

DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

NATIONAL LIBRARY OF MEDICINE

BOARD OF REGENTS

MINUTES OF THE 110TH MEETING

SEPTEMBER 26-27, 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 ^{1/2/}
September 26-27, 1995**

The Board of Regents of the National Library was convened for its one-hundred-and-tenth meeting at 9:00 a.m. on Tuesday, September 26, 1995, in the Board Room of the National Library of Medicine, Bethesda, Maryland. Dr. Carol M. Newton, Professor, Department of Biomathematics at the University of California 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 4:55 p.m. on September 26 and from 9:00 a.m. to 12:15 p.m. on September 27. The meeting was closed from 4:55 to 5:10 p.m. on September 26 for the review, discussion, and evaluation of grant applications. A Board roster is enclosed under Attachment A.

Board members present were:

Dr. Carol M. Newton, Chair	Dr. Edwin Cortez
Dr. Tenley E. Albright	Dr. Michael DeBakey
Ms. Pamela O.J. Andre	Dr. Sherrilynn Fuller
Dr. Marion Ball	Dr. Robert J. Joynt
Dr. James H. Billington (9/26)	Dr. George H. Nolan
Ms. Naomi Booker	Dr. Steven J. Phillips
Dr. Mary E. Clutter	

Alternates to ex officio members present were:

Ms. Wendy Carter, representing Dr. Kenneth W. Kizer.
Col. Eric B. Schoomaker, 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 (part of 9/26).
Capt. Vernon Schinski, representing Dr. James A. Zimble.
Col. Theodore F. Yurkosky, representing Lt. Gen. Edgar R. Anderson.

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
Dr. Dennis A. Benson, Chief, Information Resources Branch, NCBI
Mr. Fernando Burbano, Director, Information Systems
Ms. Sally Burke, Acting Executive Officer, OD
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. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP
Dr. Elizabeth Fee, Chief, History of Medicine Division, LO
Mr. Earl Henderson, Deputy Director, LHCBC
Ms. Betsy Humphreys, Assistant Director for Health Services Research Information
Dr. Lawrence Kingsland III, Assistant Director for Applied Informatics
Dr. Alexa McCray, Chief, Educational Technology Branch, LHCBC
Mr. Robert B. Mehnert, Chief, Office of Inquiries and Publications Management, OD
Dr. James M. Ostell, Chief, Information Engineering Branch, NCBI
Dr. Elliot R. Siegel, Associate Director, Health Information Programs Development
Dr. Melvin Spann, Deputy Associate Director, SIS
Mr. Richard T. West, Chief, Office of Program Planning and Evaluation, EP

Others present included:

Dr. Wendy Baldwin, Dep. Director, Extramural Research, NIH
Ms. Patricia L. Brandt, Legislative Analyst, OD, NIH
Ms. Sarah B. Carr, Office of Science Policy and Technology Transfer, OD, NIH
Mr. Rashid Darden, Student, Coolidge High School
Dr. Lois E. DeBakey, Professor of Scientific Communications, Baylor College of Medicine,
Consultant to the Board of Regents
Dr. Jeffrey Galvin, P.I., Virtual Hospital Project, University of Iowa, College of Medicine
Dr. Michael Kienzle, Assoc. Dean for Clinical Affairs, University of Iowa, College of Medicine
Mr. Gavin Lindberg, Legislative Assistant, Medical Library Association
Ms. Gwendolyn Logan, Teacher, Coolidge High School
Ms. Lucretia McClure, Librarian Emerita, The Edward G. Miner Library, University
of Rochester Medical Center
Mr. Robert Robinson, Teacher, Coolidge High School
Capt. Dennis A. Vidmar, Asst. Dept. Head and Resident Programmer, Dept. of Dermatology,
Bethesda National Naval Medical Center
Ms. Lisa White, Reporter, "The Blue Sheet"

I. OPENING REMARKS

Dr. Carol Newton, Chair, welcomed the Regents, consultants, and guests to the 110th meeting of the Board of Regents of the National Library of Medicine. She noted the presence of new Regents Dr. Tenley E. Albright and Dr. Sherrilynne Fuller.

II. REPORT FROM THE NIH DIRECTOR'S OFFICE

Dr. Wendy Baldwin, NIH Deputy Director for Extramural Research, reported on the historical study of Federally sponsored radiation research that took place primarily in the 1940s and 50s. The study began when President Clinton signed an Executive Order in January 1994 establishing the Advisory Committee on Human Radiation Experiments. The Committee, which is made up of representatives from a number of Federal agencies, is led by the Department of Energy and includes the National Institutes of Health. Dr. Baldwin said that NLM has played an important role in researching the literature; records for many of the early experiments were quite skimpy. At the same time the report of the Committee is released on October 3, the White House may announce the establishment of a National Bioethics Advisory Commission.

