conduct its international activities in general and, in particular, how it should respond to such requests. The policies that served us in the seventies and eighties need to be reexamined, Dr. Siegel said. Could there be more than one Center in a country? What should NLM's policy be toward serving individual foreign health professionals via the Internet? To what extent should NLM cover the non-U.S. medical literature in its databases? The NLM would benefit greatly from guidance from a Long-Range Planning Panel on International Programs.

Following these presentations, Dr. Marion Ball said that, as President of the International Medical Informatics Association for the last three years, she has learned of the great esteem in which the NLM is held and the enormous influence it has in the international arena. The International Congress of Medical Librarians just finished meeting in Washington, D.C.; several hundred of the attendees visited the NLM and there was considerable interest in the Library's programs and plans. The World-Wide-Web has condensed the world; telemedicine has great potential benefit for worldwide medicine; we have just scratched the surface of the educational component--how do we teach people to get on the information superhighway? How can NLM work with other international organizations--the World Bank, the State Department? How can the National Network of Libraries of Medicine become, in effect, an *International* Network of Medical Libraries? NLM needs a strategy and plan to deal with these and other international issues. The timing is right, Dr. Ball said, for a Planning Panel, under the Board of Regents, to look into NLM's international programs. Ms. Beverly Allen, who is now involved in an international program between her institution and Eastern Europe, agreed that the NLM is seen as an international leader in medical information. She offered to suggest candidate members for the panel. Dr. Michael DeBakey commented that at one time we considered the NLM a "national treasure"; it has in fact become an international treasure. He agreed that the time is right to review the Library's various international arrangements. Dr. Carol Newton suggested that a representative of the National Science Foundation's foreign programs might be considered for the panel, as might an official of the National Academy of Science. She noted that the NLM has much to gain from international programs, such as foreign organizations being responsible for identifying, preparing, and entering their literature into NLM's computerized systems. Ms. Pamela Andre suggested that NLM might look for a model to the National Agricultural Library, which has worked for more than 20 years with the United Nations and the international AGRIS system.



The Board of Regents unanimously voted to establish an NLM Long-Range Planning Panel on International Programs. Dr. Walker appointed Dr. Marion Ball as the Board's liaison.

#### **XI. FRANK B. ROGERS' AWARD**

Dr. Walker presented to Ms. Peri Schuyler, recently retired Head of the Medical Subject Headings Section, the 1995 Frank B. Rogers' Award, citing her leadership in expanding the role of MeSH and improving the quality of the vocabulary, and her playing a key role in the development of the Unified Medical Language System.

#### **XII. NLM DIRECTOR'S AWARD**

Dr. Lindberg presented the 1995 NLM Director's Award to two staff members: Mr. Ennis Wilson and Dr. Harold M. Schoolman. Mr. Wilson, of the Office of Administrative Management Services, was cited for his superior work in developing the Library's property management program. Dr. Schoolman, of the Office of the Director, received the award for his invaluable contributions to and overall effective leadership of the NLM.

#### **XIII. REVIEW OF NLM'S OUTREACH ACTIVITIES**

A review of NLM's outreach program was presented by Ms. Karen Wallingford of the Office of Health Information Programs Development, Dr. Angela Ruffin, Outreach Librarian, of the National Network Office, and Ms. Karen Ginter, Manager of MEDLARS Promotion of the Bibliographic Services Division. Ms. Wallingford said that a detailed report of NLM's outreach activities over the past five years was prepared and distributed to the Board members prior to the meeting. In 1989 there were 16 outreach projects; by the end of 1994, there were almost 300 projects involving 500 institutions. The report is organized by the four major areas of outreach activities recommended in the 1989 report of the outreach planning panel headed by Dr. Michael DeBakey. The first area is outreach to health professionals, utilizing the 4500 member institutions of the National Network of Libraries of Medicine to serve as a field force. More than 21,000 health professionals have been reached directly through the efforts of NN/LM members. The growth of NLM's online user network is one gauge of outreach success: from 30,000 user codes in 1989 to 100,000 by 1995. Building on earlier efforts, Ms. Wallingford said there is now a need for (1) more targeted outreach efforts (such as NLM's successful AIDS information outreach program), (2) working with the public library community--perhaps as part of an expanded NLM consumer health agenda; and (3) the development of benchmarks and further expertise in evaluation methodology. The second area of the original outreach report was to emphasize strengthening of hospital access to national information sources. Over the past five years NLM has been providing grant assistance to health institutions

