

is forcing decisions on the profession that it may not yet be prepared to consider, let alone resolve.

This rather slight volume is the result of a two-year inquiry by Bolt, Beranek and Newman, Inc., sponsored by the Council on Library Resources. The project director, Dr. Licklider, is a psychologist and is extremely well qualified to undertake such a study. During the period of the study, he was successively at BB & N, the Advanced Research Projects Agency of the Defense Department, and IBM (an excellent example of today's high-level commuting scientist).

The text is divided into two parts: (1) Concepts and Problems of Man's Interaction with the Body of Recorded Knowledge; and (2) Explorations in the Use of Computers in Information Storage, Organization, and Retrieval. One of the more important concepts is the *procognitive* system, which "substitutes for the book a device that will make it easy to transmit information without transporting material" (p. 6). Such systems "will not only present information to people but also process it for them, following procedures they specify, apply, monitor, and, if necessary, revise and reapply" (p. 6). To provide these services "a meld of library and computer is evidently required" (p. 6). The objectives of such systems "are to promote and facilitate the acquisition, organization, and use of knowledge" (p. 21). If we substitute "book" for "knowledge" here, we have a definition of libraries. The substitution, however, is significant. The development of these systems, by the way, will not only affect libraries serving sophisticated users, but will also have a tremendous impact on the whole educational process, particularly the relationship between libraries and the learning process.

The first half of the book (Man's Interaction with Recorded Knowledge), despite shortcomings, is well worth reading. The important chapter on "Aims, Requirements, Plans, and Criteria" is a *tour de force* that does not quite come off. It is lucid, stimulating, and a brilliant monologue, but too much is assumed or left unsaid. There are literally hundreds of ideas here that need closer examination and detailed analysis. This reviewer cannot escape the feeling that it is a hasty generalization "off the top

of the head," skimming glibly over critical problems.

Licklider has fortunately left himself and the reader a necessary, if not graceful, exit. If the user of the procognitive system finds himself at a total loss and loses track of what he is doing, he can always press buttons which ask "Where am I?" or "What should I do next?" "Through either of these programs," the author explains, "the user can reach a human librarian" (p. 127). Yes, Virginia, there is a Santa Claus.

The second part of the book (Explorations in the Use of Computers) is a brief summary of investigations made during the inquiry. They range from a survey of syntactic analysis by computer to methods of evaluating retrieval systems. This part, more than the first, suffers from lack of pattern: a string of isolated studies which pick at a whole bagful of problems without thorough analysis of any one. Many fundamental problems concerning the learning process, cognition, and semantics must be answered before such studies can be integrated into even small operational systems.

Despite its short-comings, this book is at present the best and most lucid statement of what the library may look like by the end of the century.—Robert S. Taylor, *Lehigh University*.

Specialized Information Centers. By Allen Kent with the assistance of John Canter. Washington, D.C.: Spartan Books, 1965. 296p. \$9. (65-16172).

It is difficult for this reviewer to say just what this book is all about, or rather what it was put together from. Some of the "case studies" in it are taken from a 1962 National Science Foundation publication; the bulk of it consists of "case histories" taken from answers to a questionnaire sent out (probably in September of 1963, although the authors don't say) to "500 specialized information centers . . . spread throughout North America." Information centers, and presumably the recipients of the questionnaire, are defined, for the purposes of this book as "any library or collection of documents which serves more than one or a few people."

This is one of the standard ways of manufacturing a nonbook—great goblets of un-

digested excerpts glued together with a bland, and usually nonoffensive, prose. There are, however, unwritten rules of practical ethics and scholarship to be observed even in this shadow world of nonliterature. One identifies and thanks the contributors, if one ever expects them to answer another survey—and to make it possible for the reader to find out more about a topic which interests him without running into a blank wall of noncitation. One tells how many answers were received, so the reader will know whether the book represents a valid statistical study or random culls from an ever-shortening list.

The authors' curious passion for other people's anonymity makes the reviewer's job particularly difficult. There are, for example, seven footnotes in the whole book. Four of these are to the same (1962) book by Kent (a much better book than this, by the way); the one reference to a journal article neglects to include the author's name (Fred Whaley). The only information center cited in the index is, naturally, the Russian *Viniti*. The text does name, by inadvertent inclusion of a caption, and devote some five pages to TDCK, the Netherlands Armed Forces Technical Documentation and Information Center. (And how did Jan Schüller ever get a questionnaire limited to North America?) The only proper names in the index are those of the prestigious Jerome Wiesner (based on an incorrect citation) and Congressman Roman C. Pucinski. James Killian, Presidential Science Advisor before Wiesner, and hence twice removed from the seat of power rates mention in the text but not the index—a delicate touch of protocol, this.

Painstaking textual criticism, on a rainy Sunday afternoon, suggests that not more than seventy answers were received to the five hundred questionnaires mailed, and that not more than thirty-five of these responded in any useful detail. This is, presumably, the "large sampling" of the preface. (By way of comparison, NSF-61-68, "Specialized Science Information Services in the United States," at one time available from the Superintendent of Documents for \$1.75, started out with six thousand mailings to a list selected from ten thousand organizations. Some four thousand organizations answered; detailed questionnaires were

then mailed to one thousand centers, and answers were returned by seven hundred. The final book, admittedly a directory rather than a survey of operations, includes details on 427 organizations.) These seventy-odd answers were then cut apart and glued together into chapters on acquisition, analysis, terminology control and the like.