Following Dr. Baldwin's presentation, Dr. Michael DeBakey asked about the concept of a "steady state" in biomedical research funding, and whether this stance (articulated by the NIH Director) was a wise one. Dr. Baldwin said that NIH believes that over the next decade it is not likely to see the kind of rapid budget growth of earlier NIH phases. The institution should think about adapting to a steady state, even though many in the health science community believe that biomedical science is at a point that could see an "explosion of growth." Although there is strong popular support for biomedical research at the Federal level, she said, the link between that support and significant increases in funding is very tenuous. Dr. DeBakey said that nevertheless it may not be desirable to project a policy that presumes that funding will be held to a certain level. It may result in the belief that the agency needs no higher funding. Dr. Baldwin noted that at a recent "leadership retreat" of NIH institute directors, there was a vigorous discussion of "NIH visibility" and how the NIH should continue to find ways (such as the Internet) to reach out to various constituents. Although NIH has frequent (and positive) exposure in the major news media, it should be finding ways to reach out more widely to the rest of the country to let citizens know that their tax dollars are funding important medical research. In response to a question about the role of Institute advisory councils, Dr. Baldwin said that many would like to see the councils become more involved in policy recommendations and priority setting, in addition to their role as grant reviewers. Dr. Lindberg asked about the magnitude of the radiation study--in addition to what was done at NIH and NLM. Dr. Baldwin said that it was an "enormous" undertaking--the Committee had a full-time staff of about 50. The Departments of Defense, Energy, and other major agencies involved also invested

considerable resources in the study--for example, creating "command centers" (DOD) and public reading rooms (DOE) for the millions of pages being identified.

III. CONSIDERATION OF MINUTES OF PREVIOUS MEETING

The Regents approved the minutes of the May 23-24, 1995, meeting.

IV. FUTURE MEETING DATES

The Board will meet next on January 23-24, 1996. Next spring's meeting will be May 21-22. The proposed dates of September 24-25, 1996, were accepted and confirmed for next fall's meeting.

V. REPORT FROM THE NLM DIRECTOR

Dr. Lindberg reported that, although NLM does not yet have a FY 1996 budget, it is becoming clearer what the prospects are. The final FY 1995 operating budget was \$127,997,000. The President's request for 1996 is \$139,473,000. There are earmarks for HPCC (\$8 million), AIDS (\$0.2 million), and inflation (\$2.6 million). The House allowance for NLM is \$141,493,000; the Senate figure is \$137,977,000. Both also contain earmarks for HPCC, AIDS, and inflation. What amount a joint resolution will arrive at for NLM in 1996 is not yet known. The NLM Director next discussed NLM's current staffing situation; the Library's ceiling has been reduced from 586 in 1995 to 580 for FY 1996. He introduced several new staff members: Dr. Brandon A. Brylawski and Dr. Arcady Mushegian in the National Center for Biotechnology Information, Dr. Elizabeth Fee (History of Medicine Division), Dr. Erik van Mulligen (Lister Hill Center), three new Library Associates--Terri Clark, Kristin Stoklosa, and Zdenka Geisslerova, and Suzanne Aubuchon, who is Kent Smith's new assistant. Dr. Lindberg reported briefly on the MEDINFO 95 meeting (Vancouver) and on a meeting in Geneva on the future of the World Wide Web. He described the powerful capabilities of the Web and the servers that have been developed to provide easy access to it and the Internet. The challenge now is to put in place mechanisms to continue to adapt to this rapidly changing technology so that health care--and patients--can benefit. Dr. Michael DeBakey was also at the meeting and he and Dr. Lindberg both spoke strongly in favor of telemedicine as perhaps the most highly leveraged means by which the biomedical community can obtain benefits from these communication advances. Dr. Marion Ball, who was also at the Geneva meeting, noted that Dr. DeBakey presented a marvelous opening speech that presented some of the historical antecedents of today's telemedicine technology. Dr. Lindberg, she said, neatly outlined at the conclusion of that meeting the steps that should be taken to create a foundation for medicine to take full advantage of the World Wide Web. She noted that the NLM Planning Panel on International Programs would also be discussing these matters.

Dr. Lindberg next reported that NLM has asked the Institute of Medicine to convene a panel to examine how best to evaluate telemedicine projects--in terms of medical outcome and cost-benefit. Because NLM's funds for telemedicine testbed networks are quite limited, this seemed to be the most useful contribution the Library could make in this area. Another study, to investigate how to maintain privacy and security in health-care applications that use telecommunications networks, is being supported by NLM and the NIH Clinical Center. This study is being conducted by the Computer Science and Telecommunications Board and the Institute of Medicine of the National Academy of Sciences. Finally, Dr. Lindberg noted that the NLM Planning Panel on International Programs is being formed and that it will be headed by former NIH Director Donald S. Fredrickson, M.D. The Panel will meet three times over the next year or so and present its final report to the Board of Regents for incorporation into the NLM Long-Range Plan.