to help them establish access (including Internet access) to online information. Several statewide networks have resulted from such support--in North Dakota, Nevada, Colorado, and Arizona. Ms. Wallingford noted that larger institutions have been the primary beneficiary of such programs to date. Some 70% of academic medical libraries have Internet connections while fewer than 25% of the hospital libraries have such access. NLM should now concentrate on helping smaller hospitals and managed care organizations get hooked up. The third area focused on was training in health information management. There is a need for individuals who are cross-trained in information management, computer applications, and the biomedical sciences. NLM supports institutional training grants and fellowships for such multidisciplinary training. The recently completed Planning Panel Report on the Education and Training of Health Sciences Librarians is a blueprint for further NLM activities in this area. The final area the panel emphasized was for a new generation of products and services. NLM has conducted various user studies to determine the usefulness of its services. The Library has also employed a variety of means to promote awareness of its products and services, including exhibits, press releases, public service announcements, satellite broadcasts, and special activities such as those conducted by the Friends of the NLM. New services have resulted from NLM's R&D efforts, such as Clinical Alerts, new databases on health services research and practice guidelines, and improved versions of Grateful Med. The Library has embraced the Internet as a new way to distribute information and publications electronically. Summing up, Ms. Wallingford said that she believes NLM has accomplished much of what it set out to do in 1989. Much remains to be done, however. There are still many U.S. health professionals who do not benefit from--have not even heard about--NLM's information services.

Dr. Angela Ruffin described the reporting mechanisms put in place in 1990 by NLM's National Network Office to gather information related to the outreach projects being funded through and conducted by the NN/LM. Information and data collected proved extremely valuable in preparing the present report on NLM outreach activities. The 1989 outreach planning panel report recommended that NLM and the Regional Medical Libraries should build a more active partnership and that network members should act as a field force for NLM products and services. Among the actions taken was the reconfiguration of the national network from seven to eight regions and the enhancement of the RMLs' outreach responsibilities. Direct outreach funding to member institutions was provided in the form of Grateful Med purchase orders (58 awards over three years, each for up to \$25,000). The objective of this program was to identify health professionals not affiliated with an institution with a medical library, and to introduce them to Grateful Med and the services available through the NN/LM. Dr. Ruffin provided statistics on the number and nature of the Grateful Med projects and the health professionals they reached. Dr. Ruffin also described other outreach mechanisms being employed by network members to reach unaffiliated, rural, and minority health professionals. These include outreach subcontracts, library improvement grants, technology awareness conferences, and exhibits. An outreach or education coordinator has been appointed in each Regional Medical Library. This person travels throughout the region, demonstrating Grateful Med and introducing to health professionals the services available through the network. The RMLs have instituted 56

outreach, special project, and consultant subcontracts with institutions in their regions. One focus of special activity was the lower Mississippi delta region, where 25 hospitals that lacked on-site access to MEDLINE received library improvement grants that funded computer workstations, Grateful Med software, training and support from the RML, and document delivery. Thirteen technology awareness conferences were sponsored by the RMLs, most co-sponsored with other institutions, associations, government agencies, and the Friends of the NLM. Subjects of the conferences included telemedicine, Internet, interactive multimedia programs, and virtual reality. Exhibits are a method of outreach conducted by the RMLs: They sponsored 360 exhibits at national meetings from October 1992 to September 1994 and an additional 207 at local and state meetings during that same period. Dr. Ruffin concluded by describing how the RMLs will be asked to continue, with some redirection of emphases, their outreach activities when their contracts are re-competed for the period 1996 through 2001.

Ms. Karen Ginter serves as a focal point for new ventures, including new methods of pricing and distribution, that demonstrate the value and efficiency of online searching. Examples: special Flat-Rate and Fixed-Fee pricing programs, distribution of Grateful Med in bookstores, and promotion of Grateful Med through joint marketing agreements with producers of other products. Flat-Rate and Fixed-Fee arrangements charge a one-time fee for unlimited access. There are now seven Flat-Rate agreements with major medical associations, with the requirement that at least 1,000 members will subscribe. Unlimited access for one year is provided for \$200. Fixed-Fee arrangements are those made with an institution for *all* its members. Currently there are 25 Fixed-Fee arrangements, serving over 80 sites with more than 20,000 user ID codes, serving 25,000 health professionals and 125,000 students. Access must be via the Internet. The fees range from \$5,000 to \$100,000. One notable example is the University of Oklahoma, which has formed a statewide consortium of 19 institutions. Another is the University of Illinois, whose Fixed-Fee program began in January 1994. Beginning at a level of searching worth about \$21,000, the amount increased to \$100,000 by the end of the first year and is projected to reach an equivalent of \$250,000 worth of searching by the end of this year. The University pays a fixed annual fee of just under \$75,000. As to new distribution methods, Ms. Ginter described how a pilot study determined that Grateful Med could be successfully distributed in college book stores--the software will now be distributed through the National Association of University Book Stores. In addition, there are joint marketing agreements with the producers of other health-related products and programs, including the University of Wisconsin's CHES, UTEL's telemedicine products, Reuter's GeoMedica, and the Arista Medical Marketing Group, which offers Grateful Med as a premium when it conducts focus group sessions with doctors. All of these programs remove barriers to access and increase the visibility of online searching in clinical medicine, research, and education.

