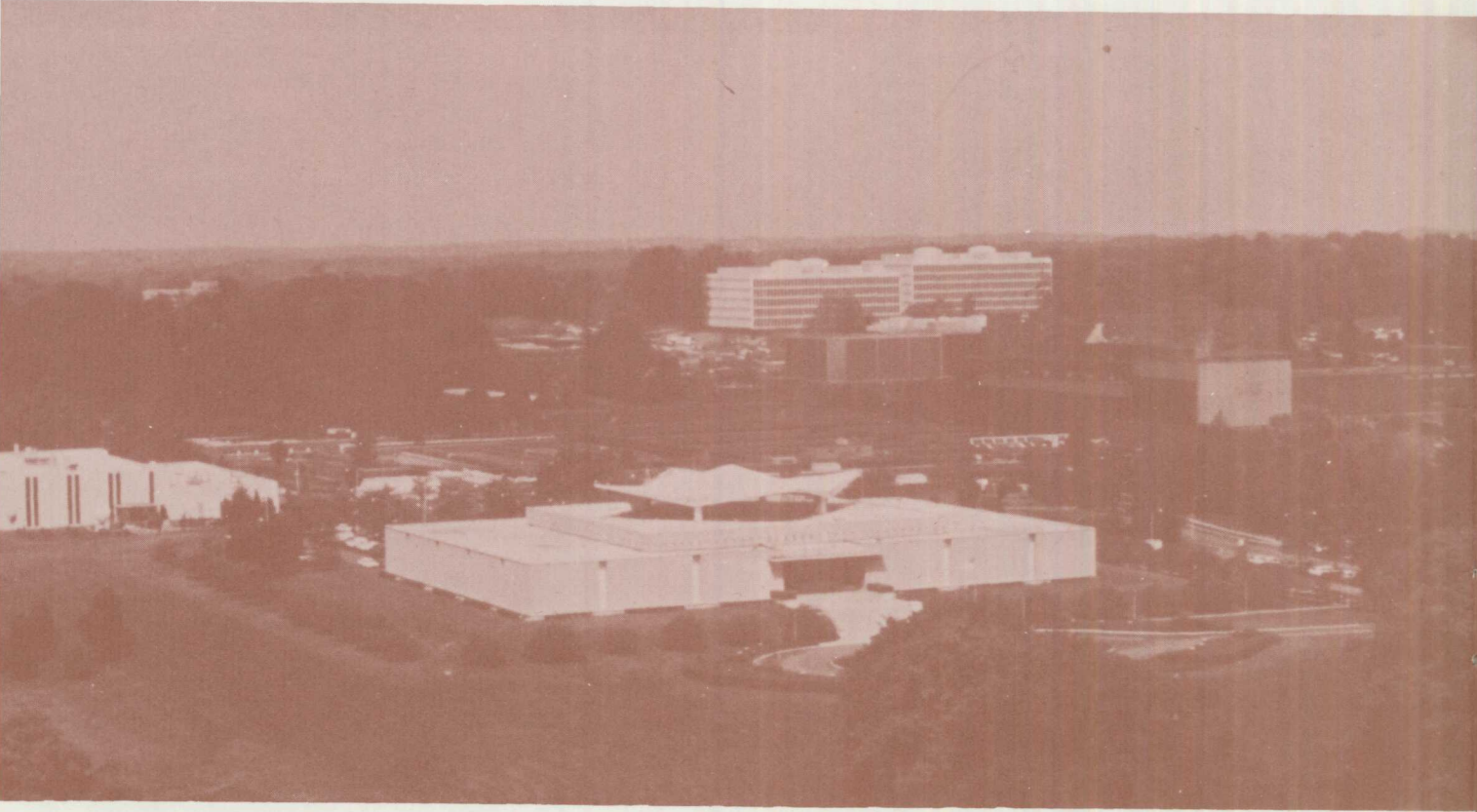


ANNUAL REPORT FISCAL YEAR 1970



NATIONAL LIBRARY
OF
MEDICINE

Aerial view of the National Library of Medicine.

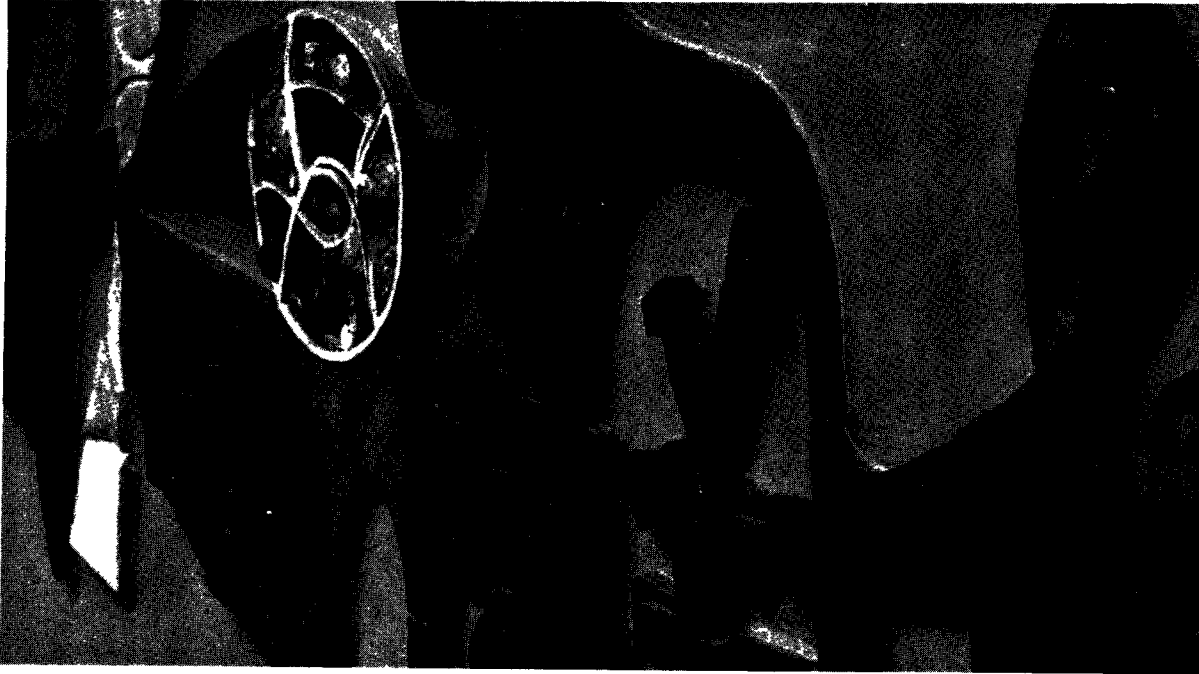


THE
NATIONAL
LIBRARY
OF
MEDICINE

ANNUAL REPORT
FISCAL YEAR 1970

**U.S. DEPARTMENT OF HEALTH,
EDUCATION, AND WELFARE
Public Health Service
National Institutes of Health**

Portion of abstract ceramic mural by Frans Wildenhain, which overlooks the Public Catalog Room.



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INTRODUCTION

"In a world where knowledge is the key to leadership, a modern, progressive library system is a vital national asset."

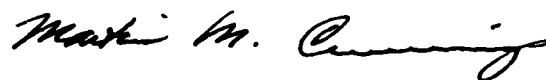
Richard M. Nixon

The past fiscal year caps an extraordinarily active and innovative decade in the history of the Library. Highlights of the Library's accomplishments included development of MEDLARS (Medical Literature Analysis and Retrieval System); passage of the Medical Library Assistance Act of 1965 (which, in the past five years, has authorized the appropriation of approximately \$105 million for improvement of the Nation's health science libraries); and creation in 1968 of the Lister Hill National Center for Biomedical Communications, in which are focused numerous technical programs designed to speed the flow of biomedical information. Other developments which have expanded the Library's role as an active information center included the addition of an Office of Specialized Information Services, which manages the Toxicology Information Program, and the integration with the National Library of Medicine of the National Medical Audiovisual Center in Atlanta, which serves as a central resource for the collection, cataloging, and distribution of biomedical audiovisual materials.

Fiscal Year 1970 contained its own share of important events, many of them linked directly to programs and services begun in the past decade. These included: 1) a new MEDLARS publication, Abridged Index Medicus, designed to serve the smaller hospital medical libraries and individual practitioners; 2) designation, under authority of the Medical Library

Assistance Act of 1965, of the last two of a total of eleven libraries comprising the Regional Medical Library network; 3) passage of legislation extending for three years the authority of the Medical Library Assistance Act of 1965; 4) further development of MEDLARS II, which in Fiscal Year 1971 will provide more sophisticated information storage and retrieval capabilities as it replaces MEDLARS I; 5) establishment of MEDLARS centers in Germany and at the World Health Organization (WHO) in Geneva, Switzerland; 6) publication of A Directory of Information Resources in the United States: General Toxicology; and 7) compilation of a computerized International Index of Medical Film Data by the National Medical Audiovisual Center. The reports below expand on these and many other developments during the fiscal year.

As you examine this report, we hope that you will sense the context in which the year's events took place: they are based largely on past accomplishments as well as on the adaptation of new technologies for improved communications services to members of all the health professions. I hope especially that the report will convey something of the Library's total commitment to improved service through the creation of a modern biomedical library system which is, to the highest possible degree, sensitive and responsive to the information needs of the biomedical community.



Martin M. Cummings, M.D.
Director
National Library of Medicine
8600 Rockville Pike
Bethesda, Maryland 20014

BOARD OF REGENTS

The Board of Regents of the National Library of Medicine serves as advisors in establishing policies for the Library and its services. Ten Regents are appointed by the President, with Senate confirmation, to serve four-year terms.