VI. NIH DIRECTOR'S ADVISORY COMMITTEE

Board member Dr. Steven J. Phillips represented the NLM Board of Regents at the May 1995 meeting of the NIH Director's Advisory Committee. The Committee addressed the topic of restructuring the NIH and concentrated on several general areas, including the restructuring of the Division of Research Grants, a report from the NIH "research ombudsman" who visited 20 institutions around the country, the future of the NIH Clinical Center (and plans for downsizing it), the NIH plan for affirmative action, and the government-wide reinvention and restructuring effort. Dr. Varmus, NIH Director, noted that the 1997 budget will emphasize biomedical high-speed computing, breast cancer research, AIDS research, and the Human Genome Project.

VII. PRESENTATION OF REGENTS' AWARD

Dr. Newton presented the 1995 Regents' Award for Scientific or Technical Achievement to Dr. Jonathan Kans and Dr. Greg Schuler of the National Center for Biotechnology Information. They were cited for developing the widely used Entrez software which allows experimental biologists to become skilled searchers of the ever-expanding information base of molecular biology.

VIII. PUBLIC SUPPORT OF NIH BUDGET--VIDEO

Mr. Robert Mehnert, NLM Public Information Officer, showed to the Board an 18-minute videotape prepared by the NIH Office of Communications. It consisted of eight videoclips from the major television networks that dealt in varying ways with the value of NIH research and the need to protect research funding.

Following the video, Dr. Lois DeBakey said that although it is heartening to see NIH receive such positive media attention, she lamented the absence of any mention of NLM in the clips. NLM should place high priority on getting out its message--to the Congress and to the public. She would like to see the Regents become more vigorous advocates of NLM by writing articles and making presentations about the Library's vital role at professional meetings. Dr. Lindberg would make a most effective guest on such a program as John McLaughlin's (one of the clips was a strong defense of NIH by Mr. McLaughlin). A segment that featured NLM on a TV dramatic series would be wonderful exposure, she said. Dr. DeBakey also suggested that the Board's Planning Subcommittee again take up outreach activities pertaining to public information. Dr. Cortez suggested that the subcommittee view an excellent series of TV programs done by PBS in the 1970s, "Search for Solutions," on how to make research understandable at the grass roots level. Dr. Newton said the Board will take the suggestions under consideration.

IX. NLM'S STREAMLINING AND REINVENTION LABORATORY

Mr. Kent Smith, NLM Deputy Director, gave a brief background of how NLM has become involved in developing a Streamlining Plan and serving as a Reinvention Laboratory under the Administration's National Performance Review. Both subjects had been introduced to the Board last January. The driving force behind these programs is the effort to reduce the size of the Federal government, both in number of employees and size of budgets. Using slides, Mr. Smith described the NLM streamlining plan submitted last May to the NIH and also brought the Board up to date about "reinvention laboratory" activities. NLM must undergo a reduction of 99 positions between 1994 and 1998 (actually this will be a cut of 123 positions from the high year of 1992). The present level is 575 full-time equivalents (FTEs). Certain kinds of positions--for example, so-called "control positions"-- must be cut more than others. Senior positions also had a cap placed on them, and the ratio of employees to supervisors must be increased (to 12 employees per supervisor). NLM's plan lays out how these goals can be reached while maintaining high work quality and customer satisfaction. For example, certain vacant jobs will be merged with others before they are filled; some positions are marked "incumbent only," so that when they are vacated they will go unfilled. The streamlining plan also calls for close involvement with NLM employees, so as to reduce the natural apprehension of staff as changes are made in how work is accomplished.

Mr. Smith described how the staff went about reviewing programs and making recommendations for improvement. Several working groups were created, including one on improving internal NLM communication [one result is that the present Board meeting is being carried live on internal cable], and more than 100 suggestions were received from employees for the streamlining effort. All components of NLM are candidates for structural change, Mr. Smith said, with major changes within the Specialized Information Services Division, Extramural Programs, and the Office of Computer and Communications Systems. Although the analysis

of Library Operations, NLM's largest division, has not yet been completed, there are likely to be recommendations for creating a "Customer Service Center" that would completely redesign how NLM responds to requests for information. NLM's research components--the Lister Hill National Center for Biomedical Communications and the National Center for Biotechnology Information--have concentrated on streamlining for efficiency rather than structural reorganization. For example, the Lister Hill Center is suggesting that its Learning Center for Interactive Technology could be used by individuals independently--a hands-on facility that would not ordinarily require staff involvement except for groups of visitors. Some have advocated centralizing certain administrative functions as a way to save money and positions. Mr. Smith said that NLM will resist this, believing that these functions are best located close to the programs they serve; in fact they should be delegated additional responsibilities so they can be even more responsive to the needs of program staff. Also, NLM is recommending that its highly regarded Office of Acquisitions Management become a "service center" for other NIH components, that is, it would be authorized to handle purchasing and contracts for other Institutes. Among the employee suggestions that NLM will try to implement is one to create a volunteer program at the NLM; another is to look into new mechanisms to bring trainees into NLM's Library Associate program.