Following these reports, Dr. Lois DeBakey, consultant to NLM, complimented the staff for condensing five years of effort into a fine overview presentation. She is pleased that NLM so aggressively pursued the recommendations of the 1989 outreach report and achieved such notable success. Although the statistics presented in the current outreach report are impressive,

there is still a way to go before Dr. Lindberg's goal of seeing Grateful Med in the hands of every health professional is reached. Dr. DeBakey said that it might be useful for future outreach efforts to determine from new users their degree of satisfaction with the Grateful Med/MEDLINE service and to see what suggestions they have for improvement. She suggested that perhaps a second outreach panel might be convened to provide additional analyses and feedback. She also suggested workshops for small institutions to assist them in obtaining grant and outreach funds from NLM. Increasing demands for access by the general public to health information is inevitable, Dr. DeBakey said, and NLM should define in advance how far it is willing to go in providing service to the public.

Ms. Wendy Carter commented that NLM has met and even exceeded the expectations in the 1989 outreach report. She said that the nonproprietary "feel" of Grateful Med and MEDLINE are an asset--it conveys the idea that NLM is concerned not so much with *how* health professionals have access, but that they in fact *do* receive its benefits. The present report strikes a balance between the information haves and have-nots, that is, there is activity aimed both at high-tech users and those without technological sophistication. Ms. Carter raised several issues. What about information to consumers? Should NLM work with public libraries in this area? Should NLM concentrate on reaching health professionals directly or through NN/LM libraries? The model of large institutions taking several smaller libraries under their wing in order to apply for a connections grant from NLM has been very successful. Lastly, it is a challenge for NLM to deal with the problem of outcomes evaluation. Dr. Michael DeBakey, who chaired the Long-Range Panel that produced the 1989 outreach report, also characterized the result of NLM's implementing its recommendations as "spectacular," and he complimented the NLM staff for their dedication. Referring to the current report, Dr. McCormick said that NLM might consider moving the recommendations forward to the summary section. She also made several recommendations for changes in wording. Dr. Carol Newton and Dr. Michael DeBakey both echoed the suggestions that NLM consider its role in providing health information to the public. Dr. Marion Ball suggested adding to the current outreach report references to several outreach documents, such as to the proceedings of the joint conference on the library building of the future, which NLM cosponsored with the University of Maryland. Ms. Naomi Booker commented that there were several natural constituencies that might be incorporated into NLM's strategy: the National Health Service Corps, Area Health Education Centers, Community Health Centers, and departments of public health in urban areas--especially where there are large minority populations. She also suggested that more uniformity in reports from the different Regions, especially in listing impediments, would be helpful. Because medical records professionals have begun to call their field health information management, NLM should consider eschewing this term in the report in favor of health science information management.

#### **XIV. HEALTH SERVICES RESEARCH ACTIVITIES**

Ms. Marjorie Cahn of NLM's National Information Center on Health Services Research and Health Care Technology (NICHSR), addressed a number of current activities of the Center. There is an NLM contract-funded initiative to develop training for librarians in health services research that focuses on familiarization with the domain, knowledge of information sources, and expertise in obtaining access to them. NICHSR has already begun to implement several of the ten core modules identified. One health services research course was taught at the recent Medical Library Association annual meeting in Washington, D.C. Ms. Cahn described a training survey undertaken as part of the training activity. Forty-two academically based health services research centers, 21 schools of library science, 15 health sciences libraries, 6 associations were contacted to see whether they have materials or sponsor courses related to the 10 training modules on health services research. Although only one or two schools of library science had a focus on health services research, there were indications they would like to move into this area. The associations and government organizations surveyed had useful materials on health services research. The training plan recommended by the contract has two components: lifelong learning and professional preparation. NICHSR is now devising a matrix that will array the objectives of the training, the core modules, what materials exist, and what materials must be developed. Where courses exist, they will be adapted and used in modules. Institutions that are already training health services researchers will be approached by NLM to become partners with library science schools. The current training schedule calls for a course similar to that recently offered at MLA to be taught at the University of Kentucky in August, at MLA's mid-Atlantic chapter meeting in October. A specialized module on health services research databases will be taught at NLM in September. NICHSR will soon share the results of the training contract with the members of the National Network of Libraries of Medicine.

