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# *special libraries*

*January 1971, vol. 62, no. 1*

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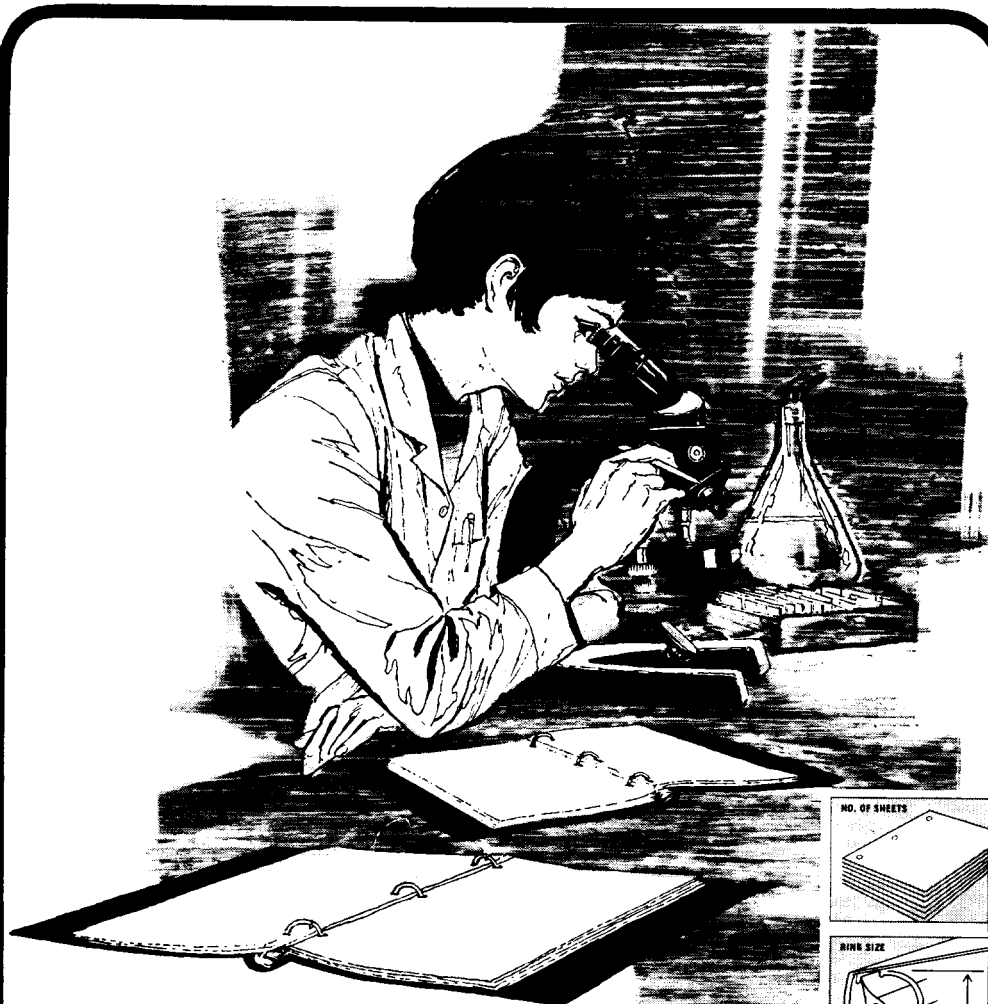
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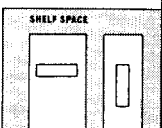
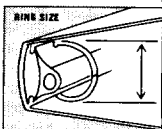
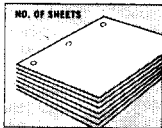
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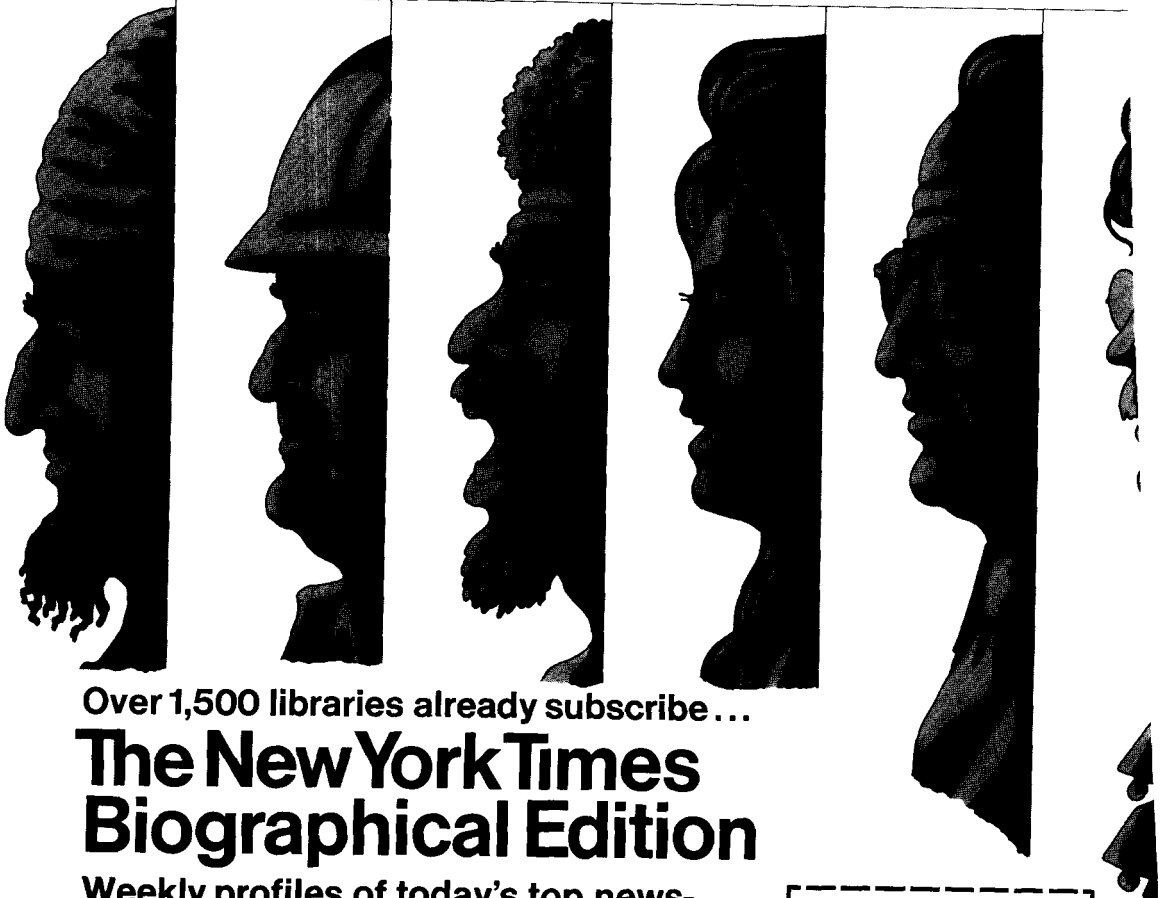
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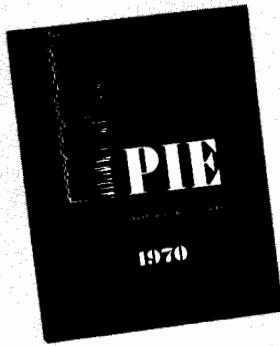
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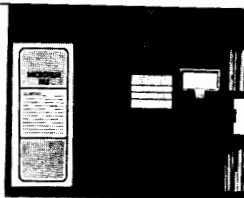
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# Overcoming the Frigidity of Special Librarians

Patrick R. Penland

Graduate School of Library and Information Sciences,  
University of Pittsburgh, Pittsburgh, Pa. 15213

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■ In striving for effective information handling techniques, traditional special librarians have neglected factors of relevance that would transform information into meaning. A general theory and taxonomy of human communication is discussed within which the information handling propensities of the special librarian can be evaluated for relevance to

the axioms of library and information science. A theoretical position is developed out of the social function of library and information science while the taxonomy is related to library situations or conditions (intra-, inter-, and audience-communication) within which communication occurs.

---

IT MAY at first appear unusual to employ sexual terminology for a professional paper. But now that sex has become a spectator sport (*Time*, Jul 11, 1969), it is obvious that mores are changing.

Even though mores are changing, it is not so obvious that the special librarian sees any need for change. "Putting Knowledge to Work" has long been a motto of SLA. The emphasis upon knowledge and information manipulation to the exclusion of communicative values has, however, some unfortunate implications. This attitude is characterized in the statement of one special librarian, "I have never had a patron in my library who did not know *exactly* what he wanted."

This rigid, or shall I say frigid, attitude is not uncommon among special librarians. Consequently, it was a surprising experience, and agreeably so, to see a recent article in *Special Libraries* which

calls attention to the total frame of reference *within which* the patron is immersed (1). The author makes the point that the library is a process, and not necessarily a place at all.

But all is not well in the house of special librarianship. Many voices are heard today which declare library service to be irrelevant. From above, funding bodies use it as a rationale for curtailing budgets. From below, elements in the emerging neighborhood pressure the library into advocacy programs. Not long ago, White (2) put the matter rather bluntly for special librarians. He maintains that there is real competition today in the information business; unless special librarians communicate better with administrators and others, they will finish their days as managers of stockrooms.

In the face of such criticism, special librarians at least remain inchoate. No theory of communication is intellectually compatible with special library ob-

jectives, except the shibboleth, "Putting Knowledge to Work." While this statement may exhibit an appropriate orientation to service, still their message design and transmission are based upon a linear, traditional model of communication. Special librarians operate as if meaning could leap out from the source with one linear scan whether by reading, viewing or listening.

Indeed, if I were to ask for a definition of communication, I would not be surprised if every reader of this paper were to emphasize aspects of message design and transmission. Librarians are notoriously credulous of charisma. If only we can obtain a dynamic speaker, with a lively humorous tinge to his message, communication will obviously occur. The word "frigidity" in the title is intended as a wry comment on the power of charisma and of verbiage.

### **Linear vs. Cybernetic Model of Communication**

It is not surprising that special librarians have such attitudes since they are based on a linear model of communication whose component theories stretch from Aristotle's *Rhetoric* to Shannon and beyond. Even today, there are a good number of theories of communication being proposed which base their approach on the usual elements of sender, sequential message design, and receiver, regardless of whether the characteristics being studied are psychological, sociological or engineering.

The linear, or marksmanship, model of communication is, of course, useful for descriptive studies. A great deal of communication research has explicated the five W's of Lasswell's famous formulation, "Who says what, to whom, in what channel with what effect." This kind of research is not wasted, because it has made a considerable contribution to the rich synthesis of the cybernetic model of communication which includes in its gestalt the entire range of human activity and man-machine interface. The systems or cybernetic approach to knowledge and the professions makes it pos-

sible, as Ross Ashby (3) says, for a person to contact and enter the communication network at *any* point, and move to any other point in any direction he may choose.

The cybernetic model as developed by Wiener (4) in electronics and by Cannon (5) in biology is more productive than the linear model for both integrative and analytical purposes. In the general cybernetic model, information is the input stimulus that "surprises" (Shannon) or modulates (Wiener) the perceptual apparatus of an adaptive control organism or mechanism. The perceived information is processed (interpreted) by the interpreter or governor within the adaptive control organism and some reaction occurs. When evident, the reaction appears as behavioral output which is fed back to the perceptual apparatus of the organism and/or to the parameter(s) which stimulated the original imputed information surprise. A simplified diagram of the cybernetic model is shown in Figure 1.

The cybernetic model of communication has immediate implications for the library and information profession in two areas: counseling versus retrieval, and in message design (that is, communications producing situations). Both areas are significant to special librarians: 1) for an understanding of the difference between communication and information, and 2) to acquire and organize knowledge spaces where information surprises can occur.

The special librarian may protest that he is neither a counselor nor a media expert preparing and transmitting messages to audiences. This may be so, but unless the special librarian understands the function of these two professional emphases, he is in danger of becoming a manager of a stockroom where no one enters who does not know exactly what he wants. In such instances, a simple reading scan of a text is sufficient to transmit meaning.

Over 300 years ago, John Dury, the English librarian, made the point that librarians should write letters to specialists to try to motivate them "to beat out

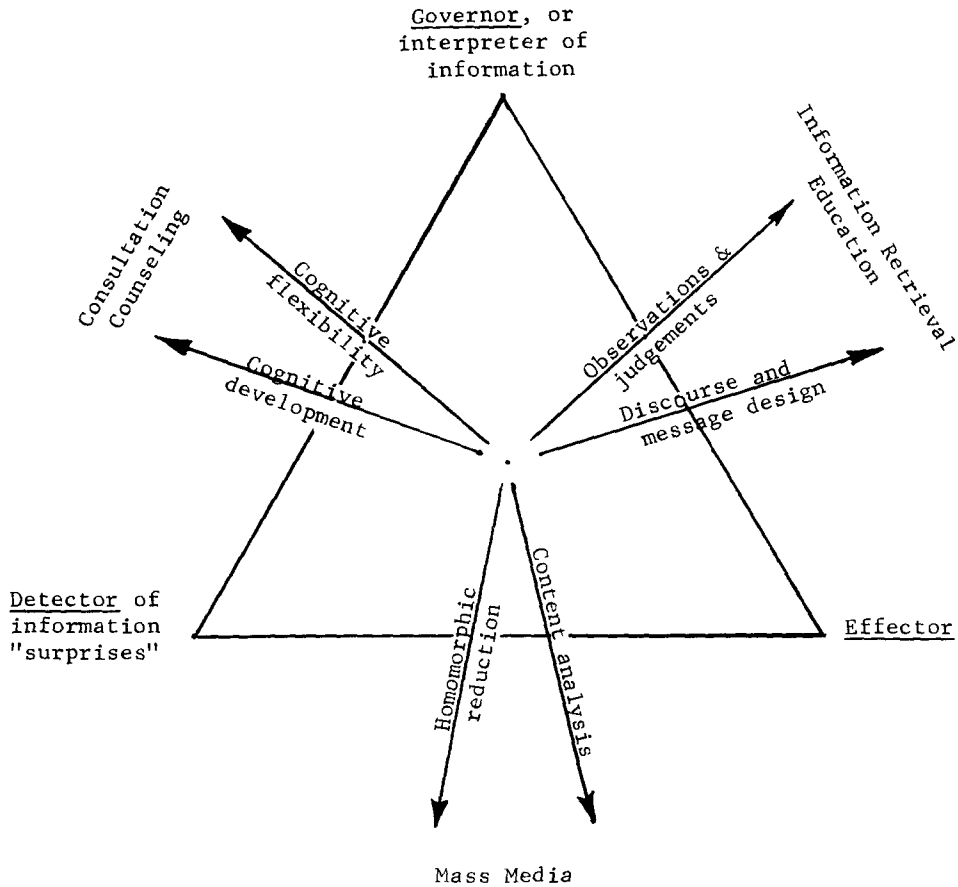


Figure 1. Simplified Cybernetic Model of Communication

new matters in the sciences," that is, to create new knowledge and publish findings where there was none previously. The purpose of this paper is to focus on the cybernetic model of communication and its component theories and demonstrate not only that it will help librarians meet the objectives Dury had, but also that the academic disciplines and the professions can be drawn together into a symbiotic system.

### Special Librarian as Counselor

It has always been curious to me why special librarians are so enamored of the phrase "Putting Knowledge to Work."

All librarians do that, and some with even greater human effectiveness than special librarians. It seems to me that John Dury's objective is more relevant to their role as *co-creators* of human knowledge. As a specialist in his subject discipline, the special librarian speaks with authority and will be listened to when suggesting areas of needed research. I realize that there is a considerable factor of negotiation here—company priority, personal interest, etc.

My purpose is not to question the appropriateness of the function of the special librarian, but rather to call attention to it in context, to realize what is being omitted which by the model of

communication used for analytic purpose, the cybernetic model, posits that counseling and information retrieval are two sides of the same coin. To argue otherwise would be to fall into the error of the flow chart school of reference work which has worked for formal order in the retrieval process.

My comment to this is: if information work can be flow charted, then the reference librarian's job is either eliminated or reduced to that of a button-pusher. All meaningful negotiation is eliminated, and to eliminate negotiation would remove all cognitive flexibility. Perhaps you too, along with our librarian commentator, have never had a patron who did not know *exactly* what he wanted. If so, you are missing half the fun of being a librarian and as such are tending towards frigidity.

If on the other hand, the special librarian is interested in a transactional approach to meaning, it will be found that Figure 1 exhibits significant differences among cognitive development, cognitive flexibility and cognitive transmission. In the cybernetic model, information is processed by the adaptive control organism. Out of the continuous stream of stimuli which impinge on the adaptive control organism, some stimuli are given attention on the basis of the information they contain and interpreted in light of preferences and concepts already available within the biological specimen.

