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Experiential Methods of Teaching Special Librarianship

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Personal involvement and the participation of students are the salient characteristics of experiential teaching. The techniques described—role-play, in-basket exercises, action mazes, simulation, games and sensitivity training—facilitate affective learning, or how it feels to make administrative decisions and live with the results. The basis of these techniques in educational psychology is summarized, and their appropriateness for teaching special librarians is postulated.

RELEVANCE is the name of the game in education these days, and "relevance"—to students—is involvement. Not talking about the vague and distant future. Not theory. Not the teacher's past experience or opinion. Not "Mickey Mouse" exercises. Involvement—the student's own experience.

Educational psychologists support the students. Involvement means high motivation, closely related to academic success. Studies of how adults learn have shown consistently that when adult students are actively involved in setting their own learning goals, in selecting learning experiences for themselves, and in choosing their own learning methods, the results are satisfying to both students and teachers (1). It is imperative, therefore, for both teachers and learners to know which methods enhance the student's role in the teaching/learning system.

Most practicing librarians, with library school some distance behind them, are familiar only with traditional presentations, primarily lectures. These traditional methods usually fail to build on the background students bring to library school, fail to utilize the students themselves as resources, and fail to involve the students in setting learning goals and identifying learning experiences for themselves.

The authors feel that the traditional teaching methods are unsuitable for the individuals who are attracted to a library school program in special librarianship. Analysis of the educational and job records of 115 students registered in the Special Libraries Program at Florida State University between 1963 and 1971 shows that 21% have held advanced sub-
ject degrees, 16% a subject masters, and an additional 5% have pursued doctoral study. One of every four students has had work experience in a library before coming to library school; one of five had this experience in a special library. Approximately half of those with library experience had had complete administrative responsibility for a special library (2). Individuals with this kind of background are capable of a great deal of involvement in their own learning.

Search for innovative methods over the last eight years has coincided with a studied movement in the discipline of education to test alternatives that emphasize student involvement. Thus, recent advances in the psychology of education and in education for other professions have provided librarianship with much experimental background and some well-tested models. Most of the methods described in this paper came from these sources.

Personal Involvement

These new learning methodologies are characterized as "experiential" methods, meaning that the student learns through personal involvement. For example, in teaching the administration of special libraries, the cognitive learning required of the student consists of the intellectual understanding of theories of administration. The educational psychologist argues that cognitive learning does not go far enough to produce the true internalization of subject matter that becomes evident in long-lasting changes in the individual's daily behavior. What is lacking is literally the "feel" of living with the subject matter.

Personal experience, for most people, argues with the educational psychologist. Before the student is placed in the actual position of administrator at any level, he should experience how it feels to be faced with administrative problems for the solution of which no theory is truly adequate. The student needs to know how it feels to make administrative decisions. He needs to ponder the choice between two candidates for a position, perhaps to make the wrong choice and to shrink from the wretchedness of having to fire a likeable, but ineffective, employee. He needs to labor long over a floor plan or a budget, and then be told to do it over again with different parameters. No amount of theory teaches him the frustration, the pressure, the panic; he must feel it by experiencing it.

The alternative methods of teaching that are described in this paper emphasize learning through feeling experience—affective learning, in the psychologist's term.

Role-Play

Role-play is probably the best known of the experiential methods. Essentially, it is the enactment of a situation in which students play the parts, or role, of—in our case—library staff, managers, and users. The situation to be enacted is structured in advance with certain learning goals in mind. The characters in the situation, including their thinking, their feelings, and their beliefs at the beginning of the enactment, are assigned, and students have time to prepare for acting out these roles. Once the enactment begins, however, it becomes free-swinging. The role-players make up their own lines, make whatever decisions and actions seem feasible to them in their assigned roles. Thus, the initial situation is known to both teacher and students. The end situation, however, is not known in advance; it evolves as the students interact.

Sometimes the situation chosen for role-play is a routine one such as a committee meeting of department heads in a cooperative planning session, or such as a series of interviews between the library administrator and several candidates for a position. Sometimes the situation is a more traumatic one, such as justifying a budget request to an unsympathetic top management representative, explaining a breakdown in library service to an unhappy user, or firing an unsatisfactory employee. Role-play offers the student insight into the thinking and emotions of various individuals in the library or-
bit as well as practice in human relations and communication skills.

### In-Basket Exercise

The in-basket exercise is especially useful for practicing communication skills. In this method each student receives one or more communications of a type that might logically turn up in an administrator's in-basket. The student must respond in the role of the individual to whom the item is addressed with an appropriate out-basket item. Decision-making skills are also sometimes practiced in in-basket exercises. A series of related communications, interspersed by responses, is called a sequential in-basket exercise. Its advantage is that it provides feedback from each division. Thus, the student experiences the inter-relatedness of administrative decisions as he deals, in each new decision, with the effects of his own prior decisions. Another method for learning the effects of a sequence of decisions, the "action maze," combines narration and in-basket items in a programmed text format. The sequential in-basket exercise technique has been computerized for fast and versatile feedback to the student and for giving the instructor information about student decision-making (3); the action maze would also lend itself to computerization.

### Simulation

The ultimate in experiential learning is the simulation. This teaching method requires the use of a library model and a situational context within which administrative decisions are made through role-play, in-basket exercises, and action mazes. The senior author has prepared three special library models, each of which consists of a set of documents. Organization charts, a mission statement, annual reports, floor plans, budget, special reports and correspondence comprise the set. In the Industrial Library Simulation the situation context is one of company expansion in which an information service for a new, but possibly temporary, company installation must be planned and staffed. The usual problems of determining what services, personnel, materials, space and budget are needed are resolved by the students through role-play and in-basket exercises. As decisions are made, the situation evolves in the model library as it would in a real library. As the educator says, the model "moves through time." A year or eighteen months in the life of the library is foreshortened into the three months of an academic quarter. In the senior author's classes a single simulation is used as the basis of an entire course in special library administration. The term "sustained simulation" is suggested for simulations of this degree of sophistication.

### Games

Role-play, in-basket exercises, action mazes, and simulations become learning games by the addition of competitive elements and scoring techniques. In games, the students sometimes play as individuals and sometimes in teams. Either way, there are winners and there are losers. Thus far, the authors have not used games as extensively as other experiential learning methods, although some pilot work has been done.

### Sensitivity Training

A different kind of participatory learning is called sensitivity training. In this method a skilled leader and a small group of learners study together their own behavior, as individuals and as a group, in a laboratory setting. Much insight can be gained into characteristic problems of interpersonal relations in this way. The increased sensitivity of the participant to both problems and people results in a greater effectiveness in leadership, it is claimed. Therefore, sensitivity training is believed by some to be especially valuable for administrators. No use of sensitivity training in courses for special librarians in the graduate library schools has come to the attention of the authors; some in-service training.
institutes in librarianship, generally, have included it.

In the opinion of many educational psychologists, experiential learning is best used under certain identified conditions. The most important of these is that cognitive and affective methods are used together to produce a combination of intellectual and emotional learning. A second important condition is that there be choices of methods open to both teachers and students.

Student reaction over the years has been very favorable to sustained simulations, though student preference is for non-game simulations. Those students who were involved in pilot game attempts have been almost totally negative to the competition and to the scoring of individuals.

In addition to employing experiential learning methods in graduate library school courses, the authors are experimenting with their use in continuing education. The initial reaction has been even more favorable than that from degree students. Given the need for research about special library administration, it is reasonable to expect that many of these techniques could be used with profit to study administrative behavior in special libraries, especially in relation to human relations and communications skills.

Literature Cited
2. Unpublished data in the authors' files.

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Experience in Minnesota with an experimental university-based technical information program has revealed the extent of the needs of small industrial libraries and has demonstrated how assistance practically applied contributes to growth of new and small firms.

BIOLOGISTS are constantly pointing out how much life exists in a small patch of grass outside one's backdoor or in the tidal pools at the seashore. They lament the fact that in our myopic fascination with daily routines we miss the experience of knowing these wonders. I would like to borrow a page from the biologist's book and ask the industrial librarian how well he knows the resources of the community. How deeply has he looked into swarming services and programs of government agencies, educational institutions, and professional and trade associations which the community contains within a metropolitan area? Has he gone beyond the inter-library loan function of finding which other library has a larger collection or will sell photocopies, and instead discovered a new concept of the community as a vast information store? The answer is too often that in-house routines tie him to a desk or to processing of materials. We have to overcome this pre-occupation that is traditional with librarians to overprocess collections, fuss with detail, and depend on literature alone as a source of information.

Time should be carefully budgeted so that the special librarian can get out into the surrounding region to learn and observe concepts and systems which will help to improve his library services. A few hours a week spent investigating information outlets in the community can pay dividends later when an R&D person brings in a tough reference request.

Metropolitan regions are in a state of constant change and they depend heavily on a wide variety of information-communication programs and activities to keep them informed. These same activities should stimulate the librarian's curiosity so that he may be able to use them to extend his retrieval capabilities beyond a limited in-house reference collection.

The industrial librarian of the future may act more in the capacity of an information source expert rather than as a technical literature specialist. Current information gathering trends seem to point in this direction; data banks and stores are often able to provide special output faster and more extensively than can ordinarily be obtained from literature. If this is an accurate observation, then we will have to give the student of special librarianship more training in searching out data and information.
stores in the community and give him a better understanding of the operation of these services.

**What Is the Community?**

Each type of library uses the term "community" to depict some particular mass grouping of society which generates varying degrees of demand for information service by libraries. In contradistinction to this concept the community can be viewed as a place which can serve up information to the library. "Community" is used here to indicate the busy urban area which is composed of one or more cities with their dense population, schools, industries, transportation systems, stores and service agencies, and as special libraries are for the most part situated within or adjacent to this kind of area the industrial librarian can find within this complex a potentially wide spectrum of data and knowledge.

Modern tele-communication systems easily bridge the distance between these urban metropolitan centers. In fact, there are occasions when the most appropriate information resource for a particular problem might be in a center hundreds of miles away. The community means not only downtown, but also those unusual service agencies elsewhere whose programs are designed to fill particular industrial information requirements.

The community is not unaware of the information needs of industry and its problems in finding details required. This has been brought to their attention forcefully by the staggering information explosion associated with the space age, through legislation such as the State Technical Services Act of 1965, and by means of the activities of the Special Libraries Association. Directors of the large public and academic libraries exhibit less concern about the use of their collections by industry than they formerly did. As more of these institutions recognize their commitment as "state-wide" or "regional" resources, a greater spirit of cooperation and interest in being of assistance is being exhibited.

It will become increasingly necessary in the future, as the strain on the larger community resources becomes more intense, for government to assume a greater part of the burden of financing services and collections. Legislation will be needed to provide the support for making extra copies of heavily used literature and information resources available so that no distinction has to be drawn between use by students, industry or individuals in the community at large. In addition, industrial librarians will have to work for more reciprocal conditions so that their special subject materials or expertise can be utilized by patrons outside the company.

**What Are These Special Resources of the Community?**

Major resources to which special librarians turn are the large city public libraries and the libraries of the academic institutions. These afford the opportunity to use a wide variety of business data source materials and scientific and technical bibliographical services, many of which are beyond the limited budget of the special library to own or house in its facilities. The rising cost of subscribing to *Chemical Abstracts* and developing back files of this and other abstracting and indexing services in conventional format is responsible for sending librarians from the small company library to the larger library facilities. Now with the introduction of *Psychological Abstracts* and *Index Medicus* on-line to libraries, a new dimension of inter-library use will be evident. Perhaps this is the kind of situation which government support can ameliorate.

The Special Libraries Association Chapter is another source which the industrial librarian can utilize. This valuable organization not only provides an opportunity for librarians to get together and discuss mutual problems, but also to aid the newer members in learning of information services to be tapped. The more active Chapters have compiled valuable directories and guidebooks, organized courses for members, and pro-
vided for their information needs in other ways.

In Minneapolis a group of special librarians representing banks, investment firms, and a utility company which are all located within a multi-block office building complex meet regularly for lunch and discuss mutual problems. Their combined experience and knowledge make these "Insiders," as they refer to themselves, an important mini-information resource outlet.

Educational institutions, from secondary educational facilities to places of higher learning, are too often overlooked as potential information centers. Faculty in colleges and universities frequently act as consultants in the world of commerce, and because of this participation in industrial information transfer are usually cooperative in supplying information to special librarians or referring them to data sources. Vocational-technical schools, for example, are in close touch with training requirements of industry and have an understanding of the overall programs of business and industry in a certain region. They can be helpful when one is interested in finding out about on-going courses for a specific situation such as water pollution control or safety, or to learn about training aids such as films, slides, and visual materials.

Even the instructional media centers can provide some useful demonstrations of methodology in presenting orientation courses in use of literature for plant personnel. Some school districts are experimenting with audiovisual materials and techniques which could be of special interest to the industrial librarian. Also, the secondary schools are at work preparing bibliographies and studies in the field of social problems which industry is becoming more and more concerned with because of marketing new products, and also in light of a greater awareness of their social responsibilities.

Federal information agencies seem to be springing up in urban areas. With the widespread involvement of our federal government in research since World War II it is almost impossible not to bump into the efforts of some government departments during a research project. One of the best places to start locally is the field office of the Department of Commerce. They either have the answer you want, can order something for you, or can direct you to another agency.

With some imagination and use of the telephone directory under the United States listings many vexing reference queries can be satisfied, or at least made more manageable.

I often wonder how many librarians pass over state printing offices and municipal government officials such as the city engineer's office when they are in the throes of a search for specific data. Yet these represent an important source of the total input required to keep commerce and industry going.

Finally, the professional and trade associations should be mentioned. These usually have local chapters with representatives or officers who are employed in large firms in the area. Of all community information sources the special societies and trade organizations are perhaps the closest to understanding the information problems of industry. Furthermore, they take an active part in doing something about these concerns and they can be valuable resource people when data and knowledge are needed.

The programs of such societies as the American Management Association and the American Institute of Chemical Engineers are well known, and contribute much to the non-member. Perhaps less familiar are the trade associations unique to a geographical region, or state engineering federations and business groups.

A Community-Wide Effort to Bring Information to Industry

I may be belaboring what seem to be well-known facts to librarians, and yet experience in serving industrial librarians through a statewide information service showed that many of them were unaware of the information channels
and networks open to them. It requires time and effort to discover what the community can offer and how it can be used by special librarians, and the payoff is more information for management with savings in search time and effort.

Most fortunate have been librarians in states which followed the provisions of the federal "State Technical Services Act of 1965," and established programs to field inquiries from business and industry, and to inform them of new details in their field as they appeared. New York, Texas, North Carolina, Pennsylvania, Wisconsin, Minnesota and other states formed active units which made use of literature and libraries as well as other means of finding and spreading information.

A technical information service was organized for Minnesota in 1967 under this federal legislation. One of the first projects was to try to learn about every existing information outlet in the state which might have some information service for industry. Details were gathered of each of these and a Directory of Information Sources for Industry in the Minneapolis-St. Paul Area was issued. The directory was available to libraries, industry, and others who requested assistance in finding information. There was a spirit of cooperation and interest on the part of a majority of the agencies contacted, for they too had often been through the painful process of searching for a particular answer or trying to find someone who could help with a problem.