Anlyan, William G., M.D.
Dean, School of Medicine
Duke University

Augenstein, Bruno W.
Vice-President for Research
RAND Corporation

Baker, William O., Ph.D.
Vice President in Charge of Research
Bell Telephone Laboratories

*Bean, William B., M.D.
Professor and Chairman
Department of Internal Medicine
University of Iowa
College of Medicine

Ebert, Robert H., M.D.
Dean, Harvard Medical School

Layton, Jack M., M.D.
Professor and Head
Department of Pathology
University of Arizona
College of Medicine

Michael, Max, Jr., M.D.
Executive Director
Jacksonville Hospitals
Educational Program

Smith, Kathryn M., D.Ed.
Dean, School of Nursing
University of Colorado

Teuscher, George W., D.D.S.
Dean, Dental School
Northwestern University

Wagman, Frederick H., Ph.D.
Director
University of Michigan Library

*Wolf, Stewart G., Jr., M.D.
Regents Professor of Medicine
and Psychiatry
Oklahoma Medical Research Foundation

Zipf, Alfred R.
(Chairman)
Executive Vice-President
Bank of America

Ex Officio Members

Carlson, Harve J., D.P.H.
Division Director for Biological
and Medical Sciences
National Science Foundation

Davis, George M., Vice Admiral, M.C.
The Surgeon General
Department of the Navy

Jennings, Hal B., Jr., Lt. General, M.C.
The Surgeon General
Department of the Army

Mumford, L. Quincy, LL.D.
The Librarian of Congress

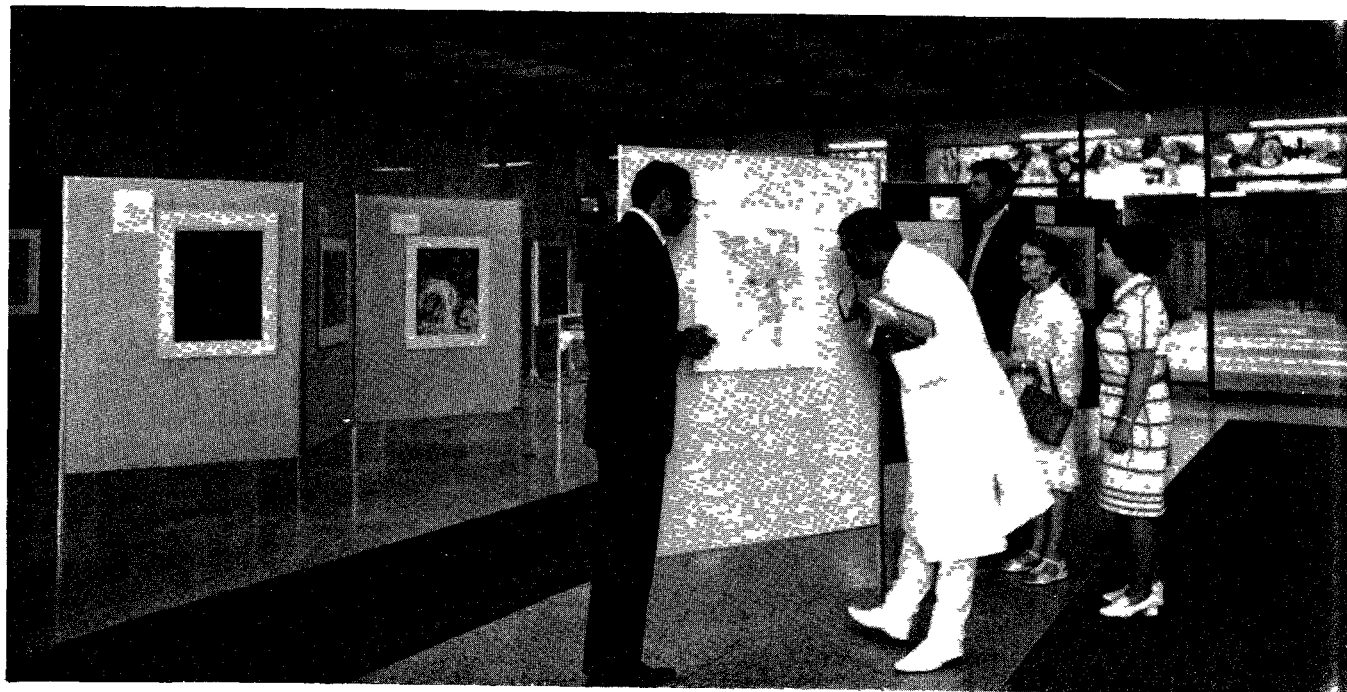
Musser, Marc J., M.D.
Chief Medical Director
The Veterans Administration

Steinfeld, Jesse L., M.D.
The Surgeon General
U.S. Public Health Service

Towner, Alonzo A., Lt. General, M.C.
The Surgeon General
Department of the Air Force

* Term expired August 1969.

Visitors examine an exhibit in the lobby of the Library



OFFICE OF THE DIRECTOR

In the task of administering and coordinating the programs of the Library, the Director is aided by his immediate staff, a Special Assistant for International Programs, an Office of Administrative Management, and an Office of Public Information and Publications Management. He is assisted also by the Library's Presidentially appointed Board of Regents, which meets three times a year to identify problems affecting the medical library community and to advise on NLM policies and programs aimed at solving these problems.

The coordinating and support activities of the Office of the Director are generally reflected in the program reports which follow. Other activities relating to the work of the Office are reported in the text immediately below. Figures 1, 2, and 3 portray NLM's organization and financial and personnel statistics.

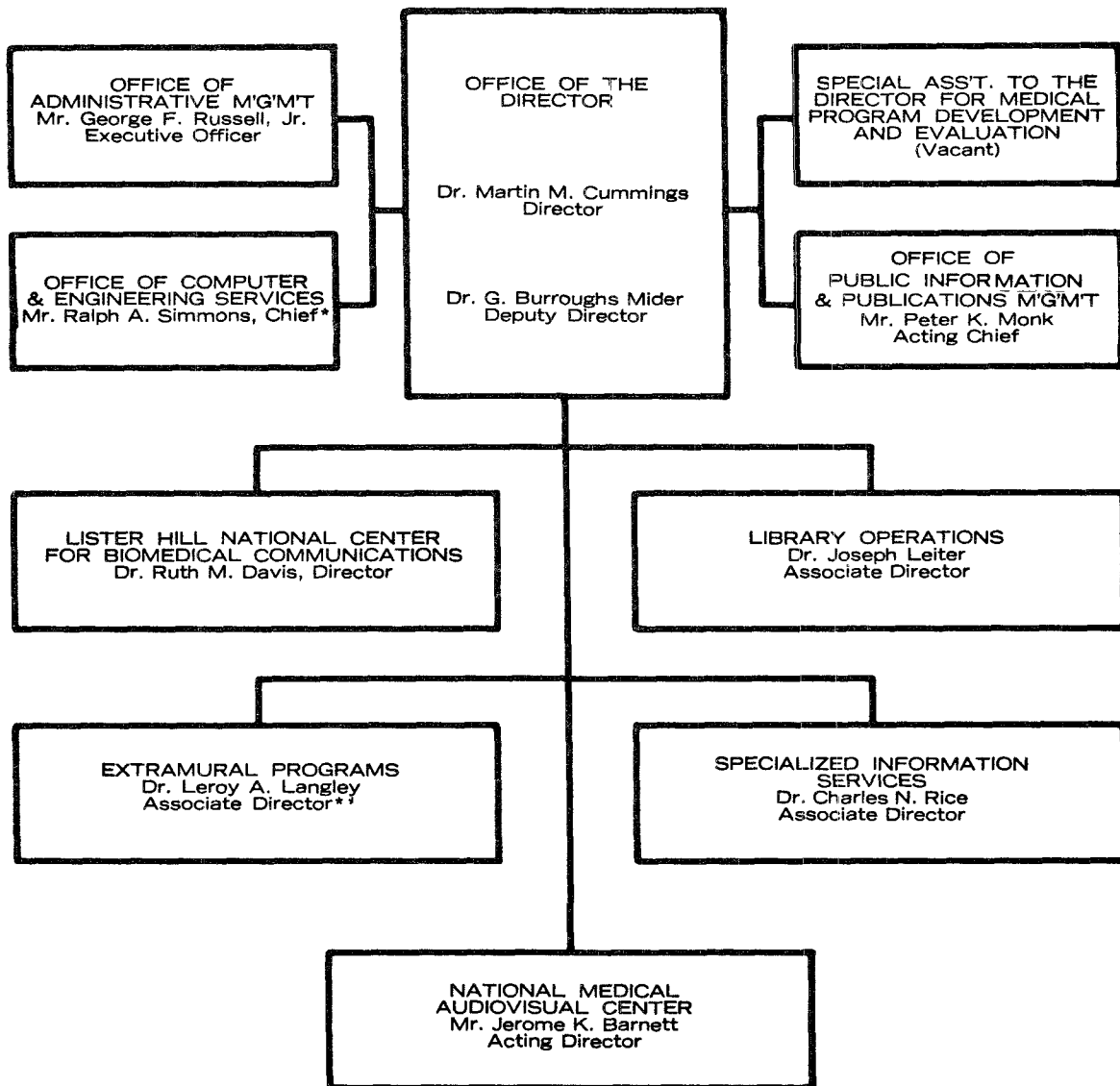
The Office of Administrative Management 1) processed about 700 personnel actions; 2) prepared and presented two separate budget submissions to the Bureau of the Budget and Congress; 3) negotiated and processed 20 reimbursable agreements with other agencies, totaling over \$500,000; 4) prepared 62 contract actions totaling \$3,722,000; and 5) procured supplies and equipment worth \$835,000.

The Office of Public Information and Publications Management 1) responded to more than 8,000 public inquiries re-

garding NLM services; 2) arranged Library tours for about 2,600 visitors; 3) completed a slide series on the Library for future presentation by WRC-TV in Washington, D.C.; and 4) prepared a series of exhibits for the Library's lobby on such topics as medical quackery and the history of the conquest of tuberculosis.

The Library continued to emphasize in its international programs those activities which are cooperative in nature and involve a sharing of resources. During the fiscal year, the Library 1) concluded bilateral MEDLARS agreements with the German Institute for Medical Documentation and Information, the World Health Organization, and the Japan Information Center for Science and Technology (bringing to seven the number of such *quid pro quo* agreements); 2) continued as technical support agent for the Pan American Health Organization Regional Library of Medicine in Sao Paulo, Brazil; and 3) provided interlibrary loan, demand search, and other services to institutions within AID countries, under a specific agreement with the U.S. Agency for International Development. Personnel and budgetary limitations forced discontinuation, in September 1969, of all services to foreign countries not included in the AID/NLM agreement. However, foreign interlibrary loan and audiovisual loan services to non-AID countries will be provided for a fee based on costs for handling and postage, effective July 1, 1970.

NATIONAL LIBRARY OF MEDICINE—ORGANIZATION



* Succeeded Mr. Alfred Asch, March 1970.
 ** Succeeded Mr. David F. Kefauver, March 1970.

Fig. 1.

Financial Resources and Allocations

Fiscal Year 1970

TOTAL AVAILABLE FOR OBLIGATION

Appropriation, NLM	\$19,682,000.
Less appropriation transfers	109,321.
Less program cutbacks under P.L. 91-231	310,000.
Brought forward from 1969	700,000.
Earned reimbursements	477,146.
	\$20,439,825.

AMOUNT OBLIGATED BY PROGRAM

Grants

Training	\$ 983,000.
Special scientific projects	5,127.
Research	989,873.
Resources	2,105,000
Regional medical libraries	1,807,000.
Publications support	267,000.
Subtotal, Grants	\$ 6,157,000.

Direct Operations

Lister Hill National Center for Biomedical Communications	\$ 910,908.
National Medical Audiovisual Center	2,320,724.
Office of Computer and Engineering Services	3,176,184.
Library Operations	4,267,841.
Toxicology Information	1,239,923.
Review and Approval of Grants	640,829.
Program Direction	1,607,850.
Subtotal, Direct Operations	\$14,164,259.
Total, National Library of Medicine	\$20,321,259.

