

Book Reviews

Let ERMA Do It. The full story of automation. David O. Woodbury. Harcourt, Brace, New York, 1956. xiv + 305 pp. Illus. \$5.

David Woodbury's 12th book about some of the mysteries and achievements of science and technology, written for the nontechnical layman, is one of his best. The first half of the book, "This business about automation," is an absorbing discussion of the development of automatic devices and techniques in relation to the concomitant social and economic changes. By citing experience, Woodbury advances the thesis that automatic manufacturing and accounting or computing processes have not displaced human workers—they have freed them for more skilled occupations and better pay. They have increased the general level of employment by requiring more persons to plan and make decisions instead of performing the same routine operations day after day. The analysis of certain major business functions or manufacturing processes facilitates an understanding of what can be done, more and more, by mechanics and electronics, and what man still must do. Why have the motor-car industry and petroleum refineries been so receptive to, and successful in, automation? Why cannot the manufacture of beer and of pretzels be made automatic in a similar manner?

The second part of the book, "ERMA and her friends," is a description of several of the outstanding electronic devices in current use, or now being developed. One of the earliest, ERMA (Electronic Recording Machine—Accounting), has revolutionized the keeping of depositors' accounts and the issuance of monthly statements in banks. ERMA's other friends, such as UNIVAC, ENIAC, MANIAC, SAGE, RAM, and MAGGIE, are introduced so clearly that anyone who adds or subtracts can understand what they are intended to do. Perhaps MAGGIE or one of her future offspring may some day keep the AAAS membership and journal subscription records. So far, the extraordinary electronic devices are not substitutes for human brains, yet they do decide between predetermined alternatives. The future, however, will

witness great improvements in the capacity and versatility of these machines. The concluding chapter, "Where do you and I fit in?" leaves the reader with the task of finishing the story insofar as his own future activity may be related to the rapidly expanding world of automation.

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Documentation in Action. Jesse H. Shera, Allen Kent, and James W. Perry. Based on the 1956 Conference on Documentation at Western Reserve University. Reinhold, New York; Chapman and Hall, London, 1956. 471 pp. Illus. \$10.

At the beginning of 1955, the School of Library Science of Western Reserve University brought together a group of some 19 people from various organizations and institutions to help plan a conference which would concern itself with the following aspects of documentation: (i) use of recorded information; (ii) improvement of the availability and utility of such information; (iii) development and application of new methods, systems, and equipment; and (iv) training of personnel. Together they planned a symposium which was called the Conference on the Practical Utilization of Recorded Knowledge. It was held in January 1956. *Documentation in Action* is, in effect, the proceedings of the conference.

In reviewing a work of this type, one cannot help comparing it with the proceedings of the Royal Society Scientific Information Conference, which was held in London a little over 7 years before the Western Reserve University conference. In many respects, the programs and purposes of the two conferences are similar.

One is also tempted to compare the Western Reserve conference with the projected International Conference on Scientific Information, now being organized by the National Academy of Sciences in collaboration with the American Documentation Institute. Here, again, the program and organizational structure

are quite like those of the Western Reserve conference. In all three conferences, the basic scheme appears to be much the same. All involve working committees and working papers which deal with different aspects of librarianship and documentation.

The thing that most clearly distinguishes the Western Reserve conference from the other two conferences is the nature and derivation of its working papers. In both the Royal Society conference and the projected international conference, a basic criterion of the papers is originality. The working committees in the Royal Society conference were asked, and those of the international conference are being asked, to enlist the aid of specialists in the conduct of firsthand investigations in the problem areas defined by their planning committees. This method is calculated to bring forth original papers based on original research.

In the case of the Western Reserve conference, the accent is on essay-type papers in which groups of experts, from their own knowledge and experience, sum up the problems and developments of the day and the possible significance of these problems and developments. In some instances, the resulting working papers lean very heavily on the past literature in the field of documentation and librarianship for their substance. In other instances, we have "thought" pieces, which reflect the professional feelings and opinions of the writers.

In any attempt to summarize and synthesize contemporary ideas in a field, one must tread the very fine line that divides the informative distillation from the stereotyped rehash. *Documentation in Action* falls on both sides of the line.

The first part of the book consists of seven chapters which review "present requirements, methods and problems" in documentation. It begins with a well-developed glossary of documentation terminology. This is followed by a discussion of interorganizational endeavors in the dissemination of information. This subject was apparently uppermost in the minds of the organizers of the Western Reserve conference. Twelve of the 26 chapters in the book touch on it in one way or another.

The third chapter is a sort of exercise or demonstration in the use of operations-research in formulating decisions. It does not seem to fit in with the other six chapters in the first part of the book. The fourth chapter gets back on the track with a discussion of the present status of education in librarianship. The fifth chapter leaves the track again with a rather overlaid discussion of the characteristics of recorded information.

The sixth chapter is given to an exhaustive and informative inventory of

methods and devices for the analysis, storage, and retrieval of information. This chapter comes closest to what one would imagine to have been the goal of the conference. It summarizes the present status of the various conventional and *avant-garde* systems for organizing bodies of scholarly and technical information in ways that will make them most useful. It does this in a way to interest the reader in possibly looking into the available systems and maybe even making some use of them.