When the services of the Technical Information Service were advertised, questions began to pour in, many of them from special librarians. A difficult standard was set: the staff would stay with a question until an answer had been found in the literature, or an expert had been contacted who knew why there was no answer possible at that time.

Many times in the past I had been frustrated while working in libraries by not being able to go far enough beyond our collections and outside our library walls to obtain answers for requesters.

Now, I promised myself that I would extend our services for a customer as far as modern communication systems would reach, and we found an amazing array of expertise ready and able to assist us both in Minnesota and great distances away.

We Talked of Cabbages and Kings and Sealing Wax and . . .

Our clients' interests seemed limitless and answering them provided me with a new insight into the information needs of business and industry. Requests from firms included such items as: names and addresses of suppliers of certain parts, agencies who drew up standards (one firm wanted standards for sausage-making machines), and possible uses for waste products, or left over parts, such as pulping mill effluents, soybean shells, and fibrous material. One firm, engaged in some peculiar kind of research, asked how much manure a cow manufactured in a day. Surprisingly enough, the answer was found in a biological handbook.

Many inquiries came from large industry, which was considering new markets or diversification of products and a literature search brought forth facts they wanted. Librarians in these larger companies were a source of numerous information requests. An R&D man or a company executive would direct the librarian to find an answer to a certain need or to search out a source. One such question we received was on the problem of tiny mites which were parasites on a type of edible mushroom. Here our file of experts came in handy, for we contacted a plant entomologist at the University of Minnesota who accepted responsibility for the question from us and assisted the firm with additional research. Another question on ultra-fine milling for a jewelry manufacturer took us further away to the Air Force Machinability Center in Columbus, Ohio for the source of information.

Often small struggling firms who had no library and insufficient knowledge of how to get help contacted us. One of these was a very young company which
in the course of making one of its products welded aluminum sheets and was getting a black residue as a result of the welding. The black residue marred the surface and caused customer rejects. Could we help? We were able to find a professor in the School of Chemistry at the University who recognized the problem and provided the company with a solution. Other new small business operations came to us with situations involving production scheduling, background information in tenant reactions to high rise apartments, and involvement in the medical supply field. We relied on local and distant community resources in satisfying these requests. Published materials were useful only part of the time.

Measure of Success

Our Technical Information Service answered reference questions, prepared literature searches, compiled guidebooks and statistical compendia, and processed thousands of inquiries. Over three hundred firms used our services and we offered a program of information retrieval and dissemination to special librarians and their companies throughout the state and the region.

More important than statistics on the number of queries handled or referrals made in this program over its four year history was the concept it demonstrated of drawing upon community resources to help industry. It revealed the extensive information requirements of statewide industries, demonstrated how networks can operate to allow librarians the chance to make their services more effective, and revealed the community's great potential.

The program nearly halted with the defeat of the renewed funding efforts in Congress for the State Technical Services Act. A new project, however, is taking shape in Minnesota in which three large public libraries in Minneapolis and St. Paul and the State Public Library Division are joining forces with the University of Minnesota Library system to help industry find information. It is being funded not only by federal funds, but by a private foundation in Minnesota as well, and the interest expressed by the community in this venture is heartening.

Summary

The librarian in the small firm should survey the resources in the community, including libraries, educational institutions, government agencies, and organizations. Some attempt needs to be made to list and categorize the services and kinds of data and knowledge each can supply.

Most metropolitan communities are rich in information resources. They could not continue to grow and develop without a network of such outlets. Special librarians can tap these to their benefit, extending their limited resources in the company library by exercising curiosity and imagination in order to build innovative services for their firms.

Communities which can develop an organized information service for their industry to draw upon all its agencies and outlets are investing in their future.

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Panoramic Maps of American Cities

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The panoramic map, also called bird's-eye view and aero view, is a non-photographic depiction of a city viewed from above at an oblique angle. Although not generally drawn to scale, the map shows perspectively the pattern of streets, individual buildings, and major landscape features. The popularity of the mapping technique in the United States reached its zenith during the post-

The panoramic map was a popular cartographic form used to depict America's urban areas during the latter half of the 19th century and the first 30 years of the 20th century. Known also as bird's-eye views, perspectives, and aero views, panoramic maps are non-photographic representations of cities portrayed as if viewed from above at an oblique angle. Albert Ruger's 1870 view of Jefferson, Wisconsin, is a typical panoramic map (Figure 1). Although not generally drawn to scale, panoramic maps show, in perspective, street patterns, individual buildings, and major landscape features. Preparation of a panoramic map involved a vast amount of detailed labor. The street pattern was first drawn in perspective. The artist then walked the streets, sketching buildings, trees, and other features to compile a complete and accurate view. These data were added to the street grid in his workroom. The resulting product was a view of the community as if seen from an elevation of 2,000 to 3,000 feet.

Panoramic Maps Through Time

Although very popular in post-Civil War America, perspective mapping was not unique to 19th century United States. A view of Florence, Italy, prepared by Claudio Duchetti about 1584, for example, appeared in Antonio Lafreri's Tavole Moderne. Mathias Merian, George Braun and Franz Hogenberg, among others, produced perspective maps of European cities in the late 16th and early 17th centuries. Normally the early artists drew low oblique angle views on which streets were seldom identified by name. Some views were hypothetical, and one pattern might be used to represent various European cities.

A modified version of the Renaissance type city view was introduced into the United States prior to the Civil War.
These perspectives, which resembled their European predecessors, were usually of large cities, drawn at low oblique angles, and at times, at ground level. Street patterns were often indistinct. Also popular during the period were prints of American cities drawn as though viewed from extremely great heights.

Post-Civil War America’s panoramic maps differed dramatically from the Renaissance city perspectives. The town views were more accurate, they were drawn from a higher oblique angle and included small towns as well as major urban centers. These maps were usually published independently, not as plates in an atlas or in descriptive works. Panoramic maps were popular wall hangings during America’s Victorian Age due to advances in lithography, photo-lithography, which made cheap copies available to a prosperous populace willing to purchase them.

The Victorian Era’s panoramic map craze ended by 1930. However, the perspective technique is still employed today. Hermann Bollmann of Braunschweig, Germany, has prepared perspectives of a number of major world cities including one of midtown New York City. His views of cities are sold separately and also appear annually on calendars sold by his company, the Bollmann Bildkarten. As was true of the Renaissance view maker, Bollmann has concentrated on views of larger cities. Also, the angle of his views is much closer to 90° than that used for post-Civil War bird’s-eye views.

Although the panorama has been utilized by cartographers for centuries, and in itself would be an interesting subject to pursue, this presentation will be limited to the post-Civil War panoramic perspective.
mapping of America's urban areas, a time when the greatest number of city perspectives was prepared in our nation. In addition to identifying some of the more outstanding artists, publishers, and lithographers, we will also consider briefly the value of the maps as sources of information on late 19th and early 20th centuries urban America.

**Uses of the Panorama**

Unlike the predecessor views, 19th century panoramic maps were mainly of small town America. The preparation and sale of these panoramas were promoted by civic pride and the desire of the city fathers to emphasize and encourage commercial growth. The maps descriptively presented the exciting and vibrant life of the community. Harbors were shown choked with ships, as in Henry Wellge's 1885 view of Pensacola, Florida (Figure 2). Trains sped along railroad tracks, at times with two on the same roadbed headed in opposite directions.

People, horse-drawn carriages, and automobiles filled the streets, and smoke belched from stacks of industrial plants. Urban and industrial development of post-Civil War America were effectively portrayed in the maps.

Citizens proudly hung copies of the perspectives on their walls. They could view their immediate environment and point out to guests their own property, because the map artist, for a suitable fee, obligingly included illustrations of private homes as insets to the main city plan. Furthermore, real estate agents and Chambers of Commerce used the maps to promote realty sales. For example, Henry Wellge prepared a panorama of Norfolk, Virginia, in 1892, which was distributed with the compliments of Pollard Brothers Real Estate. Panoramic maps not only showed the existing city, but sometimes depicted areas planned for development. Thaddeus Fowler prepared a panoramic map of South Rocky Mount, North Carolina, in 1907 that showed real estate available for development in that community.

Norris, Wellge & Company's 1885 view of Madison, Wisconsin, illustrates another use of the city perspective. In addition to those copies of the view sold for wall hangings, a number were utilized by S. L. Sheldon to advertise products sold in his farm implement store. Eighteen farm machines, including the Meadow King Mower, the Gasaday Sulky Plow, and Esterly's Twine Binding Harvester frame the map. Sheldon sent copies of the panorama to his patrons along with a request for their continued patronage. Another example of a panoramic map used in advertisement is O. H. Bailey's and J. C. Hazen's 1879 view of Maynard, Massachusetts, on which the Assabet Manufacturing Company dominates the entire view.

There is little information about the number of prints published or the selling price. For larger towns and cities more impressions, obviously, were made. Meriden Gravure Company, Meriden, Connecticut, who printed Hughes & Bailey (Figure 3) and Hughes & Cinquin aero views in the 1910s and 1920s, noted that between 100 and 250 copies of each view were generally printed. Oakley H. Bailey, one of the artists, indicated that nearly 2,000 copies of each view were made. Considering the scarcity of many views today, however, the average printing may have been in the neighborhood of 500 impressions.

The cost of individual views was most likely determined by the number of impressions and the buying capability of the citizenry. We know that O. H. Bailey's 1872 panorama of Milwaukee cost $3.00. Less was charged for smaller views, and for those printed in only two tones. The price of panoramic maps probably

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ranged between $1.00 and $5.00. And money was not the only medium for acquiring them. Thaddeus Fowler reportedly accepted quantities of flour and beans, on occasion, for his views.

The U.S. printmaking firm most identified with 19th century Americana was that of Currier & Ives. They are best remembered for their views of life in Victorian America, but they also prepared bird’s-eye views of New York City, Chicago, Boston, San Francisco, and Washington. The Currier & Ives firm, however, was not a leading panoramic map publisher, nor were they representative of those who did produce the majority of the city views. While Currier & Ives produced views mostly of large cities, post-Civil War panoramic maps, in most instances, highlighted small cities and towns, were of decidedly parochial interest and were more detailed than the average Currier & Ives city perspective.

The Artists

The most prolific and representative panoramic map artists were Albert Ruger, Thaddeus Fowler, Lucien Burleigh, Henry Wellge, and Oakley H. Bailey. The works of these five men represent 66% of the nearly 1,100 city perspectives preserved in the Library of Congress. Albert Ruger was the first of the group to draw views although all were contemporaries. After serving in the Ohio Volunteers during the Civil War, Ruger settled in Battle Creek, Michigan, and by 1866 began his prolific career by sketching Michigan cities, including views of Adrian, Lansing, Hillsdale, Monroe, and Ann Arbor in his first active year. Soon his bird’s-eye views of other midwestern cities appeared as the panoramic map increased in popularity. Ruger was particularly productive during the 1860s; in 1869 alone he produced over 60 city panoramas. In the late 1860s Ruger and J. J. Stoner of Madison, Wisconsin, formed a partnership that endured into the 1890s. Towns in some 20 states and Canada were sketched and sold by this team or by Ruger alone. While he specialized in midwestern cities, Ruger also prepared views of cities in Alabama, Georgia, Kentucky, and New Hampshire.

The collections of the Geography and Map Division of the Library of Congress contain 197 city maps attributed to Ruger. All but four are from the artist’s personal collection, purchased by the Library in 1941.

Perhaps the most prolific panoramic artist, and the one about whom we have the most information, is Thaddeus Mortimer Fowler (Figure 4). Born in Lowell, Massachusetts, in 1842, he served in the Civil War with the New York Volunteers until wounded at the Second Battle of Bull Run. Discharged in 1865, Fowler made a living by making tintypes of soldiers, and later by working with his uncle J. M. Fowler, a photographer in Madison, Wisconsin. In that city he entered the panoramic map business, publishing his first known view, that of Omro, Wisconsin, in 1870. Thus began a career that was to span over fifty years. During the early years he drew and published views from headquarters in Madison, Wisconsin. In 1880 he moved east, settling first in New Jersey and, in 1885, in Morrisville, Pennsylvania (Figure 5). Morrisville effectively served as an operating center as Fowler drew and published views of Pennsylvania, West Virginia, and Ohio com-
munities. The Library of Congress's Geography and Map Division contains 131 Fowler views of Pennsylvania towns, representing 128 different communities, all drawn between 1888 and 1922. Moreover, Pennsylvania State University and Pennsylvania Archives have over 50 Fowler views of the state which are not in the Library's collection. His production of Pennsylvania city panoramas exceeds that of any other artist for a particular state.

At various periods during his career Fowler was associated with other panoramic artists. His association with James B. Moyer of Myerstown, Pennsylvania, was particularly productive. Fowler also published city views under the imprints Fowler & Kelly, Fowler & Downs, and Fowler & Browning. After 1910, he prepared panoramic maps of cities in Connecticut, Massachusetts, New Jersey and New York with Oakley H. Bailey. Thaddeus Fowler died in March 1922 in his eightieth year following a fall on icy streets incurred while preparing a panorama of Port Jervis, New York. Views by Thaddeus Fowler include cities and towns in at least 18 states and Canada. To date 293 Fowler city panoramas have been identified and 211 of these are on file in the Geography and Map Division, Library of Congress.

Popularity

From the review of Fowler's and Ruger's works, we can picture the area covered and the time span of the popularity of the panoramic mapping of urban America. Communities in eastern and midwestern United States were the primary areas of bird’s-eye view making. Largely due to Albert Ruger’s productivity, and to the publishing activity of J. J. Stoner, America's panoramic map business was identified with the city of Madison, Wisconsin, during the late 1860s and early 1870s. Operating from that center, Stoner, Ruger, Fowler, Bailey and others made the panoramic map a popular wall decoration in midwestern homes. From Madison, the pan-

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T. M. Fowler Map Collection 58, Geography and Map Division, Library of Congress
oramic artists later extended their operations throughout the United States. By the 1880s, the Madison group had dispersed, probably because they had exhausted the number of midwestern communities to be drawn. Ruger and Stoner remained in Madison, but Bailey and Fowler moved eastward to virgin territory. The latter two, and Lucien Burleigh, made the Middle Atlantic and New England States the greatest production areas for bird's-eye views in the 1880s and 1890s. It was in these sections, moreover, that the panoramic map business had its final flurry of activity in the 1920s. Largely due to the introduction of aerial photography and the deaths of many of the outstanding panoramic map artists, America's panoramic map craze ended in the late 1920s.

Probably because of their proximity to Madison, Wisconsin, the major lithographers and publishers of panoramic maps in the 1860s and 1870s were also situated in the midwest, particularly in Chicago and Milwaukee. Beck & Pauli Lithographers of Milwaukee, Merchant's and Chicago Lithographers, both of Chicago, and publisher, J. J. Stoner of Madison, were responsible for a large percentage of the panoramas during this period. By the 1880s, however, East Coast publishers and lithographers, particularly O. H. Bailey and T. M. Fowler (publishers), and Lucien Burleigh of Troy, New York (publisher and lithographer), rivaled the midwestern companies (Figure 6).