However, if the individual does not possess the requisite cognitive structure or conceptual store due to lack of education, because he finds himself searching in a new specialty, or for any other reason, counseling is needed to assist that individual to organize unresolved experiences and to develop symbols about them before he can interrogate the knowledge store. As understanding about his life experiences develops and as cognitive flexibility occurs, then and only then can knowledge spaces be interrogated through information retrieval. Once information is retrieved, the individual can then more readily organize observations and judgments into sus-

tained discourse units and thus transmit his cognition to an audience.

### Achieving Order from Disorder

In processing information, adaptive control organisms reduce entropy. Each profession has been established by society to help individuals, groups and communities to overcome disorder. Each profession works to achieve intrapersonal, interpersonal and social order by means of particular communicative devices. Library science has its own professional means for achieving its social purposes as exhibited in Table 1.

Traditionally, the disciplines were dedicated exclusively to the creation of new basic knowledge without regard, for example, to the possible surprise value of the information in problem solving. Individual researchers in the disciplines may still create knowledge for its own sake, but the discipline as a whole will become more socially responsive and profit as a discipline from a more integrated and symbiotic relationship with the professions. On the other hand, the professions were organized to achieve some social purpose. Existing knowledge was communicated in such a way that information would reduce personal and social entropy. With the systems approach based on the cybernetic model, the professions can now serve as *watchmen* (that is, Dury's point) for knowledge lacunae and recommend to the disciplines the creation of new knowledge whose information will reduce entropy in anticipated areas of social concern.

There are, no doubt, as many cases of disorder or entropy as the plethora of perceptions of every individual in every culture. However, for the purposes of categorization and analysis, many writers have posited three major areas in which entropy is continuously present. For convenience, the codification of Hall (6) may serve as a summary. He has listed these areas as informal (personal), formal (social) and technological (environmental). Hall discusses the achievement of order in each of these. The three areas constitute the overriding concerns of any

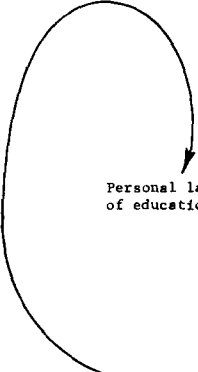
DISORDER	ORDER	COMMUNICATIVE (CONTROL) DEVICES Major Professional Goals
Theory lacunae Research lacunae   Personal lack of education	Promote theory construction, research, publishing and compendia writing in: Sciences Social Sciences Humanities	Theorem 1: Acquire one copy of everything placed in the public domain Theorem 2: Organize documents for recall and information retrieval  Bibliographic control  Networks and systems
	Promote education: elementary, secondary, college, liberal education Promote consultation Promote reference	Theorem 3: Promote use of information in people's lives  Group work services Individual services Advisory counseling Reference retrieval
  Social disorder	Promote social order, institutions, agencies, organizations, informal groups Motivate to participate through the mass and other media	Theorem 3: Promote use of information in people's lives & communities  Community development & coordinating structures Motivate to learn through the mass and other media

Table 1. Elements of a Communication-Producing Profession

culture in reducing entropy and thus become the source of purposes or objectives for any society to achieve. They serve in this discussion as the vertical column of the matrix in Table 2.

The horizontal row of the matrix stems from a situation-producing theory of communication for the professions which exists in prototype. According to Dickoff (7), each profession is aware of some state(s) of disorder, social or personal, which it endeavors to overcome. In addition, each profession employs a set of control devices, or professional methods peculiar to it, to bring order out of confusion. In other words, the profession in some way helps people, groups and communities achieve negative entropy.

Employing communications situations and entropy reducing systems of awareness as the two dimensions of a matrix, the plane of the cybernetic model of communication can be represented. But since the cybernetic model is dynamic and perhaps four dimensional, the ma-

trix remains empty or at least meaningless until elements of the traditional linear model of communication are mapped onto the matrix.

The mapping is not one-to-one, but of an infinite number of combinations of stimuli which trigger awareness in communication contexts mediated by the functions of the linear theory. The formulation is Lasswell's, but called a communications-producing professional theory by Dickoff. The distinction is important, for the latter incorporates the Burkean-Duncan (8) sociodrama theory of communication which is essential for making knowledge kinetic in communities, as is Bayesian theory for the group and Rogerian theory for developmental counseling in the dyad.

### Summary

At this point, you may ask, what has all this got to do with special librarians? As a result of cybernetic analysis, we obtain a function of librarianship and a



Entropy reducing Systems	Communication Contexts		
	DYAD	GROUP	COMMUNITY
PERSONAL	Motivate to communicate Thinking, cognition, inference Skills of liberal education Counseling & consultation	Motivate to participate Group sensitivity Group learning	Agency's knowledge to diffuse
SOCIAL	Client peer group Reference groups "Talking chains"	Administrative situations Organizational scene	Agency purpose & policy Coordinating Community council Cybernetic community development
ENVIRONMENTAL	Create new knowledge Research, publishing Primary & secondary scholarship for "world encyclopedia "	University faculties Subject disciplines Scientific & Technical societies Professional societies	Language & culture Knowledge storage & control Networks & systems for information control & transfer

Table 2. Communication Theory Matrix

method of interface with patrons. The function is to help the individual reduce entropy, that is, reduce the amount of personal experience, or stimuli which have not been interpreted. Concepts are essential for interpretation to occur. Without concepts, or intellectual labels, that is, words or cognitive development, the individual is unable to understand the stimuli he has received.

More often than not, the individual coming to the library needs help in developing labels for his experience, and in talking to someone who will listen with an information-oriented ear. This is something that special librarians do not do much of, and in my estimation it is a serious lack in their professional experience. If the special librarian does not have training in this area, he should be required to work for a period of time in a social library or at least a secondary school. Counseling is essential to help the patron develop cognitively and to achieve such a level of concept growth as will make it possible for him to place labels on his experience. Once assisted in vocalizing his need, the search begins

for information from documentary sources that will help the individual understand and synthesize his previous disparate experiences.

It is at this point that the traditional special librarian begins to operate. And, of course, this is the same as saying that special librarians place admission fees upon their services. Not only must the patron have a specialized vocabulary, but the terminology of it must have such a precise definition as makes it possible to anticipate requests or else deliver the information without retrieval negotiation.

Librarians usually protest and say—we cannot have sequential contact with any patron. We cannot evaluate the effectiveness of our counseling and retrieval by asking for a sample product of how the information was used which we supplied. We are lucky to see a patron the second time and remember him if we do.

Flow charting of retrieval strategies has unquestionably done much for the analysis and development of both information indexing and retrieval. But since

How charting usually begins with a box labeled "question specified," there is danger in either ignoring the previous negotiation, or in considering it as just talk. There are numerous librarians who will not permit this conversational mode to continue beyond five minutes under any circumstances whatsoever.

Because special librarians work most often with specialists, they run the danger of treating their patrons as if meaning were self-evident when negotiating descriptors in the file. Of course, the specialist may want to browse at the file and thus in effect develop himself cognitively, that is, develop symbols or labels for the experience, or unexpressed need, with which he entered the file at some point.

Perhaps some specialists can browse effectively, but there is considerable liability that the browser will develop interests and concerns from the descriptor labels which have little relevance to his original unspoken concerns. You probably know susceptible persons who, upon seeing some types of mental health films, have immediately developed artificial symptoms of mental disease. The role of librarian as counselor cannot with impunity be entirely eliminated from special librarianship. Specialists may be more vocal than others about interests, but this does not eliminate the need for an informed and professional listener who can hypothesize objectively about emerging and creative needs and interests.

Let us move on for a moment to the cybernetic phase of cognition transmission in the adaptive control organism. Cognition is always entropy reducing by establishing some order or in relating an information stimulus to some order. Cognitive transmission is the feedback mechanism which gives evidence of the order created and its sophistication, relevance and complexity or lack of it placed on the original stimulus. Cognitive feedback may be used to evaluate the original information stimulus and/or the cognitive creativity of the organism which was stimulated.

In any event, a knowledge of "what

for?" or as Lasswell would say "with what effect?" is essential if librarians are to be more than handmaidens in the house of the human intellect or, as we started with, if they are to overcome frigidity. The "what for?" refers to the significance and the quality of the information processing within the adaptive control organism for reducing entropy in the individual, the society and the environment, that is, the three cultural systems of stimuli awareness as explicated by Hall and others.

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Dr. Penland is professor, Graduate School of Library and Information Sciences, University of Pittsburgh. Presented as a contributed paper on Jun 9, 1970, during SLA's 61st Annual Conference in Detroit.



## The Government Bookstore

**Rowland E. Darling**

Division of Public Documents, U.S. Government Printing Office,  
Washington, D.C. 20402

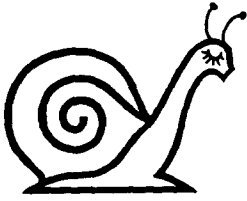
**T**HE AREA of procuring Government publications causes many problems for both you, as customers, and for us, as the sales agency or source of supply. It might be interesting to note that there are more than 1,100 bookdealers and servicing organizations throughout the United States which maintain deposit accounts with the Superintendent of Documents and deal in Government publications.

For 50 years after the Office of the Superintendent of Documents was established as a part of the Government Printing Office in 1895, the principal criticism directed at it was the fact that little was done to acquaint the public with what was available for sale. This was largely true, as any sales promotion activities on the part of a Government agency were not regarded as ethical in those days. With the range of Government activity relatively limited, in contrast to what it is today, there was a steady, unspectacular demand for Government publications which could be handled without major difficulty, with reasonable promptness and a measure of individual attention of which our predecessors were proud. As late as 1931, our Reference Section had only one telephone for the receipt of incoming calls. It was a real conversation piece when plans became known for the addition of a second telephone. Today we must utilize an automatic call distributor telephone system with a maximum capability of 36 lines, by means of which we

receive between 1,500 and 2,000 calls a day.

Opening the mail received by the Office of the Superintendent of Documents was a relaxed, preliminary duty at the beginning of each day that posed no serious problems in the early years of the Office. Mail openers of the early 1930's could not foresee that by January and February of 1970, we would work full shifts, both day and night, only to be left with more than 130,000 unopened letters on hand. Some of our predecessors in the Office were amazed when the number of publications sold by the Superintendent of Documents reached an unprecedented total of ten and one half million in 1927, and grew to over 40 million in 1950. Fifty copies were regarded as a normal initial first-run printing of sales publications to meet any foreseeable public demand. These could be stored nearby in an area in which the orders were worked. Since Jan 1, 1970, we have received up to 60,000 letters a day, have between 250,000 and 400,000 orders on hand on a normal workday, and expect to sell more than 75 million publications during the current fiscal year. We must still utilize the same amount of space in the Government Printing Office that we had in 1949, and it has been necessary to rent commercial warehouse storage space as far away as Alexandria, Virginia, in order to maintain the active inventory of

*(Continues on p. 10)*



## Expediting Acquisition of Government Documents

**Bernard Locker**

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■ U.S. Government documents rank among the most critically important publications acquired by special libraries. Many of them are hurried off by the library just as soon as they are received for the immediate use of those involved in the formulation of policy and the decision-making process of the organization. Each library, depending on its particular fields of concern, can readily

identify some categories of publications—for example, regulatory documents—where failure to receive current material promptly can create a crisis situation. Distilled from almost two decades of service on Government documents, this paper will outline some practical guidelines as to what libraries can do to avoid pitfalls in their acquisition of Government documents.

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**EXPANDING FEDERAL** concerns and actions are increasingly blanketing the broad range of American life—economic, political and social. The time has long since passed when it is either realistic or practical to plan for the future without taking into account possible changes in the Federal picture. And to keep informed about significant national developments affecting the work of your organization, you must manage your acquisition of U.S. Government documents in such a way as to insure both satisfactory coverage and prompt receipt of desired publications. U.S. Government documents rank among the most critically important publications acquired by special libraries. Each librarian is aware of some particular categories of documents which are of special importance to his organization—especially regulatory type material for which a penalty may be prescribed for non-compliance—where failure to receive current material

promptly can create a minor crisis for those involved in the formulation of policy and decision-making. This discussion attempts to provide insight into some of the complicated aspects of Government documents, as well as some practical guidelines as to what can be done to avoid various pitfalls in their acquisition.

Neither the organization of Federal agencies nor their publication programs remain static. As the President and the Congress reorganize Federal agencies, consolidate or redistribute programs and activities, and enact legislation eliminating existing programs or adding new ones—or makes cuts or increases in appropriations—such actions are reflected in the publications programs of the Federal agencies involved. This is what contributes to making the field of Government documents so fascinating and

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## *The Government Bookstore*

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more than 110 million publications. This, alone, has increased our operating costs tremendously and compounds the time required for handling orders for publications.

Because of the limited and inappropriate space available and the inability to make a determination as to the permanent future location for the performance of the growing operations, we are now faced with far more work than can be accomplished without delays, which can average as much as eight weeks. In addition to a solution to the space problem, a definite determination of the future location of the Office would also make it possible to convert the order processing to a completely automated electronic data processing system—a costly operation, but one which is absolutely necessary to handle a work volume of the magnitude with which we are faced. There seems to be no other activity, either in or out of Government, which is attempting to accomplish this manually.

### **Efforts for Improvement**

Anything that it is possible to do in the meantime to improve our order handling is being done. We have asked for and received authorization to hire all of the employees that we can use in the space we have. Congress has been approached for funds for a systems study that will, hopefully, show how computerization can be effectively used in inventory, stock control and publications identification. Branch bookstores established in major U.S. cities are expanding our retail sales outlets. They are now located in Chicago, Illinois; Kansas City, Missouri; San Francisco, California; and Boston, Massachusetts. Plans are under way to open additional stores in Atlanta, Georgia, and Los Angeles, California, within the next few weeks or months. Even if all of these aids produce the benefits to be expected, we recognize the

fact that we are fast approaching the time when our order processing in the Government Printing Office must be supplemented by a branch order processing or distribution center to be located West of the Mississippi River. Authorization and funds have been requested to take initial steps in this direction during fiscal year 1971.

### **Suggestions for Ordering**

Our customers can help us to handle the maximum number of orders within a reasonable time by taking a number of actions, some of which may not always be applicable to all orders.

If possible, place your orders from individual issues of the Selected List of United States Government Publications and/or other printed announcement order forms distributed by the Office, completing the order form and mailing label which each announcement includes. This enables us to bypass a time-consuming typing operation and introduce these orders into the system where the books are conveniently stored and can be readily identified. These orders are completed and placed in the mail within ten days to two weeks after receipt in the Office. Approximately 53% of all orders received are now being completed within ten days to two weeks.

When ordering periodicals or subscription services, never include them as part of an order for individual publications, but make a separate order. When renewing a subscription service, always return promptly the expiration notice that is sent in ample time to permit continuity of service. Generally, expiration notices are mailed 90 days prior to the expiration date of any service.

The orders which require the most time for processing are those which combine orders for publications, subscriptions and renewals, complaints, requests for adjustments, and inquiries all in a single letter. Keep these categories separate.

Use the Monthly Catalog or any other resource available that will help avoid the inclusion in your order of non-

Government publications or publications not offered for sale by the Superintendent of Documents. With 27,000 different titles available, the order processing is necessarily aimed at the identification of publications available for sale. Contrary to the belief of many, the Office of the Superintendent of Documents is not a general information office for the entire Federal Government, and it is not a repository for all United States Government publications. Requests for information not related to Government publications offered for sale only interrupt established procedures and produce delays.

Only the Government departments or agencies which originate a publication can determine the format in which it needs to be issued, or determine when it is to be revised. So much of the correspondence received about various periodicals and subscription services relates solely to troubles that customers are having because of some method of issuance which they find inconvenient to their needs.

The Office is responsible for the price at which publications are sold, but this is determined in accordance with a formula established by law. For 15 years prior to September 1968, there had been no general revision in the pricing formula. When it was revised and there was a general increase in the prices of Government publications, some customers naturally complained. Even with these increased prices, Government publications are still priced far below comparable commercially-issued publications with

similar binding and a comparable number of pages.

We shall continue to do everything humanly possible to give our customers the service that they need, that they have a right to expect, and that we want to provide. Certainly, no one feels worse than we do when some of the inadequate service our customers are receiving comes to our attention. As the demands for service have increased so drastically, part-time help has been added for both night and week-end duty. Were it not for their help, the situation would be far worse than it is, but, unfortunately, their inexperience and our inability to provide as intensive training as we should like have contributed at times to a higher error percentage than is desirable. While it may seem that letters are ignored, this is not so. All letters and orders received are promptly opened and routed within the Division for appropriate processing or handling.