The second part of Ms. Cahn's presentation concerned NLM's HSTAT (Health Services Technology Assessment--Text), a free full-text electronic resource. There are four separate databases in HSTAT: all AHCPR Guidelines; all NIH consensus development conference reports and technology assessment documents; the U.S. Task Force Guide to Clinical Preventive Services; and documents used by the CDC's AIDS/NIH Treatment Information Service (ATIS). HSTAT is available at a variety of access points: full-text retrieval system via modem or telnet; the World-Wide-Web; ftp to NLM's publications server; and the NLM Gopher. Although the HSTAT full-text retrieval system is available via Grateful Med, Ms. Cahn demonstrated the database to the Regents using a telnet connection and then via World-Wide-Web using Netscape. HSTAT has proved very popular with providers and patients. In an average month, the full-text retrieval system is accessed 200 times by modem users and 300 times by telnet users. The World-Wide-Web HSTAT has been growing dramatically, both domestically and internationally. Last month it was accessed about 4800 times. FTP and Gopher access exceeded 25,000 items between May and December 1994.

After Ms. Cahn's presentation and demonstration, Dr. Edwin Cortez suggested that NLM should collect HSTAT usage patterns, in addition to counting "hits" and the comments NLM collects via its "comments" feature. The training component for health services research is much needed and is well thought out. It is important for NLM to provide leadership and to emphasize to the library schools the need for and the importance of training in health services research. Collaborative arrangements between the professional associations and the library schools is another avenue that should be pursued. Dr. Cortez also suggested that NLM should find out how many full-time faculty members teaching in health sciences librarianship have a research degree. Dr. McCormick commended NLM for its accomplishments in this area. Integrating HSTAT into the Internet and the WWW will make it easily and quickly accessible to doctors. She said that NLM might work with NTIS and other agencies to develop joint marketing agreements so that HSTAT would be even more widely accessible. Dr. McCormick suggested that HSTAT might also include the guidelines put out by SAMHSA--the PHS Substance Abuse and Mental Health Services Agency. Similarly, information on health services research being published by NIMH, NIDA, and NIAAA should also be considered for inclusion, as should CDC's guidelines on immunization. Dr. McCormick introduced Deirdre Herman of the Agency for Health Care Policy and Research, who distributed to the Regents a new CD-ROM that contains the first 15 AHCPR clinical practice guidelines and a search retrieval engine that allows all the guidelines to be searched simultaneously by free text. The disk will be available this fall through the Government Printing Office sales program. Dr. Carol Newton commented that health services research requires considerable statistical sophistication on the part of students, and that this consideration should be built into any training that NLM develops or endorses.

#### **XV. 1995 UMLS KNOWLEDGE SOURCES AND LARGE-SCALE VOCABULARY TESTING**

Ms. Betsy Humphreys, NLM Deputy Associate Director for Library Operations, said that the purpose of the Unified Medical Language System is to make it easy for health professionals and researchers to retrieve and integrate information from disparate machine-readable sources. These sources may be patient record systems, literature databases, full-text sources, factual databanks, knowledge-based systems, etc. The UMLS approach is to build knowledge sources that can be used by many different systems to overcome the significant information retrieval problems that result from (1) disparities in the language used by the different systems and (2) difficulties in determining which of many information sources might be relevant to a particular inquiry. The UMLS project involves a combination of in-house research at NLM, contracts with medical informatics research groups, and some 600 experimental UMLS users worldwide. Because the UMLS relies on high-speed communications links, it is considered to be part of NLM's High-Performance Computing and Communications effort. Ms. Humphreys then focused her remarks on several recent experimental applications of the UMLS Metathesaurus (which is one of the four UMLS Knowledge Sources). Several of the experiments sought to

employ the Metathesaurus to help users get better retrieval from MEDLINE. The Internet Grateful Med, one of these applications, was demonstrated to the Board of Regents at its last meeting and was enthusiastically received at the just-completed Medical Library Association annual meeting. The University of Washington has recently reported their experiments showing that clinicians improved their search results using an interface based on the Metathesaurus. The Department of Veterans Affairs, in its work on computer-based patient records, has deployed a clinical lexicon based on the Metathesaurus to more than 40 VA sites. The Metathesaurus and the UMLS Semantic Network also form the basis of the Medical Entities Dictionary that is used by Columbia-Presbyterian Medical Center. As a last example, the University of Buffalo and the American Association of Dental Schools, have completed a beta test of a set of curriculum analysis tools that employ a controlled vocabulary derived in large part from the Metathesaurus.

