Review Articles

Where Facts Are

Scientists' Approaches to Information. By Melvin J. Voigt. Chicago: ALA, 1961. 81p. (ACRL Monograph No. 24) $2.50.

"Information storage and retrieval" is a phrase with a futuristic ring, but it denotes processes which have been carried on, in one way or another, for ages. Only lately has the sequence of file now, find later been dignified by such an impressive title, and one tends still to associate the phrase with mechanized information processing. This small volume considers information retrieval as it is now practiced by scientists, using the abstracts, indexes, journals, and other tools which are available. Not enough time, the author feels, has been spent in asking basic questions about the ways scientists find the information they need. A study of current usage might give useful hints for the improvement of older tools and the design of new ones.

The aim of the study was to determine how and where scientists locate needed facts; the method was a series of interviews with individual scientists and groups of scientists, some 225 in all. To eliminate possible language bias, the study was caried out in Scandinavia, where most scientists can use English, German, and French—the languages of the principal information sources—with nearly equal facility. Three different "approaches to information" were identified: The current approach, or "keeping up with the literature;" the everyday approach, or the search for specific facts in the course of the researcher's daily work; and the exhaustive approach, in which all pertinent information on a topic is desired.

All of the existing reference tools in the field were used, but their importance varied according to the scientist's approach—his reasons for making the search. For the current approach, or learning of new develop-ments, contact with other scientists either in person or by correspondence was found to be quite important. Finding the information rapidly seemed to be the determining factor in choice of sources for the everyday approach, since the scientist's associates and the standard handbooks, reviews, encyclopedias, etc., were most widely used. The exhaustive approach, predictably, made much use of articles in periodicals, journals, and printed reports, as well as indexes and abstracts to locate them.

The author points out that no single source of information can be adequate for all approaches and suggests that the perfection of mechanical tools for exhaustive literature searching is less important than improvement in sources used for the current approach. These sources might be made more useful by adding more specialized indexing and abstracting services for the narrower fields, by the further use of mechanical methods in the preparation of bibliographical services, and by international cooperation in the production of information sources within a given field. Machines alone will not save the scientists and librarians from burial beneath the increasing mass of published material, but a combination of old and new techniques should enable them to keep pace.—*Richard W. Ryan, Library of Congress.*

Machine Translation

Computers and Common Sense—the Myth of Thinking Machines. By Mortimer Taube. New York: Columbia University Press, 1961. 136p. $3.75.

A number of weighty subjects are discussed in this slender book: machine translation, learning machines, man-machine relations, the meaning of meaning, and the need for criticism in science. Much of the book deals with attempts to formalize, i.e.

to express in terms of rules, language, and learning. Since these attempts have not been and are not likely to be successful, Dr. Taube concludes that the mechanization of language translation and learning and (by implication) of abstracting and indexing is not possible. The author writes interestingly, often amusingly, but the tone of his argument raises some doubt as to the author's detachment, an essential characteristic of a critic. This Dr. Taube himself seems to sense when he states in his introduction that at times his argument becomes quite devious and difficult to follow. "After all," he tells us, "if the fox twists and turns, so must the hound."

Briefly, here are some of his arguments: For machine translation of languages, language A has to be formally (mechanically) translatable into language B. This presupposes that languages A and B can be translated into formal elements A and B and that there is a one-to-one relationship between elements A and B. Dr. Taube claims that neither supposition is true. Chess playing by computer is cited as the classic example of machine learning. Dr. Taube distinguishes between *learning the rules* of the game and *learning to play* the game. The latter learning process cannot be mechanized. The rules of chess can be formalized, but at a cost. Dr. Taube estimates that a forty-move game requires 10^{120} instructions. Learning to play chess, and by analogy learning, is not a formal process and can, therefore, not be mechanized.

This book can be read on at least two levels. On a rather unsophisticated level, it reassures librarians that their jobs will not be taken over by computers. Dr. Taube does more than this. He questions the validity of the work of leading researchers in the fields under discussion. About ten years ago, Dr. Taube introduced the Uniterm system of coordinate indexing and along with it levelled some serious charges against traditional indexes. This is not the time nor the place to discuss these charges. Suffice it to say that the questions are still under debate and that Dr. Taube's words and deeds have stimulated work in this field to the benefit of the profession. In writing this book Dr. Taube has once again put on his armor, but this time against an army of opponents who are ahead of the times (in fact, way out according to Dr. Taube) instead of behind the times. There is no doubt that this book will stimulate thought and action on these important problems.—*G. Jahoda, Esso Research and Engineering Co.*

Photocopying

Photocopying from Bound Volumes. By William R. Hawken. Chicago: ALA, 1962. xvi, 208p. (LTP Publications, No. 4) $5.00.

For the past several decades, libraries have acknowledged a responsibility not only for selecting, acquiring, and organizing books but also for transmitting information by methods other than circulating library materials. Since the 1930's, microphotography has been the primary method of intermediate transmission. Although full-size copying was first developed in 1839, it was not until 1950 that techniques were perfected (xerography, transfer reversal) which gave libraries a tool for direct, full-size copying from bound volumes. Since that time the market has been flooded with a bewildering variety of equipment, all of which seem to promise the ideal solution to the information transmission problem.

Recognizing the impossibility of the average librarian's evaluating the myriad claims of competing types of equipment (one machine has been marketed by six companies under six different trade names!) the Library Technology Project, under a grant from the Council on Library Resources, commissioned William Hawken to analyze and report on all varieties of book copying devices, excluding microfilm.

Over the period of a year, Mr. Hawken tested twenty different copying machines. The report thoroughly covers the generic types of copying methods so that the reader is familiarized with the basic differences between contact reflex (diffusion-transfer-reversal, thermographic, gelatin-dye-transfer) and optical copying methods. Each type has certain problems as well as advantages, which are well summarized, and the author evaluates the permanence of the copy produced by each method.

Of particular value is the detailed analysis of each machine tested. The author has given machine specifications, price, exposure