There has been an explosion in the interest shown in Government publications and orders received for them. During the past 20 years, the sale of Government publications has increased by more than 600% and continues to grow each year. I hope this trend will continue to the time when the necessary improvements outlined above will be a reality and will enable us to meet this demand in an entirely satisfactory manner.

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*Mr. Darling is Deputy Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. Presented at a Business and Finance Division panel discussion on Jun 11, 1970, during SLA's 61st Annual Conference in Detroit.*

## *Acquisition of Government Documents*

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challenging, though often frustrating. In addition, it must be constantly kept in mind that the Federal departments—and not GPO—have responsibility not only for the contents of publications but also for such matters as timing of distribution to the general public, format, frequency of issuance or revisions, and even whether or not a particular publication is to be recommended for sale by GPO.

### **Government Serials**

There is perhaps no area of Government documents which is more affected by such changes in Federal organization, appropriations, and shifting priorities among programs and activities than serials and other recurring publications. This compounds an already difficult problem because many serial titles would be difficult to keep track of even without such changes.

In brief, there are three main aspects to the acquisition of Government serials and other recurring publications:

- 1) Since the focus of concern is the needed information and data, it is necessary to be alert to changes, such as when agencies discontinue further publication of some data, combine publications or shift information from one serial title to another.
- 2) Since many serials are published at irregular intervals or with non-sequential numbering, constant checking must be made to learn whether the publications have actually become available.
- 3) Finally, there is the time-consuming chore of initiating individual orders for each of them as you learn that they are published.

Although we specialize in this particular field and devote a major share of our staff time in contacts with Federal agencies, including GPO, we too find that keeping up with the constantly shifting Federal picture can be extremely

complicated and often frustrating. A recent experience involving one of the most important series we service, the *Census of Business*, illustrates this problem. For the 1963 Census all final reports were made available in clothbound volumes, and early contacts with the Census Bureau this year indicated that they were planning to follow the same pattern for the 1967 Census of Business. However, a reduction in available appropriations resulted in some last minute money-saving changes including the decision to issue some important State reports in paperbound form only. Since some such reports could go out of print quickly, we had to rush out a notice to our library-clients advising them of the change and giving them an opportunity to revise their standing order with us to include authorization for us to supply these paperbound reports for the 1967 Census since this would be the only form in which these final reports would be made available.

Another illustration is the various country market surveys prepared by the Commerce Department's International Marketing Information Service. Previously these reports were issued as supplements to *International Commerce* magazine and sold as individual publications. Now they will instead be issued in a new Country Market Survey Series. Likewise, the Bureau of Narcotics used to publish their regulations in a series numbered Regulation No. 1 through 8. Now the current regulations are published in Titles 21 and 26 of the Code of Federal Regulations. Frequently publications supplied as periodical subscriptions are shifted to sales as individual books, sometimes with updating supplements, and are added to the serial category. During the past year over 100 new serial titles were added to those for which Bernan Associates handles standing orders—largely upon the recommendations of the libraries we serve.

Even with our 20 years of experience in the field of Government documents, we have not discovered any simple formula for keeping informed of all changes and developments affecting Government

serials. There are no alternatives to a program of constant study of the output for each title, keeping our antennae sensitive to possible questions, changes, and problems, and clearing them as needed with the Federal agencies involved. We perform this chore for over 1,000 different serials, annuals, periodical subscriptions and other recurring publications for almost 1,000 library-clients.

There are several available working tools for checking to learn whether the serially issued publications you need have actually been issued, including the *Monthly Catalog*, GPO's "Selected List," as well as notification lists of GPO and some of the Federal agencies. There is, however, one serious problem, namely, that by the time you learn about the existence of a particular publication you need and also initiate a one-time order for it, GPO's stock of the first printing may be exhausted. Some Government documents are printed in fairly small quantities or an unanticipated demand can quickly exhaust the total supply. Where there are expensive color plates, expensive binding, etc., it may be too expensive for GPO to reprint. When GPO does go back to press, it may take some time before you can obtain a copy.

Many libraries find that by placing standing orders with a commercial service agency they are assured of receiving automatically as issued those serially issued publications which are important for them to receive promptly and on a regular and continuing basis—without the time-consuming burden of checking to learn whether needed documents have been published and also having to initiate individual orders for each of them. Since it is our particular practice to place advance orders with GPO as soon as we learn that serially issued publications have gone to press, our library-clients have the important advantage of receiving such newly issued publications promptly and from the first printing.

### **One-Time Orders**

Turning now to the subject of one-time orders for publications which you

send to GPO for fulfillment, there is concern about what are considered to be excessive delays at GPO in completing such orders. The most hopeful and promising development is that the U.S. Congress now appears to be convinced that GPO sorely needs a new building, with far more working space specially adapted to its special operations, plus modern and mechanized equipment and facilities needed to handle its rapidly expanding activities. When this happens, much of this problem should be alleviated. As important consumers of Government documents, special libraries surely have a very special responsibility in advising Congress as to why it is in the vital public interest that these improvements be effected without further delay.

The few guidelines which follow, based on our knowledge of how GPO operates, should help avoid some of the delays in completion of "one-time" orders when they are reached for handling by GPO.

First, bear in mind that when your order reaches GPO, it takes its place among from 250,000 to 400,000 other orders which are in the process of handling and completion that day. Accordingly, even assuming a perfectly prepared order, the interval between the time GPO receives and completes a particular order can be quite unpredictable and varies from time to time depending upon the level of their workload at the time your particular order is received.

Assuming that your library maintains a deposit account with GPO, the perfect order is one that is prepared on GPO's blue order form and which includes the GPO catalog number, complete title, and price for each publication. However, if a catalog number is not available, show the name of the issuing Federal agency. Under "title of publication" particular care should be given to such details as the year of edition, volume or part number. Under "price per copy" show the price where this information is available because it too helps to confirm a positive identification of the wanted publication—particularly important



where different publications have similar titles. However, *do not* include price estimates or guesses since this only confuses matters.

If you use the bi-weekly Selected List for ordering, keep the following in mind:

- Return each list to GPO promptly because, for a limited time after a list is issued, GPO is specially geared to provide very quick service on them.
- Send in the list itself as your order rather than listing the wanted items separately on blue order forms or letters in order to take advantage of this accelerated special handling procedure.

There are some fairly common practices which deserve comment at this point because they serve to slow down GPO's handling of one-time orders. To mention a few:

- *Do not* include in one-time orders an order for periodicals and subscription services. This can only result in delay in the handling of the one-time order because the subscription portion must first be abstracted and sent to a different unit for handling.
- Some libraries send their orders to GPO on their regular 3" × 5" order slips. There is considerable variation from library to library in the spaces used to show catalog number, price, title, quantity, and even the name and address of the library. It is understandable why such order slips slow down the process of fulfillment at GPO and frequently result in errors where there is room for different interpretations.
- The use of computer cards or printouts for ordering is particularly questionable because of the use of abbreviations in titles and the absence of GPO catalog numbers.
- Avoid attaching any order slips to the blue order forms because this practice slows fulfillment while the order clerk goes through the process of comparing the information on the slips with the information on the order form. Moreover, where discrepancies are found,

the whole order may be held up for further supervisory analysis and interpretation.

There are many more do's and don'ts, but they all really add up to a single positive recommendation: When sending a one-time order to GPO, the optimum practice is to use their blue order form with which the GPO staff is accustomed to working and to provide GPO catalog numbers, complete titles and price for each wanted publication. If this is done, when your order is reached for handling, it can be processed through GPO's order-filling procedure more quickly than an order which departs from this recommended practice.

There are over 600 different periodical subscription services sold through the facilities of GPO. However, here again there are many changes constantly being made—new titles added, old ones discontinued or consolidated with others, formats revised, some changed from monthlies to quarterlies, from subscription services to individually sold books, indexes added or subtracted—just to mention a few of the types of changes which are constantly occurring. Trying to keep this picture straight can be quite a time-consuming chore.

### Other Categories

A special type of problem is presented by one particular category of periodical subscriptions for which some indexes and supplementary material are not supplied as part of the subscription services. For example, a subscriber to the *Official Gazette* does not receive the annual indexes which are sold separately from the subscription service. Actually, there are two separate indexes, one for patents and one for trademarks, which must be purchased as individual publications. Likewise, a subscriber to *Survey of Current Business* receives weekly statistical supplements called Business Statistics. However, the biennial publication entitled Business Statistics, while issued as a supplement to *Survey of Current Business*, is not supplied as part of the

subscription but must be bought separately. In selecting a commercial subscription service agency, you may want to inquire specifically as to its capability of providing such material as indexes and supplements which are not supplied automatically as part of the subscription services.

Another general category of Government subscription services which can create headaches for librarians are those which do not carry specific expiration dates but which run for an indefinite period of time. In this connection, mention should be made of one common problem. Many librarians have experienced receiving a frantic call from the user of an "indefinite" subscription service complaining that he had stopped receiving material on a critically important subscription and somehow holds them responsible. However, when they check into the matter they learn that when GPO sent the expiration notice to the user it was not forwarded by him to the library for placing the renewal. And since some of these indefinites run for five, six or even more years, the librarian's tickler system may not provide an effective control. Of course, those librarians using a subscription agency having a "til forbid" arrangement do not experience this particular problem since such indefinite subscriptions would be renewed automatically in the absence of a cancellation instruction.

### Guidelines

For those who do not make use of a commercial subscription agency but handle their Government periodical subscriptions directly with GPO, a few observations may be helpful:

- Before sending a subscription order to GPO, consult the GPO Annotated Price List 36 to ensure that the periodical title shown in the order is exactly the same as listed. Many subscriptions have similar titles and others consist of numbers, parts, or volumes which identify different subscriptions. For example, under *Cur-*

*rent Business Reports*, you must specify whether you want the retail or wholesale reports. Under *Foreign Trade Reports*, GPO sells four different subscription services. Under *Industry Reports*, there are separate services for each of five products. If you are not on GPO's free mailing list for their P. L. 36, which is revised quarterly, you should certainly ask to be placed on it.

- There are several reasons why it is important not to delay placing renewals once GPO has called for them. Bear in mind that as a general policy GPO tries to limit the supply printed of each issue to a quantity slightly greater than needed to handle their active subscription load. As a result, by the time late renewals are handled by GPO there may no longer be a supply of some issues, thus resulting in a skip in service to you. When a renewal is requested *after* the expiration date, not only do you risk a skip in service but you will most likely experience a delay in receiving those back issues which are still available.
- Skips in service can best be avoided by having mailing stencils out of file at GPO just as infrequently as possible. One way to achieve this is to try to limit addressee change requests, because when a mailing stencil is withdrawn to effect a requested change there is always the possibility that a run of mailing labels may be made without it. This may be particularly critical for dailies and weeklies for which labels for several issues are run up ahead.
- On claims for missing issues, it is important to remember that when receipt of the latest issue indicates that the previous one failed to reach you, it is important that your claim be sent to GPO immediately. The reason for this is that GPO generally has a limited supply of back issues, and since they fulfill claims on a first-come-first-served basis, those who delay sending in their claims for missing issues increase the risk of not obtaining them. It is also recommended that you at-

tach to the claim an actual mailing address label from a recent issue.

The librarian of a business or financial library has demanding responsibilities for which there are often not enough hours in the day to reach the end of the line of all that needs to be done. The standing order service on Government documents of Bernan Associates helps conserve some of the librarian's time through an automatic renewal arrangement on periodical subscriptions, by arranging for them to receive automatically as issued those serials, annuals and other recurring publications which are important for them to receive on a regular and continuing basis, and finally, by contacting GPO on their behalf when it becomes necessary to iron out difficulties which may develop.

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*Mr. Locker is founder and president of Bernan Associates, a standing order service on U.S. government publications and periodicals. Presented at a Business and Finance Division panel discussion on Jun 11, 1970, during SLA's 61st Annual Conference in Detroit.*

As part of the Special Libraries Association 1970 Annual Conference, the Business and Finance Division sponsored a panel discussion on "Problems of Obtaining U.S. Government Publications." Participants were Mr. Rowland Darling, then Acting Superintendent of Documents, and Mr. Bernard Locker, President of Bernan Associates, a commercial distributor of government publications. Panel moderator was Theodore D. Phillips, Associate Librarian, Queen's University, Kingston, Ontario.

The Division felt that this program

would be of interest to the library community in general and had it video-taped through the facilities of the University of Michigan. A slightly-edited, 90-minute version of the tape has been available for loan at no charge (except return postage) for showing at meetings through April 1971. Equipment necessary for playback is any machine that will accept one-inch helically-recorded tape, preferably Ampex.

To make arrangements for borrowing the tape, please contact: Mrs. Judith J. Field, 1613 Brooklyn, Ann Arbor, Michigan 48104.

# The Information Analysis Center and the Library

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■ The information analysis center and the library have complementary functions. The former is both a user of library services and a source of information for libraries. How they can cooperate to their mutual profit is described. The evaluation of information is the principal task of the information analysis center. This process, and the organized program in the USA to foster it, are described.

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BART E. HOLM in his book *How to Manage Your Information (1)* lists in approximate order of interest to the chemist these sources of information:

Abstracts	Libraries and In-
Published Papers	formation Centers
Reviews	Patents
Meetings	Reports
Personal Contacts	Handbooks

There are three points about this pecking order that are of particular interest. Reviews are high on the list, libraries and information centers are bedfellows and handbooks are at the bottom. These points are of interest because this paper is concerned with the codification of knowledge. Reviews are the medium for summarizing current work. Handbooks are the ultimate distribution mechanism for physical properties data, via the library. The information analysis center is a modern technique for pro-

ducing both the reviews and the handbook data. This paper will describe how this codification is being done and how libraries may take full advantage of these efforts to improve the reliability and accessibility of data needed by scientists, engineers, and other specialists. My views on these matters and the examples presented display the bias of my training as a chemist. It is a good bias to have.

Holm states that there is a tradition of organized information processing in chemistry and that the chemical societies have been leaders in this field throughout the world. He is correct. Chemical information is still in good shape. The abstract services in particular have done very well in coping with the vast output of chemical research papers. Of course, chemists think that chemical information handling should be better. Thus they, along with their brethren in less well organized sciences, have advocated and developed specialized information systems.

These run the gamut of the possible document depots, data banks, libraries, remote query abstract systems, published KWIC indexes, abstracts on magnetic tape, expert advice by telephone and last, but surely not least, the information analysis centers.

## The Information Analysis Center

The name "Information Analysis Center" is *federalese* for the older terms "data center" and "data evaluation center." But, for once, the new term is ap-

**Table 1. Activities and Products of Information Analysis Centers**

Activities	Products
Collection of documents	Bibliographies, Current Awareness
Indexing (by subject)	Indexed Bibliographies, Custom Searches
Extraction of data	Descriptive Reviews Compilation (unevaluated)
Evaluation of data	Critical Review of Area Critical Compilation of Data Criteria for Experimentation Recommendations Solutions to (immediate) Problems Correlation of Data, Prediction of Properties

Not all centers have all these activities and products. The important factor distinguishing the Information Analysis Center from the Information Center is evaluation and those products that result from it.

• •

posite. There is much information that needs to be analyzed that is not numerical data. These centers may be understood by considering their activities and products (Table 1) and two formal definitions of the IAC.

The first definition, that of G. S. Simpson, gets to the heart of the matter (2):

*"A scientific information center exists for the primary purpose of preparing authoritative, timely, and specialized reports of evaluative, analytical, monographic or state-of-the-art type. It is an organization staffed in part with scientists and engineers and to provide a basis for its primary function, it conducts a selective data and information acquisition and processing program."*

A second definition, by E. L. Brady (3), lists all the activities that a center must carry on in pursuit of this goal:

*"An information analysis center is a formally structured organizational unit specifically (but not necessarily exclusively) established for the purpose of acquiring, selecting, storing, retrieving, evaluating, analyzing, and synthesizing a body of information in a clearly defined specialized field or pertaining to a specified mission*

*with the intent of compiling, digesting, repackaging, or otherwise organizing and presenting pertinent information in a form most authoritative, timely, and useful to a society of peers and management."*

Both definitions include the concept of evaluation. This is the function that is distinctive. Apart from this the information analysis center merges into the special library, at least the special library of the future. But notice this: librarians are not mentioned in either definition. They are conspicuously absent in the smaller centers. Many scientists are learning the hard way to be librarians.

There is an important practical point that must be kept in mind when considering information analysis centers. They are costly. They are organizations with a high budget per document. They, not their users, do the work of retrieval and analysis. None of them could survive on a library budget.

### The Art of Evaluation

There is a basic distinction between the activities of the experimentalist and the evaluator. The former attempts to get a new datum by measuring a natural phenomenon. The latter examines and compares all the available measurements, with the goal of establishing the most reliable value.