The 1995 UMLS Knowledge Sources, to be released in June, will have several features of interest to applications developers including expanded Metathesaurus content and ASN-1 versions of the four UMLS Knowledge Sources (along with the ASN-1 toolkit developed at NLM). Following extensive testing over the past year, the Internet-based UMLS Knowledge Source server will become available to all UMLS users. Ms. Humphreys briefly described the component vocabularies of the 1995 Metathesaurus, which is more than double the size of the first (1990) version. She showed several sample Metathesaurus records to the Regents. The lack of a standard U.S. health vocabulary has frequently been cited as a primary stumbling block in the effort to develop robust computer-based patient record systems. NLM believes that the UMLS Metathesaurus can assist in several ways to help achieve an eventual standard for use in patient care and public health. For example, it distributes many different vocabularies in a common and explicit database format. Also, the Metathesaurus links the many vocabularies to each other, to statistical and billing codes, and to vocabularies used in a range of decision support tools (including practice guidelines, MEDLINE, etc.). The Metathesaurus represents multiple hierarchical perspectives and subsetting approaches, a necessary prerequisite to building efficient data entry systems for patient care and for public health. It also provides a reasonable forward migration path from the current vocabularies to any eventual standard. Those now developing applications based on the Metathesaurus should be able to count on being able to transition smoothly to any eventual standard U.S. health vocabulary. To help bring this about, NLM and the Agency for Health Care Policy and Research are cosponsoring a large-scale test that uses UMLS technology to determine the extent to which a set of existing vocabularies taken together cover the concepts and terms necessary to record health care and public health information. The test set will include (among other sources) the 1995 Metathesaurus. The test will begin this fall, and among the participants will be the eight cooperative agreement sites funded by NLM and the AHCPR last fall, the Department of Veterans Affairs, other PHS and DOD agencies, state health agencies, and other entities, including commercial software developers. We hope that the test will show to what extent existing vocabularies cover the terminology and concepts needed, where the gaps are, and what it would take to maintain a standard health vocabulary.

Following Ms. Humphreys' presentation, Dr. Carol Newton said that the phenomenal accomplishments in the UMLS program to date show the wisdom of the original concept. She said that there has been excellent cooperation among the many different participants in the undertaking--government, academic, and private. She asked whether there are any similar or analogous "interfacing" undertakings elsewhere in the world. Ms. Humphreys said there is interest in doing something similar in the field of engineering. Although, there are examples of a connection being built between two particular vocabularies, she is not aware of anything comparable in scope to the UMLS. In response to a question from Dr. Walker, Ms. Humphreys said that the present effort had its beginning when Dr. Lindberg arrived as director of NLM and brought with him the concept and the vision of a UMLS.

## **XVI. REPORT FROM EXTRAMURAL PROGRAMS**

### Budget

Dr. Milton Corn, Acting Associate Director for Extramural Programs, reported briefly on EP's budget for FY 1995. He stated that this is the last Board meeting that will have an effect on the FY 1995 budget. EP usually tries to save approximately 20-25 percent of the total budget for the final quarter of the fiscal year. September's meeting results will be held over for funding in FY 1996. Dr. Corn discussed actual funds remaining in each program. IAIMS, designed to integrate information systems in large academic medical centers, has \$800,000 left. The Resource Grants Program has \$1.046 million remaining, which includes \$611,000 for Internet Connections Grants. Since its transfer from NSF to NLM, the Connections Program has become more popular. Approximately 170 applications have been received this year in comparison to the 35 in 1994. Biotechnology, which has \$321,000 left, has at least three grant applications with high priority scores whose total dollar need is more than two million.