Panoramic map production never attained the popularity in the West and the South, or in Canada, that it enjoyed in the Midwest and on the East Coast. Scarcity of money in the South or a lack of population in the Far West may explain why the business never succeeded there. Also, the small number of competent panoramists preferred to concentrate on midwestern and eastern cities.

A study of Fowler's views of Pennsylvania suggests a method used by the artist to insure efficiency. It appears that Fowler did not wait for an invitation to sketch a panorama of a community but preferred instead to interest citizens and civic groups in the idea of such a drawing. After he had persuaded one town to have a map made, he sought to involve neighboring communities to negotiate similar agreements. By noting that he had already begun to draw a map of the adjacent town, he could play upon civic pride to elicit a favorable response. In this manner, he would collect agreements from several adjoining towns thus minimizing travel expenses. In 1889, for example, he prepared views of Girardville, Frackville, Shenandoah, Mahanoy City, Minersville, and Pottsville, Pennsylvania. All were within a 20 mile radius.

Not only did Fowler produce views of a cluster of adjacent towns in one year, he also concentrated in particular geographical areas of Pennsylvania for several years at a time until he had exhausted the number of communities wishing views. From 1889 to 1894, for example, he sketched cities in eastern Pennsylvania. From 1895 to 1897 and from 1900 to 1903, Fowler worked in the western part of the state. As an extension to his system, he produced views of West Virginia towns in 1898–99 and of Maryland communities from 1906 to 1907. By these residencies in a specific area, he could be assured publicity for his works and a minimum of expense. Similar methods were utilized by other panoramic map artists.

The largest panoramic map published was Camille Dry's 1875 Pictorial St. Louis (Figure 7). It was produced in atlas form on 110 plates, which when trimmed and assembled created a panorama measuring about 9 × 24 feet. Nearly 2,000 specific sites were identified below the plates. The verso of each plate contained information on various aspects of St. Louis' economic life, including businesses, professions, schools, churches, and governmental organization. A note in the preface requested that any mistakes or errors detected be looked upon with a lenient eye by an indulgent public due to the massiveness of the work.

Two other large city plans, a 4 × 5½ foot view of Washington, in 1883–84,

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and a 5 x 11 foot panorama of Baltimore, in 1869, were published by the Sachses of Baltimore. Such large views, however, were exceptions. Panoramic maps were a pictorial record of small town America during the post–Civil War period, an era in which the nation underwent large scale industrialization. In many instances, they provide the sole 19th century map of a community. In addition to their use as city plans, they provide the researcher with a graphic picture of the modes of transportation, architectural types, locations of churches, schools, and other buildings, and urban industries popular in Victorian America. Panoramic maps can be used to compare the development of cities in one state or region, or they can be used to compare development in various sections of our nation.

The panoramic map, today, is still a most pleasing wall decoration and a remembrance of a by-gone era. No other 19th century cartographic product captures the vitality and exuberance of America's urban centers in the post–Civil War period as effectively as the urban panorama.

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The effectiveness of industrial libraries is coming to depend on their ability to assume increasing responsibility in the synthesis and analysis of information. However, there are unresolved differences as to the best means of conducting and controlling certain vital research functions, notably primary industrial market research. This is an area where the industrial librarian has an opportunity to make a creative contribution to his company. The pros and cons of this approach are discussed and the necessary library conditions for optimum results are set forth.

Even the most random examination of literature about industrial libraries reveals a basic uncertainty on the part of librarians as to the way their performance is judged. In order to dispel this feeling, librarians have sometimes resorted to some rather obscure formulas to measure their contributions and to justify their existence.

There is, however, evidence that management is not always convinced by these formulas, especially when they are repeated year after year (1). The very nature of business is to be dynamic, and the stand-patter is often suspect. K. C. Rosenberg states that “the necessity for the existence of industrial libraries has yet to be proven empirically” (2). This is probably a fair statement of management’s feeling toward industrial libraries, particularly during times of falling profits or internal economy drives. At such times the librarian may be asked: “And what are you contributing to company profits?”

The industrial librarian has often left himself open to such a question by protecting the library from any change that would disturb its passive nature. Instead he has tried to change the nature of his customers—to make them more aggressive.

“The indexing and retrieval of documents presents fewer problems to the designer of information systems than does the study, analysis and modification in human behavior patterns of his clients” (3).

In short, the burden of behavior change is put on the client, not on the librarian. Once the librarian has set up the system, he tries desperately to manipulate the client into using it.

There are, to be sure, many things militating against a more active role on the part of the librarian. In 21 personally conducted interviews with industrial librarians Dan T. Bedsole (4) found that two-thirds of them named staff shortages...
and/or recruitment as their greatest problem. Staff shortages in industrial libraries are so chronic that it has led one writer to remark: "Unless a library staff is working in excess of its capacity, it is probably not doing its job" (5).

This apparent short-changing of libraries in regard to staff is another way that management has of expressing its feelings toward the library. No matter how much work is involved in cataloging, circulation, and reference, it looks like bureaucratic waste to the production-minded person, and every dollar is given grudgingly to the library (6).

Outside Pressure for Change

Under such conditions there has been little chance for any great creativity to emerge in the traditional industrial library, and it is from outside the field that the greatest stimulus to development has come. Speaking as the head of the Government Committee on Science and Technology Information, William T. Knox summed up this situation:

"It is a matter of sad record, however, that, out of some twenty-odd plans for achieving a more effective and efficient national network of information systems in science and technology, not one of the more widely discussed plans has originated from within the library community" (7).

The prime movers have been the information centers which grew up quite independently of industrial libraries, both in function and in personnel. The information center has analyzed the functions of the library in relation to itself and, as might be expected, has assigned a subsidiary role to the library.

In the opinion of E. B. Jackson the computer will force a more creative role on the librarian because he will be required to interpret vast amounts of information under his control. Jackson describes one IBM library (8) which has the responsibility of preparing reports and conference papers not only on data collected internally but also from discussions in the field.

The difference in attitude of such librarians can be seen in the following statement: "The information center should always ask, 'How can I change the IC to make it more useful to the achievement of your function?' not, 'Why don't you use my information center?'" (9).

If information center literature is taken at face value, one would have to conclude that traditional libraries have done little but act as roadblocks to progress. Actually, there seems to be a parallel evolution going on in the two systems, but development is understandably slower in the traditional industrial library.

Gradually, the traditional library is coming around to research its own operations and in doing so is discovering that there is a close relationship with research conducted in other fields. A. M. C. Kahn points out that the systems analysis for determining rush-hour motor traffic is basically no different than for determining peak loads in library usage (10). Control groups for validating research have been used, as have random and probability sampling (11). Questionnaires have been widely used to survey customers, other libraries, and specific library problems. While not always aware of how much he knows, the industrial librarian is developing a variety of tools that can be applied creatively to library problems.

Library as Information Coordinator

It is granted that some corporate technical libraries will always be tied to divisional needs and have no great creative role in company operations. But the central corporate industrial library must be a coordinating force in the collection of industrial information just as corporate management is the coordinating force in achieving company goals.

If this premise is accepted, then the corporate library will have to become an information center that not only coordinates satellite division libraries, but processes and analyzes all types of information. In fact, it will be in a posi-
tion to carry its activities one step fur-

“Researching with information implies not only arriving at conclusions beyond those reached by the individual authors investigated, but also discovering gaps in available research information” (12).

The library, then, has taken on the additional function of indicating where greater research is required.

Industrial Market Research

One type of additional research is that of the marketplace. This is information not usually available from internal sources. It concerns the present need for an industrial product, the potential size of the market, the competition, the competitive position of the company in terms of price, distribution, service, reputation, and many other factors. Such information changes rapidly and must be gathered from outside the company. Even when collected professionally, it is approximate, but it is vital to any change of corporate policy or to the introduction of new products. I. G. Ross described the importance of such information gathering for corporations.

“The ultimate aim of any economic information service, as I see it, is to supply management with up-to-date and reliable information as a basis for decision making. This may be either in the form of direct information to management or indirect as the basic data for market research and sales forecasting” (13).

The market research to which Mr. Ross alludes has presented many problems to corporate management when applied to industrial products. Unlike consumer research, which is widely accepted, industrial market research has faced opposition from within the company. Some of this opposition is well founded. “The drive to be first in the field of technology leads to the proprietary nature of information” (14). Secrecy is a primary weapon in the competitive struggle. This has resulted in many industrial products being introduced on the market with little or no previous testing or market analysis.

The high cost and frequency of failure in recent times have tended to discredit this “gut feeling” approach to the marketing of new industrial products. Industry has instead turned to industrial espionage, outside consultants, market research suppliers, or any combination of these. They have all proven expensive and only partially successful.

Industrial espionage and consultants are outside the scope of this paper, but even where successful, they by no means replace the need for market research. Considering only the inherent difficulties of dealing with an outside research supplier, the greatest of these is the distrust that company personnel feel for the outsider. Security considerations can cause a lack of candor that inhibits a full attack on the problem. There is also a long time lag while the outsider becomes familiar with a unique problem. This in turn contributes to higher costs.

There are sporadic and continuing attempts to do primary industrial research from within the corporation. Traditionally this has been a function of the marketing department, which has handled the collection and analysis of secondary data very successfully. However, it has found it difficult to plan or execute primary research projects with any degree of objectivity. Such research often affects the vital interests of the marketing department, and it is hard to sit on a jury at one's own trial and come in with an unfavorable verdict. The same danger exists when using company salesmen for data collection. Their own personal views tend to obscure their objectivity.

The Library's Contribution

The problem is to find an area within the company where the job can be done objectively and with trust that the department will have the same goals as the company as a whole. No division or department seems to be more qualified to carry out this useful function than the corporate industrial library. A
single librarian with a basic knowledge of statistics and questionnaire construction could, with the aid of interviewers recruited from within the company (trainees can be used for this purpose) and with help from company technicians and specialists, perform primary research tasks as well or better than outsiders at much less cost.

Some pertinent objections can be raised to this plan. One is the possibility of establishing another company bureaucracy. However, this is less likely to happen than might be supposed. Even large corporations seldom do more than one or two primary industrial market research projects in a year, and it is a load that the library should be able to assume with only temporary support from other departments.

Protests would undoubtedly be heard from the marketing department because old prerogatives would be altered. But any large, diverse company with a strong corporate structure should be able to overcome such objections through education and persuasion.

Librarians themselves might object to entering controversial areas. But if librarians are to be creative members of a team effort, they must give up the dubious serenity they enjoyed as a static function. At least it should be less disconcerting than having to justify the usefulness of their services to unsympathetic managers.

There is also a tendency among librarians—as well as among other people—to stand in awe of research, thinking of it as an enormous undertaking. Actually nothing is too small to be researched as long as the limits are clearly defined and the questions that fall within the definition are answered (15).

It is not easy to say at what size a company would be able to put such a program into effect, but if half a billion dollars in sales were the breaking point, 220 industrial corporations would qualify (16). Mergers, acquisitions, and diversity make information centers an increasing necessity. Industrial market research is one information gathering device the librarian can make his own.

In conclusion, it appears feasible for a library to conduct industrial market research under the following conditions:

1. A central library exists that serves the corporation and its divisions as an information center.
2. A company or corporation engages in basic industry or fabricates a large number of industrial products for which some primary market research is needed.
3. The role of the librarian has evolved to the point where it is treated as a creative force that contributes directly to the profitability of the company.
4. At least some member of the library staff has been trained in research methods and techniques.

No doubt such undertakings will have to await further evolution in the library community before they become widespread. But the advances in this direction seem well founded, and both individual librarians and corporations should benefit from them.

Literature Cited

6. Ibid.


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Lloyd Williams has worked in market research for many years. He recently received his MALS from Rosary College.
The Special Library Manager
A Profile

Paul Wasserman and Jeanne O'Connell

University of Maryland, School of Library and Information Services, College Park, Md. 20742

Details drawn from a mail survey of chief administrators in a sample of 150 libraries which report staffs of 10 or more people are provided. The data are compared and contrasted with intelligence about other types of administrators also studied as part of the overall study of library administrators.

THE DETAILS and data which form the basis for the following description are drawn from one portion of a study of administrators of various types of libraries and information organizations conducted in 1969 (1). The instrument employed in the analysis was a mail questionnaire addressed to the chief administrators in a sample of 150 libraries selected at random from a universe of 427 special libraries and information centers reporting staffs of ten or more people. Completed questionnaires were returned by 95 administrators for a response rate of 64% (2).

The study instrument was divided into four principal parts: the first concerned the background and career characteristics of the administrators; the second solicited their reactions to professional and administrative issues; the third sought to accumulate data about actual modifications which had been or were being made in the libraries represented by the respondents; the last section dealt with specific characteristics of the information centers in the sample. Particular differences were found in certain instances between the kinds of administrators functioning in what would be conceived to be more traditional forms of special libraries and those functioning as managers of information centers and special installations. The difficulties of attempting to generalize the data, therefore, to the entire class of special library administrators were made more formidable—a problem fully elaborated in the report from which this intelligence is drawn. With this limit clearly in mind, the information obtained from the study findings revealed the following:

Personal Characteristics

Of this group 60% are men, approximating the distribution in public libraries, but in contrast to the figures from academic and school libraries: 89% of academic library administrators are men, and 80% of school library administrators are women (3).

Fully 57% of the special library respondents have been in their present positions five years or less (Table 2), and only 26% have served for as long as ten years in their roles.

Background

The highest proportion emerge from the professional and managerial classes with skilled labor and white collar worker backgrounds well represented (Table 3).