The theme of NLM's "Reinvention Laboratory" is to reinvent our information systems, to move to a more flexible, powerful, and maintainable computer system that will both improve internal processing and provide innovative services to outside users. Mr. Smith described how this three- to five-year system reinvention effort has been organized and the assumptions on which it is based. It is divided into three major components: internal support systems (including internal file building and maintenance), retrieval engines (focusing on replacing the venerable ELLILL retrieval system), and user access services (including new versions of Grateful Med and document delivery systems). One prominent outcome of this work is the Internet Grateful Med, which has been demonstrated to the Board in the past and will soon move into production mode.

Following Mr. Smith's presentation, Dr. Lois DeBakey complimented the NLM staff on what has been accomplished so far in reinventing and streamlining the Library, especially since this has been in addition to regular duties. She noted that the idea of using volunteers is appealing--retired librarians and others might welcome the opportunity to help out at NLM. We must keep in mind, however, that the NLM is by its nature a labor-intensive enterprise and that we cannot allow reductions in staff to adversely affect the quality of its services. Captain Vernon Schinski, USN, commented that most large organizations do have redundant systems and conflicting methods that can be streamlined. NLM seems well on its way to identifying and rectifying such situations. He said it is unusual that NLM has been able to reorganize some of its operations from within; such change more often has to be imposed from without. Most important, successful reorganization must be led by people of vision, and the promising experience to date seems to indicate this is the case at NLM. Dr. Edwin Cortez noted that there are valuable downsizing lessons to be learned from the private sector, for example, the

need to train staff thoroughly in new ways of doing things and the need to distinguish between what is a true information commodity and what is a specialized product. Dr. James Billington of the Library of Congress said that at the urging of Congress the Library of Congress is moving more quickly into electronic dissemination of information (for example, the new "Thomas" system). He complimented the NLM on setting a systematic five-year timeline for its reinvention and streamlining activities.

X. QUALITY ASSURANCE FOR NEW NLM SOFTWARE: INTERNET GRATEFUL MED

Dr. Lawrence C. Kingsland III, described NLM's "Access Model" project, referred to earlier by Mr. Smith, to provide users with intelligent interactive retrieval from multiple information resources. Looked at broadly, the Access Model consists of users, an intelligent gateway at NLM, and multiple back-end database systems. Internet Grateful Med in its present form helps a user create, submit, and refine a search in MEDLINE. Dr. Kingsland briefly described the functions and capabilities of Internet Grateful Med, which in an earlier version had been demonstrated previously to the Board of Regents. The Quality Assurance and User Feedback Committee, chaired by Marjorie Cahn of NLM's National Information Center on Health Services Research and Health Care Technology, had a prominent role in designing how the new software would be tested and user feedback incorporated. Dr. Kingsland described how Internet Grateful Med moved through in-house alpha testing and how several suggested features were added as a result. Beta testing was done by hundreds of World Wide Web users around the U.S. (and in 20 other countries) in July 1995. Users included a wide mix in terms of their professional setting and their technological and searching sophistication. Dr. Kingsland described how NLM entered into agreements with the beta testers and under what conditions Internet Grateful Med was made available to them. He then cited a number of the actual comments of the testers--some complimentary, some critical. Overall, the reaction was extremely positive. In addition, there were a number of very useful suggestions: an easy and more direct way to select search terms, the ability to download a short form of a record, and to be able to mark selected citations for saving or printing. A new version (2.0), with many of the suggestions incorporated, will be released to the beta testers next week. Dr. Kingsland concluded by saying that the production version of Internet Grateful Med will be much the better for the extensive testing it has undergone.

Captain Dennis Vidmar, a physician at the National Naval Medical Command, who was one of the beta testers, told the Board about his experience with Internet Grateful Med. He cited several uses to which he frequently puts the system, including seeking information for direct patient care in tough cases and research in preparing manuscripts for publication. He enumerated the advantages of Internet Grateful Med over both the currently available version and over CD-ROM MEDLINE products. Although he would like to see connections to more full-text information and to images, he is extremely happy with the system as it is.