Dr. Corn stated that at NLM extramural programs are usually defined for specific areas in response to policy considerations. This is not the case at other NIH institutions, where the vast majority of applications are unsolicited ideas submitted by a Principal Investigator. NLM has chosen to expend most of its Extramural Programs budget in programmatic lines which let the community know where NLM's interests lie. In comparison to NIH, which has an average funding rate of under 25 percent, NLM is funding less than 20 percent of applications received. In response to a question from Dr. Michael DeBakey, Dr. Corn said that the total NLM Extramural Programs budget is approximately \$26 million, excluding the RML contracts. The funds can be moved among programs, but must remain in two major categories, the Medical Library Assistance Act and PHS 301.



### Meeting of the Electronic Medical Records Systems Awardees

Dr. Corn discussed the Cooperative Agreement Grant Program for research and development of computerized patient records (Electronic Medical Records Systems). The Principal Investigators came together for a second meeting at NLM on April 11-12. Also in attendance were representatives from AHCPR, VA, and DOD. The committee was made up of the PIs, a representative from AHCPR, NLM's co-sponsor on this program, and Dr. Corn as the NLM representative. Working groups were appointed and charged with developing an action plan involving multiple institutions. Each working group is to come up with a protocol that requires two or more institutions to exchange data. Dr. Corn discussed the difficulties which arise when two institutions attempt to work on joint projects. Chief among these is language--most institutions have systems used internally cannot communicate outside. He said that, unfortunately, national standards were not thought of when systems were designed. EP surveyed principal investigators and found that they invent their own standards for developing patient records without considering national or regional standards. Dr. Corn said that the UMLS is going to help institutions in communicating with each other. Of other interest, he noted that if the problem lists used by clinicians can be incorporated into the UMLS, it will get the attention of physicians who have been indifferent so far. It is hoped that data from problem lists may assist in outcomes research. Dr. DeBakey stated that the need for the ability to utilize such data and create a useful clinical database is of high priority. The EMRS committee will have an interim meeting in June in Boston and another full meeting at NLM in the fall.

### Internet Connections; Education and Training Programs

Both programs were announced in January with applications due the week of May 24. Dr. Corn believes that NLM will receive approximately 16 applications for health science librarian education and training and will fund two to four grants. Two hundred and fifty-nine letters-of-intent have been received for the Internet Connections Program. NLM anticipates funding approximately 12 to 15 connection grants. (Note: The final application receipts were 21 for the Training Program and 175 for the Connections Program.)

**MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS  
May 23, 1995, 4:15 to 4:45 P.M.**

## **XVII. REVIEW OF PENDING APPLICATIONS**

The Board reviewed 47 applications, requesting \$35,701,974 and recommended for further consideration 32 applications in the amount of \$24,904,208 for the total years requested. Fifteen applications in the amount of \$10,797,766 were not recommended for further consideration. Grant applications recommended for further consideration by the Board are listed in the summary action.

### **MEETING OPEN--MAY 24, 1995, 9:00 A.M. TO ADJOURNMENT**

## **XVIII. PRESERVATION PROGRAM: CURRENT ACTIVITIES AND FUTURE DIRECTIONS**

Ms. Margaret Byrnes, head of NLM's Preservation Section, briefly recounted for the Regents NLM's many-faceted preservation activities and how they have evolved over the decades. Early activities include moving the historical collection to Cleveland (presumably a safer location than Washington, D.C. during World War II), and microfilming deteriorating materials. By the 1980s the biggest problem facing NLM was the high acid content of paper used in publishing since about 1850. As a result, much of the late 19th and early 20th century volumes have become brittle and are at risk of being lost. A comprehensive study of NLM's preservation needs was undertaken, and it was found that about 12 percent of the collection had become brittle, and about 85 percent of the collection was on acid paper that had not yet become brittle. Reformatting 12 percent--or about 160,000 volumes--was considered to be a manageable task. Ms. Byrnes presented a graph showing the rate at which the Library would face the gradual embrittlement of the 85 percent. One result was the decision by Dr. Lindberg to undertake a campaign to halt the tide of acidic paper by persuading the publishers to use acid-free paper. The Board of Regents held a hearing in 1987, attended by more than 100, to open a dialog among all concerned about the need for acid-free publications. An NLM Permanent Paper Task Force, co-chaired by Dr. Lois DeBakey, was appointed to see what could be done to encourage the switch. From an estimated four percent of all *Index Medicus* titles when the campaign was launched in 1987, the proportion of titles indexed for *Index Medicus* that are published on acid-free paper has increased to 91 percent of U.S. *Index Medicus* titles of current issues of titles published in the U.S. This great progress was due, in part, to increased awareness on the part of publishers and to economic incentives that were driving the paper manufacturing industry to convert to alkaline paper.