An analogy may help explain the scholarly activity of evaluation. It is similar to the examination of eyewitness accounts of an event. First it must be determined that the witnesses are describing the same event. Then it is necessary to find what is common and what is conflicting in their accounts. Finally an attempt must be made to develop a consistent (and possible) statement of what occurred. So far, so good. But at all times it is necessary to keep in mind the possibility that a new witness, perhaps armed with a well focused camera, may report. The evaluator is always out on a limb.

Who is this man, the intrepid evaluator? He is not a bibliographer, a librarian, a computer programmer or an ad-

ministrator, although he may be forced to learn to be all of these. He is an expert in his subject field.

This expertise is essential. It must be broad-gauge. The evaluator must examine and select collateral information; for example, thermodynamic data are needed in the analysis of rates of reactions.

His knowledge of the field must be up-to-date. This usually means that his working environment should be that of an active research laboratory.

Because of these requirements for the evaluator to be an active Renaissance man of science, we should not be surprised that information analysis centers are staffed by subject experts and that they are located in laboratories, not libraries.

### The Usefulness of Evaluation

Why re-examine the numbers? After all, science marches on, tomorrow's measurements may be better. They may change the picture considerably. Indeed, they should be better; the experiments can be designed with full knowledge of what has already been done, and the new techniques either will be more sensitive or radically different.

But there is a very good chance, at least in chemistry, that tomorrow's measurements will be made on different systems or phenomena. Fashions in research change.

A result is that the body of knowledge on a particular process or property is often very small. The validity of the measurements must be assessed by judging not replicates, but by correlating and intercomparing similar things.

A second, common state of affairs is that a series of measurements of the same property, spread over a period of time or made in several laboratories, may not agree with each other. The questions must be asked: what do we know about the phenomenon studied, why is there disagreement?

Finally, publication of scientific results is chaotic. It may not rival law for the number of sources and the random

distribution of results, but it is a strong second.

Evaluation and compilation attempt to simplify and improve these situations. The results are:

- *Codification*—the assembly of similar material
- *Filtering*—the reduction in the amount of material that must be examined by the next worker
- *Recommendation*—advice, especially to the non-expert, on what are the most likely values for particular properties of specific substances
- *Correlation*—the development of rules that permit prediction of as yet unmeasured items
- *Analysis of techniques*—what they can and cannot do and how they should be used
- *Planning*—advice about what data are needed in a particular area.

The first two are the incentives for production of the encyclopedia. The third ("best values") is a service that a scientific discipline owes to its near neighbors and allied technologies. This has been the prime interest of data evaluators. The last three are the ones that pay off in the long run. They help science advance rationally and efficiently. Much more attention needs to be paid to them.

### The Standard Reference Data Program

The case for review and evaluation of data is strong. But it must be promoted, if it is to compete successfully with other scientific research. The program in the United States designed to do this is the National Standard Reference Data System administered by the Office of Standard Reference Data at the National Bureau of Standards. The charter of this organization is to carry out the terms of the *Standard Reference Data Act of 1968* (4). This act authorizes the Secretary of Commerce

*"to provide or arrange for the collection, compilation, critical evaluation, and publication of standard reference data"*

and

*"to prescribe . . . such standards, criteria and procedures for the preparation and publication of standard reference data as may be necessary . . ."*

The approach taken by the Office of Standard Reference Data is to involve as much of the scientific community as possible, and to select, for immediate attack, subjects of wide utility. The areas in which the NSRD program is now active are shown in Table 2.

The plan has three important features:

1) Emphasis on data on the properties of well characterized substances. This means, in effect, emphasis on physics and chemistry.

2) Data reviews for topics of limited scope, written by experts in the subjects. These are monographs, reviews in depth, that have one distinguishing feature. The authors are asked to emphasize the measured data, develop best available values and, where necessary, indicate what work is needed.

3) Information Analysis Centers charged with the task of collecting, compiling and evaluating data pertinent to a particular field, on a continuing basis. These are located where there is active work and are directed by scientists also involved in research. The authors of reviews are expected to draw upon the centers for material and advice in the course of writing their monographs.

Centers produce and distribute bibliographies, tables and reviews. Many of them also attempt to answer specific requests for information from the public. To date 32 NSRDS monographs have been published, and about 31 bibliographies distributed. There are 26 information analysis centers that are part of this program. For comparison, there are 119 federally supported analysis centers in the U.S., including the 26 of NSRDS (5). During 1969, OSRD and its centers answered 1,227 requests for information.

The monographs are the primary product. They contain the evaluated, standard reference data. They belong in

**Table 2. Office of Standard Reference Data Program Areas**

1. Thermodynamics and Transport Properties
2. Atomic and Molecular Data
3. Nuclear Data
4. Solid State Data
5. Chemical Kinetics
6. Colloid and Surface Properties
7. Mechanical Properties

These are research areas in which the Office of Standard Reference Data has evaluation programs. The areas are listed in order of priority.

. . .

the special library, on the reference shelves. Allow a good bit of space. The NSRDS program and its analogs in other countries have a mammoth task: the topics that required seven volumes of the *International Critical Tables* in 1930 would, it is estimated, fill 200 volumes today. A monthly newsletter and lists of publications may be obtained by writing to OSRD (6).

### **Distribution of Evaluated Data**

In the past, numerical data about physical properties and about processes usually have been distributed to the general scientific user by means of handbooks. This procedure continues today. Some examples are listed in Appendix 1. This is a mixed list. The first group consists of general reference sources, in the sense that they cover a wide variety of topics. All are strong on tables of data, and some include extensive texts either about the data or procedures. The second group has examples of compendia of information. They describe preparation properties and reactions of chemical compounds. Numerical data are incidental information. The third group consists of specialized reference sources. They provide a specific type of data on a wide range of materials.

In all cases there may be evaluated data presented, but often the work is simply one of compilation. Compilation *with selection* is a form of evaluation. The seemingly simple act of selecting

what is good from among the many is a very important contribution of the expert compiler.

In the better compilations and evaluations the sources of the data are given. Omission of this information is, in my opinion, inexcusable. There are more subtle omissions. Frequently there is no indication of the basis used by the compiler or evaluator in selection of synthesizing the numbers that are provided. Nor is there likely to be a good indication of what material was examined in the course of making the choices. To ask for inclusion of these missing items is to ask for a great amount of work. It is far from easy to prepare running commentary for tables. If it is provided, the book can easily double in size.

These limitations notwithstanding, the handbook is an excellent medium. The information density is high. It is organized in a consistent manner. And above all, it can be kept available for ready reference where it is needed.

Our concern with the handbook must be to keep its quality high—to see to it that the best available data are used in its tables. It will be, and should be, the first source consulted.

The future will bring a change in the distribution technique. This will be the data bank maintained by an information center. With luck, the user will be able to query this central storehouse directly and from a remote location. With even greater luck, he will get in reply the best, most up-to-date value.

This picture of the future adds nothing but ease of operation. Asking a question of a data bank is simply having a machine open the handbook to the proper page. It does not improve the data.

To some extent this future mode of operation now exists. There are specialized, remotely available data systems. But more important, there are information centers. Most of them will reply to requests for information. The librarian's problem is to know how to find the appropriate center. The National Referral Center for Science and Technology at the Library of Congress is a "switching

center" that has the mission of identifying these information sources for the user. Two of its publications and two other directories are listed in Appendix 2.

### **The Relationship Between the Library and the Information Analysis Center**

Our motto should be: Forward Together. The roles are complementary, not competitive. Each center needs the aid of a library; libraries can use the output and assistance of centers.

Supporting services provided by a library are essential, in my opinion, to the successful, efficient and economical operation of an analysis center. One task of a center is gathering the material that it will analyze. This is subsidiary to its main function, but it is a very large part of the day-to-day work. The material must be identified (selected), copies must be obtained, microforms probably will be made, the documents must be indexed, both in the bibliographic sense and for subject matter. There must be effective control of the file of material. These are needs common to all centers. These are tasks of accession, cataloging and inventory control. The materials worked with are ones familiar to the librarian. The techniques needed are those for which the librarian should be an expert.

The thesis offered here is that the special library can, and probably should, provide the information gathering function now undertaken by most analysis centers. Perhaps new techniques will have to be learned. Undoubtedly the subject expert will want the service on his own terms. Of course, the subject expert will continue to suggest solutions to these problems that are unconventional and incomplete. The librarian should adopt some of these, even if they violate the canons of library practice. The universe of scholarship is too large to be amenable to common treatment.

Service is the operative term in this discussion, and service costs. These information gathering tasks now cost information centers a great deal. The pie could be sliced differently, with profit



both to the centers and the libraries, if the latter are aggressive about it.

An analysis center is a source of information. Assume that it exists to assist the library. If there ever is a broad based information network for rapid retrieval of documents and data, the first set of terminals should be at the desks of reference librarians. Those admirable decipherers of ambiguous questions are well suited to guide the prospective user to the sources of information, classical or modern.

But let us assume that the mechanism for instant retrieval does not exist and may never develop. How then can the library use the centers? It can use them as back-up for local sources of information and use them as experts in the development of a collection.

By "back-up" is meant improvement and extension of the resources of the library. *First*, a library should collect the published output of analysis centers on the same basis that it collects encyclopedias and handbooks. This output is boiled-down information. *Second*, a library should direct its users to these publications as a matter of course. If a handbook or critical monograph exists on the subject, it will provide the answers to most of the questions that are asked.

*Third*, if the user finds these answers to be unacceptable, then the librarian should locate a center that *may* be able to provide more extensive information. The word "may" is important because the probability of finding unpublished, well-codified, evaluated information is not high. There is a much higher probability of finding an assortment of material that the user will be forced to evaluate himself. There is a class of users—other subject experts in the same field—willing to do this analysis. But it is a small subset of the users of data.

There is a practical reason for putting recourse to the analysis center last. It will take time to get an answer. Most users are in a hurry.

The other use of a center by a library mentioned above was as an expert in the development of a collection. What a library should buy, and, more impor-

tant, what it should keep are major problems. Evaluators must know what is available in their fields and what research topics are becoming important. Ask a center for a list of important reference sources in its field of activity. The request will probably be a hard one to answer, but it is one that will repay the work involved, both for the center and the library. Use any locally available evaluators as advisors on current purchases and to scan shelves for material to be removed. Be aggressive about it. It is a small price for the expert to pay in return for good library service. In my opinion, good library service is worth almost any price, and friendly librarians are worth their weight in gold.

#### Acknowledgment

I wish to thank Messrs. L. H. Gevantman, W. H. Evans and H. M. Rosenstock for suggestions in the course of the development of this paper, and Miss N. J. Hopper and Mrs. E. Tate, my friendly librarians, for assistance with Appendix 1. The description of the National Standard Reference Data Program is based, in large part, on information supplied by the Office of Standard Reference Data.

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3. *ibid*, p.12. Quoting Brady, E. *Proceedings of the Forum of Federally Supported Information Analysis Centers*. COSATI, Washington, D.C., Nov 7-8, 1967; PB 177 051.
4. Public Law 90-396, Jul 11, 1968 (82 Stat. 339) U.S.A.
5. COSATI / *Directory of Federally Supported Information Analysis Centers* (Jan 1970)
6. Address inquiries to: Information Services, Office of Standard Reference Data, National Bureau of Standards, Washington, D.C. 20234.

## APPENDIX I. Some Examples of Reference Sources for the Field of Chemistry

1. General Data Compilations
  - a. One-volume compilations

*Handbook of Chemistry and Physics*. ed. R. C. Weast, Chemical Rubber Co., Cleveland, Ohio. 50th ed., 1968-70.

*Handbook of Chemistry*. ed. N. A. Lange, Handbook Publishers, Inc., Sandusky, Ohio. 10th ed., 1967.

*Chemical Engineers' Handbook*. ed. J. H. Perry, McGraw-Hill Book Co., New York. 4th ed., 1963.

*American Institute of Physics Handbook*. ed. D. E. Gray, McGraw-Hill Book Co., New York. 2nd ed., 1963.
  - b. Multi-volume compilations

*Zahlenwerte und Funktionen aus Naturwissenschaften und Technik*. Neue Serie. [Landolt-Bornstein Tabellen] under various titles, 1923-69.

*Tables (Internationales) de Constantes et Données Numeriques*. Gauthier-Villars, Herrman, Pergamon. Vols. 1-14 (1910-45), new series Nos. 1-15 (1947-66).

*International Critical Tables of Numerical Data, Physics, Chemistry and Technology*. ed. E. W. Washburn, Natl. Research Council (McGraw-Hill Book Co.), 7 vols., 1926-33.
2. Processes and Properties Information

*The Merck Index*. ed. P. G. Stecher, Merck and Co., Rahway, New Jersey, 8th ed., 1968.

*Beilsteins Handbuch der organischen Chemie*. Springer, Berlin, 4th ed., 1918-37 (27 vols.) and three series of supplements, 1920-69.

*Gmelins Handbuch der anorganischen Chemie*. Verlag Chemie. Continuous publication of monographs on chemical elements and their compounds, 1924-69.
3. Specialized Compilations

*Solubilities of Inorganic and Metal Organic Compounds*. ed. W. F. Linke, D. van Nostrand, New York (Vol.1, 1958), American Chemical Society, Washington, D.C. (Vol.2, 1965).

*Selected Values of Chemical Thermodynamics Properties*. F. D. Rossini, et al., NBS Circ. 500 (1952), D. D. Wagman, et al., Tech. Notes 270-1 through 270-4, National Bureau of Standards (1967-69).

*Thermal Constants of Substances*. ed. V. P. Glusko, Academy of Sciences, USSR, Moscow, 3 vols. 1965-68.

*Ionization Potentials, Appearance Potentials and Heats of Formation of Gaseous Positive Ions*. J. L. Franklin et al., National Standard Reference Data Series, U.S. National Bureau of Standards. 1969.

*Tables of Bimolecular Gas Reactions*. A. F. Trotman-Dickenson and G. S. Milne, National Standard Reference Data Series, U.S. National Bureau of Standards. 1967.

*High Temperature Rate Data*. D. L. Baulch, et al., The University of Leeds, England. Four reports 1968-70.

## APPENDIX 2. Sources of Information about Information Centers

*CODATA International Compendium of Numerical Data Projects*. Springer, N.Y., 1969.

*A Directory of Information Resources in the United States. General Toxicology*. National Referral Center for Science and Technology, Jun 1969.

*A Directory of Information Resources in the United States. Federal Government*. National Referral Center for Science and Technology, Jun 1967.

*Directory of Federally Supported Information Analysis Centers* (Panel 6, Information Analysis and Data Centers, Committee on Science and Technical Information, January 1970). COSATI 70-1, PB 189 300.

Received for review Jun 9, 1970. Revised manuscript accepted for publication Nov 12, 1970.



Dr. Garvin is coordinator of the Physical Chemistry Data Programs, Institute for Materials Research, National Bureau of Standards, Washington, D.C. Presented at a joint meeting of the Nuclear Science, Aerospace, Documentation, Military Librarians, Science-Technology and Transportation Divisions on Jun 8, 1970, during SLA's 61st Annual Conference in Detroit.

# Evaluation of Indexing

## 4. A Review of the Cranfield Experiments

### Masse Bloomfield

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■ The Cranfield Experiments have been widely reviewed and have been the basis of a great deal of experimentation and study. There have been many criticisms of the Cranfield Method. However, no criticism has been made of the indexing used in the Cranfield Experiments. The indexing of Cranfield I and II is

given and critical comments made of this indexing. It is noted that the Cranfield indexing is related machine indexing and machine searching. Comparisons of the Cranfield indexing to other types of indexing are made which describe different approaches to indexing.

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**THE CRANFIELD I EXPERIMENT** began in 1957 at the College of Aeronautics, Cranfield, England, under the direction of C. W. Cleverdon. This beginning experiment was based on the attempt to compare four types of indexing: Universal Decimal Classification; an alphabetic subject index; a special faceted classification; and the Uniterm System of Coordinate Indexing (1).

Swanson, in a review article, has well described the Cranfield I experiment. He writes (2):

*The main task of the first Cranfield project was to test and compare the ability of four indexing systems to retrieve material responsive to each of a large number of questions. Each question was based on a particular document in the collection (known as the "source document") and was therefore known to be highly relevant to that one particular document. A search was successful if it ultimately retrieved the source document and was unsuccessful if it did not.*

Cleverdon has taken the results of his searches and developed two statistical measures. These two measures were called "recall" and "relevance." Relevance was later changed to "precision," but in the earlier literature the word "relevance" will be found. Cleverdon explains these two measures as follows (3):

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This is the fourth in a series of five articles on Evaluation of Indexing by Mr. Bloomfield. Part 1, Introduction, appeared in *SL* 61 (no.8): p.429-432 (Oct 1970). Part 2, The Simulated Machine Indexing Experiments, appeared in *SL* 61(no.9): p.501-507 (Nov 1970). Part 3, A Review of Comparative Studies of Index Sets to Identical Citations, appeared in *SL* 61(no.10): p.554-561 (Dec 1970). Part 5 will appear in the February 1971 issue of *SL*.

