New Information Services from a Not-So-Old Publishing House*

By WILLIAM G. MAASS
Conover-Mast Publication, Inc., New York, N. Y.
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In the last few nonths I've begun to worry about a new side of the technical information problem. I've seen so many papers, reports, surveys, articles, books—and speeches like this one—about it, that I wonder whether we are contributing to a solution or merely *adding* to the problem.

Actually, I think we would all agree there isn't any *one* technical information problem. There are many different problems—each one a complex problem in a particular specialized area of communication. I doubt that any single information handling system is ever going to meet the technical information problems of the whole technical community.

Most of you are as familiar with the facts as I am. But I approach them from the special viewpoint of a publisher, and perhaps I put them in a slightly different perspective.

For one thing, research keeps uncovering new areas which themselves become specialized fields. Any Sunday in the help wanted columns of the New York Times you find employers searching for specialized skills that didn't exist fifteen years ago—systems engineers, solid-state physicists, cryogenic engineers, weapons analysts, and, for that matter, information control engineers. As publishers we have to think in terms of the very specific needs of many different small groups of specialists. And what each group needs depends on the kind of work it does.

Unlike the basic research scientist, an engineer or applied scientist developing a new product has needs that are likely to be interdisciplinary—which cut across several technologies. Of course he wants to know about progress on closely related technical projects. But he also has to be on the lookout for new materials and components, and methods and systems that may have the answer to his own technical problems hidden away in them. As publishers we spend considerable time and money surveying the information needs of scientists and engineers. Our studies indicate that two quite opposite trends are working at once.

Our technical readers find increasing demands on their time. So they ask us to be more and more selective in our editorial content—to be more and more specialized.

Yet those same readers are finding that discoveries and developments of great importance to them keep turning up in fields far removed from their own specialties.

This is an age of specialization. The scientist or engineer is compelled to specialize. And yet he dare not limit his knowledge to the ever narrowing confines of his own field. Moreover, as a publisher I have to admit that what is happening to publications nowadays is not making his problem any easier.

The scientific learned journals and the commercial technical magazines have always been the major channel for communication among specialists. But in this age of specialization the character of technical publications is changing rapidly.

The number of specialized publications in the trade and technical field has increased 50% in the past ten years. Today there are about 2700 such magazines in the United States—with a combined circulation of nearly 50 million readers. Some of the new publications result from "splintering" of major fields into smaller, more highly specialized segments. Others serve the interest of specialists working in completely new areas. We still have the basic technical publications, like *Chemical and Engineering News, Petroleum Engineering, Electronics,* and *Mechanical Engineering*—but now we also find a multitude of new titles, reflecting more specialized interest—magazines like *Semi-Conductor Products, Electro-Mechanical Design, Assembly and Fastener Engineering.*

In addition to this wider range of technical publications, technical men now have at their disposal many additional types of information services—technical libraries, indexing services, translation services and abstracting services.

In theory, most specific factual data, things like the characteristics of materials, or the sources of products, can be organized most efficiently in a reference file. Ultimately such things will be handled by mechanical or electronic data processing systems. But even here there's a problem. The consumption of fundamental science by technology is getting faster all the time. The time lag between development of a fundamental idea and its utilization in technology used to be measured in tens of years; now it is measured in months or even weeks. Therefore, timeliness in the dissemination of some types of technical information is of primary importance. Announcements of the availability of new materials, new products, equipment, and systems and processes must be disseminated quickly. This type of information can hardly be handled fast enough through a reference system.

Then, too, some types of information required by scientists and engineers never get recorded in a formal research report. Progress reports on development projects and solutions to specific technical problems developed by one organization can only be communicated to another through some form of technical reporting service. Technical publications have provided the principal means of communication in this area.

But none of this gets at the second problem I spoke of—the specialist's need to know what's happening outside his specialty. This need is especially acute for the man working in applied science or engineering development. He is faced with the difficult task of determining *where to look* for help. None of the conventional types of information service will keep him abreast of progress across the entire field of science and technology. He cannot turn to the reference services, since he doesn't know *what* he's looking for. He does not have enough reading time to scan even abstracts or indexes of the thousands of potentially helpful publications—let alone to read the actual articles and reports. And even if he

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had the time, he would have trouble understanding the specialized technical jargon in which each is written. So while the specialist can use his reference services and his specialized publications to keep abreast of vital information within his technical specialty, they have little value in his search for "*interdisciplinary*" information.