Total Available for Obligation for Repairs and Improve- ments	36,200.
Total Obligated for Repairs and Improvements	—0—

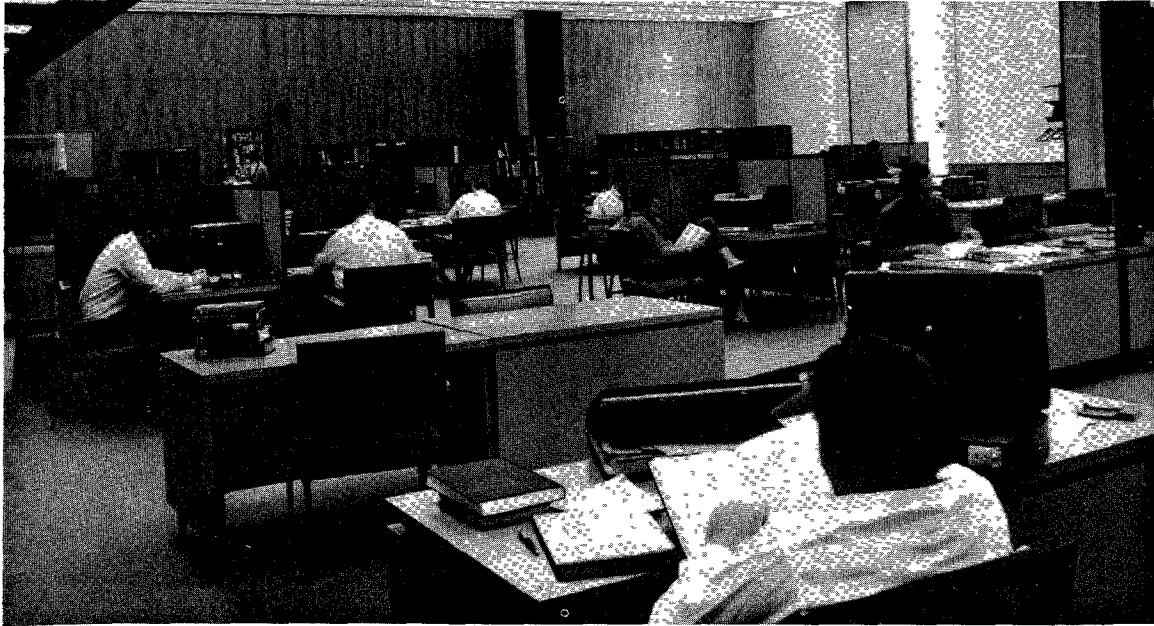
Fig. 2

Personnel on Duty (June 30)

	1968	1969	1970
Office of the Director	11	14	11
Public Information and Publications M'g'm't	10	7	5
Office of Administrative Management	36	35	30
Office of Computer and Engineering Services	49	55	53
Extramural Programs	34	30	31
Lister Hill National Center for Biomedical Communications	10	12	10
Specialized Information Services	18	18	17
National Medical Audiovisual Center	127	122	109
Library Operations	201	196	195
Immediate Office of Associate Director	(10)	(8)	(8)
Bibliographic Services Division	(47)	(49)	(49)
Technical Services Division	(56)	(55)	(54)
Reference Services Division	(70)	(67)	(66)
History of Medicine Division	(18)	(17)	(18)
Total Full-Time Permanent Positions Occupied	496	489	461

Fig. 3

Section of the NLM Reading Room.



LIBRARY OPERATIONS

Increasing network activities continued to modify Library Operations (LO) program approaches to collecting, cataloging, indexing, and retrieving the world's biomedical literature. During the fiscal year, the Library designated the last two Regional Medical Libraries (RML's) of the nationwide network (see Appendix A) created to provide more widely available interlibrary loan and computer search services. Completion of the network has augmented significantly the total amount of service supported by the NLM. There has been a concomitant enhanced effort in coordination, training, and management, not only in the provision of service but in building the reference data bases as well: for example, foreign MEDLARS centers are indexing both foreign-language and many English-language journals in return for the use of MEDLARS tapes.

The Library Network/MEDLARS Technical Bulletin, published by LO staff for RML and MEDLARS personnel, is an important tool for coordinating network activities. In addition, two meetings of the Regional Medical Library Directors were held during the Medical Library Association meetings in October 1969 and May 1970. There were two MED-

LARS workshops, one in November 1969 for domestic MEDLARS centers and one in Stockholm during May 1970 for European MEDLARS centers. A meeting of European MEDLARS center directors was held concurrently with the Stockholm meeting.

Network training activities were expanded; more than 100 MEDLARS User Orientation Courses were presented throughout the country, with participation of both NLM staff and members of local MEDLARS facilities. In addition, LO staff members gave three four-month training courses for domestic and foreign MEDLARS analysts, with instruction in indexing, medical subject headings, search strategy, and related topics. To promote the development of strong medical library services at all levels, LO staff also prepared an exhibit entitled "The Basic Hospital Library," incorporating a core collection of textbooks, journals, and reference works especially useful for small community hospitals.

All divisions of LO continued efforts to define systems for automating library services and improving bibliographic access under MEDLARS II, with concrete results scheduled for the next fiscal year.

BIBLIOGRAPHIC SERVICES

The Bibliographic Services Division (BSD) indexes the periodical literature of medicine, prepares Index Medicus and other published indexes, and formulates computer searches in response to individual requests for bibliographic assistance (see Fig. 4). BSD trains personnel from MEDLARS centers in the techniques of indexing the literature and searching the MEDLARS files. It maintains technical liaison with the 11 domestic and seven overseas MEDLARS centers, and coordinates their operations.

Indexing

About 210,000 articles were indexed for MEDLARS during the fiscal year, the same as the previous record production of Fiscal Year 1969. Again, slightly over half of the indexing was performed under contracts and cooperative agreements with external agencies. Indexers were trained for the MEDLARS centers in Australia, France, Japan, and Germany.

The indexing backlog was further reduced by an additional 20 percent. Citations from many of the prime English-language journals now appear in Index Medicus and Abridged Index Medicus within 30 to 45 days after receipt of the original publication at the Library.

Searching

Approximately 14,300 MEDLARS demand searches were carried out for domestic users, over 25 percent more than during Fiscal Year 1969. Output increased at both NLM and the MEDLARS centers, with NLM continuing to formulate one-fourth of all domestic searches. A new domestic MEDLARS search center became operational in the Regional Medical Library at the New York Academy of Medicine; new MEDLARS centers were established in Germany and at the World Health Organization in Geneva, Switzerland, while the MEDLARS center in France became fully operational during this fiscal year.

Publications

The 1969 edition of Cumulated Index Medicus (CIM) contained over 10,000 pages and was published in eight volumes. It contained 224,000 citations, an increase of eight percent over the 1968 CIM.

In January 1970, the Library began publication of Abridged Index Medicus (AIM), an important new monthly bibliography specifically designed for the practicing physician. Each issue contains citations to articles from 100 English-language journals chosen from the 2,300 journals indexed in Index Medicus (IM) for quality and particular value to the

medical practitioner. The value of AIM stems from the fact that its select content and low cost will make it particularly useful to the individual practitioner, and to the libraries of small hospitals and clinics.

In May, the first issue of a new recurring bibliography, Parkinson's Disease & Related Disorders, appeared. It is being produced by NLM for publication by the National Institute of Neurological Diseases and Stroke, and replaces the Parkinson's Information Center alerting service.

Thirty-six new Literature Searches (selected individual computer searches reprinted for wide distribution) were added to the list of available titles. These bibliographies covered such timely subjects as cannabis toxicology, drug abuse and crime, and non-nutritive sweeteners.

Medical Subject Headings

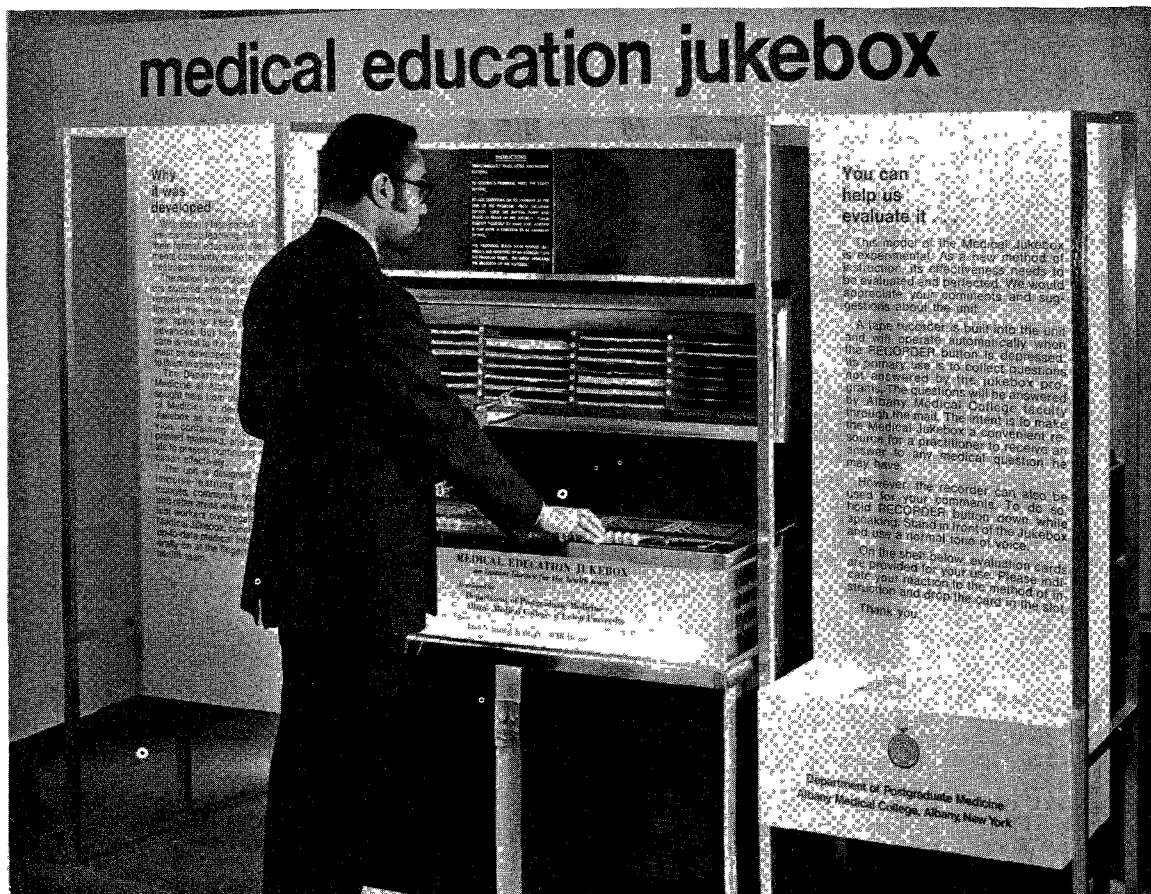
Because of the continuing technical constraints of MEDLARS I, the number of new main headings introduced during the year was held to 248. Continued effort was devoted to the development of the expanded vocabulary which will provide the fundamental base for the improved MEDLARS II system.

TECHNICAL SERVICES

The Technical Services Division (TSD) selects, acquires, and catalogs the world's biomedical literature (see Figs. 5-7) and publishes this data in the NLM Current Catalog. Proof sheets of NLM cataloging were issued twice a week to selected libraries to determine the value of rapid dissemination of cataloging information, and received a favorable response. As a result, the Medical Library Association arranged to issue the proof sheets on a subscription basis, starting in July 1970.

Serial-record data for the 20,964 journals currently received by NLM were furnished to the Union Catalog of Medical Periodicals (UCMP) staff, which began converting the records to machine-readable form. Work had been completed on 7,500 titles by the end of the fiscal year. This project will form the basis both for automating serial work at NLM, and for establishing a national union list of health-science periodicals linked to a network of regional union lists.