*"Recall ratio" equals  $100 \times R/C$  where C equals the total number of documents in the collection which have an agreed standard of relevance to a given question, while R equals the number of those relevant documents retrieved in a single search. On the other*

hand, "relevance ratio" equals  $100 \times R/L$  where  $L$  equals the total number of documents retrieved in a single search. As an illustration, presume that in a given collection of documents, ten are known to have an agreed satisfactory standard of relevance. In a single search, six of these documents are retrieved, plus another twelve documents which are irrelevant. In this situation recall ratio equals  $100 \times 6/10 = 60\%$  while the relevance ratio would be  $100 \times 6/18 = 33\%$ .

From this description of what Cleverdon defined as recall and precision (relevance) ratios, it becomes clear that Cranfield I is interested only in how well these two ratios compare for the four indexing systems tested.

One of my criticisms of Cranfield I is that the indexing is given a minor role in the whole experiment. When words like "Effects" and "Effectiveness" appear in a list of index terms (given in the Cranfield Uniterm Index terms of Table I), the entire experiment is suspect. Those two words appear on a list of stop words to the KWIC journal *Chemical Titles* as being non-content words which should not appear in a KWIC index.

Cranfield I is built around a study of information systems and the ability of the information systems to produce relevant documents to given questions from a small total number of documents. The use of a small number of documents allows the experimenter to know the total number of relevant documents in the collection.

### Criticisms of Cranfield I

The major criticisms found in the literature of Cranfield I do not deal with the problem of indexing, but tend to be aimed at the basic design of the experiment and the way it was conducted. Cuadra has criticized Cranfield I obliquely. He points out that the two possible definitions of relevance are rolled into one in the Cranfield studies, and therefore variables are introduced into the experiment that cannot be controlled properly (4). In testing the entire information system, by means of

matching user questions to the indexing vocabulary, too many variables interfere with a figure of merit that can be faithfully reproduced. Thus, to restate Cuadra, he feels that Cranfield suffers by trying to do too much.

Richmond echoes Cuadra when she states (5):

*Up to the present, very little has been done in experimental situations to alter only one variable at a time, so that much experimentation suffers from the presence of too many uncontrolled variables. The Cranfield Project had so many variables going at once that one is seriously justified in asking whether the results mean anything at all.*

Swanson attacks the Cranfield I study on the basis of the relationship between the titles in the collection and the questions posed in the retrieval phase. "An examination of the questions and titles . . . shows that such a close resemblance is more the rule than the exception" (6). This impression is confirmed by the Cleverdon remark that "the questions were based on the titles" (7). Swanson states that nearly "half the questions, in fact, show so close a resemblance to the title of the source document that for all practical purposes they can be considered as titles turned into questions" (8).

In another criticism of Cranfield I, Taube leveled the accusation that using relevance undermined the value of the experiment (9). Taube does not attack the Cranfield study on the basis of its indexing. He does, however, cast as much doubt as he can on the value of the Cranfield experiment by attacking the assessment of relevance.

### Western Reserve University Indexing System

In an attempt to use the Cranfield I methodology to evaluate another system currently in operation, the Western Reserve University Indexing System for Metallurgical Literature was tested. Along with the WRU indexing, the English Electric faceted classification was also studied. WRU developed their system based on a machine search capability.

In one example of WRU indexing found in the literature, 32 index terms were listed to define a single paper (10). However, of the 32 terms, 7 are used more than once to bring the total number of entries for the article to 39. The terms that are used more than once have unique roles assigned to them each time they are used.

The need for 39 index terms for one document is related to the use of computers for searching. With 39 terms in the computer, a very specific retrieval can be conducted. The indexing journals which also indexed the WRU example used no more than 4 index terms to define the identical article. In a comparison between the indexing of the WRU indexing system, *Chemical Abstracts*, *Physics Abstracts* and a manually prepared KWIC index set, the WRU indexers assigned 39 terms to the sample document; *Chemical Abstracts* indexers assigned but 4 terms; *Physics Abstracts* had but 2 index terms for this sample article; and the KWIC program developed 6 terms.

One of the important differences which has come to light in this study is represented by this comparison. There exist two bodies of thought in indexing which are clearly at odds with each other. When Cleverdon says that the optimum number of terms per article is between 20 and 60 (11), he obviously is talking about indexing for machines and not for the kind of indexing done by the Library of Congress for books or the indexing done for the printed abstracting and indexing journals.

The need for indexing for machines was spurred by the Uniterm System with Coordinate Indexing which Taube had originated. With the advent of the computer able to make use of Uniterm Indexing, Western Reserve University and others have used this system. The Defense Documentation Center's *Technical Announcement Bulletin* has two sets of indexing—one for the printed issues which can be searched manually and one for the machine searching capability.

The indexing done by WRU is avail-

able only by processing a computer search. With machine searching, there can be no human interpretation of the results of a search until the computer printout is available. There can be no selection from general terms as there can in any published subject index. Unless the machine searcher provides the correct descriptors in their correct Boolean or weighted relationship, the results cannot be predicted. The human search can be a general one first and then a specific one, depending on the feelings of the searcher. This is not true for a machine search. The machine dictates the way the search must be done. With an on-line capability, the searcher may get the results of the search immediately and reprogram or rephrase his search questions. On the off-line machines, if the search is too general, the machine dump can be enormous. In my experience, I have seen a dump of some 20,000 items in response to a single machine search. It is obvious that the question asked the machine must have been far too general for it to have produced 20,000 references.

Rees at Western Reserve has written several papers explaining the poor results of the machine searching in the Cranfield I—WRU experiment (12,13, 14). The design of this experiment was based on a comparison of searching results for the WRU indexing system with the English Electric faceted classification system. An identical set of 1,300 documents already in the WRU system was indexed at Cranfield using a faceted classification. Then 137 questions were developed from the collection of documents and posed to both indexes. The recall ratio for the WRU system was 81.4% and the recall ratio for the faceted classification test at Cranfield was 85.3%. These statistical results put the WRU system on the defensive, and Rees states (15):

*An examination of the performance figures compels one to wonder why the WRU system, with its high power of discrimination provided by exhaustive and specific indexing, thesaural control and syntactic relationships, did not perform substantially better than the*

faceted index. If control devices such as role indicators, punctuation linking and thesauri do not materially improve performance, then this has serious implications to the development of information retrieval systems, in that it has been assumed that these devices are desirable if not indispensable to the assurance of high relevance and recall.

*The severity of this train of speculation necessitates serious consideration as to what was tested, the nature of the controls surrounding the tests, and design features of the experiments likely to have influenced the results.*

In the discussion which Rees makes about the significance of the WRU experiment, he says (16):

*It is evident that the Cranfield test method needs further investigation with respect to its underlying design. In its application to the WRU indexing system, it is not clear as to what was tested. The complexity of the indexing process and use of index languages within the framework of a total information retrieval system is such that it is difficult to be confident that the mass of resulting data really relate to the hypothesis tested.*

By quoting from the Rees evaluation of the Cranfield Test of the WRU indexing system, it would seem to indicate that the Cranfield I methodology and its results are far from conclusive in just the area of recall.

### **Need for Identifying Characteristics**

There is a need to identify the characteristics of indexing systems and to quantify them. For instance, the inclusion or exclusion of cross references in an index makes it easy or difficult for a human researcher to use. However, testing computer indexing systems such as the one at WRU, the use of cross references is irrelevant to the experiment. The computer cannot search cross references in the WRU program. This aspect of the computer search is meant to be accomplished when the human programmer uses the thesaurus accompanying the computer store. The Cranfield I Experiment and the WRU test did not provide any insight into the identification of index term characteristics or any quantify-

ing aspect of these characteristics. These tests are so designed that only recall and relevance ratios are obtained. There is no way to tie back a recall ratio of one index term or a set of index terms for a single document.

Lancaster, in his book *Information Retrieval Systems*, reviews the Cranfield method at length. The book stresses the experience Lancaster has had with Cleverdon and with the evaluation of MEDLARS using the Cranfield method. It would seem that Lancaster is as knowledgeable about the Cranfield method as anyone.

Perhaps Lancaster's statement about the Cranfield Method is the most critical of all. He states (17):

*Recall ratios and precision ratios . . . do not mean very much in themselves [his roman]. They cannot be used to compare the performance of our system with that of some other system having different documents, different requests, and different user tolerances relating to recall, precision, response time, and amount of user effort. Such comparisons are meaningless.*

Lancaster is saying that the Cranfield Method cannot be used to compare indexing systems, and he dismisses the Cranfield Method from the evaluation of index term assignment.

### **Cranfield I vs. KWIC**

In an attempt to compare the actual indexing of a Cranfield I item in terms of its alphabetic indexing, the Cranfield I alphabetical subject cataloging and the Cranfield Uniterm cataloging were compared to a KWIC index set for a single document. This comparison is shown in Table 1. The question that was generated by Cranfield I to find a recall and relevance value for this source document is: *The Effects of Lateral Damping on the Dispersion of Fighter Aeroplane Gunfire.*

Table 1 shows the KWIC indexing for the source document which generated the Cranfield question above. It is obvious, as Swanson has stated earlier, that there is more than a casual relationship between the title and the question used

**Table 1. A Comparison of Cranfield I Indexing Versus KWIC Indexing (18).**

Cranfield I Citation No. 12414: H. Kuehnel. *A Flight Investigation of the Effects of Varied Lateral Damping on the Effectiveness of a Fighter Airplane as a Gun Platform.* NACA TN-4199, January 1958.

Cranfield Uniterms	KWIC Terms	Cranfield Alphabetical Subject Catalogue
0	0	Aeroplanes, Fighter—Effectiveness, Flight Tests
0	0	Aeroplanes, Fighter—Stability, Flight Tests
Aircraft	0	0
0	Airplane	0
Damping	Damping	Damping—Stability, Flight Tests
Effects	0	0
Effectiveness	0	0
Fighter	Fighter	0
Flight	Flight	Flight Tests—Stability, Damping
		Flight Tests—Damping
Gun	Gun	0
Investigation	0	0
Lateral	Lateral	0
NACA	0	0
Platform	Platform	0
Stability	0	Stability, Lateral—Damping, Flight Tests
0	Varied	0

for searching. It is also obvious that the KWIC index terms would have led to the source document with persistent searching. The question would have been answered by searching under the KWIC terms "Airplane," "Gun," "Fighter," "Lateral" or "Damping."

In studying Table 1, it could be said from this one sample that the Uniterm Indexing of Cranfield I is an enriched KWIC. Since only one comparison is given, this conclusion may be in error.

To quote Cleverdon on his opinion of recall values for KWIC indexing, he states (19):

*The fact that 97% retrieval was obtained by KWIC indexing is not so much an argument in favor of this technique as an interesting commentary on the effectiveness of the titles of the reports and papers used in this project.*

### Cranfield II

In continuing the Cranfield experimentation, Cleverdon has designed a series of tests which are meant to test the use of various index language devices. The new series of tests is called Cranfield II and was reported in the 1967 *ASLIB Proceedings* paper.

Cleverdon gives an example of his basic indexing in this paper for Cran-

field II. The index terms are given as single words or Uniterms and are shown in Table 2. In comparing the Cranfield II list of index terms with those of the conventional published indexes and that of a KWIC index, also shown in Table 2, it is difficult to understand the need for the exhausting indexing Cranfield II has attempted.

Again, the objective of Cranfield II seems to be in the area of the computerized type of index characterized by single terms with a depth of indexing far greater than used in conventional indexes. Cleverdon has stated in the discussion of the *Aslib Proceedings* article mentioned above that peak performance of the number of index terms "occurred anywhere between 22 and 60 terms per document; the only thing that could really be said was that 33 terms was better than either 22 or 60" (20). This kind of thinking can only be produced by the person who does not consider *Chemical Abstracts*, which uses about 6 terms per article, as deep indexing. Why is it necessary for Cleverdon to assign over 30 index terms per document and *Chemical Abstracts* only 6?

The same criticisms that Cuadra has leveled against Cranfield I are true for Cranfield II. The use of recall in trying to determine efficiency of index terms

**Table 2. A Comparison of Cranfield II Indexing with Human and KWIC Indexing for an Identical Article**

A. Stone/Effects of Stage Characteristics and Matching of Axial Flow Compressor Performance. *Am. Soc. Mech. Eng. Trans.* 80: 1273-1293 (1958)

Cranfield II Indexing	KWIC Indexing	Index to <i>ASME Trans.</i> Vol. 80, 1958	<i>Applied Science and Technology Index</i> , 1958
0	0	0	<i>Air Compressor—Testing</i> (X)
Analysis	0	0	0
Angle	0	0	0—Angles (0)
Annulus	0	0	0
Area	0	0	0—Area Measurement (0)
Axial	X	0	0
Blade	0	0—Blades, see Compressors, Steam Turbines	0
Cascade	0	0—Cascades, see Flow of Fluids	0
Characteristic	0	0	0
Choking	0	0	0
Co-efficient	0	0	0
Compressor	X	0—Compressors (X)	0—Compressors (0)
Constant	0	0	0
Curve	0	0	0—Curves (0)
Data	0	0	0—Data Processing Service Centers (0)
Design	0	0	Design (0)
Distribution	0	0	0
Double	0	0	0
Flow	0	0	0—Flow Indicators (0)
Guide	0	0	0
Hysteresis	0	0	Hysteresis (0)
Idealized	0	0	0
Inlet	0	0	0—Inlets (0)
Knee	0	0	0
Line	0	0	0
Loading	0	0	Loading and Unloading (0)
Loss	0	0	0
Mach	0	0	0
Mass	0	0—Mass Transfer (0)	Mass (Chemistry) (0)
Matching	X	0	0
Number	0	0	0—Numbers (0)
One	0	0	0
Operations	0	0	Operations Research (0)
Percentage	0	0	0
Performance	0	0	0
Pitch	0	0	Pitch (0)
Point	0	0	0
Pressure	0	0—Pressure Vessels (0)	Pressure (0)
Range	0	0	Range Finders (0)
Ratio	0	0	0
Slope	0	0	0—Slopes (0)
Speed	0	0	Speed (0)
Stage	0	0	Stage Lighting (0)
Stagger	0	0	0
Stalling	0	0	0
Surge	0	0—Surge Vessels (0)	Surge Tanks (0)
Temperature	0	0	Temperature (0)
Test	0	0	0
Total	0	0	0
Two	0	0	0
Unstalling	0	0	0
Up-rating	0	0	0
Valued	0	0	0
Vane	0	0	0
Velocity	0	0	Velocity (0)

**Key:** 0—the single word term did not appear in the list of index terms.

(0) with an index term preceding it—that term appears in the index, but this article is not indexed under that term.

X—this article was indexed under this term. For this chart, all the Cranfield II index terms should be followed by an (X), but to avoid confusion, they were omitted.

**Note:** The stop word list from "Chemical Titles" of Jan 31, 1966 was used to generate the KWIC index terms manually.



allows far too many variables to enter into the experimentation without effective control.

In studying the actual indexing as shown in Table 2, the large number of index terms which are used in Cranfield II, 54 in this instance, is frightening. No library cataloger would ever use that many terms to index a single article. The conventional indexes rarely use more than 5 terms and seldom over 10 terms. Fifty terms are extraordinary for any index. In a check of the 54 terms listed in Table 2, 20 of them matched to the "List of Words Prevented from Indexing" of *Chemical Titles*. It is hard to understand why Cleverdon would be studying this indexing when half of the index terms are listed as prevented words in a KWIC index tool.

## Conclusions

There is merit in the Cranfield II definitions of how to increase recall and precision. When these devices are related to such terms already familiar to library catalogers as the use of general and specific subject headings, the use of the words recall and precision take on some meaning.

When an index term is made more general it increases the recall value as well as decreasing its precision. When a book on trees is also indexed under botany, certainly more information on trees will be found. But at the same time, the increase in irrelevant botanical information is enormous. But if we narrow the index terms for trees to Maples and Pines, the specificity of the terms would be increased, thereby increasing the precision of the indexing or reducing the amount of irrelevant information. Under actual manual searching, the mental processes of determining the level of generality or specificity are done subconsciously. However, when using a machine search as is done in the Cranfield studies, the WRU indexing system and in the Salton SMART work, human experience in searching cannot be of much help. Once a human searcher uses an indexing tool, the number of items re-

trieved is influenced greatly by a reading of either the title or a phrase modifier or catchwords. It is possible to eliminate hundreds of references under a general heading by looking for certain precision devices. In machine searching, the aid which a title or modifier phrase can give is not available to the searcher, and the only result that is obtained is usually the final printout. Because the correct or source or relevant document number was not available to the Cranfield searchers as they looked through their index, their searches had to include many irrelevant documents. In a human search, a precision ratio would be almost impossible to define.