A second major emphasis in the preservation program, Ms. Byrnes said, is systematic microfilming of the 160,000 volumes on brittle paper. To date, 59,000 volumes have been filmed. At the current rate, it will take 20 more years to finish the task. Many more thousands of volumes will by then, of course, have become embrittled. Although microfilming is an "old" technology, it is still considered the most reliable way to assure that the information survives. Until electronic imaging becomes more mature and widely accepted, microfilming will remain the preservation technology of choice. NLM's Preservation Section is also responsible for protecting the collection in the event of fire or flood. An NLM Disaster Committee has been established and the NLM disaster plan is now being revised and updated. Although NLM has not experienced any major disasters, there have been several rather serious floods resulting from breaks in plumbing. The environmental conditions (heat, humidity) under which the collection is stored also play an important role in preservation, Ms. Byrnes said. The Preservation Section carefully monitors these. Some items, such as master negative microfilms and preservation copies of historical motion pictures, are stored in an underground vault in what was once a limestone mine in rural Pennsylvania. Another important preservation activity is the program to bind journals and paper-cover books (some 25,000 volumes per year) to protect them. Some 200 rare and historically valuable books are treated each year by a conservation lab in New England. This year, Ms. Byrnes said, the Library plans to establish a modest repair facility to make minor repairs to items from the general collection. There are also problems associated with nonprint materials, for example photographs, film, and magnetic tape. Many in the library field are turning their attention to converting paper-based materials to electronic form. NLM's Lister Hill Center researchers have been active in experimenting in this field. NLM is currently looking at the possibility of converting pre-1965 *Index Medicus* volumes to electronic form. Because of the variation in type fonts and printing density used over the years, however, it is proving difficult to employ optical character recognition (OCR) technology for this. Nevertheless, NLM is undertaking a feasibility study to see how it can be accomplished. The use of electronic imaging for preservation is in its infancy, Ms. Byrnes said, and many major issues (e.g., costs, standards, and long-term availability over successive generations of hardware and software) have not been fully addressed. Many of these questions will be answered in the coming years, and NLM should position itself to take advantage of electronic imaging for preservation when it becomes feasible.

Following Ms. Byrnes' presentation, Dr. Michael DeBakey commented that the preservation of NLM's collection certainly deserves very high priority. He commended the NLM on the considerable progress made since the mid-1980s. He believes that it is important to preserve and put online the pre-1966 *Index Medicus*--those issues that were published before the advent of MEDLINE. Ms. Pamela Andre urged that NLM and the National Agricultural Library, whose experience in these matters parallels NLM's, cooperate in their preservation efforts. Digital imaging in libraries is clearly the way of the future, she said, and NLM should take the

lead in the medical library world in resolving issues of transitioning from microfilming to digital technology. Dr. Lois DeBakey noted that there was much skepticism expressed when the campaign began to reduce the amount of publishing on acid-free paper. NLM is to be congratulated on increasing dramatically the *Index Medicus* titles printed on permanent paper. Ms. Wendy Carter said that it is difficult, in a time of diminishing resources, to know where to assign priorities. She suggested it may be possible for NLM to reach agreement with other libraries in the National Network of Libraries of Medicine whereby other institutions would assume the responsibility for preserving certain portions of the medical record. Ms. Betsy Humphreys commented that one of the things we discovered in surveying the preservation problem is that other medical libraries realize it is NLM's responsibility to preserve the literature and, in a time of tight budgets, they are glad to leave the responsibility to NLM.

Dr. Michael DeBakey introduced a resolution commending the National Library of Medicine for taking the lead in this crucial area and urging the Library to continue its preservation efforts as a high priority. The motion was seconded and approved by Board of Regents unanimously.

#### **XIX. REPORT OF THE NOMINATING COMMITTEE**

Dr. Zimble, reporting on behalf of the nominating committee, placed in nomination the name of Dr. Carol Newton for Board of Regents Chairman. She was unanimously elected by her colleagues.

#### **XX. BILLINGS IN WASHINGTON**

Dr. James Cassidy of the NLM History of Medicine Division presented to the Board a series of slides depicting the environment and some of the experiences of John Shaw Billings during his 30-year directorship (1865-1895) of the U.S. Army Surgeon General's Library, the forerunner of the NLM.