Use of external sources to select and acquire materials was further expanded during the year. The procurement program with Keio University in Tokyo was augmented to include selection, acquisition, and cataloging of available Far Eastern biomedical literature for the Library. In addition, arrangements were made with the Library of Congress to re-



ceive their preliminary catalog cards for publications received under the "All the Books Program." The cards are being used as one selection source for biomedical materials published in the United States.

An on-line, in-process file to support cooperative cataloging activities was initiated with the State University of New York Upstate Medical Library at Syracuse (SUNY Upstate) and the Francis A. Countway Library of Medicine at Harvard. Records of in-process cataloging can be quickly checked to avoid duplication of effort. These records are maintained in the SUNY file, with the three libraries entering their data via 2740 terminals, and searching the file via the same terminals.

Library school students, working part-time, began to correct the card catalog to conform to the Anglo-American rules; computer file maintenance corrections will also be made for 1966-70 cataloging. This will make possible the consolidation of computerized catalog data, thus fa-

cilitating its use by other medical libraries.

REFERENCE SERVICES

This Division provides reference, bibliographic, and reader services to users at the Library, and supplies material from the Library's collections to the biomedical community at large by means of an extensive interlibrary loan program in conjunction with the Regional Medical Library Network. It also maintains and preserves, through contract binding and the microrecording of deteriorating publications, the collection of library materials published from 1871 to date.

Reference, Bibliographic, and Reader Service

The Reference Services Division (RSD) received over 21,000 reference inquiries during the fiscal year (see Fig. 8). More than 25,000 health science professionals and students used the Reading Room and requested over 78,000 items.

Plans for a "Multi-Media Resource" within the Reference Section have been developed, and the first steps are being taken to implement it, including space renovation and the securing of motion pictures, video tapes, and slide sets. Two model exhibits were installed in the Library for a "Tutorial Environment System" and a "Medical Education Jukebox," both self-instructional devices designed with NLM support.

The Division established a Health Sciences Bibliographic Clearinghouse to collect, index, and distribute bibliographies in the health sciences. Staff members issued for evaluation a pilot publication, Bibliography of Medical Bibliographies, listing available bibliographies and providing an index to them. A training course for medical librarians was developed, including the preparation of a Reference Services Manual. A list of reference sources also was updated and published in the Bulletin of the Medical Library Association as "Selected Reference Aids for Small Medical Libraries."

Interlibrary Loan

The Division received over 100,000 interlibrary loan requests (see Fig. 9). Photocopy of journal articles was usually furnished in lieu of lending the original volume. The average time required for staff to fill requests improved during the year.

Work progressed toward completion of an automated Graphic Image System. Equipment with the capacity to store 150,000 articles in microcopy form has been designed to provide rapid response to interlibrary loan requests for material from a selected group of journals. Delivery of the system is scheduled in the next fiscal year.

Preservation and Photographic Support

Over 21,000 journal and monograph volumes were bound, and almost 600,000 pages of deteriorating and irreplaceable library material were microfilmed to archival standards (see Fig. 10). In addition to interlibrary loan and preservation filming, the Division filmed and processed 380,000 catalog cards, processed 151,000 photocomposed pages for Index Medicus and other publications, and produced 2,200 photographs and slides.

HISTORY OF MEDICINE

The History of Medicine Division (HMD) acquires, organizes, and services the Library's original source materials for study and research in the history of medicine and related sciences (see Fig. 11). It prepares catalogs, bibliographies, and works of independent historical scholarship. The Division has custody of manuscripts, prints, and all publications in the Library's possession that appeared prior to 1871.

During Fiscal Year 1970, HMD provided approximately 4,000 books, manuscript boxes, and microfilm reels to readers in the Library. It filled over 2,000 requests for photocopies and interlibrary loans, and supplied 1,000 photographs and slides in response to requests for pictorial material.

HMD added almost 1,500 volumes to the historical collections, and over 160,000 manuscript items, including papers of Drs. Ward Darley, Harold L. Stewart, and Jacob M. Ulmer, the Civil War letters of Dr. Thomas Winston, and official records of the Association of American Medical Colleges and the Association of State and Territorial Health Officers. HMD cataloged over 3,000 monographs and serial titles.

The fourth volume of the Bibliography of the History of Medicine appeared in April 1970.

Bibliographic Services

	FY 68	FY 69	FY 70
Journals Indexed in <u>Index Medicus</u>	2,246	2,260	2,251
Articles Indexed			
NLM -----	112,010	99,447	90,859
Other U.S. -----	58,978	76,249	75,528
Foreign -----	<u>21,935</u>	<u>34,906</u>	<u>43,613</u>
Total -----	192,923	210,602	210,000
MEDLARS Searches Performed			
NLM -----	2,500	3,182	3,550
U.S. Centers -----	5,173	8,231	10,737
Foreign -----	<u>2,698</u>	<u>4,062</u>	<u>6,453</u>
Total -----	10,371	15,475	20,740
Recurring Bibliographies -----	11	16	18
Literature Searches Distributed ..	18,403	23,005	23,351

Fig. 4

Growth of Collections

	Volumes Added	Total Volumes in Collection
BOOK MATERIAL		
1. Bound Monographs		
a. -1800 -----	408	37,518
b. 1801-1913 -----	212	89,058
c. 1914- -----	<u>8,418</u>	<u>228,218</u>
Subtotal (1) -----	9,038	354,794
2. Bound Serials -----	16,343	365,484
3. Unbound Issues, Volume Equivalents -----	-----	<u>20,964</u>
Total Bound Volumes (1+2+3) ..	25,381	741,242
4. Theses -----	8,660	318,848
5. Pamphlets -----	308	<u>171,522</u>
Subtotal (4+5) -----	8,968	490,370
Total Book Material -----	34,349	1,231,612
NON-BOOK MATERIAL		
1. Microfilms (Archival Film on Reels) ..	426	11,111
2. Microfiche -----	1,459	3,100
3. Pictures -----	<u>403</u>	<u>67,133</u>
Total Non-Book Material -----	2,288	81,344
GRAND TOTAL -----	36,637	1,712,956

Fig. 5

Acquisition Activities

	1968	1969	1970
SEARCHING			
Prospects Considered for Acquisition,			
Not in Library -----	14,209	22,015	16,081
Prospects Considered for Acquisition,			
Library Has -----	11,997	5,855	14,647
TOTAL -----	26,206	27,870	30,728
ORDERS PLACED -----	5,025	5,670	8,625
SERIAL RECORD *			
New Titles Added -----	1,299	1,847	2,114
Discontinued Titles -----	553	1,604**	598
Current Titles Received -----	18,459	19,448	20,964
PUBLICATIONS PROCESSED			
Serial Pieces -----	88,757	96,920	94,175
Other -----	27,698	27,353	27,767
TOTAL PUBLICATIONS PROCESSED -----	116,455	124,273	121,942
OBLIGATIONS FOR PUBLICATIONS ..	\$204,300.	\$286,398.	\$355,000.
(Included for Rare Books) -----	\$ 23,564.	\$ 41,353.	\$ 60,212.

* Figures for serial titles have been corrected for titles which have been deleted or ceased publication.

** Includes 1,000 titles removed from serial records, congresses, and college catalogs.

Fig. 6

Cataloging Activities

	1968	1969	1970
Completed Cataloging			
New Titles	14,450	14,273	16,344
Recataloged Titles	1,253	1,253	1,423
TOTAL	15,703	15,526	17,767
Volumes Reclassified and/or Transferred	1,070	1,582	2,055
Catalog Cards Filed	114,256	119,904	113,080
Volumes Shelved	13,006	10,380	10,441

Fig. 7

Reference Services

	1968	1969	1970
Requests by Telephone	11,871	11,698	10,715
Government	(5,432)	(5,500)	(5,281)
Non-government	(6,439)	(6,198)	(5,434)
Requests by Mail	1,300	1,322	1,218
Government	(196)	(161)	(145)
Non-government	(1,104)	(1,161)	(1,073)
Readers Assisted	11,580	11,185	9,769
Government	(3,639)	(3,795)	(3,487)
Non-government	(7,941)	(7,390)	(6,282)
TOTAL	24,751	24,205	21,702
Government	(9,267)	(9,456)	(8,913)
Non-government	(15,484)	(14,749)	(12,789)
Readers Counted	31,671	27,303	25,786

Fig. 8

Circulation Statistics

	1968	1969	1970
Requests Received	261,938	234,666	219,229
Requests Filled	220,633	199,461	179,390
Requests Unfilled	41,305	35,205	39,839
Rejected	(6,290)	(7,510)	(14,244)
Not Available	(35,015)	(27,695)	(25,595)
Percentage of Requests Filled *	86.3%	87.8%	87.5%
ITEMS USED BY MAJOR CATEGORY			
Reader Requests	93,794	82,412	78,779
Interlibrary Loans	126,839	117,049	100,611
Photocopy	(120,021)	(110,573)	(93,746)
Original	(6,818)	(6,476)	(6,865)

* Based on total number of requests accepted (receipts less rejections).

Fig. 9

Binding Statistics

	1968	1969	1970
Volumes Sent to Binder	16,986	16,650	15,361
Volumes Returned from Binder and Processed	18,022	15,606	27,157
New Volumes	(16,630)	(14,805)	(25,999)
Rebinds	(1,392)	(801)	(1,158)
Volumes Bound at NLM	4,858	6,330	5,551
Volumes Repaired at NLM	4,314	4,787	4,683

Microrecords Statistics

	1968	1969	1970
Volumes Collated	3,986	2,925	1,248
Pages Edited	1,294,209	1,089,831	528,425
Reels of Film Accepted	1,534	2,338	422