Education

Compared to administrators of other types of libraries reviewed, three times
Table 1. Present Age

<table>
<thead>
<tr>
<th>Age Group</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 35</td>
<td>3</td>
</tr>
<tr>
<td>35-50</td>
<td>38</td>
</tr>
<tr>
<td>Over 50</td>
<td>50</td>
</tr>
<tr>
<td>No response</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 2. Years in Present Position

<table>
<thead>
<tr>
<th>Years</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than one year</td>
<td>10</td>
</tr>
<tr>
<td>1-5 years</td>
<td>47</td>
</tr>
<tr>
<td>6-10 years</td>
<td>15</td>
</tr>
<tr>
<td>11-15 years</td>
<td>17</td>
</tr>
<tr>
<td>16-20 years</td>
<td>6</td>
</tr>
<tr>
<td>21-25 years</td>
<td>2</td>
</tr>
<tr>
<td>26 years and over</td>
<td>1</td>
</tr>
<tr>
<td>No response</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 3. Father's Occupation

<table>
<thead>
<tr>
<th>Occupation</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional, technical and kindred workers</td>
<td>23</td>
</tr>
<tr>
<td>Managers, officials and proprietors (except farm)</td>
<td>22</td>
</tr>
<tr>
<td>Craftsmen, foremen and kindred workers</td>
<td>17</td>
</tr>
<tr>
<td>Clerical and kindred workers</td>
<td>10</td>
</tr>
<tr>
<td>Farmers and farm managers</td>
<td>7</td>
</tr>
<tr>
<td>Sales workers</td>
<td>7</td>
</tr>
<tr>
<td>Operatives and kindred workers</td>
<td>2</td>
</tr>
<tr>
<td>Service workers (except private household)</td>
<td>2</td>
</tr>
<tr>
<td>Laborers (except farm and mine)</td>
<td>1</td>
</tr>
<tr>
<td>Retired</td>
<td>1</td>
</tr>
<tr>
<td>No response</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 4. Undergraduate Subject Major

<table>
<thead>
<tr>
<th>Major</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities (including history)</td>
<td>39</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>23</td>
</tr>
<tr>
<td>Sciences</td>
<td>20</td>
</tr>
<tr>
<td>Applied fields (e.g. business, education, engineering)</td>
<td>12</td>
</tr>
<tr>
<td>Library Science</td>
<td>2</td>
</tr>
<tr>
<td>No response</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 5. Nature of Library Education

<table>
<thead>
<tr>
<th>Education</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate minor in Library Science</td>
<td>9</td>
</tr>
<tr>
<td>Fifth year Bachelor's in Library Science</td>
<td>39</td>
</tr>
<tr>
<td>Master's Degree in Library Science</td>
<td>52</td>
</tr>
<tr>
<td>Ph.D. in Library Science</td>
<td>3</td>
</tr>
<tr>
<td>Certificate</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
</tr>
</tbody>
</table>

* Base = those reporting library education

Table 6. Types of Library Experience

<table>
<thead>
<tr>
<th>Type</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>74</td>
</tr>
<tr>
<td>Academic</td>
<td>58</td>
</tr>
<tr>
<td>School</td>
<td>11</td>
</tr>
</tbody>
</table>

* Base = those who have worked in other types of libraries

as many of this respondent group received their undergraduate degrees in one of the sciences (Table 4). Some 60% are university educated, while 24% attended a liberal arts college.

A total of 42% have continued their education beyond the undergraduate level: 40% in one of the humanities, one-third in science or engineering, 16% in the social sciences, and 8% in education. Only a few of the respondents with non-library science Ph.D.'s (24% of those who pursued advanced work) have also had formal library education and one-half of those Ph.D.'s were granted in either science or engineering.

In all, only 61% of special library and information center administrators have had formal library education (Table 5). This represents a sharp variation from academic, public, and school findings with percentages of 94%, 97%, and 90% respectively.

Work Experience

60% of the respondents reported that their library careers had been limited to work in special libraries, while 40% specified previous employment in at least one other type of library (Table 6).

Almost one-third have spent their library careers in a single institution and only 15% have moved more than four times (Table 7).

Close to two-thirds of special library and information center administrators are members of the Special Libraries Association (reaching a high of 88% with industry librarians), and a range of other national library associations and non-library associations appear in Table 8.

Table 7. Number of Libraries Where Employed (Special and Non-Special)

<table>
<thead>
<tr>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>31</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>21</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Could not be determined</td>
<td>2</td>
</tr>
</tbody>
</table>

December 1972
Sources of Ideas

Respondents were asked to rank the sources to which they turn for professional ideas. It is interesting to note that although the literature of their own profession was placed second by academic, public, and school library respondents, it occupies a minor position for this group (Table 9).

Career Choice and Career Satisfaction

While an appreciable number of the administrators appear to have elected the information field during their school years, for at least one-half of them this was a choice made at a later time (Table 10).

Recognition of the importance of the information function was most frequently mentioned as a conditioning factor, although the influence of librarians and a liking for books carried considerable weight (Table 11).

For the 61% who reported having had formal library education, attendance at library school appears to have had a negligible effect on career choice; 83% indicated that their interests were not changed in any way during library education.

If they could “do things over,” three-fourths of this administrative group would choose library or information center work again. However, close to one-half of them appear to have entered the managerial ranks as the result of “circumstance” rather than by deliberate preselection of this role (Table 12).

Role Expectations

A significant number of special library and information center administrators stress the managerial functions of their positions as compared to very small percentages in academic, public, and school libraries. When invited to identify the most important dimensions of their present roles, almost one-third mention the necessity for efficient management of resources and/or the improvement of their own administrative skills. For one-fourth of the respondents a

Table 8. Membership in National Professional Associations (Library and Non-Library)

<table>
<thead>
<tr>
<th>Association</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Libraries Association</td>
<td>62</td>
</tr>
<tr>
<td>American Society for Information Science</td>
<td>35</td>
</tr>
<tr>
<td>American Library Association</td>
<td>34</td>
</tr>
<tr>
<td>American Chemical Society</td>
<td>10</td>
</tr>
<tr>
<td>Medical Library Association</td>
<td>7</td>
</tr>
<tr>
<td>American Association for the Advancement of Science</td>
<td>6</td>
</tr>
<tr>
<td>American Association of Law Libraries</td>
<td>5</td>
</tr>
<tr>
<td>National Microfilm Association</td>
<td>5</td>
</tr>
<tr>
<td>Society of American Archivists</td>
<td>3</td>
</tr>
<tr>
<td>American Management Association</td>
<td>3</td>
</tr>
<tr>
<td>National Security Industrial Association</td>
<td>3</td>
</tr>
<tr>
<td>American Association for State and Local History</td>
<td>3</td>
</tr>
<tr>
<td>No response</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 9. Relative Importance of Professional Sources

<table>
<thead>
<tr>
<th>Source</th>
<th>Rank Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meetings of professional information groups</td>
<td>1</td>
</tr>
<tr>
<td>Professionals on your staff</td>
<td>2</td>
</tr>
<tr>
<td>Special institutes and conferences</td>
<td>3</td>
</tr>
<tr>
<td>Other information professionals</td>
<td>4</td>
</tr>
<tr>
<td>People outside the information field</td>
<td>5</td>
</tr>
<tr>
<td>Professional journals and other literature of librarianship and information science</td>
<td>6</td>
</tr>
<tr>
<td>Literature outside librarianship and information science</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 10. Time of Choice to Become a Librarian or Information Scientist

<table>
<thead>
<tr>
<th>Time of Choice to Become a Librarian or Information Scientist</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>During high school or before</td>
<td>6</td>
</tr>
<tr>
<td>As an undergraduate</td>
<td>23</td>
</tr>
<tr>
<td>During graduate school</td>
<td>3</td>
</tr>
<tr>
<td>While working in a library or a library connected activity</td>
<td>15</td>
</tr>
<tr>
<td>While engaged in another career or occupation</td>
<td>43</td>
</tr>
<tr>
<td>After military service</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
</tr>
<tr>
<td>No response</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 11. Reasons for Choice to Become a Librarian or Information Scientist

<table>
<thead>
<tr>
<th>Reason</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>From working in subject discipline I recognized the importance of information handling</td>
<td>31</td>
</tr>
<tr>
<td>I was influenced by a librarian I knew</td>
<td>28</td>
</tr>
<tr>
<td>I always liked books</td>
<td>26</td>
</tr>
<tr>
<td>I had reached a dead end in my technical field and information work opened new avenues</td>
<td>7</td>
</tr>
<tr>
<td>As a result of vocational counseling</td>
<td>6</td>
</tr>
<tr>
<td>A member of my family was a librarian</td>
<td>5</td>
</tr>
<tr>
<td>Other factors (e.g., economic or market considerations, satisfactory working experience in library or information fields)</td>
<td>42</td>
</tr>
<tr>
<td>No response</td>
<td>3</td>
</tr>
</tbody>
</table>
dominant concern is the recruitment, training, and supervision of staff. General program development and expansion received frequent mention, and a number emphasized the need to meet client requests more quickly and effectively through refinements of processing and retrieval techniques. In addition, 13% expressed specific interest in computer applications and the automation of appropriate routines—more than twice as many as the number who specified similar interests in other types of libraries.

Job Satisfactions

On the whole, special library and information center administrators appear to find and take more direct satisfaction from service-client interaction than do their peer groups in other types of libraries examined. For many, a major source of job satisfaction is the conviction that their efforts are both useful and appreciated, and that their library is responding effectively to the information needs of the parent organization or constituent group. Some take particular delight in the introduction of self-styled innovative techniques and programs; others simply report an overall improvement in library operations. Here it is distinctly the service process, rather than the acquisition of holdings (collection building is cited by only one respondent) that seems rewarding. Staff associations and interchange with other professionals in the larger organization are an additional source of satisfaction for a sizeable number of respondents.

Job Dissatisfactions and Frustrations

The largest proportion of special library and information center respondents, over one-half, report that they find financial and personnel constraints their major sources of job dissatisfaction. In addition, one-fourth report that management of the client group is insufficiently attuned to the information function, slow to exploit its potential, or, on the other hand, unrealistic in its level of expectation. Smaller numbers deplore the lack of adequate communication or proliferation of red tape inherent in some bureaucratic structures. Lack of space was cited by a few respondents and a few find the pressures on their time burdensome.

Present Mobility

Responses to the question: "Which of the following best describes how you feel about making a job change in the near future?" suggest that this is a somewhat more mobile group than the administrators of other types of libraries, but that one-third are fairly firmly entrenched in their present positions (Table 13).

Of the two-thirds who would be willing to consider another position, slightly better than one-half cite salary as an important condition. New challenges or additional responsibilities were specified as major considerations by approximately one-third, while an organizational climate favoring independence of operation received some mention. A small number feel that management's attitude toward the information facility is paramount (particularly with respect
Table 14. Desired Position in Five Years

<table>
<thead>
<tr>
<th>Position Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the Same Position</td>
<td>43</td>
</tr>
<tr>
<td>Same</td>
<td>24</td>
</tr>
<tr>
<td>Same, with better library support facilities</td>
<td>13</td>
</tr>
<tr>
<td>Same, with better personal benefits</td>
<td>6</td>
</tr>
<tr>
<td>In Another Position</td>
<td>29</td>
</tr>
<tr>
<td>Other library position</td>
<td>14</td>
</tr>
<tr>
<td>In library-allied field, such as teaching library science or consulting</td>
<td>10</td>
</tr>
<tr>
<td>In non-library field</td>
<td>5</td>
</tr>
<tr>
<td>Retired</td>
<td>19</td>
</tr>
<tr>
<td>Don’t know</td>
<td>3</td>
</tr>
<tr>
<td>No response</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 15. Administrator’s Satisfaction with Rate of Change in His Library

<table>
<thead>
<tr>
<th>Satisfaction Level</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very satisfied</td>
<td>19</td>
</tr>
<tr>
<td>Reasonably satisfied</td>
<td>51</td>
</tr>
<tr>
<td>Not satisfied</td>
<td>24</td>
</tr>
<tr>
<td>No response</td>
<td>6</td>
</tr>
</tbody>
</table>

Respondents who would choose to remain in their current positions were about equally divided between those who weigh personal factors highly and those for whom professional considerations are dominant. A fair proportion report that there is sufficient challenge or potential for growth and change where they are; others value the prestige of the institution in which they play a part; still others simply like their jobs. By far the largest number who cite personal reasons report that they are close to retirement or that their length of service would make it economically disadvantageous to move at this point. Other factors mentioned included various family commitments or a distinct preference for the area.

Abstracting from the conditions which might impel a move, it is of interest that only 29% of special library and information center respondents would positively hope to be in another position in the relatively near future. Answers to the question “Ideally, what would you like to be doing five years from now?” produced the distribution in Table 14.

The Library Administrator in His Situation

Approximating the distribution in other types of libraries sampled, special library and information center administrators characterized their degree of satisfaction with the change taking place in their facilities as shown in Table 15.

Invited to report what they would like to see happen in their situations in the short-run, widespread consensus emerged. Cited frequently were increases in the size and caliber of staff, increased availability of funds for personnel and for general library or information center purposes, and increased space within which the facility might function. A small number identified greater availability of computer time, reorganization within the context of the parent organization, or improved organizational relationships for the facility with management personnel.

With respect to long-run expectations, it was clearly necessary to differentiate by type of facility. For the engineering and applied science library, the most frequently identified objective appeared to be the development of a corporate or organization-wide library and information service program which would vest complete responsibility for such a system within the library. A number of respondents specified that an ideal system would be automated with on-line capacity for information retrieval. Some of these administrators also stipulated the need for organizational restructuring so as to place the library in a more strategic position—reporting, for in-
stance, directly to the highest level official.

The responses of the special library directors in the science settings overlap those of the engineering group. Again, a high premium was placed upon advanced utilization of mechanization in order to facilitate establishment of a central information system for the overall organization. There was more emphasis here on the need for added managerial support for the information program and on the desirability of providing more individualized approaches to clientele services than is now possible.

Among the other types of special libraries and information centers represented, there did not appear to be great consistency about the nature of long-term aspirations other than the fact that long-term and short-term hopes were, for many, essentially the same. No common long-term desires stretched across the whole continuum of special librarianship, once the engineering and science groups were characterized.

Although responses to the questions "What are the prospects of realizing your aims? What stands in the way? Please explain your situation. Is your management aware of and does it support your objectives?" proved difficult to capture by generalization, essentially they reduced to the central question of eliciting sufficient support from either corporate or legislative management. Even when sympathetic—and a number of respondents specified that they were—the parent organization tends not to have enough resources with which to meet all of the ends deemed necessary. Among the engineering and science personnel, optimism and pessimism were about equally displayed. A large number of respondents identified the fact that prospects were variable as a function of the economic conditions obtaining within the firm or within the jurisdiction to which control of their facilities was subject.

A further series of questions asked the administrator to characterize his own role in planning and bringing about change. While 55% stated that they initiated most of the ideas for change themselves, 15% reported that their contribution varied. A high 80% indicated that they had a major involvement in the implementation of new ideas.

Two additional change-related opinions were solicited: the administrator's attitude toward staff participation in decision making, and his reaction to the demands being placed upon his library or information center. With respect to the appropriateness of the decision making process in their own facilities, 84% reported satisfaction with their present arrangements. Added comments on this issue displayed wide variation with the type of organizational setting less prominent as a differentiating factor than the respondent's own view of the role of the professional in decision making. Perhaps the largest number of administrators suggested that although there should be a high degree of staff involvement in discussion and deliberation of alternatives (with particular emphasis upon those related to change), final responsibility rested with the chief administrative figure who operated within a context of overall organizational objectives. The larger the size of the organization, the greater was the prospect that the respondent would indicate that there were formal mechanisms for groups to convene to discuss policy questions.

Some 83% of this group felt that the external pressures being placed on their library or information center were largely reasonable and only 3% described such demands as unreasonable.

In answer to a question which asked them to assess the pressure being put upon their facilities, respondents could be divided equally into two groups: one set of administrators felt that although demands were generally reasonable, financial, personnel, and/or space constraints limited adequate adaptation at this time; the other set reported that their facilities were able to keep pace with expressed desires and deplored only the paucity of genuine interest which might produce a kind of pressure they would welcome. These two response patterns seemed to cut across the field, with
no one type of special library or information center subscribing exclusively to either view.