When we change the recall ratio to generic coverage and precision ratio to specific coverage, every librarian knows the compromise when searching. The indexer on the other hand always attempts to be as specific as the material allows him to be. The Cranfield studies do attempt to give some understanding to the searching process, but almost none to the indexing process. For those interested in searching, there is little in the Cranfield literature which discusses the contrasts between machine searching and human searching.

The two Cranfield studies have provided a vast amount of data which may be of value when evaluating the results of machine searches. They show little promise in providing a yardstick for such indexing characteristics as depth of indexing. If Cleverdon insists that peak index performance comes between "22 and 60 terms," the commercial indexing and abstracting journals will ignore him.

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# An African Experience

## The Role of a Specialized Library in a War Situation

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■ The Nigerian Civil War of July 1967 to January 1970 excited a lot of interest around the world while it lasted. The root cause of the war was the secession of the former Eastern Region of Nigeria under the leadership of Col. (later General) Ojukwu from the Nigerian Federation. While interest was shown in the fighting, the real focus of world opinion was on the issues at stake, especially the Biafran charge of genocide which was upheld by such prominent figures as Connor Cruise O'Brien. For most of the war, Biafran propaganda remained so effective that *Time* reported that the Federal Nigerians were "behind in the

war of words." It was in this war of words that the Library of the Biafran Directorate for Propaganda played a major role. This paper attempts to describe in some detail the work of that library.

I think that our experience is an example of the part libraries and librarians can play even in the strangest circumstances. It would be recalled that the area known as Biafra was blockaded by land and sea, and communication with the outside world was via a Telex machine, and a jungle airstrip which was open only at night to avoid attacks by the Nigerian Air Force.

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AT THE OUTBREAK of war in July 1967, the library resources of the then Eastern Region of Nigeria, which had just been rechristened Biafra, were quite impressive. The University of Nigeria Library had two branches at Nsukka and Enugu, with a total stock of about 200,000 volumes. The Eastern Nigeria Library Board had the Central Library in Enugu with about 100,000 volumes, and Divisions at Ikot-Ekpene, Umuahia, Port-Harcourt, and Onitsha, each with a stock of about 15,000. There were also the Advanced Teachers College Library at

Owerri and an Agricultural Library at Umuahia. Apart from these, there were a number of township reading rooms and very good secondary school libraries at C.C.C. Uyo, Earnest Gemms Akokwa, and Government College Umuahia.

With these resources, it was no wonder that the propaganda sheets which the Eastern Region Government began producing in October 1966 were well researched.

As Biafra suffered reverses and towns had to be abandoned, these resources began to dwindle. By the end of 1967,

Nsukka and Enugu were gone, and Onitsha, although not yet in Federal hands, had been attacked once in October and was officially evacuated.

At this stage, Biafra's ever mobile capital had spilled over to Aba and Umuahia. Umuahia was the seat of government and Aba the Communications centre. It was to Aba that the Ministry of Information, the Directorate of Propaganda, and Biafra's important Telex machine were moved.

Propaganda played an important role in Biafra's war effort and ranked next only to the actual fighting. As the underdog, Biafra needed to maintain high morale on the home front and keep her case constantly in view of the outside world. These twin aims were achieved through two Biafran radio stations—The Voice of Biafra and Radio Biafra—and also through the Biafran Overseas Press Service which publicised Biafra abroad and arranged visits of journalists and others to Biafra. The Biafran cause was misunderstood in Africa and certain areas of the world, and in order to constantly propound and defend it, research was important. After the Congo crisis of 1960–1962, all secessionist movements were regarded with suspicion in Africa.

### The Ministry of Information Library

It was in these circumstances that it was decided to form a Library Committee in the Directorate for Propaganda. Before this time, there were already 21 committees charged with different responsibilities. Aba had only a township reading room. Umuahia and Port-Harcourt were each 40 miles away in different directions; Onitsha was 100 miles away. If the Directorate for Propaganda was to carry out its functions efficiently, there had to be a library as one of the major sections. At this time in February 1968, there were six professionally qualified librarians within the Directorate. Three of us served on script writing committees while the other three worked in the Transport office. A librarian who was deployed in the Directorate for Food Supply was brought in to head the new

Library Committee, and the three of us who worked at script writing agreed to work in the library.

### A. Birth and Objectives

The only items available with which to set up a library service were a few 1967 issues of the *Times* of London and the London *Financial Times*, two empty rooms, and a table and chair for the Chairman of the Library Committee. Within a week, we were able to move a few hundred volumes from the Divisional Library at Onitsha which had been abandoned after Federal Troops attacked the town. A few tables and chairs were moved down as well, and very soon we were ready to start in earnest. At our first meeting, we produced a blueprint stating briefly what we intended to achieve. We planned to provide a reliable information service for the Directorate for Propaganda/Ministry of Information within the limits of the obvious restrictions of a war situation. We surveyed the communications situation, and decided that since we could not hope to increase our stock by book purchases overseas, it would be wise to run a reference service strictly. As it turned out, however, communications were fairly good and purchase was indeed possible.

With our main objective in mind, we set up four sections within the library as follows: Librarian's office, Cataloguing, Readers' Services, and Indexing and Abstracting. By this time, we had received a few more issues (1967–early 1968) of some British newspapers, with a promise that receipt would be fairly regular in the future. A number of original publications of the Directorate for Propaganda/Ministry of Information began to come in, and we also became a deposi-



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tory for all material (manuscripts, pamphlets and posters) of the various committees and departments. The services of a typist were secured, and four undergraduates were offered jobs as indexers. Later, in the brief but tumultuous history of the library, four more professional librarians, along with a number of library assistants and cleaners, were employed. Four professionals, one undergraduate and three cleaner/messengers left the services of the library at different stages between October 1968 and December 1969. On the average, the library always had a total staff of between 17 and 19.

As can be imagined, the library acquired very few books. We did, however, acquire other material, consisting mainly of newspapers and newspaper clippings, excerpts from newspapers and magazines, transcripts of the monitoring service of the Broadcasting Corporation of Biafra, manuscripts for Biafran radio programmes, and publications of the Directorate for Propaganda.

The indexing section was therefore kept very busy, and we never completed all that we set out to do. We were working at a job which benefited Biafran

propagandists while the war lasted, but we hoped the project would have wider significance as soon as the war was over.

Operating as we did, in a war situation, we could not employ modern methods, and indeed at each phase conditions grew worse than before. The library moved twice in the face of Federal advances—from Aba to Umuahia in late August 1968, and from Umuahia to Umuaka in mid-April 1969. Each time, we lost some books, a few newspapers and about 80% of our furniture. The premises of the Directorate for Propaganda/Ministry of Information were always a favourite target for the Nigerian Air Force. At Aba, we estimated that Russian-built Migs and Illyushins flew over our buildings about 35 times in six months, with no direct hit; at Umuahia about 40 times in seven months, with one near direct hit. We did not keep a record at Umuaka. In such terrible conditions, compounded by hunger and the not too distant rumbling of field guns, it was a miracle that we survived at all. Staff discipline was another matter as most of the staff were underpaid and had to keep alive by queueing for long hours to collect food from the relief organisations.

## B. Organisation

Let us now examine in some detail the work of the various sections of the library.

### 1. THE INDEXING AND ABSTRACTING SECTION

(a) *Newspapers and Magazines*: Eight British newspapers, namely *The Times*, *The Financial Times*, *The Sunday Times*, *The Daily Telegraph*, *The Sunday Telegraph*, *The Sun*, *The Observer*, and the *Daily Sketch*, were regularly received. In addition, there was one American newspaper, *The International Herald Tribune*, published in Paris.

Issues of these newspapers arrived in monthly installments via one of the night flights into Biafra's main lifeline—the Uli Airstrip. After recording, two librarians and four undergraduate indexers searched for articles dealing with the Nigerian crisis indicating, on the front page of the newspapers, the pages on which they appeared. Then the undergraduates and any other members of the staff who had free time prepared abstracts of such articles on 3" × 5" slips. The slips were then arranged alphabetically by the entry word. From this, the first draft of the monthly *List of References on the Nigeria/Biafra Conflict* was typed. The Chief Indexer edited the draft, making changes to the abstracts and entry words where necessary. He then prepared the subject index for the issue on hand.

Thirteen issues of the *List of References* were completed between 1968 and January 1970 (vol.1, nos.1/3–12, 1968; vol.2, nos.1–3, 1969). An annual cumulative index for 1968 was published in October 1969.

Many problems bedeviled our publications programme. After December 1968, stationery became very difficult to procure in Biafra. Biro pens, typewriter ribbons, duplicating stencils and paper were in very short supply. Although we later reverted to using ruled exercise books and to producing multiple copies the hard way by using carbon sheets, we

still had terrible bottlenecks. The priorities of the Ministry of Information also caused problems. In times of crisis, the radio programmes had top priority because they had to meet deadlines. As they had deadlines to meet every day, however, they came first constantly. Moreover, we managed to meet the needs of researchers for the various script-writing committees in spite of our inability to publish, so it was felt, much to our dismay, that publishing was probably a luxury for us. As the only library in Biafra providing real service, our clientele stretched from Ojukwu's Briefs Committee at one end of the scale, to officers of the Biafran Land Army programme on the other. Moreover, it was safer and more permanent to have our abstracts typed rather than left on slips which could get lost.

Apart from the British newspapers and the *International Herald Tribune*, we received with varying regularity *Time*, *Newsweek*, *The Sunday Times Magazine*, *The Economist*, and *West Africa*. A few issues of daily newspapers from African countries were also received, and abstracts from them were included in the *List of References*.

(b) *Excerpts from Newspapers and Magazines*: Most of the excerpts were taken from newspapers and magazines published in continental Europe where, due to religious and humanitarian considerations, the Biafran cause was viewed with deep sympathy. Having the excerpts translated was no problem at all. A Translation Bureau attached to the Directorate of Propaganda employed several Biafrans who had studied abroad or were Biafrans through marriage. French was well taken care of, and there were two engineers and a doctor who had studied in Germany. A Spaniard married to a Biafran engineer took care of publications in Portuguese and Spanish, and a microbiologist who had trained in Moscow was available to help with Russian.

Excerpts were stored in flat paper folders and arranged alphabetically according to title of newspaper or magazine. Eventually a subject/author title

index was prepared every six months. Reference in this index was to page number on the files.

(c) *Monitored News*: The Broadcasting Corporation of Biafra (BCB) operated a wide-ranging monitoring service which, in spite of terrible difficulties, was kept going 24 hours a day, every day of the 30 months of the civil war.

The monitored reports were first recorded on tape and then transcribed by a team of stenographers. Apart from misspelled names of foreigners, the quality of the service was good. Mimeographed copies of the monitored reports reached the library within a week, and were indexed by subject and spokesman by a qualified librarian. *The Index to Monitored News* (full title: *World Radios on the Nigeria-Biafra Conflict; an Index to Monitored News*) was issued every quarter. Reference in the *Index* was to radio station and date of report.

At the beginning the two chief indexers separately responsible for the *List of References/Index to Excerpts from Newspapers*, and *The Index to Monitored News* made no serious attempts to reach agreement on a uniform list of subject headings although they frequently consulted with one another. With the publication of the cumulative index to the *List of References* for 1968, in October 1969, it was decided that the time had come to work out a uniform list of headings.\*

## 2. THE REFERENCE SECTION

The Reference Section consisted of a set of *Encyclopaedia Britannica*, *Webster's Third International Dictionary*, and the library's entire stock of some 2,000 general books, files of newspapers, monitored reports, etc. It was manned by a team of undergraduates, most of whom

---

\* It is not possible in this paper to give a full list of all headings, as such a list would include the names of all countries and individuals ever concerned with Biafra. For a list of the most constantly used headings, see Appendix 1.

were trained on the job in the first three months of 1968.

Most inquiries were related to the war, and were received almost entirely from script writers wanting to know the dates of specific events (e.g. a Government Statement, an air raid, or an infantry battle) or facts about an event or place (e.g. the number of casualties at a given battle, or the population of Ivory Coast).

In order to facilitate the work of the Reference Section, the library, in conjunction with a Documentation Committee, began to issue a special series of publications containing extracts from newspapers and monitored reports on a given topic. Sample titles: *The ICRC and Relief work*; *Russian Involvement in the Nigeria-Biafra Conflict*; *British Policy in the Nigeria-Biafra conflict*.

In addition, the Library's Government Statements files were arranged alphabetically by country of origin, the contents ranging from General DeGaulle's statement of support for Biafra on July 31, 1968 to the statement of support for Biafra broadcast in a commentary over Radio Peking later the same year.

## 3. THE CATALOGUING AND ACQUISITIONS SECTIONS

The Cataloguing Section was kept very busy in the first ten months of the life of the library. This period coincided with the golden age of Biafran propaganda. Pamphlets, committee papers, proposals for a peace settlement, and other ephemera flooded the library. Each had to be very carefully catalogued and classified to facilitate information retrieval. A special classification scheme was devised (see Appendix 2) and the cataloguing section produced about 5,000 catalogue cards during this period.

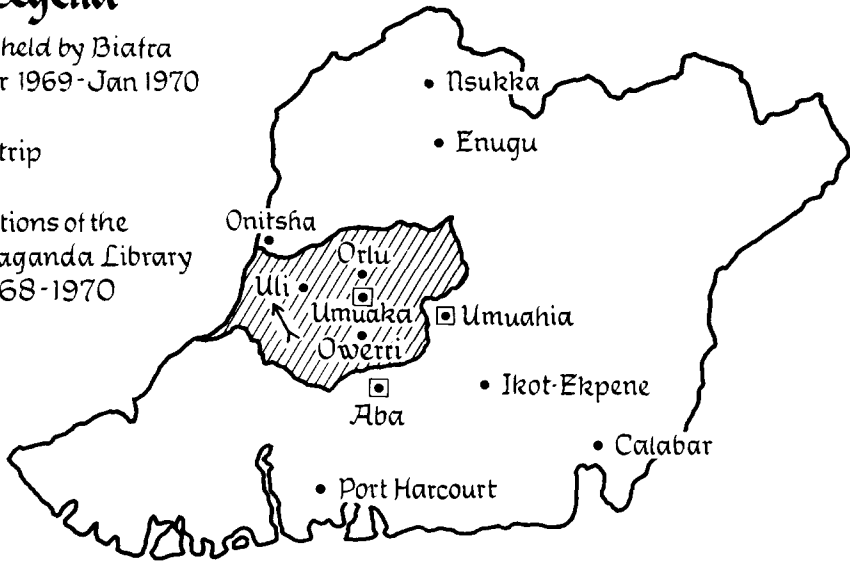
After April 1969, Biafran propaganda began to lose much of its earlier lustre and effectiveness, as Biafrans became less enthusiastic. The result was a corresponding decrease in the production of such pamphlets, and the cataloguer and his staff began to help with indexing and abstracting.

## Legend

▨ Area held by Biafra  
Apr 1969 - Jan 1970

↖ Airstrip

◻ Locations of the  
Propaganda Library  
1968-1970



Biafra

• • •

The Acquisitions section kept track of the publications of the Ministry of Information and also managed to persuade the government to spend part of its dwindling foreign exchange reserves to purchase some 100 volumes on current affairs in mid-1969.

### Other Libraries

Mention must be made here of two collections which were operational until the end of the war. The Briefs Committee library consisted of about 300 volumes taken from Ojukwu's personal library and the library of Dr. Jaja A. Wachukwu, Nigeria's first Foreign Minister, who owned a very fine collection of Africana. It provided very little library service and was mainly a reading room where Col. Ojukwu's speech writers could meet.

The Bank of Biafra library possessed a file of current newspapers and a few volumes on law and banking.

### Conclusion

I have recorded this experience with mixed feelings. I am glad to have the opportunity of telling other librarians what a small group of their colleagues were able to do during one of the most gruesome conflicts of modern times in Africa. At the same time, I am saddened that the world may never be able to reap the fruits of the seeds we so tirelessly tried to sow under very trying circumstances. On the 10th of January, five days before the Nigerian civil war came to an end, the Biafran Directorate for Propaganda abandoned its last headquarters at Umuaka, ten miles south of Orlu. Everything connected with it, including the library, was left behind as no one felt safe being caught with a "Biafran" paper or file on him. In March 1970, I made a sentimental journey to Umuaka, optimistically hoping to salvage what I could, but the library had simply disappeared.



