

functory, this document is nevertheless useful in bringing together in one publication references to the growing body of literature on library use studies and user behavior investigations. It will be particularly helpful as a source document for other researchers beginning work in this area. Since this state-of-the-art review at the University of Sheffield necessarily precedes the Centre's own research and testing, further reports in this series of Occasional Papers promise a useful contribution in an area in which we still know far too little.

In a further attempt to disseminate the progress and results of its work, the Centre has begun, as of June 1977, distribution of a newsletter entitled *CRUS News*. While this first four-page issue concentrates on news of the Centre and its own projects, future issues (no frequency prediction is offered) promise to serve as a clearinghouse for other activities as well as its own. Individuals interested in being placed on the distribution list for the newsletter or in receiving a copy of Occasional Paper No. 1 should contact the Centre at the University of Sheffield.—*Herbert S. White, Professor and Director of the Research Center, Graduate Library School, Indiana University, Bloomington.*

Allen, Thomas J. *Managing the Flow of Technology: Technology Transfer and the Dissemination of Technological Information Within the R&D Organization*. Cambridge: MIT Press, 1977. 320p. \$20. LC 76-57670. ISBN 0-262-01048-8.

This work consists of a series of reports on data collected and conclusions drawn by the author from 1963 to 1973. Much of its content has already appeared in journal articles. It is thus not surprising that most of it will already be known by anyone who has been following the literature on the transmission of information over the past decade. On the other hand, it does provide a convenient compendium, a state-of-the-art review on the subject for newcomers and those who wish to refresh their memory on the work reported here.

From his position at the Sloan School of Management at the Massachusetts Institute of Technology, Allen was able to investigate parallel groups of scientists and engineers

who were working on certain problems under government research and development projects. At first the information-gathering processes of those in these projects were measured and compared to the quality of their work. Later, the emphasis shifted to determining how information enters and flows through a research and development organization. As might be expected, a number of conclusions could be drawn from the data—some of them agreeing with commonly held views and some newer and more startling in their implications. Among them are:

1. Engineers think differently from scientists. Scientists are especially interested in choosing their own problems and look to the community of other scientists for evaluation, therefore, the results of their research are fully communicated to the entire research community. Engineers, on the other hand, choose to work in situations where someone else selects the problems on which they will work. Nor is prestige and status dependent upon other engineers, but upon company officials to whom publication means giving secrets to competitors.

2. In science all work up to a point in time is recorded in the literature; in technology the literature is less cumulative, not built on previous literature, and not meant to document the end product or establish priority.

3. Whereas information in science is transferred via the written record, in technology it is more often transferred through personal contacts. Other sources of information in descending order of importance to technologists are: customers, the company's previous research, consultants, and vendors.

4. At different stages in their work, engineers use the published literature differently, spending more time with it at the beginning of a problem and tapering off markedly about one-third of the way through a project. In contrast, internal consulting with colleagues in the company has the same initial peak of use but then adds another surge two-thirds through the project.

5. In order of importance, engineers use textbooks, trade journals, privately sponsored engineering journals, professional en-

gineering journals, and handbooks, while scientists go first to scientific journals and last to textbooks. Whatever source they use, engineers tend to acquire and use the material for themselves, with recourse to the library only about half as often. When the library is used, engineers prefer to do the searching themselves, rather than obtain help from the library staff. In the case of unpublished reports, engineers' colleagues are the largest source of supply.

6. Throughout the studies, it was demonstrated that internal communication within the companies was of overwhelming importance for reaching successful conclusions of the assigned projects, with the most successful projects using more and more diverse local communicants; however, outside consultants also played an important role.

7. In most organizations there were a small number of key people to whom others turned for information, so-called "technological gatekeepers." These people read widely in both scientific and technological journals and had a broad range of contacts both within and outside the company. They were thus able to translate information into terms that were meaningful for their engineer colleagues. Networks of such "gatekeepers" also existed, through which the "gatekeepers" themselves maintained communication, thus increasing their effectiveness to their own groups. Once information entered the group, it became diffused through internal subgroupings. All of this developed spontaneously, with no administrative fiat.

8. Since communication within a technological organization is so important for success, organizations should strive to make such communication easy. Proximity of individuals, good office layouts, or the removal of office walls and substitution of open bays, the location of stairs and elevators, and traffic patterns all must be examined for this purpose.

From all his study and experimentation, the author comes to the general conclusion that much more attention should be paid to informal, person-to-person communication of technological information within organizational settings than has been done in the past, where the focus has been on the traditional published literature and the framework of supporting bibliographic ap-

paratus. The author would, it is felt, be pleased with the many studies now being undertaken to describe the various facets of organizational communication in differing fields, but it is likely he will be somewhat disappointed in his hope that commercial R & D firms will begin experimentation within their organizations on these topics. The need of such firms to make a profit probably precludes such rearrangements of physical and administrative set-ups.—*Estelle Brodman, Librarian and Professor of Medical History, Washington University School of Medicine, St. Louis, Missouri.*

Birmingham Libraries Co-operative Mechanisation Project (BLCMP). *Final Report.* Written by D. G. R. Buckle, T. French, A. R. Hall, G. N. Metcalfe and D. J. Wilkins. Compiled by G. N. Metcalfe. Final Report to the British Library Research and Development Department on Project Number S1/G/027, January 1969–March 1975. Birmingham: BLCMP, University Library, 1976 176p. £5.00. ISBN 0-903154-05-6.

This is the final report on the activities through March 1975 of the Birmingham Libraries Co-operative Mechanisation Project (BLCMP). The BLCMP began with three libraries (the universities of Aston and Birmingham and the Birmingham Public Libraries) and added four additional libraries (Birmingham Polytechnic, Bradford University, Warwickshire County, and Aalborg University in Denmark) by the end of the grant period. After an initial cost analysis and feasibility study (comparing manual cataloging costs with estimated costs of an automated system), the BLCMP elected to proceed with an automated shared cataloging system.

The project resulted in the design and implementation of the batch computer system to utilize MARC records and locally generated records in MARC format, the creation of a union data base accessible to participating libraries, and the generation of a variety of outputs required by the participants. In addition, early project work included feasibility studies on the usefulness of centrally produced bibliographic records; the definition of standards for local record variations, cataloging practices, filing rules,