One insight into the administrator's fundamental posture toward change and the strength of his personal commitment may be gauged by his responses to the question "In attempting to effect change in most special library and information center situations, which of the following are called for?" (Table 16).

General Conclusions

In contrast with other types of library administrators, special library administrators have no such comparable identity as do, for example, public library directors. Not only do the forms of service provided by these administrators vary widely, but the typical characteristic of the special library, service to a distinctive, basically homogeneous constituency, was not always present. While subgroups within the special library group were analyzed separately, the small number in these subgroups precluded drawing any definitive conclusions about sub-elements in special librarianship. Thus the findings presented can only be considered suggestive, awaiting further analysis based on more extensive data. The only fundamental commonality of the total group is that those included were not academic, public, or school library administrators.

The administrator of the special library or information center was found to be no more aggressive about change strategy than his counterpart in other types of libraries, no more willing to put his job on the line to force modification, no less satisfied with the rate of change in his facility, no more inclined to encourage non-authoritarian forms of government. While he may reveal a more pronounced tendency to be mobile than administrators in other types of libraries, he shares with them the view that the rate of progress of his unit is satisfactory, with lack of resources, money and staff the only real deterrents to improvement.

There were, however, certain distinguishing personal characteristics of this group. Fewer come to their positions through the entry point of library education. A lesser number are drawn from the humanistic disciplines so predominant in other forms of librarianship. A significantly smaller percent belong to the American Library Association. As particular subgroups within the sample are analyzed, the variations in background become more striking. Suggestive are the findings with regard to the administrators in industrial and governmental set-

Table 16. Respondents' Evaluation of Suggested Change Strategies

<table>
<thead>
<tr>
<th>Cage</th>
<th>Very Advisable</th>
<th>Not Appropriate</th>
<th>Not Checked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Willingness to take temporary defeat without giving up ultimate objectives</td>
<td>91</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Willingness to see the library's needs for support in relation to other needs of the organization</td>
<td>88</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Finesse in getting changes accepted by administrations</td>
<td>87</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Recognition that lasting change is not made overnight</td>
<td>78</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>Seize on opportunities as they arise: &quot;strike while the iron is hot&quot;</td>
<td>77</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Conducting a careful and methodical program of introducing developments using caution and restraint</td>
<td>77</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>Maintaining sound relationships with influential people and groups within the organization by keeping them satisfied</td>
<td>76</td>
<td>16</td>
<td>5</td>
</tr>
<tr>
<td>Adopt a forceful, aggressive approach to effecting change</td>
<td>66</td>
<td>33</td>
<td>2</td>
</tr>
<tr>
<td>Choosing dramatic innovations as the way to enhance the climate for change acceptance</td>
<td>36</td>
<td>58</td>
<td>3</td>
</tr>
<tr>
<td>Readiness to leave if requests are not met in a reasonable time</td>
<td>16</td>
<td>77</td>
<td>4</td>
</tr>
<tr>
<td>No response</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>
tings (36% and 35% of the sample respectively). Less than one-half of the company library administrators have had formal library education; a markedly higher proportion took their degrees in the scientific and technological fields; only 21% belong to the American Library Association; and only 56%, as contrasted with 66% of the entire special library sample, identify themselves as "Librarian." Respondents within governmental organizations, on the other hand, appear to be more nearly comparable to their peers in the academic, public, and school library form rather than with the company library administrators with whom they share the "special library" designation as part of the present study: 76% of government library administrators have been formally educated in librarianship; 66% have a humanities background; 39% belong to the American Library Association; and 73% call themselves "Librarian." Substantial age differences emerge as well. Only 38% of the industrial library administrators are over fifty years of age, while 70% of governmental librarians are. Variations in personal characteristics were not found as clearly related to differences in change orientation however. It cannot be said that being drawn from other than librarianship or having a preference for an industrial library environment means that the individual will be a more change-oriented administrator. He is not necessarily an aggressive manager and may freely accept traditional library philosophy.

Indeed, revolutionary change in information practices was not seen to constitute a driving thrust of the special library manager. Rather it seems likely that in both the industrial and governmental settings, new types of information units will continue to be spawned wherever the conventional library fails to broaden its mandate so as to enlarge the scope of its activity to encompass advanced information services. Except for the isolated administrator of the special library or information center, the disposition to move dramatically toward change was uncommon in the present study.

**Literature Cited**


2. Full details of the sample choice and the design and analysis of the return are contained in the Appendixes to the full report: *ibid*, p.66–94.


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Automated Cataloging of Technical Reports
Via Optical Scanning

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A system for automated cataloging of technical reports was established during 1971. Only one cataloging work/input sheet is produced. It is optically scannable. The twice-per-month output is an updated book catalog, an announcement bulletin, demand bibliographies, and an SDI notification system. Benefits include a 600% increase in report usage and a 10% decrease in catalog maintenance.

SIX MONTHS after our automated technical reports system came into being, the circulation librarians presented an unheard-of problem at our weekly staff meeting. Our technical reports circulation had increased to such an extent that it was becoming necessary to devise a faster, more efficient method of handling report circulation. At about the same time we became aware that we had some thinking to do about frequency of cumulation and cabinetry to hold the reports book-catalog in its computer printout form. We had previously noted that if the distance to and from the computer room was walked more than once a day, it was guaranteed either to take off x-number of pounds from the walker or markedly increase her consumption of lunch. These were the kinds of happy problems that automation posed and we were delighted to solve them. It was a relief not to be coping with the old bugaboos of constantly misshelved reports, backlogs of cards to file and drawers of unrevised filing, plus a stagnant reports collection that never seemed to move.

Background

During the eighteen years of the existence of the Boulder Laboratories Library, over 50,000 hard copy technical reports were cataloged and over 125,000 microfiche filed. Until Jan 1971, the cataloging of hard copies revolved around a source-oriented classification scheme developed and used solely at the Boulder Laboratories Library. The intent was to bring together on the shelves all reports issued by the same company or agency. However, the call numbers became increasingly complex, both to derive and for shelving. Staff curtailment in 1968 forced the cessation of subject cataloging of the reports. Even though the unit card was reproduced by Xerography and the file element underlined on the card to save typing time (Figure I), the clerical load of maintaining the catalog and typing a monthly acquisitions list became a persuasive argument for harnessing the power of data processing.

Our system, called TRACY (Technical Reports Automated Cataloging—Yes), was developed by the Library Systems Group, a Boulder-based consulting firm. The firm specializes in library automation and had designed and installed various automated systems for libraries in the Denver-Boulder area with which we
Figure 1. Catalog Card (Manual System)

Figure 2. TRACY System Flow Chart

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were familiar. Rather than create our own system, we thought it practical to contract with the Siemens Group.

We also visited libraries at the National Center for Atmospheric Research in Boulder, and the Lawrence Radiation Laboratory Library at Livermore, California, and incorporated some features of both of these successful automated operations into our system. It should be emphasized that our programs are written in the INFOR and FORTRAN languages for the CDC 3800 computer. (Figure 2 displays a simple flow chart of the TRACY System as a whole.)

Optical Scanning Input

Naturally, access to computer facilities and budgeting for computer costs are the central points to consider in the decision to use data processing. To save the expense of leasing a keypunch machine at $120 per month, we use an IBM Selectric typewriter equipped with an optically scannable type font to create the machine-readable input sheets. The reports clerk types the input sheet directly from the report to be cataloged; there is no intervening code or work sheet. (Figure 3 shows a typical technical report ready for typing onto scan sheet.) This method of operation requires a clerk skilled in technical reports cataloging who can also master the intricacies of producing scan sheets. Because our input method is somewhat unusual, we have reproduced a cataloging input sheet (scan sheet) (Figure 4), complete with “Christmas tree” corrections—one of the simple ways of eliminating a wrong character.

Obvious advantages of optical scanning versus punched card input include the aforementioned cost of renting a keypunch as opposed to equipping a typewriter. Proofreading is simpler, once one becomes familiar with the angular shape of the characters. About four reports with an average total of 6 lines apiece can be described per 81/2" × 11" input sheet. Thus reading one sheet is equivalent to proofing 17 to 20 tab cards. Corrections are easy to make. The Christmas tree, or a line-out, will cancel a character or a line, whereupon the operator then types the correct character, or spaces down, retypes the line, and continues on. Contrast this with the time consumed in repunching a card or duplicating it to the exact column where the error occurs.

We found scan tapes produced from the optical scanning process to be just as accurate as cards, once the basic rules for input were understood. There are definite requirements for producing scan sheets: type must be dark, typewriter aligned properly so that all characters are clear and complete, lines must begin and end within specified margins, etc. A clerk will require perhaps a month to become familiar with the keyboard and
spacing requirements for optical scan input, and a somewhat longer period of time to fully comprehend the fine points of technical report cataloging. Eventually the process becomes as routine as any other and the speed of production compares favorably with that of key-punch input. There was plenty of debugging of TRACY in its first months of operation, but almost no problems were attributable to optical scan input.

Inputs and Products

We went through the usual protracted period of decision-making about inputs and outputs and formats, lasting in our case about five months, before we became operational. In the process, two manuals were written covering details of programming and input rules and procedures.* The results of our planning may be summarized in the following lists:

**Inputs (18 Items)**

1. ID number (no hyphens)
2. ID number (hyphenated)
3. Source (Corporate Author)
4. Title
5. Author(s)
6. Date
7. Paging
8. Form
9. Holdings
10. Security classification
11. Distributor's number
12. Originator's number
13. Contract number
14. Notes
15. Generic term
16. Descriptors
17. Selected descriptors
18. Supplements

* Documentation and programs for the TRACY System are available on request for the cost of photocopying. Write to Joan M. Maier, Chief, Library Services, R51, National Oceanic and Atmospheric Administration, Environmental Research Laboratories, Boulder, Colorado 80302.

**Current Outputs**

- Shelf list (Figure 5)
- Source index (Figure 6)
- Lead author index (Figure 7)
- Inverted author index (all authors) (Figure 8)
- Originator's number index (Figure 9)
- Distributor's number index (Figure 10)
- Selected descriptor index (Bibliographies, Conferences, Translations) (Figure 11)
- TRAC Sheet (announcement) (Figure 12)
- KWOC index (semi-annual) (Figure 13)

**Produced on Demand**

- SDI on specific subjects (weekly notices)
- Bibliographies on specific subjects

**Other Possibilities**

- Title
- Contract number
- Security classification (Restricted use only; no classified documents)

The system can handle any number of inputs; 18 items were sufficient for our needs.

The TRACY programs direct the computer to print a book catalog and scan newsletter called the TRAC Sheet. The cumulated update occurs once or twice a month, and the superseded catalog is discarded except for the shelf list portion, which merely increments in number order. The reports collection grows at the rate of 200–250 reports per month, which will allow us to continue to cumulate for two or three years. When the cumulated catalog in computer printout form becomes unwieldy or the cost too great, we will begin a new cumulation, merging the new with the old annually. Photoreduction to $8\frac{1}{2}'' \times 11''$ format is also a possibility.

A decision with which no one quarreled was to use a much simplified call number, consisting of seven digits. The first two digits represent the calendar year, the third digit the form, and the last four digits the sequential number. For example, 71-0-0680 represents the 680th hard (paper) copy report added.
Figure 5. Shelf List

71-8-0632 LOCKHEED CO.
HIGH ALTITUDE CLEAR AIR TURBULENCE.
CROOKS, M., SEP 69 114P
AF67-6616
71-8-0636 SIOLO STATE RESEARCH.
QUARTERLY TECHNICAL SUMMARY, 1976, 2 NOV - 1977, 31 JAN.
MCWORTHY, A.L.
MAR 71 60P ESO-TR-71-28
71-8-0827 LOCKHEED CO.
HIGH ALTITUDE CLEAR AIR TURBULENCE.
CROOKS, M., NOV 78 44P
AF67-6616
71-8-0828 SIOLO STATE RESEARCH.
QUARTERLY TECHNICAL SUMMARY, 1976, 1 SEp - 28 NOV.
MCWORTHY, A.L.
DEC 78 40P ESO-TR-71-280
71-8-0878 LOCKHEED CO.
HIGH ALTITUDE CLEAR AIR TURBULENCE.
CROOKS, M., SEP 69 114P
AF67-6616
71-8-0879 PROJECT HICAT, AN INVESTIGATION OF HIGH ALTITUDE CLEAR AIR TURBULENCE. FINAL REPORT, VOLUME 2.
CROOKS, M., NOV 69 94P
AF67-6616
71-8-0880 PROJECT HICAT, AN INVESTIGATION OF HIGH ALTITUDE CLEAR AIR TURBULENCE. FINAL REPORT, VOLUME 3.
CROOKS, M., NOV 69 94P
AF67-6616
71-8-0882 CUKOWINSKI, W., NOV 69 20P
AF67-6616
71-8-0883 DALLAMORE, E.
VECTOR, G.A.
NOAA, ERL, AIR RESOURCES ATMOSPHERIC TURBULENCE AND THEORIES.
MAR 71 17P LA-6844-MS
71-8-0884 DALLAMORE, E.
VECTOR, G.A.
MECOMBINATION RATES OF THERMAL IONS. FINAL REPORT.
GCA Corp.
25P DEC 74
71-8-0885 DALMANN, S.C.
ADVANCED CONCEPTS OF MICROWAVE GENERATION AND CONTROL IN SOLIDS. 1ST QUARTERLY REPORT, 1974, 3 OCT - 31 DEC.
COPPELL UNIV.
112P MAR 71
71-8-0886 CAMM, T.O.
ARTFACT, F.M.
IONOSPHERIC ELECTRON DENSITY PROFILE MODEL, TECHNICAL MEMORANDUM 70-3.
AIR WEATHER SERVICE.
43P JUL 74
71-8-0887 DAVWICK, R.
PRIMITIVE TERRESTRIAL ATMOSPHERE AND THE ATMOSPHERES OF VENUS AND MARS.
CANADA, DEFENCE SCIENTIFIC INFORMATION SERVICE.
48P DEC 74
71-8-0888 OWSON, J.M.
FURTH, N.P.
THERMOMETER, MACHINER MACHINE TARGET PLASMA REACTORS.
PRINCETON UNIV.
18P MAY 71

Figure 6. Source Index

Figure 7. Lead Author Index

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SPECIAL LIBRARIES
to the library in calendar year 1971. The zero denotes hard copy. We further established a number for technical report indexes such as STAR, GRA-GRI, Tab, and indexes issued by various organizations such as NATO, U.S. Air Force Cambridge Research Laboratories, etc. This amounts to a form of open-entry cataloging. These materials are given a number in the 5-series; for example 71-5-0025. Supplements are added to such a basic number, called Supp. 1, Supp. 2, etc. Thus the indexes will shelve together, always retaining the same basic number denoting the year of entry into the collection. The 5-series shelf list is printed out in normal numerical sequence following the 0-series. We anticipate that other types of material could also be cataloged into the TRACY System, using perhaps 71-2 for microfiche, 71-4 for tape cassettes.