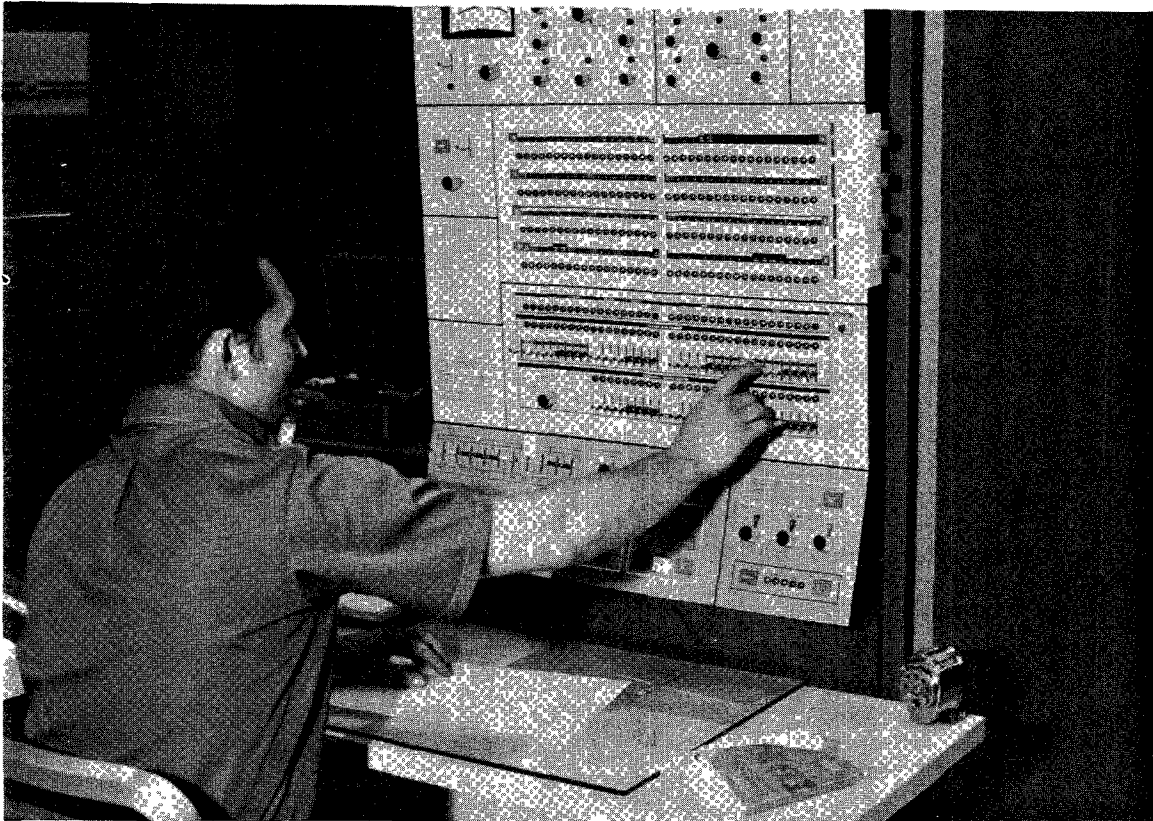
Fig. 10

History of Medicine Division Activities

	1968	1969	1970
ACQUISITIONS			
Books	382	456	1,538
Modern Manuscripts	41,431	23,250	159,627
Oral History Hours	58	83	66
Prints and Photographs	1,581	2,286	634
PROCESSING			
Titles Cataloged	1,166	1,384	3,132
Entries Established (18th c.)	1,555	1,068	436
Modern Manuscripts Cataloged	41,226	39,831	39,070
Pictures Indexed	1,512	486	430
Articles Indexed	4,295	4,620	5,327
Pages Microfilmed	126,678	139,003	160,704
PUBLIC SERVICE			
Reference Questions Answered	2,041	1,652	1,461
ILL and Pay Orders Filled	2,533	2,234	1,985
Reader Requests Filled	5,215	4,742	3,876
Pictures Supplied	1,910	1,409	1,094

Fig. 11

IBM 360/50 console control unit.



OFFICE OF COMPUTER AND ENGINEERING SERVICES

The Office of Computer and Engineering Services (OCES) provides automated data processing and related support to the various programs of the Library, including technical planning, systems analysis and development, computer programming, and computer operations. A major responsibility is the systems development for the design and implementation of MEDLARS II. The staff of OCES directs this development effort, is responsible for the work of the principal contractor (Computer Sciences Corporation), and provides for the necessary coordination with other parts of the Library.

MEDLARS I ACTIVITIES

The Honeywell 800/200 computer systems continued to function reliably in support of MEDLARS I production, with around-the-clock work shifts throughout the year. Computer processing at the Army Map Service supplements the Library's computer, and another capability was established at two Department of Defense computer facilities to be used by the Ohio State IBM 7094 programs for

processing demand searches. Improved flexibility of processing resulted, during the month of May, in the shortest throughput time for demand search in the history of MEDLARS, averaging only five days from submission for input to the computer to final output.

Three of the four production categories showed an increase for the year: MEDLARS citations input increased from 226,000 to 228,000; demand searches increased from 6,500 to 8,000; and total photocomposed pages increased from 65,000 to 75,000. Catalog entries remained at approximately the same level (19,600).

MEDLARS II DEVELOPMENT

MEDLARS II has as its main objectives: 1) more specificity in indexing, with an augmented vocabulary; 2) user-machine interaction for input, vocabulary browsing, and retrieval; 3) improvements in response time to bibliographic requests; and 4) automated acquisitions and cataloging procedures. The system is to be implemented in two phases—

INITIAL in the second quarter of Fiscal Year 1971, and EXTENDED in the second quarter of Fiscal Year 1972. The INITIAL is characterized by batch operation with selected extensions over MEDLARS I mainly in the vocabulary area. The EXTENDED will provide more comprehensive capabilities, with on-line access to the system through remote devices.

Specific steps leading to the software implementation are the Overall Functional Design Specifications and Detailed Application Design within the overall framework for each phase of implementation. In conjunction with these design efforts, input and output requirements were analyzed.

An IBM 360/50 computer was accepted in June 1969 for the development and implementation of the MEDLARS II system. The keymatic encoder (a keyboard to magnetic tape device) was selected for input preparation to MEDLARS II, because of its ready adaptability to the INITIAL system design and expanded character set capability, using a single keystroke.

The PHOTON 713-100-15 has been

approved by the Joint Committee on Printing for production at the Library of smaller bibliographies and catalog cards. Larger publications will be produced on the LINOTRON 1010 at the Government Printing Office.

OTHER SUPPORT ACTIVITIES

Computer programming was accomplished to provide a file maintenance capability for the Auxiliary Chemical Module, and to segment the chemical name data for input into the MEDLARS II vocabulary.

An automated audiovisual distribution system was developed for the National Medical Audiovisual Center by OCES, in conjunction with contract personnel from the Radio Corporation of America. Its objectives are to: provide master file maintenance, inventory control, and accurate, current booking accounting; systematize shipping and receiving of audiovisuals; and speed the processing of unscheduled requests. Transactions are sent from NMAC offices in Atlanta, Georgia, via telephone lines for processing at NLM; resulting instructions and booking data are then transmitted back to NMAC.

SPECIALIZED INFORMATION SERVICES

Specialized Information Services (SIS) was established at the National Library of Medicine to meet national needs for information in toxicology and related fields. The Toxicology Information Program (TIP), an element of SIS, was designed to fulfill recommendations made by the President's Science Advisory Committee in recognition of the impact of chemical contaminants on the environment and their effects on human health and welfare. SIS receives guidance concerning scope and operational priorities from a committee in the Division of Medical Sciences of the National Academy of Sciences, National Research Council, which maintains contact with the professional, academic, and industrial communities.

TOXICOLOGY INFORMATION PROGRAM (TIP)

The TIP devoted almost all in-house effort, during the past year, to projects concerning pesticides information.

As the result of a Toxicology User Study, conducted by interviews and by a large-scale national mailing of questionnaires to toxicologists and related scientists, TIP is now better prepared to develop specific products and services to meet national needs.

Through a university contract, TIP has also been studying various domestic and foreign sources of toxicology information. The study has identified relevant primary journals, secondary services, sources of unpublished data, and non-serial publications, as well as certain industrial firms which have expressed a willingness to cooperate with TIP. Another contract enabled TIP to identify nationally some 4,000 individual toxicology professionals who will volunteer to provide direct assistance to TIP.

The National Referral Center, Library of Congress, produced for TIP A Directory of Information Resources in the United States: General Toxicology, listing

approximately 700 potential information resources. The Directory became available for sale to the public through the Government Printing Office in January 1970.

Initial efforts to develop a terminology for toxicology were begun during the fiscal year. A group of experts submitted core and specialty lists of terms for review by TIP; this work will be continued.

TIP's continuing interest in drug interactions led to a contract to develop and produce in 1971 a drug interaction bibliography, which will cite articles dealing with drug-drug and drug-chemical interactions and their effects on human health.

The Program is continuing work on computer input, file management, and search programs which will support computer-based toxicology data files. Nearing completion by the close of the fiscal year were pilot computer programs to provide capabilities for processing and editing of scientific text. Subscripts, superscripts, chemical structure diagrams, and many special characters would be acceptable in input documents as part of the scientific text. The input capability includes hardware for handling the special characters keyed directly onto computer-compatible magnetic tape.

TIP continued to work with industrial toxicologists to learn more about their needs and problems as related to existing secondary sources of information.

DRUG LITERATURE PROGRAM (DLP)

Preparation continued, in cooperation with MeSH and other BSD staff, for the increased indexing anticipated in MEDLARS II. The MEDLARS subgroup of the Academy of Pharmaceutical Sciences' Subcommittee on Information was established and the initial meeting held.

The DLP staff was detailed to Library Operations in April, pending the Library's conversion to MEDLARS II.

NMAC television control room.



NATIONAL MEDICAL AUDIOVISUAL CENTER

The National Medical Audiovisual Center (NMAC) plans and administers a national program to improve the quality and use of biomedical audiovisuals in the schools of the health professions and throughout the biomedical community. The Center thus contributes directly to the mission of the National Library of Medicine in strengthening the information services in support of the national health effort.

The Center acquires and distributes films and other audiovisual materials; provides biomedical audiovisual reference and research services; consults with and assists medical schools and institutions in the development and use of audiovisual systems and materials; conducts audiovisual research, training, experimental production, and other activities in the development of media to support medical education; and encourages production, distribution, and use of audiovisual materials in the health sciences.

In 1970, NMAC completed a major reorganization, shifting emphasis from motion picture and television production to expanded programs in the acquisition, organization, and distribution of health professional audiovisuals, related clearinghouse reference services, and activities involving educational research, consultation, training, and media development.

More than 72,000 audiovisuals were distributed in Fiscal Year 1970 (see Fig. 12). During the year, some 29 motion pictures and 41 television programs were completed (see Fig. 13). These covered such areas as clinical pathology, concepts and controversies in modern medicine, physical diagnosis, rehabilitation medicine, and teaching in medical laboratory operations.

NMAC provided over 260 consultations, surveys, seminar/workshops, and presentations for schools of the health professions and related organizations (see

Fig. 14). During the latter part of the fiscal year, a series of six seminar/workshops were presented at NMAC on motion picture production, physical learning spaces, sound/slide series production, photomicrography and photomacrography, television production, and orientation to the computerized audiovisual reference services at NMAC. In addition, a national Conference of Directors of Biomedical Communication was held at the Center. Participation in the workshops and other meetings was limited to key physicians and professional medical educators representing many schools of medicine, dentistry, nursing, and other health professions. All sessions were filled to capacity.

NEW PROGRAMS

Cooperative Media Development Projects

During the fiscal year, NMAC entered into cooperative projects with schools of

the health professions, national professional health organizations, and agencies of the Federal Government to help develop audiovisual media for medical teaching. Each cooperative proposal must meet specific criteria as to subject matter and scope; relate to medical teaching; have national significance and applicability; and be acceptable to a target audience of health professionals. Cooperative projects are now being considered for the development of audiovisual core material in such fields as pathology, psychiatry, anatomy, orthopedics, and obstetrics.