The series of indexes described in this paper and the files with which they were concerned would have formed a good basis for the documentation of the Nigerian civil war which is already engaging the interest of scholars.† As it is now, the task will have to be tackled the difficult way.‡

## APPENDIX I

### Directorate for Propaganda Library Subject Headings for Use in the Indexing Section

#### ABA

Air Raids  
Battle for Aba August 1968—  
Casualties  
Social Conditions  
(N.B. All other towns in Biafra sub-divide like Aba)

Adekunle, Benjamin *Commander, 3rd Marine Commando Division, Nigerian Army*

Attitudes (Sub-divide by subject, e.g. Pacification)  
Battles  
Profile  
War aims  
(N.B. All military Commanders sub-divide like Adekunle)

#### AIR RAIDS

By Biafra  
By Nigeria  
Casualties  
Public Opinion on  
Targets

#### ARMAMENTS

Biafran  
Nigerian  
Sources

AWOLOWO, *Chief Obafemi Nigerian Commissioner for Finance*

Discussions (Sub-divide by personality)

---

† See, for example: Gernot Zieser. *Die propaganda-strategische Biafras in Nigeriamischer Bürgerkrieg*. (Ph.D. Thesis, University of Salzburg, 1970)

‡ S. O. Oderinde of the University of Ibadan has compiled "Nigerian Crisis: A Preliminary Bibliography." Ibadan University Library, 1968. 11p. It consists mainly of a few books, government publications, and pamphlets.

#### Messages

From (Sub-divide by sender)  
To (Sub-divide by recipient)  
On (Sub-divide by subject)  
Visits (Sub-divide by place)  
(N.B. All other personalities including the Nigerian and Biafran Heads of State sub-divide like Awolowo)

#### BIAFRA

Aliens in Biafra  
Currency  
Economy  
Effects of the war  
Emergency measures  
Foreign Reserves  
Foreign Relations (Sub-divide by country or international organisation)  
Link with the Outside World  
Occupied Territories  
Peace Terms (*See separate heading*)  
Politics & Government  
Reconstruction Programmes  
Refugees (*See separate heading*)  
Treaties  
War aims

#### BIAFRAN ARMY

Casualties  
Conduct  
Officers  
Other Ranks  
Recruitment & Training  
Reverses  
Victories  
(N.B. Other wings of the Armed Forces divide like the Army)

#### BIAFRANS ABROAD (Sub-divide by country)

#### BIOLOGICAL WARFARE

#### CARITAS INTERNATIONALE

Problems  
Political  
Technical  
Relations (with the combatants and other organisations)  
Relief aid  
To Biafra  
To Nigeria  
(N.B. All relief organisations, including ICRC, Save the Children Fund, and War on Want sub-divide like Caritas)

#### COMMONWEALTH OF NATIONS

Conferences  
Peace moves  
(All other international bodies, e.g. the UN and the OAU divide like the Commonwealth)

CONFERENCES *See* Peace Talks, and under specific international organisations

CURRENCY *See* under country

#### DEMONSTRATIONS

Pro-Biafra (Sub-divide by locale)  
Pro-Nigeria (Sub-divide by locale)

FOOD POISONING *See* Genocide

FOREIGN INTERVENTION

FRANCE

- Arms deliveries (Sub-divide by destination)
- Foreign relations (Sub-divide by country)
- Official policy in the conflict
  - Approved
  - Condemned
  - Reviewed
- Relief aid to war victims  
(N.B. Countries not directly involved in the combat divide like France)

GENOCIDE

- Charge against Nigeria
  - Denied
- Evidence of
  - Food poisoning
  - Starvation

GREAT BRITAIN

- (Divide like France)

GUERRILLA Warfare

INTERNATIONAL OBSERVER TEAM IN NIGERIA

- Reports
- Visits (Sub-divide by locale)

INTERVENTION, Foreign *See* Foreign Intervention

NIGERIA (Divide like Biafra)

NIGERIAN ARMY (Divide like Biafran Army)

PEACE MOVES

PEACE TALKS

- Addis Ababa
- Proposals

Biafran  
Nigerian  
Results

(N.B. All other peace talks e.g. London Kampala, divide like Addis Ababa)

PEACE TERMS

Biafran  
Nigerian

PRISONERS OF WAR

Biafran  
Nigerian

REFUGEES

Plight  
Death Rate

RELIEF

Cost  
Problems  
Routes  
Air (Day & Night flights)  
Land  
Sea & River

RELIEF WORKERS

SHIPPING

STARVATION AS A WEAPON OF WAR *See* Genocide

ULI—IHIALA AIRSTRIP

Accidents  
Air raids  
Hazards

UNION OF SOVIET SOCIALIST REPUBLICS (Divide like France)

UNITED STATES (Divide like France)

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## APPENDIX 2\*

### Directorate for Propaganda Library Classification Scheme for Publications

- A Nigeria before 1966
- B Eastern Nigeria before 1966
- C Nigeria, January 1966—May 1967
  - 1 May massacres
  - 2 July massacres
  - 3 September massacres
  - 4 Aburi
- D Eastern Nigeria, January 1966—May 1967
- E Nigeria after May 1967

F Biafra—General works

(For publications on subject areas closely related to the Nigeria-Biafra war, *See* H2.7)

G Biafra—Subject areas

- 1 Biafra—Philosophy
- 2 Biafra—Religion
- 3 Biafra—Social system
- 4 Biafra—Political system
  - .1 His Excellency: speeches, press interviews, statements of policy, etc.
  - .2 Cabinet and Commissioners' Speeches, statements of policy, etc.
  - .3 Official home relations
  - .4 Foreign relations
    - .41 Relations with Africa (*See* sub-division below)

*Countries*

- .411 A—C
- .412 D—F

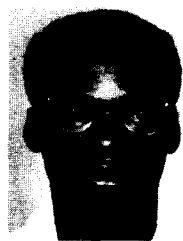
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\* I am grateful to my colleague, Mr. R. C. Nwamefor, who evolved this scheme, for graciously allowing me to use it.

- .413 G—I (Gabon)
  - .414 J—L
  - .415 M—O
  - .416 P—RR
  - .417 S—U
  - .418 V—X
  - .419 Y—Z (Zambia)
  - .42 Relations with Asia (Divide like above)
  - .43 Relations with Europe (Divide like above)
  - .44 Relations with America (Divide like above)
  - .5 Relations with Nigeria (See also H6.3 below)
  - .6 Biafra Revolution. Theory of,
    - 5 Biafra—Economy
    - 6 Biafra—Education
    - 7 Biafra—Legal system
    - 8 Biafra—Language & literature
    - 9 Biafra—Pure science
    - 10 Biafra—Technology
    - 11 Biafra—The Arts
    - 12 Biafra—History
- H Nigeria-Biafra War: General Works**
- 1 Causes
  - 2/3 Prosecution of the war
    - .01 Psychological Warfare
      - .1 Sectors (sub-divide by battles)
      - .2 Occupation (Military)
      - .3 Organisations
        - .31 Organisations (Civilian)
        - .32 Organisations (Military)
    - .4 Mercenaries
    - .5 Refugees
    - .6 Relief activities
    - .7 Contributions by specialists, professionals, etc.
    - .8 Economy
    - .9 War atrocities
  - 4 Foreign interests
    - .1 U.K.
    - .2 U.S.S.R.
    - .3 France
    - .4 Portugal
    - .5 U.S.A.
    - .6 China, etc.
  - 5 Public opinion
  - 6 Peace moves
    - .1 Pacifists
    - .2 Peace terms
    - .3 Peace meetings, conferences
  - 7 Settlement
  - 8 Results
- J Post-war Era & Reconstruction**
- K International Organizations**

*Received for review Nov 16, 1970. Manuscript accepted for publication Dec 10, 1970.*

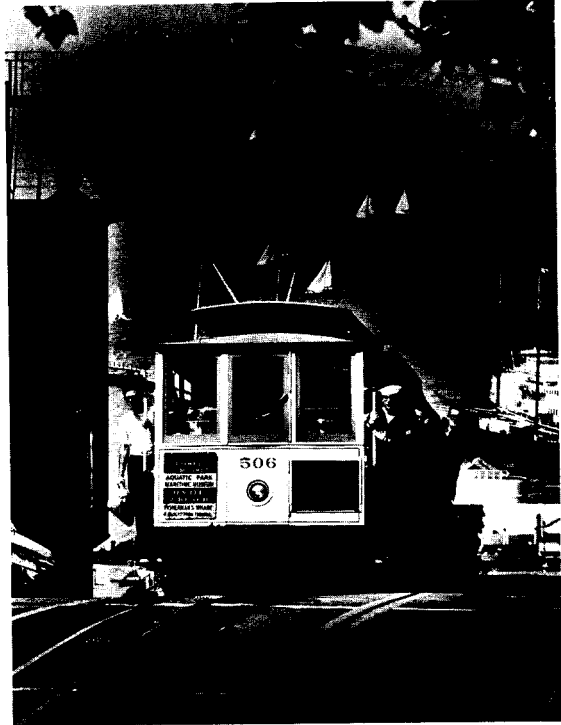
Sanobi's Photo Studio, Uwani Enugu



Mr. Anafulu is Africana Librarian, Nnamdi Azikiwe Library, University of Nigeria, Nsukka.

**"EAST IS EAST, BUT WEST IS SAN FRANCISCO"**

(Quoted by Herb Caen, *San Francisco Chronicle*, in *Baghdad-by-the-Bay*, N.Y., Doubleday, 1949, p. 13.)



*San Francisco Convention & Visitors Bureau*

**JUNE 6-10, 1971**

**AN INVITATION TO ATTEND  
THE 62nd ANNUAL SLA CONFERENCE**

**Design for Service: Information Management**

## HIGHLIGHTS:

**SUNDAY AFTERNOON:** RAYMOND S. ROSS, Ph.D., Director, Speech Communication Laboratory, Wayne State University.

"The Human Communication Process," a fresh and imaginative approach by the author of *Speech Communication: Fundamentals and Practice*, 2nd ed., N.J., Prentice-Hall, 1970.

**MONDAY:** COST BENEFIT ANALYSIS; or, how you can most effectively spend your cut budget. Conducted by JEFFREY A. RAFFEL and ROBERT SHISHKO, authors of *Systematic Analysis of University Libraries*, MIT Press, 1969.

### SPECIAL SESSIONS: CONTRIBUTED PAPERS

- Techniques (one session for new librarians, one for experienced)
- Information Systems
- Education

**TUESDAY:** EDUCATION FOR SPECIAL LIBRARIANSHIP. What the Graduate Schools *are* and *are not* doing—with plenty of time for discussion from the floor.

ANDREW H. HORN, Dean of the UCLA Library School

**WEDNESDAY:** *Morning.* Annual Business Meeting

*Afternoon.* ON-LINE SOCIETY, A WAY OF LIFE. Conducted by a panel of three.

*Evening.* A speechless BANQUET

**THURSDAY:** CONTINUING EDUCATION SEMINARS  
TOURS

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Pre-Pay for All  
Ticketed Events*

*SAVE \$10.00*

*watch for details to be mailed to all  
members*

# 62nd SLA CONFERENCE PROGRAM

June 6-10, 1971

San Francisco Hilton

San Francisco, California

## Registration

Sat Jun 5 1:00 p.m.-5:00 p.m.

Sun Jun 6 11:00 a.m.-6:00 p.m.

Mon Jun 7 8:00 a.m.-5:00 p.m.

Tue Jun 8 8:00 a.m.-5:00 p.m.

Wed Jun 9 8:00 a.m.-2:30 p.m.

Thu Jun 10 8:00 a.m.-9:00 a.m.

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### SATURDAY, JUNE 5

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9:00 a.m.-5:00 p.m.

**BOARD OF DIRECTORS**

1:00-5:00 p.m.

**\* REGISTRATION**

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### SUNDAY, JUNE 6

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9:00 a.m.-1:00 p.m.

**BOARD OF DIRECTORS**

10:00 a.m.-Noon

**Metals/Materials Division**

Early Bird Workshop for Younger Members  
Design for Service: Information  
Management

11:00 a.m.-6:00 p.m.

**\* REGISTRATION**

1:00-3:30 p.m.

**Chapter Officers and Bulletin Editors**

**Presiding: JOSEPH M. DAGNESE**  
Chapter Relations Officer

M.I.T. Libraries  
Cambridge, Mass.

1:00-3:30 p.m.

**Division Officers and Bulletin Editors**

**Presiding: BESS P. WALFORD**  
Division Liaison Officer

Philip Morris, Inc.  
Richmond, Va.

2:00-8:00 p.m.

**\* EXHIBITS**

2:30-3:30 p.m.

**First Conference Attendees Round Tables**

#### *Business Libraries*

**Mrs. MARION M. SMITH**  
Stanford University  
Graduate School of Business  
Stanford, Calif.

#### *Fine Arts Libraries*

**Mrs. ELIZABETH R. USHER**  
Metropolitan Museum of Art  
New York, N.Y.

#### *Government Services*

**MARGARET L. PFLUEGER**  
U.S. Atomic Energy Commission  
Division of Technical Information  
Oak Ridge, Tenn.

#### *Library Networks*

**Mrs. PHYLLIS I. DALTON**  
Assistant State Librarian  
California State Library  
Sacramento, Calif.

#### *Medical Libraries*

**Mrs. GLORIA WERNER**  
University of California Medical Center  
Biomedical Library  
Los Angeles, Calif.

#### *Microfilm Information Retrieval Systems*

**Dr. I. A. WARHEIT**  
IBM Corp.  
San Jose, Calif.

#### *Patents*

**JUNE WAYNE**  
Shell Development Co.  
Patent Division  
San Francisco, Calif.

**SUNDAY, JUNE 6 (contd.)**

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*Scientific and Technical Reference*

Mrs. GWYNETH HEYNES  
Ampex Corp.  
Redwood City, Calif.

*Selective Dissemination of Information*

Mrs. KATHRYN FORREST  
University of California  
Riverside, Calif.

*Technical Processes*

Mrs. LUCILLE JACKSON STRAUSS  
Pennsylvania State University  
Chemistry and Physics Library  
University Park, Pa.

4:00-5:30 p.m.

● **FIRST GENERAL SESSION**

Presiding: **MARK BAER**  
Conference Chairman

Hewlett-Packard Co.  
Palo Alto, Calif.

Welcome from the San Francisco Bay Region  
Chapter, SLA

**H. DONALD GHOLSTON**  
Chapter President

Chevron Research Co.  
Richmond, Calif.

Communication Theory and Human  
Interaction

**Dr. RAYMOND S. ROSS**  
Wayne State University  
Speech Communication Laboratory  
Detroit, Mich.

The speaker will present an absorbing program on human perception and communication, illustrating the talk with verbal-pictorial models. Audience participation will be encouraged.

6:00-8:00 p.m.

\* **CONFERENCE-WIDE RECEPTION**

8:00-10:00 p.m.

**Picture Division**

**ROUND TABLE DISCUSSION**

The Picture Researcher and the Librarian  
Division Suite  
(Division members only)

Moderator: **Mrs. RENATA SHAW**  
Library of Congress  
Prints and Photographs Division  
Washington, D.C.

9:00 p.m.-

**Business and Finance, Insurance, Petroleum,  
Public Utilities, Publishing, and Transportation  
Divisions**

Open Houses

10:00 p.m.-

**Documentation, Newspaper, and Picture  
Divisions**

Open Houses



**MONDAY, JUNE 7**

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8:00 a.m.-5:00 p.m.

\* **REGISTRATION**

9:30-11:30 a.m.

● **SECOND GENERAL SESSION**

**Library Decision Making by  
Cost Benefit Analysis**

Moderator: **LORRAINE PRATT**  
Stanford Research Institute  
Menlo Park, Calif.

Speakers: **JEFFREY A. RAFFEL**  
Massachusetts Institute of Technology  
Department of Political Science  
Cambridge, Mass.

**ROBERT SHISHKO**  
Yale University  
Department of Economics  
New Haven, Conn. and  
The RAND Corp.  
Santa Monica, Calif.

All special librarians are forced to make difficult choices from among many desirable schemes

**MONDAY, JUNE 7 (contd.)**

for expanding and improving library facilities and services. One must allocate the resources available in some rational and effective way. The two speakers will discuss the methodology for applying cost benefit analysis and program budgeting to libraries, including the problems of uncertainty, criteria selection, modeling, and pitfalls inherent in the cost benefit approach to decision making.

10:00 a.m.-8:00 p.m.

**\* EXHIBITS**

Noon-2:00 p.m.