#### **XXI. BIOTECHNOLOGY INFORMATION RESOURCES**

Dr. Richard Roberts, Research Director of the New England Biolabs, and co-recipient of the 1993 Nobel Prize in Physiology or Medicine, had written to the NLM Director about his concerns on the current status of federal support for molecular biology databases, and was invited to present his views to the Board of Regents. Dr. Roberts has had long involvement with databases and was on the original panel that wrote the guidelines for GenBank. He is concerned about what appears to be a lack of coordination among government agencies in support for information resources and the lack of guidelines for determining the need for new databases. Database proposals to funding agencies need knowledgeable and unbiased reviewers

to make dispassionate evaluations. Recently, many computer scientists have become interested in biological databases as testbeds for computer science algorithms. They often are looking for technical solutions to problems without a deep interest in the underlying biological content. Dr. Roberts said that computer scientists can be useful advisors to databases, but they should not have a major role in the review process. Biologists should have a dominant role in any review to determine the scientific usefulness of a database. There is considerable disarray in the governmental funding of the databases. Some are funded by DOE, NSF, and various institutes and offices at NIH. There is a great need for a coordinating committee that would look at what's out there and review all the database applications. Dr. Roberts said that the NLM would be a logical agency to take this lead: NLM is prestigious and has great experience in databases and in providing information on the electronic superhighway. He recommended that NLM take the lead within NIH to get that agency's effort together, and then perhaps DOE and NSF would join in. NLM could also provide links between records in the biotechnology databases and the journals. Electronic publishing will not be long in arriving, and NLM can provide a valuable link in that arena. Dr. Roberts specifically recommended that NLM commission a "white paper" on the subject as a way to begin examining the issues. He offered to organize a small committee to do this.

Following Dr. Roberts' presentation, Dr. David Lipman, Director of NLM's National Center for Biotechnology Information, said that several other senior molecular biologists also recognize the problems outlined by Dr. Roberts. Dr. Lipman corroborated Dr. Roberts' statements about the involvement of computer scientists in biology databases. Because the biologists who set up the databases were driven totally by content issues, there were some technical aspects of their creation that were not optimum. The initiation of the huge Human Genome Project coincided with cutbacks in defense budgets and, as a result, many computer scientists became interested in the field of biotechnology databases. Thus, the problems associated with the databases were often recast as technical problems; databases were frequently funded because they addressed an interesting technical problem, but they failed to address a need in biology. Dr. Lipman said that it would be very helpful to have a group of high-profile biologists engage in the review of the problem that Dr. Roberts has suggested. Dr. Carol Newton commented that there is a great need for "training at the interface." The technical people may have much of value to offer that the biologists don't realize. She agreed that the judgment of what is useful in the databases should be left completely to the biologists. Are there any high-quality training programs whereby first rate biologists can learn more about the computer aspects and vice versa? Dr. Roberts said there are a few such courses that merge biology and computer science. He added, however, that many older biologists are not keen on using computers--and not about to learn. Dr. Mary Clutter, in her work at the National Science Foundation, has heard many of the same problems articulated in other areas of biology, and she agreed that the kind of white paper being suggested here would be very valuable. Dr. Lindberg commented that NLM has had good experiences in working with NSF; working the DOE is more problematic. He said that we should work toward articulating a "pan-NIH" position on the problem, one in which the NSF

might join. Dr. Lindberg said that to do this, NLM will pursue Dr. Roberts's offer to help with a white paper. Dr. Roberts said that he will put together a plan on how to go about this, and submit it to NLM for approval.

**XXII. ADJOURNMENT**

The meeting was adjourned at 11:30 a.m., Wednesday, May 24.

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Subcommittee Meeting on Monday, May 22:

Extramural Programs Subcommittee--2:00-3:45 p.m.  
(Attachment B)

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**ACTIONS TAKEN BY THE BOARD OF REGENTS**

1. The Board unanimously elected Dr. Carol M. Newton as Chair for the coming year.
2. Dr. Walker presented the 1995 Frank B. Rogers' Award to Ms. Peri Schuyler for her leadership in expanding the role of MeSH and for playing a key role in the development of the Unified Medical Language System.
3. The Board approved a resolution commending the National Library of Medicine for taking the lead in efforts to preserve its historical collection from further deterioration because of the acid paper content.
4. The Board unanimously approved the establishment of an NLM Long-Range Planning Panel on International Programs. Board member, Dr. Marion Ball, was appointed by Dr. Walker as the Board's representative on the Panel.

5. The Board concurred with the recommendations of the Extramural Programs Subcommittee.

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

DAD Lindberg 8/4/95  
Donald A.B. Lindberg, M.D. (Date)

H Kenneth Walker 7-28-95  
Dr. H. Kenneth Walker, M.D. (Date)