NMAC Videotape Duplication Program

A videotape duplication program was initiated this year to make available, without charge, duplicates of NMAC's videotape master material. Eligible requesters provide NMAC with raw videotape to which the Center transfers requested material from about 175 master tapes of programs produced at NMAC or acquired from other sources. These programs

NATIONAL MEDICAL AUDIOVISUAL CENTER

Audiovisuals Distributed

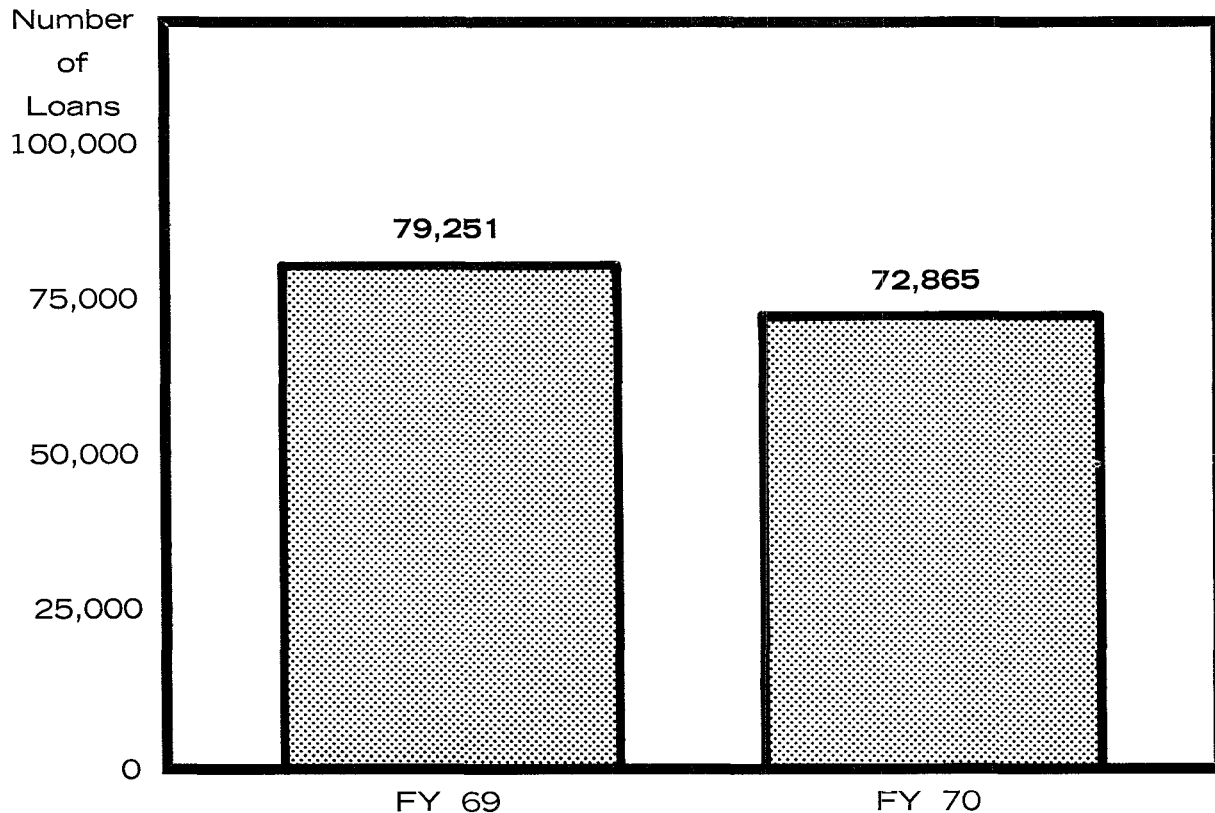


Fig. 12

cover a wide variety of professional medical teaching material in clinical pathology, nursing, radiology, surgery, cardiology, and other medical subjects.

CONTINUING PROGRAMS

Clinical Pathology Series

During 1970, NMAC completed a series of 56 videotape programs which constitute a core course in clinical pathology. The series is available for both loan and purchase as transfers on 16mm black and white film, and will be available in videotape format through the new videotape duplicating service.

Concepts and Controversies in Modern Medicine Series

This series was continued, with completion of the following programs: "Hospitalization of the Psychiatric Patient:

Should It Be Abolished?"; "The Anticoagulation Dilemma"; "The Oral Contraceptives"; and the "The Medical School and the Community: How Are They Related?" Programs in this series are also available for loan or sale on 16mm black and white film, and will be made available through the new videotape duplication project.

Rehabilitation Medicine Series

A cooperative project with the New York University Institute of Rehabilitation Medicine continued in Fiscal Year 1970 with production of 12 single-concept teaching films (8 mm cartridge) to assist in training physical therapists. This series now comprises over 50 films.

Automated Audiovisual Distribution System

Conversion to computer of the NMAC Distribution System, begun in 1969, continued in 1970 in an effort to coordinate

NATIONAL MEDICAL AUDIOVISUAL CENTER

Motion Picture and Television Productions

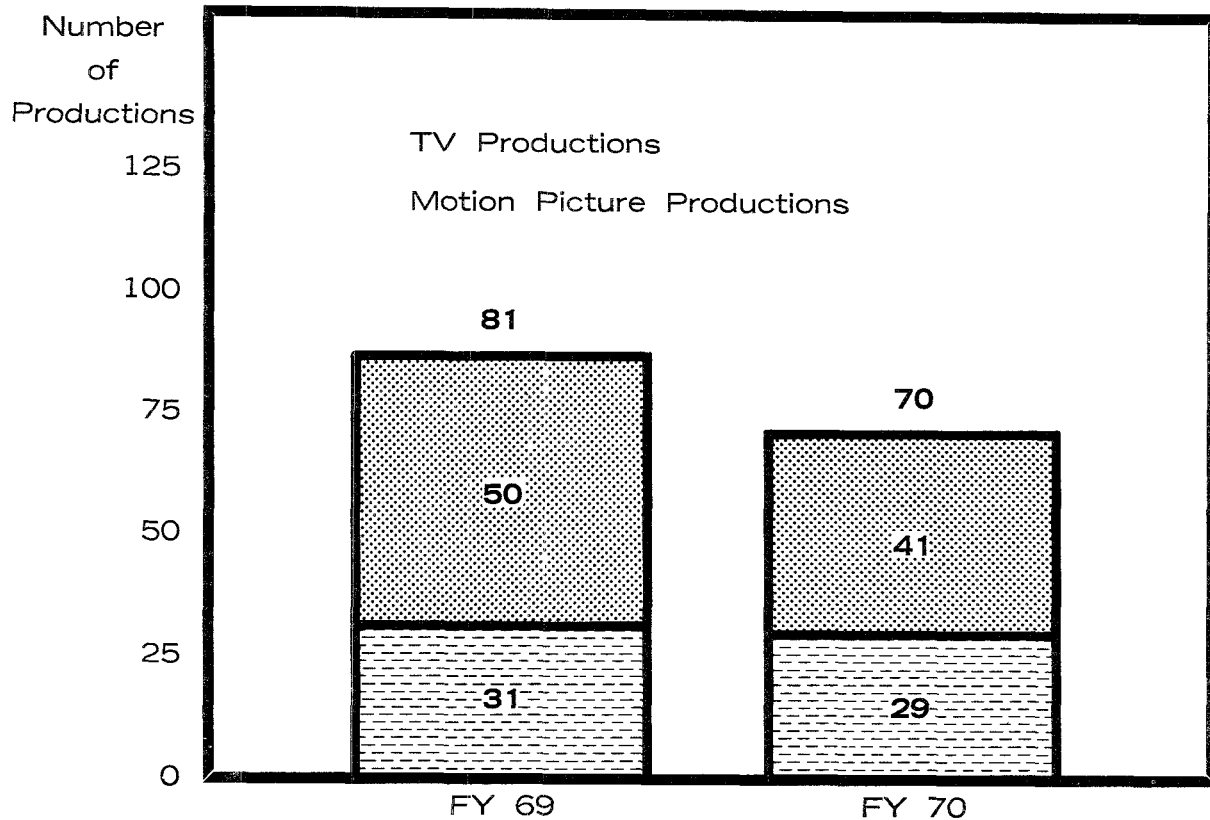


Fig. 13

this program with the computer services provided by OCES. Full computer operations began in June 1970.

Computerized International Index of Medical Film Data (IIMFD)

The IIMFD was computerized and has been operating successfully for a year. All data can now be retrieved by: (1) any combination of 65 major subject categories or 1,800 sub-headings, (2) any combination of 3,000 distribution and sales sources, (3) specific titled address, or (4) major cataloging project designation. The Center furnished more than 7,000 subject-oriented searches from the International Index during the fiscal year.

NMAC/VA Cooperative Project

The Center continued a program begun in 1969 with the Veterans Administration (VA) to provide information about materials available for education in hematology,

psychiatry, gastroenterology, and surgery. With support from the VA, NMAC has also provided consultative and advisory services to the American College of Orthopaedic Surgeons in the development of 60 sound/slide productions.

Publications

Toward Improved Learning, Volume II, was published by the Center in Fiscal Year 1970 and distributed to the medical profession. The 1970 National Medical Audiovisual Center Catalog and the Film Reference Guide for Medicine and Allied Sciences, 1970 edition, will be released early in Fiscal Year 1971 by the Government Printing Office.

Curtailed Programs

Operations involving the Still Picture Collection, the National Archives of Medical Motion Pictures, and the Motion Picture Stock Footage Collection were suspended in Fiscal Year 1970.