Like the sixth chapter, the seventh brings us more or less up to date in an important and basic area of documentation: studies of the mechanisms by which people who need information go about getting it and using it. This chapter would have been better if the authors had resisted the temptation to inject value judgments. Nevertheless, it serves as a challenge by focusing attention on the fact that the documentalist and librarian really know very little about the people for whom they are trying to make information readily available.

With the exception of four later chapters, nothing in particular would have been lost, and probably a good deal would have been gained, if *Documentation in Action* had ended with chapter seven.

The first of the four exceptions is a chapter entitled, "Men, information, and now automation in the decision-making process." It is a clearly speculative look at the future role of computers and computerlike machines in operations-research and in library reference work. It helps to underline the economic and other practical advantages of using such machines and the role of interorganization cooperation as an economic expedient in their use.

The second of these notable chapters is entitled, "Information theory and the retrieval of information." It attempts, with considerable success, to set forth the problems and possibilities of applying information theory to bibliographic organization. We are given a look at some of the problems which may be involved in the utilization of digital computers for storing and searching information and for preparing bibliographies.

The next chapter is in the same vein, with the important addition that it gives some indication of the inner workings of these machines. In so doing, it helps the librarian and documentalist to formulate his requirements and aspirations for mechanized searching in terms which take into account the things that machines can and cannot do and the limited means by which they do the things they do. One of the factors that has slowed progress in the development of mechanical searching devices is the fact that li-

brarians and documentalists have not known how to speak to the machine-designers, and vice versa.

The last of these four chapters is one which deals with the bibliographic problems of law. It is rather unfortunate that most of the activities in documentation, to date, have concerned themselves only with natural science and technology. The law represents an area of activity which is uniquely dependent on the literature for its substance. It has a rich and mature literature whose organization for practical use has given rise to many important and basic innovations in publishing, librarianship, and documentation. The organizers of the Western Reserve conference showed foresight in including problems of legal bibliography in their deliberations.

In organizing the conference on which this volume is based, the members of the Western Reserve University School of Library Science managed to bring together some of the best available minds in the field of documentation and librarianship. It seems a pity that better use was not made of this unusual array of talent. *Documentation in Action* belabors certain subjects—cooperative information processing, for example—but leaves many important questions unanswered. Perhaps this reflects the present state of documentation and librarianship.

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Portraits from Memory. Recollections of a zoologist. Richard B. Goldschmidt. University of Washington Press, Seattle, 1956. 181 pp. + plates. \$3.50.

When I finished reading *Portraits from Memory* I decided that a note of appreciation to the author was in order. After I was asked to review the volume it became evident that a review could take no more fitting form than a public note of appreciation. I should like to take this opportunity to thank Richard Goldschmidt for perpetuating his precious memories. The portraits which he has sketched with such skill and deftness will be invaluable to generations of biologists. Many of the German founders of zoology are made to live again as human personalities within a framework of their scientific achievements and efforts. Few biologists remain who are familiar with the inception of so many fields of biology. Only Goldschmidt could link these beginnings with the personalities who were intimately associated with them.

Two other things are made clear in this small volume. Goldschmidt's description of German university life of

the early 1900's, with its emphasis on research and devotion to high standards, re-creates the atmosphere in which so many important developments took place. Over and above this, the book serves as a self-portrait of the author. In the descriptions of his many friends and teachers we cannot fail to observe the awareness, the sensitivity, and the many vital interests of Goldschmidt himself. At times he is sharp and critical, with little patience for the self-satisfied and dull. Yet, throughout, one notes a feeling of affection—and nostalgia—for his former acquaintances.

This book is recommended reading for all graduate students of biology who are interested in the background of their science—and for their teachers too.

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Rheology, Theory and Applications. vol.

1. Frederick R. Eirich, Ed. Academic Press, New York, 1956. 761 pp. Illus. \$20.

In this book, 23 authors have written 17 chapters dealing with the fundamentals of rheology. It is to be followed by two companion volumes, continuing the fundamental considerations and extending over into the applied fields.

If a condensed phase be thought of as a giant molecule, then any change in the relative position of the component molecules is an isomerization, and the relaxation processes involved can be treated like any other chemical reaction. It follows that shear stresses, like other types, simply act to lower the free energy of the activated, and of subsequent, states with respect to the initial state of the system. From this point of view, non-Newtonian viscosity is the general case, Newtonian viscosity being the limiting process approached at low rates of shears. Bondi develops this relaxation-theory approach at some length. Other chapters consider other aspects of relaxation theory.

Another approach to viscosity is to calculate the molecular distributions of the molecules in liquids in the resting state and then calculate the forces associated with the distorted distributions accompanying flow. This method is accurate, in principle, and leads to some interesting results. However, to make the calculations manageable, one usually has to introduce various approximations. Riseman and Kirkwood, in a chapter entitled "The statistical mechanical theory of irreversible processes in solutions of macromolecules," have discussed this procedure.

In other chapters, Reiner discusses