early nineteenth centuries in developing printing in India.

The section on the public library and national development makes the customary case for the importance of libraries in developing countries but more specific reference to India would improve it. There is substantial reference to the Scandinavian countries, which reflects the author's study tour of libraries in the United Kingdom and Scandinavia as a UNESCO fellow in 1951–52. His report to UNESCO appears as an appendix. Other appendices include education for librarianship in India, a valuable expansion of the DDC for Indic subjects, and a description of the working of a district library.

It may be a quibble to note that this book would have benefited from more careful editing, attention to bibliographical detail, and some up-dating of references. In scanning the dates of the items cited in the bibliographies, where dates were given, only three appeared later than 1960, and none later than 1965.

In summary, the historical and descriptive material is of interest and value to any reader concerned with the development of libraries and bibliography in India; that dealing with organization and management is too elementary for the informed student. Nevertheless, the author has succeeded in his stated purpose to produce a general textbook for use by students preparing for diploma or degree examinations in library science in Indian universities.— *Carl W. Hintz, Oregon State System of Higher Education.*　■■

ABSTRACTS

(The abstracts below are selected from those prepared for publication in Research in Education *by the ERIC Clearinghouse for Library and Information Sciences at the University of Minnesota. Unless otherwise noted, copies of the following documents are available, by purchase, in microfiche or hard copy format, from the ERIC Document Reproduction Service, National Cash Register Co., 4936 Fairmont Avenue., Bethesda, Maryland 20014. Orders must include ED number.)*

Mathematical Models for Library Systems Analysis. By F. F. Leimkuhler. Washington, D.C.: NSF, 1967. 17 p. (available from the Clearinghouse for Federal Scientific and Technical Information as PB 176 113, MF—$0.65 HC—$3.00).

This paper reviews the research on design and operation of research libraries sponsored by the Purdue University Libraries and the Purdue School of Industrial Engineering. The use of mathematical models in library operations research is discussed. Among the mathematical methods discussed are marginal analysis or cost minimization, computer simulation, and statistical inference. The shelving models, storage and retrieval models, and search and file organization models developed by the Purdue operations research group are described.

A DDC Bibliography on Computers in Information Sciences. Volume I. Information Sciences Series. Alexandria, Va.: Defense Documentation Center for Scientific and Technical Information, 1968. 304 p. (ED 029 676, MF—$0.65 HC—$3.00).

The unclassified and unlimited bibliography compiles references dealing specifically with the role of computers in information sciences. The volume contains 249 annotated references grouped under four major headings: Time Shared, On-Line and Real Time Systems, and Computer Components. The references are arranged in accession number (AD-number) sequence within each heading. Four indexes, AD-Numeric, Corporate Author/Monitoring Agency, Personal Author, and Contract, are appended to facilitate access to references.

A DDC Bibliography on Computers in Information Sciences. Volume II. Information Sciences Series. Alexandria, Va.: Defense Documentation Center for Scientific and Technical Information, 1968. 297 p. (ED 029 677, MF—$0.65 HC—$3.00).

The unclassified and unlimited bibliography compiles references dealing specifically with the role of computers in information sciences. The volume contains 239 annotated references grouped under three major headings: Artificial and Programming Languages, Computer Processing of Analog Data, and Computer Processing of Digital Data. The references are arranged in accession number (AD-number) sequence within each heading. Four indexes, AD-Numeric, Corporate Author/ Monitoring Agency, Personal Author, and Contract, are appended to facilitate access to references.

An Inventory of Library Services and Resources of the State of Washington, 1965. By Dorothy L. Bevis. Olympia: Washington State Library. 363 p. (Free; EDRS price $1.50).

This survey of current library resources and services in Washington is based on questionnaires; visits to public, university, college and community college libraries in the state; and statistics from state and national governmental sources. The inventories of public and academic libraries include discussions of standards applicable to the libraries and descriptive text and charts which give pertinent information about these libraries. The examination of school libraries is based on a survey published in 1964 under the supervision of the State Office of Public Instruction, which is updated with recent comparative statistics, and an historical sketch of school libraries in Washington. Trends and survey recommendations indicate a transition from the book-centered school library to an integrated library/audiovisual program of services. A comprehensive examination of community college libraries in the state emphasizes the recent growth in Washington's community colleges and the effect of this

on their libraries. Also included in this report is a survey of the Washington State Library, prepared in 1965, which gives information on services to the public libraries of the state. Appendices include a union list of periodicals in libraries in the Spokane area, the survey questionnaires and checklists, and a bibliography of ninety items used in conducting the inventory.