NATIONAL MEDICAL AUDIOVISUAL CENTER

Educational Systems and Development Advisory Services

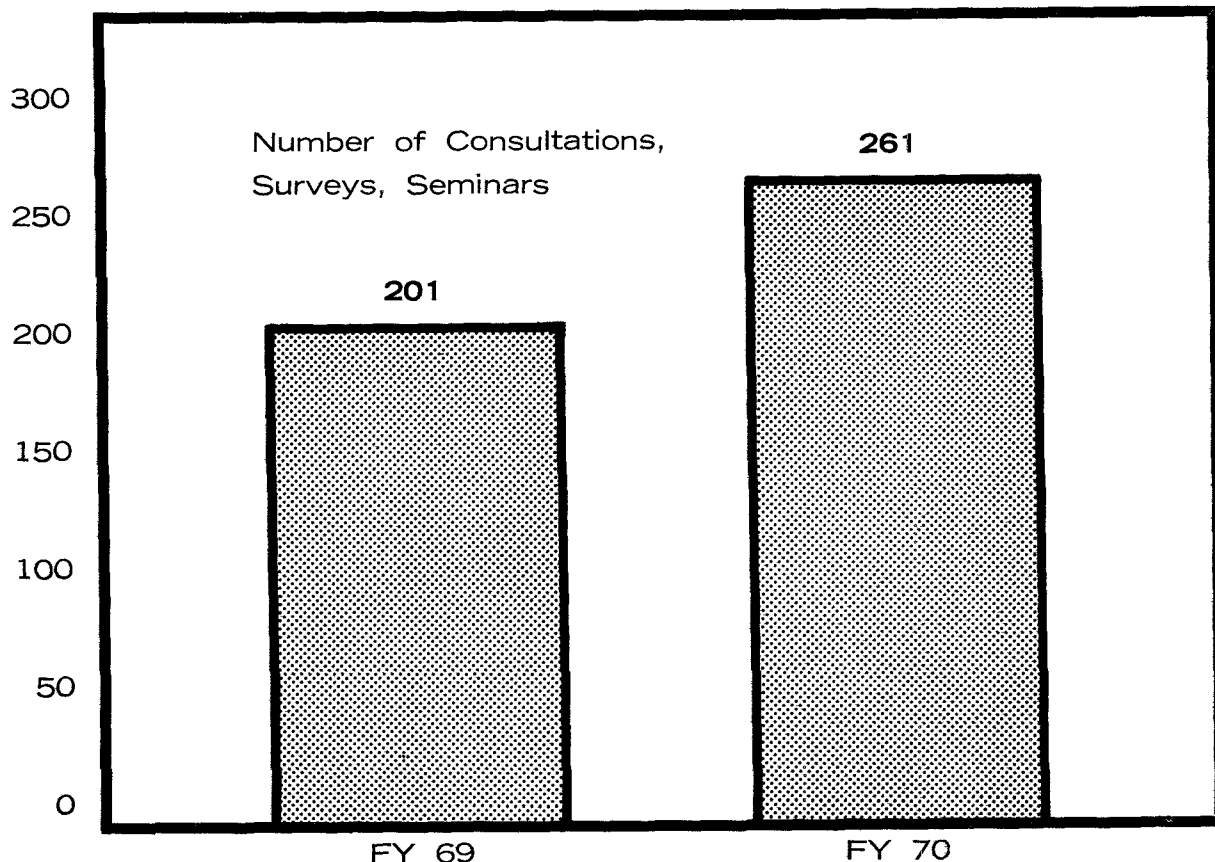
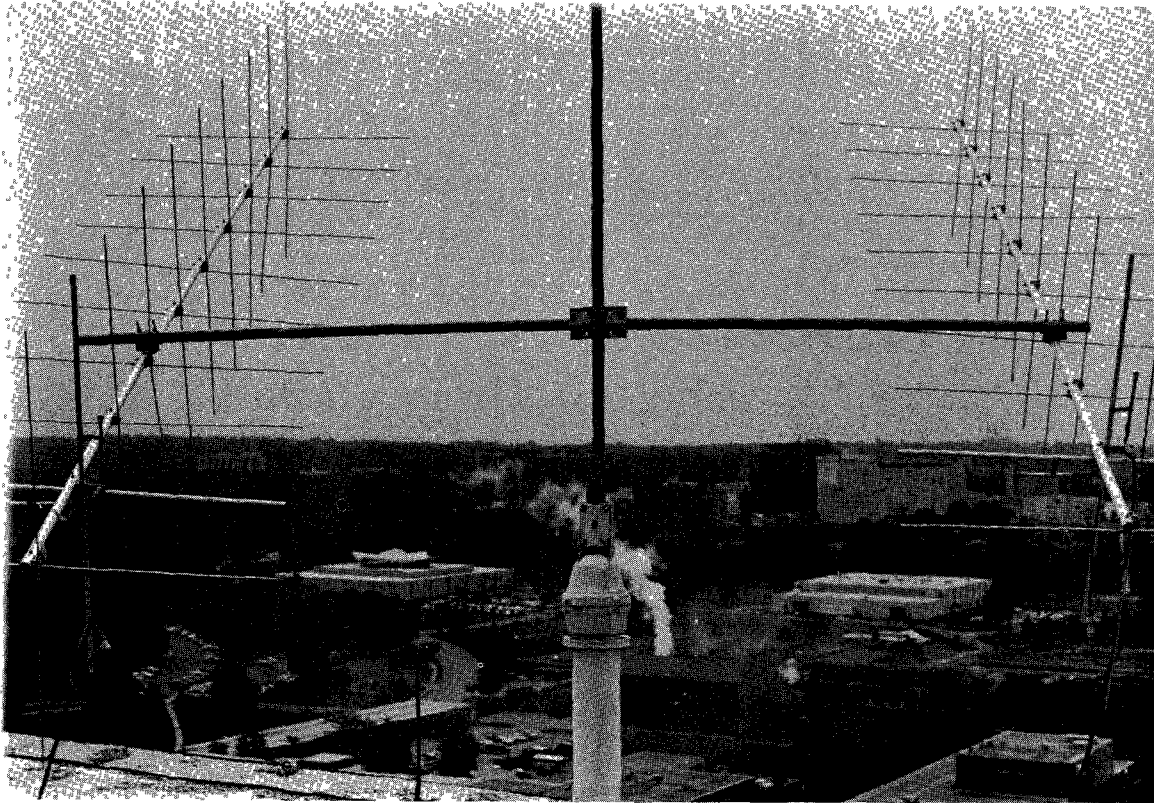


Fig. 14

Satellite communications antenna atop the NIH Clinical Center.



THE LISTER HILL NATIONAL CENTER FOR BIOMEDICAL COMMUNICATIONS

The Lister Hill National Center for Biomedical Communications (LHNCBC) has the responsibility within the National Library of Medicine for improving health care delivery, medical education, and biomedical research through new applications of computer and communication technology. It also serves as the focal point within DHEW for coordination of biomedical communications systems and network projects.

During Fiscal Year 1970, the Center continued its efforts to define the educational and information needs of the medical community, and to relate these needs to services which a national Biomedical Communications Network could provide. A contract with the Council of Academic Societies of the Association of American Medical Colleges produced information and advice concerning the educational needs of the medical community. A steering committee of medical educators concentrated specifically on relating these needs to the content and mechanisms

which the Lister Hill Center could best use in the selection, production, evaluation, and delivery of education services.

The Center has also worked actively with a newly formed committee of the American Medical Association entitled "Computers in Medicine." This committee is focusing, with staff of the Center, on problems of standardization and sharing of computer records and resources. The Universities Associated for Research and Education in Pathology (UAREP) is now under contract to develop selected educational materials to support learning in specific areas of pathology.

BIOMEDICAL COMMUNICATIONS INVENTORY

The Center, as DHEW focal point for biomedical communications project and network activities, continued to perform special analyses such as the Biomedical Communications Inventory (BCI) prepared in Fiscal Year 1969. Using information

from this inventory, the Center presented a preliminary overview of DHEW biomedical communications activities to the Library's Board of Regents in November 1969; subsequently, a revised analysis of survey information was submitted to the Director, NIH. The Center arranged for agency briefings for the Assistant Secretary for Health and Scientific Affairs, DHEW, as a step toward formulating a Departmental program for improved coordination of DHEW biomedical communications projects.

BIOMEDICAL COMMUNICATIONS NETWORK

The Center concentrated its efforts on the development of experimental prototype services of a Biomedical Communications Network.

Video Networking

The Center undertook three specific projects related to linking medical schools and hospitals by television. The first was a comprehensive design and cost analysis of a video network connecting all U. S. medical schools. The second looks to the design of an experimental television network which would allow interaction among Dartmouth Medical School, the University of Vermont Medical College, the University of New Hampshire, and some 16 community and Veterans Administration hospitals in the Vermont-New Hampshire area. (A contract for the engineering design of this network—which would be used for purposes of both medical education and the delivery of health care—has been initiated with the Jansky & Bailey Department of the Atlantic Research Corporation.)

The final project focuses on using a video network to relate the continuing education resources of a university medical center to specific, patient-oriented problems confronting those who deliver health care. A contract has been negotiated with Dartmouth College for the design, implementation, operation, and evaluation of such a network linking the Dartmouth Medical School-Mary Hitchcock Memorial Hospital complex and Claremont General Hospital. The Center hopes to produce, through this project, a model system which could be adapted for use in areas where one or two medical centers must serve a large number of isolated, small communities.

On-Line Computer Networking

The Center, in cooperation with Library Operations staff, has initiated a new experimental service, called the AIM-TWX System, to provide rapid, responsive searching of the medical literature. Bibliographic information on articles published

during the last five years in over 100 journals of clinical medicine is being stored in a large, time-sharing computer in Santa Monica, California, run by the System Development Corporation. The journals include those in the new Abridged Index Medicus (AIM). This computer can be called from either TWX terminals or Teletype terminals connected to the telephone network. After placing a call to the computer and signing in with his number, the terminal user receives instructions from the computer, explaining how to search the stored bibliographic information in a simple, conversational way. This experiment is being conducted to identify the usefulness of such services: 1) to help medical practitioners in isolated areas, 2) to assist in undergraduate, graduate, and continuing medical education, and 3) to provide information precisely when it is needed for health care. About 15 interested groups were authorized in Fiscal Year 1970 to use the system.

Audio Networking

The Center, in conjunction with the University of Wisconsin and the RAND Corporation, completed studies which analyzed the need for telephone dial access or audio services, and produced a network design, including costing data, which would make such services available nationwide. Implementation awaits a re-examination of priorities for available funds.

SATELLITE COMMUNICATIONS

The Center initiated an experimental satellite communications project during Fiscal Year 1970, using the National Aeronautics and Space Administration's Applications Technology Satellites (ATS). The project's initial objective is to experiment with satellite communications as a means for medical consultation between remote areas and participating medical centers; a long-range objective is the exploration of the degree to which satellite communications technology can be applied to the spectrum of biomedical communications. The LHCNBC, using its own satellite communications terminal located in the NIH Clinical Center, formed a network consisting of a component of the University of Alaska, and the medical centers and engineering facilities at the University of Wisconsin, the University of Washington, and Stanford University. During April 1970, the LHCNBC initiated a series of satellite communications tests. The series produced the successful transmission of live electrocardiograms, slow-scan television and color facsimile, and the interrogation of a time-sharing computer through consoles linked to the computer via satellite.

ON-LINE INDEXING

The Lister Hill Center has also been active in exploring the potential of technology for library-related activities. Since the fall of 1967, the Center has been working with the Lincoln Laboratory of MIT on the development of an interactive system for using and manipulating the controlled vocabulary of MEDLARS, Medical Subject Headings (MeSH). To meet this objective, Lincoln Laboratory

has built a data base which contains all of the existing MeSH terminology. The system has been modified to allow use of a cathode ray tube display terminal at the National Library of Medicine. A first version of an on-line indexing capability has been developed to operate using this terminal, and the first experiments in indexing medical literature on-line have been completed.

EXTRAMURAL PROGRAMS

The Office of Extramural Programs (EP) administers grants and contracts authorized by the Medical Library Assistance Act of 1965, and an international program funded by special foreign currencies. Of major significance to the library community was the passage in March 1970 of a three-year extension of the Medical Library Assistance Act. The Medical Library Assistance Extension Act of 1970 increases the previous authorization of \$21 million per year to a maximum of \$27.5 million at the end of the third year. Other changes include the policy for making resource grants, the addition of demonstration project authority, and a provision for planning grants for Regional Medical Libraries.

REGIONAL MEDICAL LIBRARIES

This program supports a national system of Regional Medical Libraries to supplement the services provided by existing health science libraries. Fiscal Year 1970 saw a total coverage of the nation with Regional Medical Library services, with awards made for the South Central and Mid-Continental regions (see Appendix A).

RESOURCE GRANTS

These grants provide funds to expand and improve medical library resources. Since the enactment of the Medical Library Assistance Act of 1965, 1,418 awards have been made to 402 institutions. During Fiscal Year 1970, new grants were awarded to 12 libraries, and continuing support provided to 385 libraries. Most grants are used to expand basic collections of books and journals or to acquire indexing or reference tools. Some larger libraries use grants for assistance in automation of processing procedures, production of union lists, improvement of catalogs, and expansion of bibliographic and interlibrary loan service. Recent amendments to the Medical Library Assistance Act offer greater flexibility in the operation of the program. For the first time, grants may be made to assist in the establishment of new libraries, and the size of an award is based on the needs of the institution and the quality of its proposal. (Previously, the amount was based on the library's operating budget for the past three years.)