There are at least two problems with this technique, especially if the first thing done with the editorial scissors is to cut off the respondent's name. By definition, only those centers which answer are included, even if their staff consists of "1/10 professional and 1/10 secretary." Slightly larger centers, such as the Defense Documentation Center (which at the time the questionnaires were apparently sent out was still called ASTIA, and so referenced) are dismissed with a casual remark, even though the literature is bulked with reports describing their activities.

Then too, the space devoted to a center tends to be proportional to the length of its response, rather than its over-all importance. For instance, the center which receives most space in the text is the Institute of Experimental Medicine and Surgery of the University of Montreal disguised, *passim*, as: "the specialized information center of an institute"; "medical library of a medical school"; "a medical school with particular interest in documentation . . ."; "a medical school with overt interests in the field of experimental medicine"; "the experimental medicine division of a medical school"; "a medical school's information center"; "a medical school's specialized information center"; "a medical school whose information center specializes in the documentation of literature pertaining to endocrinology and stress"; and, I suspect, as a "search-ready" (sic) specialized information center in the field of medicine."

Since my agency is the only federal sponsor of documentation activities at the University of Montreal, I am naturally gratified by the space devoted to these activities. Yet the librarian, George Ember, and I agree that both because of its unique use of the Symbolic Shorthand Notation for coding, and the ready availability in Montreal of skilled yet inexpensive coders (to say nothing of the complete absence of mechanization) the University of Montreal might

have gotten slightly more than its fair share of space in the book.

I am never quite sure whether the Yalu river should stand between the reviewer of a book and the advertising claims made for it. Since naive book-buyers may be guided by these, it seems only fair to point out that this is *not* "The first book in the specialized information center field that. . . ." Pride of this place is surely occupied by the classic "Centralized Information Services—Opportunities and Problems," Western Reserve University Press and Interscience, 1958 written, oddly enough, by Allen Kent and James Perry.

The librarian, though, should derive some small consolation from this book—the same consolation derivable from one of Samuel Johnson's statements: "Commerce," said he, "can't be so difficult. Look at the class of people who succeed in it." Since the book defines an information center as any library or collection of documents, it not only bridges but annihilates "the existing gulf between the librarian and the documentalst."—*Harold Wooster, Air Force Office of Scientific Research.*

Clinic on Library Applications of Data Processing. Proceedings. 1963. Ed. by Herbert Goldhor. Champaign, Ill.: Distributed by the Illini Union Bookstore, [1964]. vii, 176p. \$2. paper. (65-1841).

This small volume serves as an excellent travel guide through selected data processing installations in libraries across the country. Representing a broad range of libraries by type, all but three of the ten papers presented are case studies of operating systems in various stages of development. As a result the collection is a practical demonstration of how mechanization and automation can help rather than an excursion into theoretical advantages as yet untried. As such, the book is particularly valuable to the novice in the field, although a careful comparison of the variant methods of operation will suggest adaptable alternatives to those librarians already in the systems planning stage.

Public librarians will be particularly interested in Lorin Burns' description of automation in the public libraries of Lake County, Indiana, and John Henderson's very

full explanation of the production of the book catalog in the Los Angeles County system. For those librarians in smaller systems who have justifiable qualms about the expense of mechanization, Burns' figures on the annual cost of handling acquisitions, book processing, registration, circulation control, and catalog card production will probably be a pleasant surprise. James Jacobs' paper on the possibilities of data processing in school library systems appears to be valid enough, although for the most part it depicts planning rather than current operation. Ralph Parker's paper on the evolution of automatic systems at the University of Missouri, on the other hand, represents more than fourteen years of pioneering progress which university librarians just now beginning to develop systems can admire and envy. Special library systems are represented by two papers, Marjorie Griffin's history of the trial-and-error method of development at IBM's Advanced Systems Development and Research Library, and Hillis Griffin's description of processing and circulation at the National Reactor Testing Station Technical Library in Idaho. In the final case study Seymour Taine discusses the preparation of the Index Medicus and the Medical Literature Analysis and Retrieval System (MEDLARS) at the National Library of Medicine.

In the three general papers, Burton Adkinson discusses trends in the library application of data processing, Donald Kraft describes Key Word in Context indexing and the selective dissemination of information, and Louis Schultheiss contributes a brief but useful exposition of flow charts as the basic step in systems design. Included as an appendix is Edward McCormick's "Bibliography on Mechanized Library Processes," which is an excellent starting point for further investigation.

Two conclusions are inescapable in considering the contents of these papers. First, it is apparent that with the exception of some efforts of limited scope in the special library field, all applications of data processing to date have been in the area of the library's housekeeping operations, technical services, and circulation. The time is ripe for some significant experimentation in the application of machinery to general biblio-

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