It is unlikely that any *one* information service will solve this interdisciplinary communication problem. However, at Conover-Mast we have developed a new kind of publication which will help provide cross-communication among the scientific and engineering specialties. I believe "International Science and Technology" to be the first practical means for the scientist and engineer to keep up with the significant developments in areas outside his own specialty which may have an important bearing on his work.

This is a new *kind* of publication because it utilizes a unique journalistic technique. The major editorial articles will be in the form of state-of-the-art reports—or review articles. Each state-of-the-art report will be authoritative—authored by a recognized expert in the field. But most important, it will be written in terms understandable to technically competent specialists outside the subject area.

This editorial concept demands a new kind of editorial staff: a staff with a high degree of technical knowledge as well as communications skill. It also requires that the staff maintain contact with the scientific community—and to that end we have established an editorial board of distinguished scientists—a *working* board which meets regularly with the editorial staff. This board will keep the editor and his staff apprised of the relative importance of various fields of science and technology: particularly those *new* areas so important to the applied scientist and engineer. In addition to helping the staff to evaluate the relative importance of the many fields of science and technology, the broad also will help us keep informed as to who the leading authorities are in each field.

We believe "International Science and Technology" will do more than add to the reader's store of useful knowledge. It will stir him to fresher, enriched thinking about his own technical concerns. The role of technical communication in stimulating creativity is possibly even more important than its basic job of disseminating useful information.

Sometimes we overlook the importance of one other form of technical communication—and that is technical advertising. Even in technical publications, not all advertisements transmit useful information—but, when used effectively, technical advertisements can become an important channel for the exchange of technical information. In addition to generating new knowledge at a fantastic rate, our research and development effort is also increasing the flow of new products and processes for industrial and consumer use. What is more, the new knowledge, and often new facilities, required to develop new products has enlarged the scope of many companies' capabilities. With their new knowledge, new experience, and new facilities, these companies have something to offer to new prospects. An engineer or scientist faced with the many complex problems inherent in our advanced projects is constantly on the lookout for someone who can provide an answer. Because of the rapid rate of change in the total capability of individual companies and because of the rapid development of new products, materials and processes, technical advertising becomes a vital communications link between the scientist or engineer with a problem and the company with a possible answer.

The role of the commercial technical publishing company is changing. In our company, we no longer think of our business as the "publishing business"—but rather we think of ourselves as being in the business of specialized communications. We don't intend to limit our future activity to publications as we know them today. Of course we will keep looking for ways to improve our present publications, as our readers' needs change. And we will continue to explore the possibility of new publications or of new kinds of publications, such as "International Science and Technology." But now we are studying completely new ways to disseminate technical information. For example, we are studying the possibility of establishing data processing centers with electronic systems for storage and retrieval of technical information on particular kinds of components and equipment—their properties, reliability and availability.

We also have investigated the possibility of applying microfilm techniques to catalog files to replace the conventional catalog libraries in specific industrial areas.

Television offers some very interesting possibilities for specialized communication. As you know, most specialized use of television has been in the form of "closed circuit" transmission, utilizing coaxial cables. Because of its cost, use has been limited to very selective audiences located in a limited number of broadcast centers. However, future developments in cable design may make it possible to utilize standard telephone cables for closed circuit transmission. This could reduce the cost to a point where closed circuit broadcasts of specialized technical information would be practical. Even today, it is possible to use regular television network facilities to reach specialized audiences at reasonable cost. We could put together a technical program on medical science and transmit it into the homes or offices of 100,000 doctors—and the distribution cost would be competitive with publication postage rates! The program would be taped and broadcast at an off-hour, say 3:00 A. M., when the network is not transmitting but is still paying cable rental. The doctors would be equipped with a special type of television set—one that is in limited use at present. It turns itself on at a pre-set time and records the program on tape, then shuts itself off. Actually, anyone who tuned in that station at 3:00 A. M. could watch the program on a conventional set. But the doctor would be able to replay his tape recording of the program anytime at his convenience—in fact, he could save and replay it for reference as many times as he desired. In practice, the doctor would rent the set at an annual fee—and the producers of the program would carry commercial medical messages from pharmaceutical companies, medical equipment manufacturers, *etc.*, to finance the programs. Recently, the president of one of the major television networks told me that this approach is technically possible right now.

When you consider the advantages of product or process demonstrations in color, the possible applications for this specialized communication form develop rapidly. I can foresee similar programs for electronic design engineers, for production methods engineers, or for petroleum process technicians.