TRAINING GRANTS

More than 100 health information specialists received support from NLM training programs during the year. Five of these programs provided internships to

21 librarians for specialized training in information processing and medical librarianship. Six grants supported 65 trainees for master's degree programs in biomedical communications or health librarianship. Four doctoral programs supported 11 Ph.D. candidates for careers in health information research. One specialized program for medical editors supported five trainees. Applications were received for two training programs in a new area: multi-media specialization for health education, research, and service programs. Three postdoctoral research fellowships were supported. Four new programs will not recruit until next year.

SPECIAL SCIENTIFIC PROJECTS

Five scholars continued to receive support for studies of major scientific advances related to health.

RESEARCH GRANTS

NLM research grants support four program areas: (1) library-related research and development; (2) information science research and development, e.g., projects to improve information storage and retrieval, and studies of information needs of health workers; (3) historical research in medicine and health; and (4) projects to develop and analyze information search tools, or to review and analyze the health literature. A total of 46 research projects were active during the fiscal year, although only 11 new projects were funded.

PUBLICATIONS GRANTS

Among the projects funded in this program during Fiscal Year 1970 were the publication of critical reviews and translations of Russian literature in psychophysiology and psychosomatic medicine; the preparation of an internationally standardized comparative nomenclature in histology; and the preparation of a stereotaxic brain atlas.

INTERNATIONAL PROGRAMS

The Library serves as the principal resource within the Department of Health, Education, and Welfare for the improvement of international exchange of published biomedical information in the special foreign currency program (Public Law 480). During Fiscal Year 1970, projects were developed in Israel, Poland, Yugoslavia, and India. These projects include translations of biomedical monographs and journals, critical reviews, histories of medicine, conference proceedings, abstracting, indexing, and audiovisual projects.

MEDICAL LIBRARY CONSTRUCTION PROGRAM

The construction grant program authorized by the Medical Library Assistance Act is administered by the Bureau

of Health Professions Education and Manpower Training, National Institutes of Health.

Extramural Programs		
Program Accomplishments—Fiscal Year 1970		
Program	New Grants FY 1970	Total Active Grants
Regional Medical Library	3	10
Medical Library Resource Grants	12	397
Training Grants and Fellowships	7	23
Special Scientific Projects	0	5
Research Grants	11	46
Publications Grants	<u>5</u>	<u>17</u>
TOTAL	38	498

Fig. 15

REGIONAL MEDICAL LIBRARIES

Appendix A

Regional Medical Library	Service Area
1. New England Region Francis A. Countway Library of Medicine Harvard University Boston, Massachusetts	Conn., Me., Mass., N.H., R.I., Vt.
2. New York Region New York Academy of Medicine Library New York, New York	New York and the 11 northern counties of New Jersey
3. Mid-Eastern Region Library of the College of Physicians Philadelphia, Pennsylvania	Pa., Del., and the ten southern counties of New Jersey
4. Mid-Atlantic Region National Library of Medicine Bethesda, Maryland	Va., W. Va., Md., D.C., N.C.
5. East Central Region Wayne State University Medical Library Detroit, Michigan	Ky., Mich., Ohio
6. Southeastern Region A. W. Calhoun Medical Library Emory University Atlanta, Georgia	Ala., Fla., Ga., Miss., S.C., Tenn., Commonwealth of Puerto Rico
7. Midwest Region John Crerar Library Chicago, Illinois	Ill., Ind., Iowa, Minn., N.D., Wis.
8. Midcontinental Region University of Nebraska Medical Center Omaha, Nebraska	Colo., Kans., Mo., Neb., S.D., Utah, Wyo.
9. South Central Region University of Texas Southwestern Medical School at Dallas Dallas, Texas	Ark., La., N.M., Okla., Tex.
10. Pacific Northwest Region Health Sciences Library University of Washington Seattle, Washington	Alaska, Idaho, Mont., Oreg., Wash.
11. Pacific Southwest Region Biomedical Library, UCLA Los Angeles, California	Ariz., Calif., Hawaii, Nev.

MEDLARS PRODUCTS

Appendix B

1. Index Medicus (Monthly)
2. Cumulated Index Medicus (Annual)
3. Abridged Index Medicus (Monthly)
4. Bibliography of Medical Reviews (Monthly—Annual)
5. List of Journals Indexed in Index Medicus (Annual)
6. Medical Subject Headings (Annual)
7. NLM Current Catalog (Biweekly—Quarterly—Annual)
8. Anesthesiology Bibliography (Bimonthly—Sixth issue cumulative)
Cooperating Organization: Wood Library-Museum of Anesthesiology
9. Artificial Kidney Bibliography (Quarterly)
Cooperating Organization: National Institute of Arthritis and Metabolic Diseases,
National Institutes of Health
10. Cerebrovascular Bibliography (Quarterly)
Cooperating Organizations: National Heart Institute, and National Institute of
Neurological Diseases and Stroke, National Institutes of Health
11. Index to Dental Literature (Cumulative quarterly)
Cooperating Organization: American Dental Association
12. Endocrinology Index (Bimonthly)
Cooperating Organization: National Institute of Arthritis and Metabolic Diseases,
National Institutes of Health
13. Fibrinolysis, Thrombolysis & Blood Clotting (Monthly—Annual)
Cooperating Organization: Committee on Thrombolytic Agents, National Heart In-
stitute, National Institutes of Health
14. International Nursing Index (Cumulative quarterly)
Cooperating Organization: American Journal of Nursing Co.
15. Bibliography of Medical Education (Monthly)
Cooperating Organization: Association of American Medical Colleges
16. Index of Rheumatology (Monthly)
Cooperating Organization: American Rheumatism Association
17. Bibliography of Surgery of the Hand (Quarterly—Fourth issue cumulative)
Cooperating Organization: American Society for Surgery of the Hand
18. Toxicity Bibliography (Quarterly)
Cooperating Organization: Drug Literature Program, National Library of Medicine
19. Current Bibliography of Epidemiology (Monthly—Annual)
Cooperating Organization: American Public Health Association
20. Neurosurgical Biblio-Index (Quarterly)
Cooperating Organization: American Association of Neurological Surgeons
21. Cranio-Facial—Cleft Palate Bibliography (Quarterly)
Cooperating Organization: American Cleft Palate Association
22. Index of Investigative Dermatopathology and Dermatology (Monthly)
Cooperating Organization: Universities Associated for Research and Education
in Pathology, Inc.
23. Recurring Bibliography on Hypertension (Bimonthly)
Cooperating Organization: American Heart Association, Inc.
24. Recurring Bibliography on Education in the Allied Health Professions (Annual)
Cooperating Organization: School of Allied Medical Professions, The Ohio State
University
25. Parkinson's Disease and Related Disorders, Citations from the Literature (Monthly)
Cooperating Organization: National Institute of Neurological Diseases and Stroke,
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STAFF HONORS

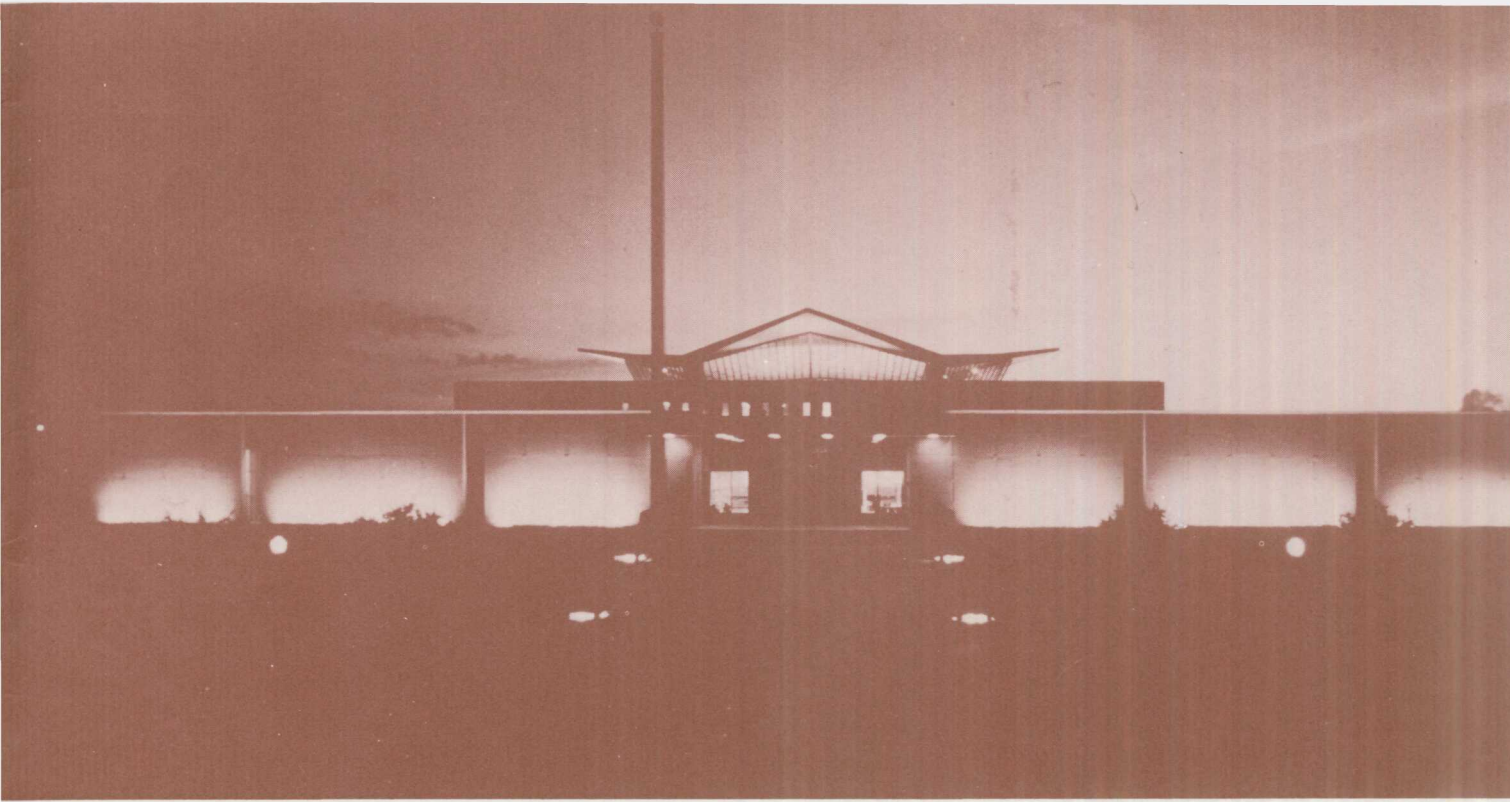
Appendix D

Recipient	Honor	Date
Mr. Ralph Simmons	First Annual NLM Director's Award for Outstanding Contribution to the Library's Programs	November 1969
Dr. Jaroslav Nemeč	First Annual Regents' Award for Scholarship or Technical Achievement	June 1970
Mr. David Kefauver	DHEW Superior Service Award	June 1970

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service

National Institutes of Health