The 5-series is the only provision made for shelving related materials together. Ordinarily the reports are assigned numbers as received in the library; thus a part 1 and a part 2 of the same report may not stand together on the shelf. The patrons and the library staff have accepted this feature and we have not experienced any great unhappiness about it. We do make a strong point of informing the users that they must use the TRACY indexes, but since reports were seldom browsed anyway, we do not feel that we have lost any significant avenue of access.

The inputs and printouts as listed should be self-explanatory. Certain printouts have proved to be extremely useful. The originator's number (Item 12), correlated with the ID number, is our chief source of identifying duplications. For example, if we discover the same report (such as AFCRL-70-0657) correlated with two ID numbers, we can pull one report from the system.

The weeding advantage is inherent in tying call number to year of accession. We expect to weed our hard copy collection after a period of time, supplanting the hard copy with microfiche if available. Distributor's numbers (AD, N, PB, etc.), which are also the microfiche
filing numbers, are put into TRACY either at time of original input, if available, or later as reports are indexed by DDC, NASA, or NTIS. Every six months the reports clerk checks for the availability of microfiche and updates the TRACY file accordingly. The distributor's number correlated to our ID number then becomes the document by which we will weed the collection. This printout is also proving useful in retrieving current reports by AD or N number—an advantage we did not enjoy under manual operation.

Subject access to reports is gained routinely in three ways: through KWOC index (keywords out of context); through announcement bulletin (TRAC Sheet) which is arranged by large general subject categories; and by a special printout of three selected descriptors—CONFERENCES AND SYMPOSIA, BIBLIOGRAPHIES, and TRANSLATION. A fourth means of access is available on demand, based on keywords suggested by the author of the report which are included in TRACY (Item 16) if available. No attempt has been made at this time to build a thesaurus or control the vocabulary; anyone wishing to access the system must come up with his own list of keywords. However, the KWOC index can assist the searcher in selecting words in the TRACY data base.

While none of these subject approaches is complete in itself, together we find that we have fairly adequate subject coverage. KWOC proves increasingly valuable. Whether our retrieval is at the 50% or 90% level is undetermined as yet because the KWOC index is still small. After a few years of operation we may have enough user data to draw firm conclusions. The only subject input that requires analysis by the staff is the generic term (Item 15), which is used to organize the TRAC Sheet announcement bulletin. We devised a set of 22 generic, or subject category terms to fit our own collection, which is chiefly mathematics, physics, geophysics, meteorology, earth sciences, seismology, electronics, and telecommunication. Each report is assigned a term by the clerk or cataloger prior to input. It is sometimes time-consuming, but much less so than doing full subject cataloging, thesaurus in hand. Our scientists requested this sort of breakdown to save them time in scanning the TRAC Sheet.

The TRAC Sheet (Figure 12) is produced once or twice a month, whenever the book catalog is run, and contains 100 or 200 reports. Mailed to about 675 scientists and/or libraries within the National Oceanic and Atmospheric Administration/National Bureau of Standards/Office of Telecommunications system, it also serves as an order form for borrowing the technical reports listed therein. Since the inception of TRACY, our reports circulation has increased by about 600%, directly attributable to TRACY. We realize that given this sort of distribution, any announcement list, whether machine or manually produced, would provide dramatic results. However, it takes little extra work to pull this sheet out of the TRACY system and we take full advantage of it.

Costs and Benefits

In describing TRACY, we have taken the optimistic approach. Because we conceived it, financed it, babied it, debugged it, and made it work to suit our specifications, we love it. To be honest, we have also sputtered, fussed, flapped, complained, threatened to burn it, and despaired of ever being able to live with TRACY. But slowly the problems eased off and the runs began to come in correctly. We understand this is very normal. We have learned that it is wise to put the data in right the first time; corrections, especially certain ones which involve more than one element (entry), are troublesome. Any change from the original requirements may also cause problems. Thorough planning of the smallest details with programming personnel before the program is ever written will pay off.

There are always pros and cons to automation. First the financial picture. We are charged at the Boulder Laboratories for computer time; libraries which do
Figure 11. Selected Descriptor Index

- **BIBLIOGRAPHY**
  - 71-0-0662 BIBLIOGRAPHY OF ELECTRON SHIELD DATA 1957.
  - 71-0-0666 BIBLIOGRAPHY OF ION-MOLECULE REACTION RATE DATA.
  - 71-0-0668 BIBLIOGRAPHY OF LOW ENERGY ELECTRON COLLISION CROSS SECTION DATA.
  - 71-0-0669 BIBLIOGRAPHY OF PHOTOABSORPTION CROSS SECTION DATA.
  - 71-0-0670 BIBLIOGRAPHY OF PHOTOABSORPTION CROSS SECTION DATA.
  - 71-0-0672 BIBLIOGRAPHY OF PHOTOABSORPTION CROSS SECTION DATA.
  - 71-0-0674 COMPUTER PROGRAMS IN OCEANOGRAPHY.
  - 71-0-0675 EXTENSIVE ENGLISH-LANGUAGE BIBLIOGRAPHY ON GRAPH THEORY AND ITS APPLICATIONS.
  - 71-0-0677 GKROSCOPE AND ITS APPLICATIONS. A LITERATURE SURVEY. SENSING AGARD REPORT.

Figure 12. TRAC Sheet

- CLEAR
  - HIGH ALTITUDE CLEAR AIR TURBULENCE.
  - PROJECT MIGAT, AN INVESTIGATION OF HIGH ALTITUDE CLEAR AIR TURBULENCE. FINAL REPORT, VOLUME 2.
  - PROJECT MIGAT, AN INVESTIGATION OF HIGH ALTITUDE CLEAR AIR TURBULENCE. FINAL REPORT, VOLUME 3.
  - PROBABILITY OF A CLEAR LINE-OF-SIGHT THROUGH THE ATMOSPHERE FOR A SATELLITE-BASED LASER COMMUNICATIONS SYSTEM - A FEASIBILITY STUDY.
  - CLEAR-COLUMN
    - CALCULATION OF CLEAR-COLUMN RADIANCES USING AIRBORNE INFRARED TEMPERATURE PROFILE.
  - CLIMATE
  - HF
    - NEW METHOD FOR PREDICTING HF GROUND WAVE ATTENUATION OVER INHOMOGENEOUS, IRREGULAR TERRAIN.
  - HI
    - OBSERVED GALACTIC HARD X-RAY EMISSION AS AN INDICATION FOR COSMIC RAY HEATING OF INTERSTELLAR HII.
  - MIGAT
    - PROJECT MIGAT, AN INVESTIGATION OF HIGH ALTITUDE CLEAR AIR TURBULENCE. FINAL REPORT, VOLUME 3.
  - NICAT
    - PROJECT MIGAT, AN INVESTIGATION OF HIGH ALTITUDE CLEAR AIR TURBULENCE. FINAL REPORT, VOLUME 2.

Figure 13. KWOC Index

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not have to pay for it out of their budget will come up with lower costs. The following is a comparison of the unit costs per report of the old manual (3” × 5” card) system for cataloging our technical reports with the TRACY System.

**Costs:**

<table>
<thead>
<tr>
<th>Task</th>
<th>Old System</th>
<th>TRACY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog &amp; produce master card</td>
<td>$1.06</td>
<td>$1.60</td>
</tr>
<tr>
<td>Marking, sorting, and filing cards</td>
<td>.42</td>
<td>none</td>
</tr>
<tr>
<td>* Revising Cards or OCR Input sheet</td>
<td>1.10†</td>
<td>.27</td>
</tr>
<tr>
<td>Card Reproduction</td>
<td>.15 (per set)</td>
<td>none</td>
</tr>
<tr>
<td>Supplies, labels, typewriter, tape, binders</td>
<td>none</td>
<td>.05</td>
</tr>
<tr>
<td>Fixing OCR Data (scan sheets to magnetic tape)</td>
<td>none</td>
<td>.03</td>
</tr>
<tr>
<td>Computer Costs:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultant Assistance</td>
<td>none</td>
<td>.38</td>
</tr>
<tr>
<td>Printout Catalog</td>
<td>none</td>
<td>2.00</td>
</tr>
<tr>
<td>Announcement Bulletin Printing:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master</td>
<td>none printed</td>
<td>.05</td>
</tr>
<tr>
<td>Printing</td>
<td>none printed</td>
<td>.25</td>
</tr>
<tr>
<td><strong>TOTAL UNIT COST</strong></td>
<td>$2.73</td>
<td>$4.63</td>
</tr>
</tbody>
</table>

* NOTE: Includes inspecting the typing and checking the filing of the cards.

**Benefits:**

<table>
<thead>
<tr>
<th>Task</th>
<th>Old System</th>
<th>TRACY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circulation</td>
<td>Jun 70–Feb 71</td>
<td>Feb 71–Nov 71</td>
</tr>
<tr>
<td></td>
<td>151 hard copy reports per month</td>
<td>442 hard copy reports per month</td>
</tr>
<tr>
<td>Access</td>
<td>1 catalog</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 catalogs:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Circ desk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tech reports area</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Branch library</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reports clerk</td>
</tr>
<tr>
<td>Retrieval</td>
<td>authors, source, shelf list</td>
<td>authors, source, shelf list, originator’s number, distributor’s number, subject term</td>
</tr>
<tr>
<td>Shelf Maintenance</td>
<td>difficult-to-use, source-based class number</td>
<td>easy-to-use accession number for shelving &amp; weeding</td>
</tr>
<tr>
<td>Potential for providing additional services</td>
<td>none</td>
<td>demand bibliographies, SDI, machine searches</td>
</tr>
</tbody>
</table>

The $1.90 difference in unit cost is primarily attributable to computer charges. TRACY is run on the Priority 2 fee which is $286 per hour. Priority 1 is $220 per hour but is not used because the turn around time can be as much as two weeks. Even with Priority 2, two and three days is not uncommon. There are five separate programs to run in sequence; therefore, occasionally Priority 3 ($330 per hour) is selected to circumvent peak load period delays at the Computer Center. Priority 6 ($600 per hour) is never used. When $286 per hour is contrasted with computer charges to the library at a neighbor institution of $75 per hour, we believe that our computer costs may be higher than most libraries would expect to pay. The $0.38 for consultant services is a non-recurring cost in the next fiscal year, because a full-scale training program is underway for the library staff to learn to maintain the system and to learn enough about the programs to make minor adjustments in the print formats. Even though the unit cost is higher, we believe that the benefit in informing the scientist in a timely, relevant manner is worth it. The manual system was limping along—“too little and too late”—almost an exercise in futility. Our studies have shown that 75% of our circulated reports are no more than two years old. Therefore, the shorter the cataloging time the more relevant your technical reports to the research mission.

The personnel picture is available for
comparison. We have hired no new clerks or catalogers to handle TRACY; our requirement of one full-time clerk has not changed from manual operation. Under the old system, the reports clerk spent more hours sorting and filing catalog cards; that chore has disappeared. She presently spends about the same number of hours cataloging reports and preparing input sheets that she did formerly but she has more time to handle other aspects of her job such as filing orders, liaison with computer room, etc.

Time of the cataloger to revise typing and filing in the catalog has dropped drastically, since revision of filing is not required. Her proofing time varies, depending on the accuracy and experience of the reports clerk, but at no time is it more than the manual system, sometimes much less. The cataloger makes the difficult decisions concerning which reports should be kept and which subject categories should be assigned to them. Generally 10%–15% of the cataloger’s time is spent on technical report activities.

Public Services personnel find they must cope with increased report circulation; however, using the simplified call number, shelving time is cut, accuracy of shelving is much improved, and retrieval is no longer a major research effort. Our overall impression is that there is actually about the same amount of library staff time spent on technical reports, but that internal handling is vastly superior to manual operation.

Initially we were dependent upon our Library Systems Group consultant and programmer to keep TRACY running; however, the aforementioned training program for our technical processing staff has made us largely self-sufficient. We submit our runs, call up programs, and correct errors except for occasional great mysteries which we must call on the Library Systems Group people to unravel. We don’t feel completely at the mercy of the computer once we understand some of the reasons why our programs do or do not run.

Added services to library users constitute the greatest talking point for TRACY. We can show unquestioned improvement here. We produce four complete book catalogs (one original, three carbons) for placement in the Public Services area, Branch Library located two miles from the main campus, and the Reports Processing Office. There is the new capability to access reports by distributor’s number, originator’s number, keywords, and other data items as desired. The SDI system shows promise for the individual user who wishes to make a bibliographic search in a very narrow subject field. TRACY is by its nature more accurate than a manual catalog; filing errors and lost cards are eliminated. And the TRAC Sheet is quickly and easily produced.

TRACY is like a high-strung, pedigreed pup. Now that she is housebroken and has her masters well trained, TRACY is our nomination for Best in Show. And she is only a year and a half old.

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Joan M. Maier is chief, library services, and Helen J. Stiles is head of the library’s technical services, National Oceanic and Atmospheric Administration, Environmental Research Laboratories, Boulder, Colorado.
Microfilm Permanence and Archival Quality Standards

Don M. Avedon

National Microfilm Association, 8728 Colesville Road, Silver Spring, Maryland 20910

The facts about microfilm permanence and archival quality are presented in simple terms. The major factors, including the film base material, the film emulsion, processing, and storage conditions are reviewed. The designations on the edge of the film are explained and a list of references provided.

For many years questions regarding the keeping characteristics of silver microfilm have been asked repeatedly. Four of the most frequently asked questions are:

Does the microfilm have "archival permanence"?

How can I obtain microfilm with "archival quality"?

Does the microfilm meet the "residual hypo" test?

What does the "triangle" on the edge of the film mean?

In this article I will address these questions and attempt to clarify the subject area of keeping characteristics of silver microfilm. The article covers silver halide films, both original film and duplicates, but does not cover diazo, vesicular, dry silver, and color microfilms. This does not mean they do not have the ability to last a long time; it is just that industry norms have not been established yet.

"Archival permanence" refers to the ability of the entire processed microform to retain its original characteristics and to resist deterioration over time. The entire processed microform refers to the base material, the emulsion, and the processing used. The method of handling and storing the film also affects its life. It must be emphasized that "archival permanence" and "archival quality" involve much more than just the residual thiosulfate of processed microfilm. Additional characteristics of concern include: folding endurance, viscosity, ignition, burning rate, curl, and brittleness. When one uses the word "permanent," the question of time is always raised. Through practice, "archival permanent microfilm" has come to mean that film which will last as long as 100% ragstock paper. Rag-stock paper is claimed to have a life of hundreds of years. "Short-term" life of microfilm has come to mean on the order of 10 years.

Safety Film

All microforms, both processed and unprocessed, should meet minimum requirements with respect to hazards from
fire. In order to be classified as Safety Photographic Film, a photographic film must: 1) be difficult to ignite, 2) be slow burning, and 3) evolve a limited amount of toxic oxides of nitrogen during the decomposition. The requirements for Safety Photographic Film are covered in American National Standard PH1.25. These requirements apply equally to polyester and cellulose base films. A film that meets this standard may have the word safety or the symbol S included in the edge printing (Figure 1).