Development of an Integrated, Computer-Based Bibliographical Data System for a Large University Library. Annual Report to the National Science Foundation from the University of Chicago Library, 1966/67. By H. Fussler and C. T. Payne. Chicago: University of Chicago Library, 1967. 48 p. (PB 176 469, MF—$0.65 HC—$3.00).

Part I is a discussion of the following project tasks: (1) development of an on-line, real-time bibliographic data processing system; (2) implementation in library operations; (3) character sets; (4) Project MARC; (5) circulation; and (6) processing operation studies. Part II is a brief discussion of efforts to work out cooperative library systems development. Part III lists projects and task efforts in man-months. Part IV lists tasks underway and projected for 1967/68. Appendix A includes samples of bibliographic data input worksheets and output catalog card array. Appendix B is a paper given by Charles T. Payne on May 1, 1967, at the Clinic on Library Application of Data Processing conducted by the Graduate School of Library Science, University of Illinois, covering the problems and progress of the project.

An Operations Research and Systems Engineering Study of a University Library. Final Report (No. 5). Baltimore: Johns Hopkins University Library, 1968. 66 p. (ED 001 376, MF—$0.50 HC—$3.40).

This fifth and final report describes activities since June 1965. Centralization of the Eisenhower Library Collection was completed early in 1965 and a circulation system became operational in April 1965. The main portion of this report focuses

on various aspects of the circulation system such as preparation of identification cards; the photographic process; circulation control operations (date due stickers, key punching and verifying, library utilization, work in process delay, quality control, and computer operations); and a simulated borrowing study. It is proposed in the report that an all-numeric code replace the call number or input identifier in the circulation system. The processing and updating procedures for the shelflist on tape are described. Acquisitions, cataloging, and activities of the library staff are discussed briefly.

Library Catalogs: Their Preservation and Maintenance by Photographic and Automated Techniques. By James W. Henderson and Joseph A. Rosenthal, eds. Cambridge: M.I.T. Press, 1968. 267 p. $7.50.

The report deals with one basic question: What does a large research library do when its catalog shows signs of serious deterioration? The catalog under consideration in this report was the Main Public Catalog of the Research Libraries of the New York Public Library. The catalog has nine million cards, some of which date back to 1857. A 1965 report by Seoud Matta, "The Card Catalog in a Large Research Library: Present Conditions and Future Possibilities in the New York Public Library," recommended putting the catalog into book form in order to preserve it. This report is devoted to the technical details of preserving the present catalog and planning for the future. Major conclusions of the study recommended that: (1) the catalogs of the Research Libraries of the New York Public Library be divided chronologically as soon as possible; (2) the present (or retrospective) Public Catalog be reproduced photographically in book form; (3) the future (or prospective) catalogs be produced in a combination of card and book form from a store of machine-readable data; and (4) a Central Serial Record be created to contain acquisition information, cataloging and holdings data, and bindery records for all serial publications in the Research Libraries.

Least Cost Decision Rules for the Selection of Library Materials for Compact Storage. By Winston C. Lister. Washington, D.C.: NSF, 1967. 282 p. (ED 027 917, available from the Clearinghouse for Federal Scientific and Technical Information as PB 174 441, MF—$0.65 HC—$3.00).

Two aspects to be considered in designing a storage system for library materials are the fraction of the collection which is to be stored and the criteria to be used for selecting materials for storage. This study demonstrates that for a given selection criterion least-cost storage quantities can be assessed with stored materials. Two storage criteria, one based upon the age of the materials and the other utilizing the individual book usage rates, are discussed and compared. For the age policy the objective is the determination of a least-cost critical age at which materials are transferred to storage and a definition of the fraction of the collection that should be stored. The model assumes that the circulation rate of the books declines with age according to an average geometric pattern of obsolescence.

Library Effectiveness: A Systems Approach. By Philip M. Morse. Cambridge: M.I.T. Press, 1968. 214 p. $10.

Addressed to both librarians and system analysts, this book attempts to apply the analytic methods of operations research and systems analysis to the operating problems of the library. The first part of the book discusses theoretical models with emphasis on the pattern of book use, on its change with time, and on the problem of estimating and evaluating the degree to which the library satisfies or fails to satisfy the seeker of information, and includes chapters on Library Use and Probability Distributions, Arrivals and the Poisson Distribution, Queues and Book Circulation Interference, and Book Use and the Markov Process. In the second part, an actual sample library—the Science Library at M.I.T.—is chosen to show how this theory can assist the managing librarian. An appendix gives tables of the Markov-Poisson Process. ■■