Two Board of Regents members responded to Dr. Kingsland's presentation. Dr. Sherrilyne Fuller expressed her enthusiasm for the project and complimented NLM on keeping the user foremost in developing and testing Internet Grateful Med. She noted that medical librarians around the country are supporting a vast array of interfaces, databases, and search vocabularies. Internet Grateful Med makes this a less onerous task because it provides a more coherent view of the information access process and allows the librarian to concentrate on the *delivery* of information rather than the mechanics of the various systems. She added that the opportunities for international access using IGM are tremendous. Dr. Edwin Cortez commented that the iterative process of the IGM development was the right way to go--feeding back to the developers the comments and suggestions of testers. The close communications links established among the developers, NLM staff, and outside testers served this process well. In summary, he is left with the comforting feeling that everything at this stage is *not* perfectly clear, but that the intelligent process put in place to develop Internet Grateful Med has resulted in a truly useful product. Ms. Wendy Carter commented that NLM has responded well to three repeated themes from customers: the need for a modified Grateful Med that has an interface that offers decision support for the user; the concern for search costs and requests for fixed price arrangements; and the need to link to full-text documents, which NLM is now working on.

XI. INTELLECTUAL PROPERTY AND THE NATIONAL INFORMATION INFRASTRUCTURE

Dr. Harold M. Schoolman, NLM Deputy Director for Research and Education, said that NLM's involvement with intellectual property rights goes back at least a quarter of a century when the institution was involved in a copyright infringement suit by a medical publisher. NLM's interlibrary loan practices, the heart of the matter, were upheld in the courts. More recently, Dr. Schoolman has served on the Working Group on Intellectual Property of the Information Infrastructure Task Force, the body set up to articulate and implement the Administration's vision for the National Information Infrastructure (NII). The Working Group is chaired by Mr. Bruce A. Lehman, Assistant Secretary of Commerce and Commissioner of Patents and Trademarks. The Working Group issued a preliminary report addressing the major issues of intellectual property law, focusing primarily on copyright law and its application and effectiveness in the context of the NII. The report led to hearings which resulted in some 1500 pages of testimony by library associations and other interested parties who felt that there was too much emphasis in the report on the commercial aspects of the NII. To the great credit of the Working Group, Dr. Schoolman said, this testimony was carefully considered and the report subsequently revised and a balance struck between the rights of users and owners. Among the major issues tackled by the Working Group was the fundamental one: Does copyright retain its critically important place in an era of electronic publishing? Dr. Schoolman quoted from a section of the report that affirmed copyright as fundamentally adequate and effective, with only a need for a few minor amendments to take into account current technology. Another issue faced was the effect of electronic transmission on the rights of copyright owners. A section of

the report was quoted recommending that the Copyright Act be amended to expressly recognize that copies can be distributed to the public by transmission and that this transmission falls into the exclusive distribution right of the owner. Dr. Schoolman described the Working Group's grappling with the problem of "first sale" doctrine as applied to NII and under what circumstances one who receives a lawful electronic copy can legally transmit it. Another issue discussed was the position of online providers (such as America Online) and infringement of copyright that may occur on networks. The copyright doctrine of "fair use" in the context of the NII is also a matter of contention, and the courts will no doubt be called on to adjudicate the matter. The Working Group report does make several recommendations directly affecting libraries in the areas of permissible practices in electronic preservation/archival copying and interlibrary loan. Exemptions for educational or classroom use are discussed in the context of distance learning and use of multimedia materials. Finally, the Working Group recommends the addition of a new chapter to the copyright law that (1) contains a prohibition against the manufacture of anything designed to circumvent any device whose purpose it is to protect the integrity of a copyright owner's rights, and (2) makes explicit the necessity for publishing copyright management information.

Dr. Schoolman introduced Ms. Lucretia McClure, Librarian Emerita at the Edward G. Miner Library, University of Rochester Medical Center, who described a conference on fair use in which she participated. The conference followed the hearings mentioned by Dr. Schoolman. Although the 60 participants had only three minutes each for formal remarks, there was considerable discussion among the participants, and general agreement that they should themselves constitute an informal group to work on guidelines for fair use in a digital environment. The Department of Commerce facilitates their meetings. Ms. McClure represents both the Medical Library Association and the Association of Academic Health Sciences Library Directors on the group. She described the early meetings, the various position papers delivered and discussed, and how the group fine-tuned these discussions and posited various scenarios about what would be possible fair use in different circumstances. They are now at the point of discussing and articulating actual guidelines for classroom use, interlibrary loan, and personal use. The conferees represent two kinds of organization: (1) libraries, educational organizations, and nonprofit groups and societies, and (2) publishers, software manufacturers, music and motion picture producers. There are basic differences in outlook between the two groups. The first draft of the working group emphasized protections for the proprietary interests to the exclusion of users. The final version, which Dr. Schoolman quoted from, reflects much more the rights of users. To illustrate this, Ms. McClure cited several instances in how changes in wording evolved. Several serious issues remain unresolved, including distance learning and fair use by libraries of encrypted materials. She finished by saying that Dr. Schoolman's contributions to the final report were substantial and that the library world has much to thank him for.