Processed Microfilm

Processed microfilm on cellulose base materials should meet the requirements of American National Standard PH1.28. Film manufacturers can arrange to have their film products tested by an independent commercial laboratory for these standards. The General Services Administration may be contacted for the names of those laboratories approved as being capable of and having experience in such testing. In order to assure a valid test, the manufacturer should arrange for a GSA representative to visit the manufacturer’s plant to select the samples and forward the samples to the laboratory for testing. On completion of the testing, a copy of the test report will be forwarded directly to the GSA Quality Control Division Office. Based on the results of this test, a decision is made as to the acceptability of the film for “archival permanent” use. If the film passes the test, it may have a triangle included in the edge print (Figure 1). The usage of the triangle is covered under Federal Standard 125B. Users of film marked with this triangle are cautioned as to the significance of the triangle: the triangle signifies that the microfilm is capable of meeting “archival permanence” requirements as specified in American National Standards PH1.28 for cellulose ester base films or PH1.41 for polyester base films. The triangle in no way reflects what will happen to the film as a result of processing. Film processing is the responsibility of the service company or in-house processor.

Figure 1. Edge Print on Microfilm.

The procedures, chemicals, temperatures, and wash practices used in processing microfilm are critical in obtaining “archival quality” microfilm. The effect of residual chemicals on microfilm can seriously affect the life of the image of microfilm. Until recently, the most commonly used test for residual thiosulfate (sometimes called hypo) has been the Ross-Crabtree test which is covered in American National Standard PH4.8–1958. This method is now considered obsolete and has been replaced by the Methylene Blue and Silver Densitometric methods. Both of these new methods of test are covered in American National Standard PH4.8–1971. The Methylene Blue method is extremely reliable and gives repeatable results at the low level of thiosulfate required for archival processing of microfilm. The Silver Densitometric method is not as precise as the Methylene Blue method at the low level of thiosulfate required for archival processing of microfilm.

Storage of Microfilm

Improper storage of microfilm will have a severe, adverse effect on the life of microfilm. Following are the recommended limits of humidity and temperature for storage of microfilm:

Short-Term Storage
— Relative humidity shall not exceed 60%
— Temperature shall not exceed 32°C. (90°F.)
Archival Storage
— Relative humidity shall not exceed 40%.
— Temperature shall not exceed 21°C. (70°F.)

American National Standard PH5.4 covers recommended storage conditions for archival and short-term storage. Consult the standard for complete requirements.

References
5. American National Standard PH1.41-1971, "Specifications for Photographic Film for Archival Records, Silver-Gelatin Type, on Polyester Base."
10. Federal Standard No. 125B, "Film, Photographic and Film, Photographic Processed (For Permanent Record Use)."
13. NMA Recommended Practice MS104-1972, "Inspection and Quality Control of First Generation Silver Halide Microfilm."

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SPECIAL LIBRARIES
CHAPTERS & DIVISIONS

Cleveland—At a joint meeting with ASIS, John Sherrod discussed "The 1972 Annual Meeting and New Directions for ASIS." Mr. Sherrod is chairman of the 1972 ASIS Annual Meeting and President-Elect of ASIS.

Dayton—At the Chapter's Sep 29 meeting, Frederick G. Kilgour discussed "The Ohio College Library Center Revisited."

Illinois—A dinner meeting was held Sep 25. A video tape describing the new Social and Economic Statistics Administration was presented. Robert B. Voight of the Census Bureau was the speaker.

Minnesota—The Chapter sponsored a Continuing Education series on Statistics. The sessions took place four evenings, Sep 26-Oct 17. Dr. E. G. Booth (economic analyst appraiser, Elmquist & Associates) discussed agricultural statistics; Jack D. Key (director of libraries, Mayo Clinic) covered Medical Statistics; Dr. Gayle Anderson (director, Planning Section, State Department of Education) considered Educational Statistics; Audrey Anderele (trade specialist, Office of Business Services, U.S. Department of Commerce) spoke on Business Statistics.

New York—PLUS 15 was the title of the Chapter's all-day seminar Oct 20. E. Gerald Corrigan, senior economist and assistant secretary, Federal Reserve Bank of New York, and W. W. Simmons, formerly with IBM Corp., spoke on their views of the world in 15 years. After lunch, panels discussed the users, subject fields, and resources in PLUS 15. Efren Gonzalez concluded the day with a view of the profession in PLUS 15.

Southern California—Ethel Crockett, California State Librarian, was guest speaker at the Chapter's Sep 28 meeting.

Texas—The Chapter met Oct 13-14 on Galveston Island. Dr. Harold A. Wooster, chief, Research and Development Branch, Lister Hill National Center for Biomedical Communications, spoke on "Lister Hill Center and Libraries of the Future." After a seafood buffet luncheon, the University of Texas Medical Branch Library presented a demonstration of MEDLINES.

Virginia—Virginia Beach was the site of the Chapter's meeting Sep 23-24. President Edward G. Strable visited the Chapter. Other speakers included Roderick G. Swartz, deputy director, NCLIS, and John Sherrod, director, National Agricultural Library.

Washington, D.C.—The Chapter's first meeting, Sep 14, was a program panel of new directors in the local library and information world. The speakers discussed their various new roles.

SLA Authors


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Willis, Dawn E. Urban Mass Transportation: A Bibliography. U.S. Department of Transportation Library Bibliographic list no.6. Available from National Technical Information Service, Springfield, Va. 22151. $3.00 hc; $0.95 mf. AD 733 773.


In Memoriam

Ralph Shaw

Dr. Ralph Shaw, most recently dean of library activities and professor, University of Hawaii, died Oct 14, 1972 in Honolulu. Dr. Shaw was noted for his adaptation of machines to library service and for related inventions such as a photocharging machine, a rapid selector of microfilmed records and a trailer-type bookmobile.

Before going to University of Hawaii in 1964 he had served as professor in Rutgers University's Graduate School of Library Service (1954/64). Among his other positions, he had also operated the Scarcecrow Press, Metuchen, N.J.

His books included the 19-volume American Bibliography, 1801–1819, Theory and History of Bibliography and Literary Property in the United States.

A former president of American Library Association, Dr. Shaw had been a member of SLA since 1932.

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IFLA, FID, and Instant-Goulash-Mix on the Danube

For several years Conference planners for IFLA and FID meetings in 1974 had hammered a theme song which sounded like "Getting to Know You," with arpeggios that pointed to a merger or something. It had been many years since the two federations had met in the same city. Early versions of the preliminary program showed an overlap of their program sessions; as later versions of the programs appeared, the overlap disappeared—until finally an entire week separated the program sessions of the FID Congress from the program sessions of the IFLA General Council. The intervening week was labelled as FID Conference and was filled with meetings of the FID Council, Committees and General Assembly. All except four of the FID committee meetings were closed sessions to non-members of the committees.

Arrival at Budapest's Ferihegy Airport provided hints of adventures to come during the IFLA and FID sessions. Ferihegy has aspirations to appear to be a bustling international airport. A quick look at airline schedules shows that a bustle can be created by timing the arrival of incoming international flights to coincide.

The delays at the public health, immigration and customs desks had a Hungarian flavor aimed at preventing importation of black market forints by passengers arriving from Vienna. (Or in contrast, on return to the US it was refreshing to find that US Customs were no longer particularly concerned with alcoholic beverages but were concentrating on narcotics instead.)

IFLA General Council Sessions were scheduled at the Hungarian Academy of Sciences (Akademiai Kiado) on Franklin D. Roosevelt Square, a short walk from the Duna Intercontinental Hotel, along the Pest side of the Danube embankment. FID Conference sessions were scheduled at the Duna with many committee meetings at the rather distant Physic Club.

Spectacular views of the Buda side of the Danube with the precipitous Gellert's Hill and Castle Hill with the now restored Matthias Coronation Church (1255–1269) and Buda Castle now under restoration, provided ready temptations for sight-seeing sessions when program sessions became too stuffy. A comparison of the number of persons registered with the number in meeting rooms led to the conclusion that there were quite a few sight-seers. The IFLA attendance was reported to be 600 plus 300 "accompanying" persons, while the corresponding FID attendance figures were reported to be 250 and 50, respectively.

The program sessions of IFLA seemed to be rather diffuse this year because of attempts to cope with a theme related to International Book Year 1972, "Reading in a Changing World."

The Special Libraries Section theme was: "Special Libraries for Science, Progress and Humanism." Apparently the representatives from France, Germany, USA and USSR were invited to speak on this topic as related to special libraries in the speaker's country, plus contributed papers from other countries. Apparently none of the four had submitted his paper in time to allow for translation; and the individual receiving sets for the simultaneous translators were rather scratchy. More than one listener got the impression that a liberal dollop of propaganda had been mixed into a number of these titles as speakers affirmed the virtues of science, progress and humanism while the American report included the state of unemployment of American librarians. Whether unemployment did or did not represent progress and humanism did not survive the mechanics of simultaneous translation into the other official languages.

Excellent reasons for meetings in Budapest are the seemingly infinite number of sidewalk cafes where strong coffee or a small bottle of light wine can be had as a restorative. The sidewalk cafes also provide observation posts for evidence that Hungarians of all ages are lovers. And a number of young women still seem to be operating as self-employed capitalists, although the hotel management insists that they are models from the fashion show.
IFLA's Sub-Section of Social Science Libraries arranged its program about the information needs and documentary material in the social sciences, and reports on economic libraries in some European countries.

The Sub-Section of Geography and Map Libraries was concerned—not unexpectedly—with the problems and use of maps and cartographic materials. The Sub-Section of Libraries in Hospitals was concerned with standards, surveys and "Books and infection."

Once again there is evidence that the establishment of specialty Sub-Sections within IFLA's Section of Special Libraries is a divisive influence to any consideration of special libraries on a global basis.

The Committee on Education reconstituted itself as the Section of Library Schools, while the Committee on Library Research

"So leap with joy, be blithe and gay, Or weep my friends with sorrow. What California is today, The rest will be tomorrow."

"We hear much from scientists of 'the exponential growth of knowledge,' but I have never seen an informed estimate of the value of the average contribution to these journals."

"Those who believe in books should regard with extreme distrust, therefore, all proposals to turn libraries into 'information centers' and librarians into 'media specialists.' They should recognize for what it is the rhetoric of the information technology promoters who attack 'tradition-bound librarians' and talk of the need for libraries to escape 'the restraints of a totally print-oriented mission.' Instead of being dazed by visions of what might conceivably be achieved in the brave new world of the year 2,000, they should ask what in fact can be achieved two or three years hence and what existing library services will have to be abandoned to provide the funds required. As they weigh the gains from the one against the losses from the other, they will usually find that the institution concerned, in trying to become something more than a library, would in fact become something less."

GORDON N. RAY
President
John Simon Guggenheim Memorial Foundation

"... the book has to reach not only the hands of the reader, but it should penetrate his mind and senses."

"... I do not overestimate the possibilities of the literature ... nevertheless the book means might. The book can do much. It can serve in this divided world the cause of human integration and understanding. It is worthwhile to make alliances for this cause with all who believe in the future of the book and culture."

JÓZSEF DARVAS
President
Hungarian Association of Authors

struggled with its theme of "The book and reading in contemporary society as a subject for research."

Non-Hungarian language newspapers were available in the hotels but the supply did not quite equal the market. A mixture of German, English and French papers provided news about three days old. A local German/English paper reported on rather selective topics. One of the more tasty items was a recipe for cold tomato soup! Add grated orange or citron peel, nutmeg, sugar, salt and pepper to tomato puree, and dilute with water to taste (Kitchen tested by SL).

Both FID and IFLA seem to be concerning themselves with the small and less industrialized countries. The FID Congress theme was "Participation of Less Industrialized Countries in World-Wide Documentation Activities and Information Exchange." The most notable comment to be made at either meeting was that of a representative of a small African country, on seeing the two-inch thick report of an FID Committee: "How do you know what is best for us when you do not have one African representative on your committee?"

Another newspaper recipe leads to homemade mayonnaise with conventional ingredients of egg yolks and salad oil and lots of strong whipping. But then an equal quantity of sour cream is folded in to produce a tasty salad dressing (Kitchen tested by SL).

Official greetings were delivered to the IFLA meeting by Hungary's First Deputy Minister of Culture. Dr. Orbán László noted that the first Hungarian printed book, Cronica Hungarorum had been completed at Whitsunday 1473, and that András Hess had been working at this task in 1472. Thus the
IBY72 and the IFLA and FID meetings coincided with the 500th anniversary of printing in Hungary.

The opening session of FID seemed to be loaded with addresses by representatives of international organizations allied with Unesco: UNISIST, UNIDO, INIS, AGRIS and OECD.

About a year ago IFLA had been suspended by Unesco because of the policy of apartheid of IFLA’s South African members (The South African Library Association). After the resignation of this South African membership association, Unesco had cancelled the suspension of IFLA.

Surprisingly, during the period of IFLA’s suspension by Unesco, FID had not been suspended. Even more surprisingly, in Budapest—and still unexplainedly—the representative of the South African national member in FID sat at FID’s General Assembly table with no objection from any other national member. The FID national membership from South Africa is the South African Council for Scientific and Industrial Research (CSIR).

“Librarianship in every age is such as the age ‘deserves.’ . . .”

“... there is also another controversy carried on since many years by Hungarian librarians which is . . . not a matter of idle speculation or correct terminology only. It is concerned with the question whether there does really exist a self-contained, independent ‘library science’ with a particular, clearly delimited sector of reality for a field of investigation entirely of its own, or whether it does not more correspond to the facts if we content ourselves with talking—more modestly but also more exactly—only about a ‘theory of librarianship’? Just because modern development raises with a continuously increasing intensity the claim that the librarian should be an active partner of the research worker, a librarian at home only in ‘library science’ will become increasingly less and less able to fulfill his new tasks.”

DR. MITRAI LÁSZLÓ
Director General
University Library, Budapest

Participants in both IFLA and FID were guests at an evening boat ride on the Danube, and at a performance of the Hungarian State Folk Ensemble at the theatre of the Magyar Optical Works. Program notes for several different programs were distributed to the audience. I am sure that I had the correct program because those girls had real bottles on their heads for the “Bottle Dance” and the shepherds seemed to be whipping the heck out of someone in the “Shepherd’s Club Dance.”

IFLA participants were one-up on the FID registrants as a result of a reception at the Central Club of the Hungarian People’s Army. What seemed to be acres of fine food and drink on buffet tables were rapidly demolished. The waiters at the club were alternately amazed and overwhelmed by the feeding habits of some librarians in a state of anxiety.

Thankfully, there were no gypsy violinists at the reception. But almost every restaurant in town featured a gypsy combo where individual enthusiasm sometimes exceeded collective musicality on occasion. A welcome exception to the usual pseudo-gypsy music was found at the Gundel, an excellent restaurant looking out over Varesliget (People’s Park) and next door to the zoo.

What seemed to be the most significant decisions in Budapest were apparently made behind closed doors—and were only alluded to in relatively circumspect manner by the presidents of the two federations. Straws in the wind seemed to say that decisions had been reached to discontinue merger talks but to continue to explore possibilities of joint committee work.