Looking ahead 5 years, technical groups all over the

country might assemble at 8 o'clock each Monday morning (before the regular work day starts) in a company conference room, and review the latest developments in their field on large screen TV—from a program which was broadcast while they were asleep.

Meanwhile, what about magazines? Our technological society keeps getting more complex, and publication costs keep rising. Commercial magazine publishers face a considerable challenge. We believe successful magazines will have to concentrate on those areas of technical information which are most efficiently disseminated by publications. This means eliminating many types of information now appearing in publications. Publishers must find ways to shorten the lead-time between the occurrence of an important technical development and the time it appears in the magazine. Possibly most important, they will have to develop new journalistic techniques—writing style, format, and the use of graphics—to shorten reading time, and at the same time increase understanding for the reader.

As technology grows more complex and as the rate of technological obsolescence quickens, effective technical communication will become even more important. I sincerely believe that the competitive system which motivates our commercial technical publications will be the most important force driving us to meet this challenge.

The Federal Government and U. S. Scientific Information*

By BURTON W. ADKINSON
Office of Science Information Service, National Science Foundation, Washington, D. C.
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GENERAL SCOPE OF THE FEDERAL GOVERNMENT'S ROLE. The U. S. Federal Government, through its own activities and through contracts and grants, today is both one of the principal producers and stimulators and one of the largest users of scientific information. The following facts indicate something of the scope of the Federal Government's activities in scientific information: In fiscal year 1960, over 60% of the scientific research and development in the United States was financed by the Federal Government, and one of the principal products of all research and development is scientific information. Thirty-seven Federal agencies have significant scientific information activities. Of approximately 450 specialized scientific information centers in the United States, as identified by the Battelle Memorial Institute, some 200 receive direct or indirect Federal support. The last issue of the National Science Foundation's publication, *Research and Development in Scientific Documentation*, describes 171 projects in scientific documentation under way in the United States of which 120, or 70%, are supported in whole or part by the Federal Government.

CHARACTER OF THE FEDERAL GOVERNMENT'S ACTIVITIES. The major emphasis of Government agencies in this field has been, and should continue to be, on the support of information activities which contribute to the accomplishment of the particular missions of these agencies. However, each agency has been established to perform a needed public service, and its information efforts are bound to have an effect on the general information picture, just as scientific information from non-governmental sources contributes to the accomplishment of strictly Federal purposes. Beyond this, however, the Federal Government has a major responsibility for the maintenance of an effective U. S. technical information system because today scientific research and development play so important a role in the nation's over-all welfare.

In its own operations, the Government has been principally involved in scientific information (1) as an operator of information systems and (2) as a user of services and equipment.

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As an operator of information systems, the Government contributes to a variety of non-Federal needs for scientific information. Examples of these non-Federal services include:

A series of bulletins called *Scientific Information Activities of Federal Agencies* is being issued by the National Science Foundation. Numbers published to date are:

1. Department of Agriculture (NSF 58-27)
2. Office of Naval Research (NSF 59-19)
3. Department of Commerce I, covering Office of Technical Services, Bureau of the Census, Bureau of Public Roads, and Patent Office (NSF 59-58)
4. Government Printing Office (NSF 60-9)
5. Tennessee Valley Authority (NSF 60-44)
6. National Science Foundation (NSF 60-56)
7. Department of Commerce II, covering Weather Bureau, Coast and Geodetic Survey, Maritime Adminstration, Business and Defense Services Adminstration, Office of Business Economics, and Bureau of Foreign Commerce (NSF 60-58)
8. Department of Commerce III, covering National Bureau of Standards (NSF 60-59)
9. Federal Communications Commission (NSF 61-12)
10. Veterans Adminstration (NSF 61-22)

These bulletins are available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

As a service to libraries and scientific information centers, the Library of Congress systematically supplies catalog cards on publications, including those on scientific and technological subjects. Its publication *New Serial Titles* during the past five years has provided a listing of approximately 16,500 new serial titles per year of which at least a third have been in the fields of science and technology, including agriculture and medicine. This listing is important for indicating the existence of new research areas and the world-wide status of scientific research. The Library also issues the *Monthly Index of Russian Accessions* which lists thousands of Soviet publications, over 50% of which concern science and technology.

As a service to agriculture and allied fields, the Department of Agriculture publishes numerous reports, bulletins, surveys, and compendia of various kinds. Among the best