Board member Wendy Carter commented that the subject of NII and copyright is a serious matter for libraries and the efforts of Dr. Schoolman and Ms. McClure are appreciated. She

is reassured by the descriptions just presented of the latest working group report. There are three aspects of the issue--legal, marketplace, and technical--and all three have to be accommodated before a satisfactory solution can be arrived at. In performing our duties day in and day out we tend sometimes to forget that what we do has a real impact on the overall health of the nation. Our legislation specifically says that what we are doing is, I quote: "important to the progress of medicine and to the public health." Board member Pamela Andre is optimistic based on what she has heard today that the three key library activities involved--interlibrary loan, preservation, and fair use--are being fairly addressed. She cautioned, however, that what goes into the making of a law is sometimes quite different from what comes out. As Congress and the various interest groups discuss the issues libraries must remain vigilant to safeguard their interests.

XII. REPORT FROM EXTRAMURAL PROGRAMS

Dr. Milton Corn, Acting Associate Director for Extramural Programs, reported briefly on EP's budget for FY 1995. He stated that the 1995 budget of \$30 million has been completely expended. The grant applications which will be reviewed at this meeting will be funded in FY 1996.

Internet Connections Grant Program

Dr. Corn described the Internet Connections Program as one which provides small amounts of money to help organizations connect to the Internet, an attempt to improve the infrastructure for the flow of health information throughout the country. This year 174 applications were received and 25 were funded. Dr. Mary Clutter asked whether some of the larger institutions funded this year could have provided their own funds. Dr. Corn said that sometimes the Internet Connections Program is used to provide additional distribution to sites within or affiliated with the medical center. A wide variation of organizations were funded, including small hospitals, free-standing clinics and large medical centers. There were no applications in the dental field. In response to a question by Dr. Michael DeBakey, Dr. Corn said that the average grant was for \$30,000 if the connections were within the institution itself and \$50,000 if they are reaching out to other hospitals. Dr. DeBakey also noted that the large number of applications reflects the difficulties universities and institutions are having finding funds to make connections.

Health Sciences Librarians "Challenge" Grant Program

Dr. Corn described this program as a small grant program, requesting planning grants to develop a proposal to change the training of librarians, so as to give the health sciences librarians the ability to take advantage of the digital age. Originally \$250,000 was available to fund three or four applications. Some end-of-the year rebudgeting permitted the addition of

another \$200,000. NLM received 21 applications; nine were assigned priority scores and will be presented to the Board of Regents for concurrence at this meeting.

Dr. Corn noted that the NLM Panel on Librarian Training identified four items of importance: Improve status of librarians at health science institutions, change the curriculum, provide graduate training and continuing education, and improve recruitment into the field with particular emphasis on minorities. In response to a question by Dr. Steven Phillips, Dr. Corn said that this program is funded through HPCC with FY 1995 funds already in hand.

Publication Grant Program

Dr. Corn briefly discussed NLM's Publication Grant Program. This program provides financial assistance for preparation and/or publication of not-for-profit biomedical scientific publications. The audience served by the program includes biomedical scientists, educators, and health practitioners, medical historians, medical librarians and other health communications specialists. Some types of publications supported include books, videos and electronic textbooks.

Dr. Robert Joynt said he is particularly pleased with the challenge grants. He said NLM handled them expeditiously and he complimented the staff for a job well done. He also said that NLM has the best prepared grant reviews for the Board of any other committee he has worked with at NIH.

XIII. HPCC HEALTH CARE APPLICATIONS MEETING

Dr. Michael J. Ackerman, NLM Assistant Director for High Performance Computing and Communications, displayed a list of the dozen three-year contract awards made in 1994 by the Library for health care applications of HPCC. On July 19, 1995, there was a meeting at NLM for the project directors of the awards that deal with telemedicine; NLM staff and others interested were also invited to attend. The intention was to discuss common problems, the need for evaluation, and future directions. Dr. Ackerman briefly described each of the projects. In one group were those related to imaging: a "collaboratory" for health informatics, teleradiology, teleneuroimaging, and linking images to clinical information systems. A second group was related to networks: a citywide 10-megabit network for patient care and research; a statewide Iowa testbed network; and collaboration technology for real-time treatment of patients in West Virginia. A third group was made up of other HPCC applications: a metropolitan medical network in Chicago based on a new facility and organ modeling support for virtual surgery simulation. A representative from one project, at the University of Oregon, was unable to attend the meeting. One area all were asked to address at the meeting was that of security and privacy. Common issues had to do with access and authentication, maintaining data integrity, use of encryption, and enforcement or sanctions. Various hardware and software incompatibilities, especially related to telephones, was a common problem. Another was how

to gain cooperation within one's institution. Technical problems had to do with acceptable levels of image granularity for different purposes (archiving, diagnosis, etc.), image compression, and latency and response time. All contractors were asked to look at the entire issue of evaluation--the efficacy, efficiency, and cost-benefit ratio of the services they were developing. Dr. Ackerman then introduced Dr. Michael Kienzle, of the University of Iowa, one of the principal investigators on the Iowa National Laboratory for the Study of Rural Telemedicine.