The retiring president of FID (Ralph MCBurney, Canada) referred to a financial loss of 25,000 guilders while attempting to lease a larger office to accommodate both FID and IFLA. Apparently some details of Dutch law had not been checked with an attorney. Therefore FID will remain in its old office in The Hague, and IFLA has acquired its own offices also in The Hague. Later it was stated that Budapest in 1972 is the last time for a long time that there would be a “conjoint” meeting with IFLA.

IFLA’s position was stated by Herman Liebaers (Belgium) who was re-elected for a three-year term:

“Though it is my preference to dwell on similarities rather than on differences,—this attitude in my opinion is the backbone of all forms of international cooperation—I have tried to understand why so many peo-
"Television, if not subordinated to business interests but acting in the service of social development and the demand of the population, may be a helping friend to books and reading, and not a rival."

DR. ORBÁN LÁSZLÓ
First Deputy Minister of Culture
Hungarian People's Republic

People in our profession have been so keen on these differences. I am happy to report that these people were or are more numerous on the other side than on ours. And the explanation appears to be rather simple: we, librarians, have no time to look for sophisticated explanations. If FID on the one hand fully represents documentation and IFLA on the other hand librarianship—and I would not argue with those who claim that this is not so in either case—but if they did, I would say that FID are theoretical perfectionists and IFLA down-to-earth pragmatists, they write reports about ideal solutions to our common problems, we have no time to report on the empirical way in which we tackle our day-to-day troubles. We cannot avoid writing either, but we generally do it at weekends, which unavoidably gives our texts an amateurish flavour. On paper FID is more professional than we are. May I add: on paper only? But I would not shrink from going on record as saying that any medium-sized public library does more for the advancement of documentation than most of the papers which bear an FID-imprint. I think that we cannot stress enough to our FID friends and to those who are impressed by paperwork, that our concern is with the actual solutions to our problems, that there is not much time and energy left over when we have had local, national and international discussions about buildings, collections and management. May I give one small example: FID has apparently a permanent contract with Unesco to report on developments in reprography, but who has to choose the right camera within a tight budget? The answer is obvious. Is documentation the paper curtain behind which libraries operate? I would not say no."

Instead of the usual and pleasantly efficient local arrangements by local librarians, registrants were confronted with the bureaucrats of IBUSZ (the Touring, Travelling, Transport and Purchase Company, Ltd.), a Hungarian government agency whose primary mission seems to be the extraction of the maximum amount of hard currency from tourists. The hotel rates of $18.50 plus 10% service (total $20.35) were inflated in the hands of IBUSZ to $23.00 to be collected by IBUSZ. Errors by IBUSZ in visa expiration dates caused a number of registrants to become liable to fines for "expired visas" and to time-wasting trips to immigration offices. Planners of international meetings in Hungary are advised to beware of the "helping hand" of IBUSZ!

Among the social events for both IFLA and FID were evening "goulash parties" at $6.00 per person. Tickets for the same "goulash parties" were available at the IBUSZ desks in hotels at $5.00. A nightclub tour titled "Budapest After Dark" at $12.00 could be obtained for $10.00 at hotel desks. It seemed unpatriotic to contribute to the dollar drain in view of the 20% mark-up for IBUSZ profits, especially when Puritan morality (Hungarian-style) had just lowered the boom on Hungarian topless exposure.

A shopping expedition in a nearby grocery yielded a package of instant "Gulyas Leves" at 4.10 forints (12¢); goulash soup for two: sprinkle into 0.6 dl of boiling water and simmer for 20 minutes. With a bottle of a good white wine from Eger at 30 forints (90¢) the overpricing of the goulash party by IBUSZ was comfortably averted. P.S. The shopping cart also had some tasty salami, crusty crunchy bread, marinated green paprikas, grapes and a caloriferous chocolate cake.

**Future Meetings**

1973
FID—No meeting; biennial from 1972
IFLA—Grenoble, France (25 Aug–1 Sep)

1974
FID—West Germany
IFLA—Washington, D.C. (7–14 Dec)

GYÖRGY DOSZAS
FID Study Committee on Education and Training (FID/ET)

The thousand-year-old Hungarian town of Veszprem was the scene of the latest in the series of international conferences on information science education, Sep 14-16, at the Technical University of Chemical Engineering after the sessions of the International Federation for Documentation (FID) 36th General Assembly at the Hotel Duna, Budapest.

The FID Study Committee on Education and Training (FID/ET) under Dr. W. Pirog, Poland, were the sponsors, and Dr. Janos Szentmihalyi, Eotvos Lorand University, Budapest, was in charge of excellent local arrangements.

The first session on “Information Science as an Emergent Discipline” featured D. J. Foskett(UK)’s paper on educational implications of the interdisciplinary nature and current flux that characterize Information Science today.

“Research and Development in Education for Information Science” was the theme of the second session. It included a broad review by Dr. E. Pietsch (Germany) and Dr. V. Slamenka’s report on Georgia Tech’s Audiorgraphic Learning Facility.

Dr. Harold Borko (UCLA), U.S. Delegate to the FID General Assembly, presided at the third session on “Educational Issues in International Information Systems Development,” for which Dr. Paul Wasserman (Maryland), and U.S. Member, FID/ET, provided the theme in his paper with that title.

The fourth session was in the nature of a panel discussion on the Future of Education in Information Science. Under our leadership, the panel consisted of Mr. Foskett, Dr. Pirog, Dr. Szentmihalyi, Dr. Wasserman and Dr. Wiesenberger (two of whom had never participated in nor observed a panel discussion before). One caveat was that discussion was to be directed to the training of individuals at the university level, inasmuch as teachers are the greatest need of all.

On Question 1 (What Will Be Taught?) there seemed to be agreement in the need to escape from the present institutionalization of information science. Students grounded in excellent theory would be able to adapt present practices into future needs. Wasserman asked the University to avoid calcification, particularly in the area of information science where the subject is not only interdisciplinary in nature but also in experimental flux. We provide the tools with which the student learns for a lifetime. Users were not forgotten—De La Garza saw the crux of the matter was that people having information problems needed communication with the worker (professional) who can solve those needs. Wersig reechoed that our objectives must be oriented towards user needs and our students’ needs. For the latter, they needed to be able to react to the changing environment, they needed to be able to work together in teams, and they needed to be able to criticize their own work. Slamenka observed that our objective is to optimize the organization of knowledge. He also sees a higher level objective of improving the problem solving capabilities of mankind.

On Question 2 (Who Will Teach It?) participants identified educators, researchers, practitioners, and students themselves as optimum agents—with advocates of each group or combination of agents extolling their merits. Menou mentioned the advocacy of the “traveling seminar” in the mysterious Schur Report for OECD that several of the Europeans have seen but has not yet been released generally.

On Question 3 Foskett mentioned need to upgrade our recruits, but that late entrants were not an important element, at least in the United Kingdom. Wiesenberger mentioned the profiles developed at Charles University that enabled them to identify people who would do well as information scientists. (Results may not be released yet as the work is not fully complete.) Wasserman challenged us to attract to our ranks those capable of raising the present limits of our operators in our present mode of operation. Some sentiment existed in the group for requirement of practical experience in information science work of up to one year prior to embarking on formal information science education.

On Question 4 (How Will They Learn?), in addition to computer aids and a new emphasis on the carefully organized practicum, innovative presentation of innovative content was deemed crucial. Motivation was essential to learning, and we need to help them to learn, i.e., “Light my fire!”

Proceedings, presumably in summary form, will be issued via FID/ET from Warsaw or The Hague in some six months’ time.

E. B. Jackson
University of Texas at Austin
Past Chairman, USNCFID
of ASIS-72, emphasizing international co-operation. Each Technical Session had as its theme some aspect of international information systems.

The Wednesday morning session concentrated on education and research in information science and their relationship.

The lack of reported research in the field was deplored, the symbiosis of research and education was explored, and the need for new structures was emphasized. One point was that the organization of information has been dictated by package rather than by social needs. In this information-rich culture there is a need to filter out non-essential information. It was asked why the methods of information science should be utilized only for scientific and technological information. Why not develop information retrieval for children's books, etc.?

Thursday morning’s Technical Session focused on “Shaping of International Information Systems by Technology.” Carl Wait (Assistant Science Advisor, U.S. Mission to the Organization for Economic Cooperation and Development, Paris) discussed “Information and Public Policy,” emphasizing the philosophical base of information. He noted that we are so absorbed in our ability to do things that we fail to see the anomalies of what we are doing. Government must see that information potential be used properly toward social goals (to restore man’s dignity).

The next four speakers discussed various new communications technologies such as the COMSATE satellites, the ESRO/ELDO Space Documentation Service, and the information retrieval network set up at the Conference. One speaker experienced difficulty operating the slide equipment while lecturing on the presently available advanced communications equipment. The last speaker considered the international aspects of copyright, particularly in regard to its application to the new technologies.

On the train ride home, one’s eyes were drawn to the tenements of Baltimore, and one wondered what those inhabitants felt about the quality of life being provided by the new and dazzling technologies. Mr. Wait had made his point.

“Private Rights and the Common Need” was the title of a forum sponsored by two ASIS SIGs. The oft discussed conflict between the protection of individual privacy and the need for information for the general benefit of society was the basis for this disappointing discussion.

Special Libraries
“Technology is only the tool through which messages are relayed. Men must relate to each other.” Thus spake Bell Telephone in a film on communications shown in the Information Science Theater.

A highlight of the Conference was the opportunity to attend a performance at the John F. Kennedy Center for the Performing Arts, Arthur Miller’s “The Creation of the World and Other Business” was the offering in the Eisenhower Theater. The conflict between good and evil was evident; the solutions were not always so evident. Lucifer and the apple tree in the Garden of Eden were up to their Biblical tricks. One was forcefully reminded that what caused the Fall of Adam and Eve was eating from the Tree of Knowledge—they sought to know.

JDB

REVIEWS


The process of analyzing the intellectual content of documents invariably implies the formation of concepts, their verbalization, and the selection, arrangement and recording of terminology. Language, then, as used not only by the author, but as used by the indexer, abstracter, subject cataloger and, of course, the information retrieval or reference specialist, plays a vital role in the bibliographic communications process linking the author’s creative effort with current and potential users. The barriers across time and physical location of volumes are bridged by the index language. Certainly, no one can deny the truism stated by Lancaster and others that the quality of the index language used in an information storage and retrieval system is in many ways the single most important factor governing the performance of that system.

Thus, the subject of vocabulary control, selected for treatment and analysis in this volume, is of fundamental importance to the field of librarianship and information science. While emphasizing vocabularies of post-coordinate retrieval systems, particularly those of machine-based systems making use of thesauri, Lancaster also delves into the more traditional alphabetical subject catalogs, classified catalogs and classification scheme approaches. The text is comprehensive in scope, well written, well organized and supplemented by numerous helpful diagrams and illustrations. Here, however, one must express the wish that the examples chosen to illustrate the various general concepts and techniques of vocabulary control were not so frequently derived from the field of medicine and technology. The text is intended primarily for students of library and information science. It has been this reviewer’s experience that individuals with backgrounds in the social sciences or humanities tend to be discouraged, if not “turned off,” if confronted by a preponderance of sci-tech examples. Each chapter of the text is provided with an excellent bibliography. A detailed index enhances the value of the publication.

While expressing admiration for the *grandeur* of intent, scope, depth, and importance of subject matter treated, this reviewer was nevertheless troubled by Lancaster’s tendency to equate controlled vocabularies with classification scheme approaches. Early in the volume (p.1) Lancaster states: “It is important to subsequent retrieval that, in the indexing operation, documents be assigned to classes according to some consistent pattern. If the classification is to be useful it must bring documents on related subjects together. This implies that we must exercise some control over the indexing operation.” Further on (p.66) he notes: “A controlled vocabulary must provide both alphabetical and classified arrangements of the terms it contains. The traditional thesaurus displays its classification covertly in its BT-NT reference structure and perhaps by supplementary term groupings. The faceted classification provides an alphabetical approach in its alphabetical subject index.”

While elements of classification may, indeed, be injected into the construction of thesauri and subject-headings lists, a distinction must be made between grouping of subjects based on controlled vocabulary lists and classing of subjects based on classification schemes. Obviously, placing a subject in relationship to the rest of a specified knowledge universe, i.e., a classification scheme, is not to be equated with placing a subject alphabetically, i.e., in relationship to the rest of the alphabet, give and take a few *see* and *see also* references, BT’s and NT’s. Perhaps a fuller recognition and emphasis of the above concept and the use of the term “class” in conjunction with classification schemes and the term “group” with controlled vocabularies may have lessened confusion and yielded a more lucid synthesis.

While a good deal of the material included in the text has been culled and summarized from the journal and report literature, there is no question that the material needed to be
pulled together and organized into a unified whole. As an evaluator of the MEDLARS system, researcher and consultant, Lancaster is certainly qualified to engage in such an effort. The publication under review represents for the most part a highly successful effort in selecting, analyzing and translating into readable language a complex and important subject. I will certainly recommend it to my students.

I. M. Klempner
School of Library and Information Science
State University of New York at Albany


Reading this booklet, I couldn't help comparing it with two other books I have read recently. This booklet is very closely related to the SATCOM (the National Academy of Science's report entitled Scientific and Technical Communication) Report written in 1969 and the UNISIST (Study Report on the Feasibility of a World Science Information System written by a UNESCO and ICSU task team) Report written in 1971. The SATCOM Report covers nearly the same ground as this 1972 report. The UNISIST Report is international in scope.

I reread the Synopsis to the SATCOM Report after I had finished reading Libraries and Information Technology. Their similarities were pronounced. I had read and reviewed the UNISIST Report so recently I didn't reread that report. All three of these reports seemed to be written by the same Task Force. These teams have tried to bring organization to scientific and technical literature from the scientist's laboratory notebook through the indexing and abstracting citations.

These reports define the problems well enough. None of them are willing to recommend hard solutions. The kinds of recommendations I look for when I read reports from national or international task forces on information systems begin with consolidations and then with standardization. One of the specific recommendations that can be made either when talking about library automation or in bibliographic control is that we merge similar functions at the national level. Specifically, one recommendation I would make is that all government and contractor reports be identified by a standardized system of alphanumeric symbols. This is a first step toward bringing bibliographic order to just government and government-supported reports, which would necessarily include legislative reports as well. Another specific recommendation I can make is merging the several government produced abstracting and indexing journals. This would mean that the duplication between NASA, STAR, Nuclear Science Abstracts and NTIS Government Reports would end.

The chaos, just in the government published indexing and abstracting journals, is apparent to anyone who will only look at them. It is obvious even to the neophyte that one computer system could produce all of the indexing and abstracting journals published by the federal government.

It is no problem to suggest these changes. I cannot help but wonder why the SATCOM Report of 1969, the UNISIST Report of 1971 and the National Academy of Sciences Report of 1972 did not do the same. The task teams which wrote these reports are knowledgeable.

These three reports are similar in their innocuous platitudes which will be filed and forgotten. In order to bring order to our bibliographic records we are going to need men who are willing to express stronger recommendations than those appearing in these three reports.

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