Dr. Kienzle gave an overview of the National Laboratory for the Study of Rural Telemedicine, created by the three-year \$7.25 million NLM grant in April 1994 to the University of Iowa. Among the special challenges in Iowa are the aging population, very rural nature of the state, lack of a public transportation system, a public health system that needs improvement, and the professional isolation of many primary care doctors (because of the rural nature of Iowa). On the other hand, the Iowa Communications Network provides 2800 miles of fiberoptic communications connecting 150 video classrooms, the universities, community colleges, etc. This affords great potential for medical connectivity. He described the advisory structure for their telemedicine activities and said there are now six sites for the Telemedicine Laboratory, including three hospitals. The University's medical library is closely tied into the project. Dr. Kienzle used a multimedia presentation program to show the Board what has been accomplished so far and what is being planned. Among the services being offered: teleradiology, 3-dimensional image analysis, emergency and trauma care, enhanced access to information services (e.g., MEDLINE), and the "Virtual Hospital."

Following Dr. Kienzle's presentation, Dr. Jeffrey R. Galvin, also of the University of Iowa, said that medical education is not a four-year operation, that it is vital to teach medical students how to incorporate new information into their knowledge base throughout their career. The Virtual Hospital is about creating an "electronic umbilical" which can be used from medical school on. It is based on the concept of asking questions and receiving answers right at the patient's bedside, not later on the phone or in the library. The system, which is used by some 60,000 people a week, keeps track of you and what you ask, and can even award CME credit for incorporating new and accurate information into current decision making. Dr. Galvin gave a live demonstration of the Virtual Hospital.

Dr. Michael E. DeBakey commented that this was a most impressive presentation and demonstration about the potential value of telemedicine. He noted that a number of past telemedicine efforts have been abandoned because of lack of continuing support. Have those working in the Iowa project thought about how they will maintain the activity after the life of NLM's support? Dr. Kienzle replied that, although other grants and contracts will be sought, the base of the program in health education, distance learning, and consumer education, is very broad and that its many constituencies--local, state, national, and even international--will support it. Also, the Iowa telemedicine system will assist various state agencies such as the State Department of Public Health (which is seeking legislation that would support its use of the system). Board member George H. Nolan said that it is clear that telecommunication is

going to be effective in education and continuing education; it is less clear what its ultimate role will be in the practice of medicine. Iowa is far ahead in this area and it has a unique opportunity to gain information that can be used elsewhere. Echoing a comment by Dr. DeBakey, Dr. Nolan said that it is absolutely imperative that evaluation of the system be a high priority and that it be done well. Colonel Eric B. Schoemaker commented that an important issue is how to incorporate private practice fee-for-service capability into the Iowa system.

Captain Vernon Schinski suggested, and the Board agreed, that the Regents should go on the record supporting the HPCC/telemedicine program and according it high priority. Capt. Schinski will help draft a resolution to be considered at the next meeting.

XIV. COMPUTER SECURITY

Mr. Fernando Burbano, Director of NLM's Office of Computer and Communications Systems, described recent testing of the Library's computer systems for issues related to security. In these days of widespread Internet access and general computer connectivity, installations like NLM's must be alert to the possibility of unauthorized intrusions into their computer systems. At NLM's request, several tests of the Library's computer system were conducted by the Computer Security Technology Center, a part of the Department of Energy's Lawrence Livermore National Laboratories. Mr. Burbano described briefly the nature of the vulnerabilities uncovered and what "patches" the NLM is applying to fix them. The good news is that the intrusions were quickly detected by NLM staff and the potential exposures quickly repaired. On the down side is the fact that some intrusions were successful and that some of NLM's response was reactive. The most basic need is for NLM-wide good security practices and a high level of alertness on the part of the staff. Recommendations resulting from the exercise: install "firewalls," restrict certain sensitive files, limit "trust hosts" with special privileges, display warning banners, improve password selection, use various security tools available, and create an overall computer security program. Mr. Burbano said that one security measure that would help defeat hackers is encryption and "ID cards" that would result in secure one-time passwords. In summary, although weaknesses were found, NLM was able to patch them and institute procedures that should greatly increase the security of its computers.

Following Mr. Burbano's presentation, Board member Steven Phillips commented on the growing problem and great costs of a wide range of computer crime nationally, ranging from chip theft to computer break-ins. The situation with military computers is quite different from NLM's situation, because the Armed Services have dedicated computers and closed networks that are not accessible to the public. Board member Dr. Mary Clutter of the National Science Foundation introduced Mr. Mike Morse who, using slides, described the steps that NSF is taking to make its computers more secure, steps that are quite similar to NLM's actions.

XV. NLM ADOPT-A-SCHOOL PROGRAM

Ms. Cynthia Gaines, a Technical Information Specialist in NLM's Specialized Information Services Division, is the coordinator of NLM's Adopt-A-School Program. Ms. Gaines briefly reviewed how NLM's partnership program with the Coolidge High School in Washington, D.C., came into being and has evolved over the past couple of years. Among the aims of the program is to provide positive role models for students and to encourage minority students to pursue careers in science and medicine. Ms. Gaines who did much of the early work, collaborated with Mr. David Nash, NLM's EEO Manager, to identify a suitable school. Afterwards, a team of NLM staff visited Coolidge to survey the facilities there. Field trips to NLM by the students, and NLM staff lectures at Coolidge, followed. On February 7, 1994, there was a special ceremony at the school at which Dr. Lindberg participated in the signing of a "Declaration of Partnership" between the Calvin Coolidge Senior High School and the National Library of Medicine. Over the next year, NLM participated in a science fair at the school, a number of faculty and students came to work at NLM over the summer of 1994, and there were several field trips for the students to various parts of NIH. With NLM help, an Internet node was established at Coolidge in the fall of 1994, and there were subsequent training sessions on how to use the Net. On January 11, 1995, at a ribbon-cutting ceremony that was covered by the local media, a new Media Resource Center was opened with five personal computers, other equipment, and educational materials donated by NLM. The summer work sessions at NLM for students and teachers were continued in 1995. Ms. Gaines finished her presentation by showing several video clips of media coverage of the ribbon-cutting ceremony.

Mrs. Gwendolyn Logan, a chemistry teacher at Coolidge High School, said that the partnership represents a tremendous step forward in science education at their school. Students now perceive that science education is for all, not just the small percentage who want to major in science. Reforms in science education are more important than ever now, and they have implications for international economic competition. The partnership with the NLM and the resulting Media Resource Center gives the school a great tool for teaching entire courses or enrichment units. Students can become facilitators for their peers--answering questions, working on group projects, exhibits for science fairs, panel discussions, etc. Mrs. Logan noted especially how working with NLM's Dr. Melvin Spann and Ms. Cynthia Gaines, the computer training sessions, the NLM lectures and seminars, the field trips and tours, all allow her to go back to Coolidge and talk to the students about nontraditional roles that students with a science background might take. She also described briefly how the D.C. Public Schools and the National Science Foundation are working together in a rural/urban school initiative program called the Mathematics, Science, and Technology Initiative. All 22 high schools in Washington, D.C., are involved.

Following Mrs. Logan's presentation, Mr. Robert Robinson, an English instructor at Coolidge High School, described how, as a result of the Adopt-A-School Program, Coolidge now has a presence on the Internet. He and Rashid Darden, a Coolidge junior, demonstrated the

Coolidge World Wide Web site, including its Home Page, showing how a wide variety of information about the school, faculty, and students, is now available worldwide over the Internet.

Following the presentations, Dr. Michael DeBakey complimented the participants in the NLM Coolidge Adopt-A-School Program and said that a somewhat similar program is in place in Houston, where the Baylor College of Medicine sponsors a "high school for health professionals" that has been incorporated into the public school system. He would like to see such innovative programs extended in public school systems across the country.

XVI. ADJOURNMENT

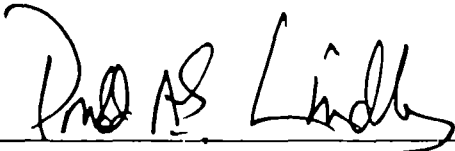
The meeting was adjourned at 12:15 p.m., Wednesday, September 27.

Subcommittee Meeting on Monday, September 25:
Extramural Programs Subcommittee--2:10-3:15 p.m.
(Attachment B)

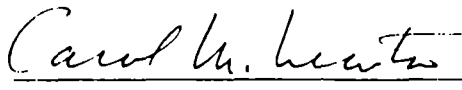
ACTIONS TAKEN BY THE BOARD OF REGENTS

1. The Board concurred with the recommendations of the Extramural Programs Subcommittee.
2. Dr. Newton presented the 1995 Regents ' Award for Scientific or Technical Achievement to Dr. Jonathan Kans and Dr. Greg Schuler of the National Center for Biotechnology Information.

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)
1-11-96

 12/22/95

Carol M. Newton, M.D., Ph.D. (Date)