**Advertising & Marketing Division**  
LUNCHEON and BUSINESS MEETING  
(Pre-registration required)

Noon-2:00 p.m.

**Aerospace Division**  
LUNCHEON and BUSINESS MEETING  
(Pre-registration required)

Noon-2:00 p.m.

**Biological Sciences Division**  
**Petroleum Division**  
JOINT LUNCHEON and PROGRAM  
(Pre-registration required)  
Biological Productivity of the  
California Current  
**JOHN D. ISAACS**  
Scripps Institution of Oceanography  
San Diego, Calif.

Noon-2:00 p.m.

**Documentation Division**  
LUNCHEON and PROGRAM  
(Pre-registration required)  
Management and Administration of  
Large-Scale Systems Development Programs  
**ALLEN B. VEANER**  
Stanford University Libraries  
Stanford, Calif.

Noon-2:00 p.m.

**Geography and Map Division**  
LUNCHEON and PROGRAM  
Rocca's Restaurant, 555 Golden Gate Ave.  
Maps: Their Deterioration and Preservation  
**RICHARD D. SMITH**  
University of Chicago  
Graduate Library School  
Chicago, Ill.

Noon-2:00 p.m.

**Insurance Division**  
LUNCHEON and BUSINESS MEETING  
Metropolitan Life Insurance Co., 600 Stockton St.  
(Division members only)  
Host: **Metropolitan Life Insurance Co.**

Noon-2:00 p.m.

**Military Librarians Division**  
LUNCHEON, BUSINESS MEETING and  
PROGRAM  
(Pre-registration required)  
Speaker: **To be announced**

Noon-2:00 p.m.

**Museum Division**  
See Picture Division

Noon-2:00 p.m.

**Natural Resources Division**  
LUNCHEON and PROGRAM  
(Pre-registration required)  
Myth and Reality in California:  
An Ecological Look

**RICHARD G. LILLARD**  
Los Angeles City College  
Dept. of English  
Los Angeles, Calif.

Professor Lillard, author of several books and many articles on ecology, natural history and the impact of man on the environment, will follow his address with extensive discussion of information problems in his field of writing.

Noon-2:00 p.m.

**Newspaper Division**  
LUNCHEON and BUSINESS MEETING  
(Pre-registration required)

Noon-2:00 p.m.

**Petroleum Division**  
See Biological Sciences Division

Noon-2:00 p.m.

**Pharmaceutical Division**  
LUNCHEON and PROGRAM  
(Pre-registration required)  
Government Controls and Regulations  
Moderator: **VALERIE NOBLE**  
Upjohn Co.  
Kalamazoo, Mich.

Panel: **DAVID CARTON**  
Syntex Corp.  
Legal Department  
Palo Alto, Calif.

**Other Division Members**

Noon-2:00 p.m.

**Picture Division**  
**Museum Division**  
JOINT LUNCHEON and PROGRAM  
(Pre-registration required)  
California Palace of the Legion of Honor  
Art Classification for a Slide Library  
**Mrs. LURAIN C. TANSEY**  
University of California  
Santa Cruz, Calif.

Noon-2:00 p.m.

**Public Utilities Division**  
LUNCHEON and BUSINESS MEETING  
(Pre-registration required)



**MONDAY, JUNE 7 (contd.)**

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Noon-2:00 p.m.  
**Science-Technology Division**  
LUNCHEON and BUSINESS MEETING  
(Pre-registration required)

Noon-2:00 p.m.  
**Social Science Division**  
LUNCHEON and BUSINESS MEETING  
(Pre-registration required)

1:00-3:00 p.m.  
**Publishing Division**  
Publishers and Their Libraries in the 70's  
Dr. PAUL WASSERMAN  
University of Maryland  
School of Library and  
Information Sciences  
College Park, Md.

To include a panel of Division members

1:30-4:30 p.m.  
**Business and Finance Division**  
BUSINESS MEETING  
Bank of America, A. P. Giannini Auditorium,  
California and Montgomery Sts., Concourse Level  
Followed by Walking Tour of the following  
libraries:

Bechtel Corp., Pacific Gas and Electric Co.,  
Standard Oil of California, Bank of America  
National Trust & Savings Assn., Wells Fargo  
Museum and Bank, Federal Reserve Bank of San  
Francisco, San Francisco Public Library Business  
Branch, and Pillsbury, Madison and Sutro Law  
Library.

2:00-6:00 p.m.  
**Geography and Map Division**  
TOUR: Basic San Francisco  
Tour Leader: RICHARD F. HOUGH  
San Francisco State College  
Department of Geography  
San Francisco, Calif.

A guided bus trip which reveals much of the  
diversity of the city. Highlights include the fi-  
nancial-commercial core, historic sites, ethnic  
concentrations, redevelopment areas, port fac-  
ilities, and vista points. Coffee break at University  
of San Francisco Student Union.

2:00-5:00 p.m.  
**Metals/Materials Division**  
TOUR and PROGRAM  
University of California, Berkeley  
Metallurgical Research Laboratories  
Speaker: EARL R. PARKER  
Department of Metallurgy  
University of California  
Berkeley, Calif.

2:00-3:30 p.m.  
**Museum Division**  
BUSINESS MEETING  
California Palace of the Legion of Honor

2:00-3:30 p.m.  
**Picture Division**  
BUSINESS MEETING  
California Palace of the Legion of Honor

2:30-4:30 p.m.  
**Cost Benefit Analysis (contd.)**  
Case studies and discussion, led by the  
morning General Session leaders

2:30-4:00 p.m.  
**Advertising & Marketing Division**  
PANEL DISCUSSION on Library Publications  
Speaker: Mrs. MAYRA P. SCARBOROUGH  
Hoffman-LaRoche, Inc.  
Nutley, N.J.

2:30-4:00 p.m.  
**Biological Sciences Division**  
See Petroleum Division

2:30-4:30 p.m.  
**Chemistry Division**  
PANEL DISCUSSION  
Operational SDI Systems in Chemical  
Information Centers

Moderator: Mrs. ELIZABETH W. KRAUS  
Eastman Kodak Co.  
Research Laboratories  
Rochester, N.Y.

Custom-Designed Manual Service  
PAUL L. GARWIG  
FMC Corp.  
Chemical Research and  
Development Center  
Princeton, N.J.

ISI Tape Service  
Mrs. LEE ANN BERTRAM  
Eli Lilly and Co.  
Indianapolis, Ind.

2:30-4:30 p.m.  
**Documentation Division**  
CONTRIBUTED PAPERS  
Moderator: Mrs. AUDREY N. GROSCH  
University of Minnesota Libraries  
Minneapolis, Minn.

Automation and the Lessons We Have  
Learned at Lockheed-Georgia Corp.  
CHARLES K. BAUER  
Lockheed-Georgia Corp.  
Marietta, Ga.

When we automated in 1962, considerable  
thought and preparation went into the system to  
be programmed. Although we realized then that  
the contemplated system would not meet all of  
our requirements, it was felt that we developed  
the best possible automation program as a cure  
for all our ills. Today, after nine years, we are  
in the fourth generation of our automation pro-  
gram, just because too many problems were dis-  
covered while utilizing our mechanized system.  
Could these problem areas have been avoided  
when we first started to automate?

Let me pass on to those who are planning or are in the process of initiating automation the lessons we have learned during these nine years of "experience" gained in the process of converting our first system into the fourth system.

#### Why Some Library Systems Fail

I. A. WARHEIT  
IBM Corp.  
San Jose, Calif.

Whenever a new technology develops, there are at first a number of failures. These failures are very instructive in teaching the designers how to develop and implement new systems. Unfortunately, failures tend to be concealed and are seldom adequately or correctly described. In an attempt to caution the library system designer, a number of different types of failures and apparent failures are described. These are broken down into three basic types: lack of resources, design failures, and operational or people failures. Specific examples are not given; rather, the fundamental characteristics which caused the failures are examined.

#### Reference Function with an On-Line Catalog

RUTH WINIK  
IBM Corp.  
Los Gatos, Calif.

The automated Experimental Library Management System (ELMS) in use at the IBM Los Gatos Laboratory has proved to offer unique advantages in fulfilling the reference function. All records of the library, including complete bibliographic descriptions, order information and circulation status, are available at the librarian's fingertips at the reference desk. The IBM 2260 display terminal permits very fast answers of most patron and interlibrary loan questions. Reference collection currency can be easily monitored because files can be searched by date. Time spent with patrons in file query is optimized through provision for multiple access points and permutation of titles, descriptors and corporate authors.

#### An Automated On-Line Union Book Catalog

CHARLES W. SARGENT  
University of Missouri  
Department of Information Science  
Columbia, Mo.

Using an already tested and operational program, CONSIDER, a research project was instituted at the University of Missouri to test the feasibility of an on-line union book catalog of the holdings of the four campuses of the university. The project, funded by the university, was to be used as one of the methods for uniting the various campuses into a university at four locations. This project was given to the recently es-

tablished Department of Information Science which was designated as a problem-solving as well as a teaching entity.

The input document, the copied shelf list card, was coded to conform to the libraries' needs and the constraints of CONSIDER. Input to the computer, originally punched cards, is now by means of Magnetic Tape Selectric Typewriters (MTST) and a locally produced program for editing and conversion. Preliminary cost figures as well as overall statistics of the program are given.

2:30-4:30 p.m.

#### Engineering Division Nuclear Science Division Science-Technology Division JOINT PROGRAM

The Engineering Index: A World-Wide  
Transdisciplinary Information Service

JOHN E. CREPS and  
JOHN W. CARRIGY  
Engineering Index, Inc.  
New York, N.Y.

Presentation will describe the role, organization, and operation of Engineering Index, Inc. The abstracting and indexing policy will be treated with emphasis on the interdisciplinary aspects considered creating the data base, as well as the range of services developed to enhance its utility. Brief mention will also be made of *Ei's* plans for the future.

2:30-4:30 p.m.

#### Insurance Division PROGRAM

Fireman's Fund American Insurance Companies,  
Forum Auditorium, 3333 California St.  
Cost Benefit Analysis Study for  
Insurance Libraries

Moderator: MARIAN G. LECHNER  
Connecticut General Life  
Insurance Company  
Hartford, Conn.

2:30-4:30 p.m.

#### Newspaper Division

The New York Times Information Bank

JOHN ROTHMAN  
The New York Times  
New York, N.Y.

2:30-4:30 p.m.

#### Nuclear Science Division

See Engineering Division

2:30-4:30 p.m.

#### Petroleum Division Biological Sciences Division JOINT SYMPOSIUM

New Perspectives of Oceanology:  
Investigation, Exploration, Utilization

Moderator: H. DONALD GHOLSTON  
Chevron Research Co.  
Richmond, Calif.

Federal Research in Marine Biology  
PHILIP M. ROEDEL  
National Oceanic and  
Atmospheric Administration  
National Marine Fisheries Service  
Washington, D.C.

Hydrocarbons and Petroleum Waste Products  
in the Marine Food Chain  
Dr. R. LEE  
Scripps Institution of Oceanography  
San Diego, Calif.

Challenge of the Challenger  
R. F. BAUER  
Global Marine, Inc.  
Los Angeles, Calif.

Biodegradation in the Ocean  
JAMES MURAOKA  
Naval Civil Engineering Laboratory  
Port Hueneme, Calif.

2:30-4:30 p.m.  
Public Utilities Division  
PROGRAM and TOUR of Library, Pacific Gas  
and Electric Company, 245 Market St.  
Round Table Discussion of New Problems  
and New Sources of Information for Public  
Utilities Libraries

Moderator: Mrs. CAROLYN MILLER  
Public Service Company of Oklahoma  
Tulsa, Okla.

2:30-4:30 p.m.  
Science-Technology Division  
See Engineering Division

2:30-4:30 p.m.  
Social Science Division  
Using the Results of the 1970 Census  
DAVID SHAW  
U.S. Census Bureau  
Washington, D.C.

Commentary on access to the printed tabulations and computer tapes.

2:30-4:30 p.m.  
Transportation Division  
PANEL DISCUSSION: Where the Various  
Kinds of Transportation Are Going in the  
Seventies

3:00-4:30 p.m.  
Pharmaceutical Division  
BUSINESS MEETING

3:30-5:30 p.m.  
Museum Division  
See Picture Division

3:30-5:30 p.m.  
Picture Division  
Museum Division  
TOUR, California Palace of the Legion of  
Honor

4:30-6:00 p.m.  
● THIRD GENERAL SESSION  
Contributed Papers

Session A  
Techniques for the New Librarian  
Library of Congress Proof Slips:  
The Overlooked Selection Medium for  
Business Libraries

Mrs. ELIZABETH CASELLAS  
Tulane University  
Graduate School of  
Business Administration  
New Orleans, La.

Library of Congress proof slips are created when copy for new catalog cards is run on long sheets, five cards at a time. Complete or partial sets of these sheets are available by broad subject category. The results of a survey of sample business libraries show only a small percentage using proof slips for selection although they represent the most comprehensive bibliography available, afford specialization, and necessary cataloging information. Advantages and disadvantages in the use of proof slips, problems with traditional selection media, the use of non-library specialists, and foreign materials in U.S. business libraries are also analyzed.

A Non-Automated Library's Approach to Preparation and Use of a Current Awareness Bulletin

LOUANNE A. KALVINSKAS  
Avery Products Corp.  
Pasadena, Calif.

The Avery Products Corporation is a leader in the field of self-adhesive products with over 3,000 employees in this and several foreign countries. Its executive, marketing, technical and research staffs need immediate awareness of new technical, marketing, and business developments that relate to their business. These varied needs are met by a monthly *Current Awareness Bulletin*.

This paper illustrates a personalized approach to information dissemination that meets the criteria of rapid, efficient, and low-cost dissemination for a variety of specialized needs. The mechanics of preparation and the composition of the *Bulletin* are described to assist others facing similar information dissemination problems.

Form Cards for Specialized Cataloging  
Mrs. ANNE T. PROTOPOFF  
California Teachers Association  
Burlingame, Calif.

The California Teachers Association Research Library uses preprinted form cards in a very specialized situation to allow for individualized cataloging practices and simplicity of clerical follow-up. There are three form models: 1) main entry, 2) location subject (numeric with linked alphabetic subject heading for the classified catalog), and 3) added entry (for either alphabetic or classified catalog). The same forms are color differentiated for book and non-book materials which are interfiled. The system is designed for a library not yet computerized.

*Session B*

**Techniques for the Experienced Librarian**

A Computerized System of Preparing and Updating Periodical Routing Slips

JOAN BLAIR and  
ARNOLD J. ZIEGEL  
Arthur D. Little, Inc.  
Management Sciences Library  
Cambridge, Mass.

To facilitate the routing of periodicals, a computerized system of printing and updating routing lists was designed to replace a manual one. A computer program generates a data base of staff routing choices and prints out routing slips for each periodical. The data base can be modified as changes necessitate. Monthly a printout of new or needed lists is ordered. Lists stay neat and up-to-date. The system also can compile statistics, show a staff member all titles routed to him, and print out new titles received or those dropped during the preceding year to expedite annual ordering.

The Library Bulletin:

A Forgotten Tool for Service

Mrs. HATTIE T. ANDERSON and  
Mrs. WILDA B. NEWMAN  
Johns Hopkins University  
Applied Physics Laboratory  
Silver Spring, Md.

While briefly noting steps taken to enhance the traditional roles of a library bulletin, this paper concentrates on the use of this old tool in a new role. A case history is presented of efforts to develop the bulletin as a medium for laboratory and library staff to freely communicate in matters concerning library service. It is concluded that this feature of a library bulletin competes with advisory committees, surveys, user manuals, displays, announcements, and lectures as an open-ended means for raising and resolving service issues, informing clients of programs and policies, and maintaining a dynamic image of the library.

Use of the MT/ST at a Remote Facility to Produce Catalog Cards for an Industrial Research Library

ANN T. BROWN  
The Timken Company  
Canton, Ohio

Mechanics for producing thousands of catalog cards needed on a "catch-up" as well as a continuing basis were implemented by the decision to use a magnetic tape typewriter already in operation within The Timken Company. Major problems of typist instruction and supervision arose due to the location of the research library at a facility twelve miles remote from the main plant typewriter installation. Redundant handling and loss of materials posed real dangers. Analysis of input procedures for the proposed card production system suggested a solution making use of work sheets and continuous typing forms.

The Use of the UDC in a Mechanized System

JOH. VAN HALM  
N. V. Bronswerk  
Amersfoort, The Netherlands

The UDC is the main classification scheme used in both library and documentation functions at the Central Information Dept. Mechanization has taken place in the preparation of UDC and alphabetical indexes using a KWIC-program to direct access documentation files. Special features of the system are the KWIC serial number, the program sorting number, the encoded UDC form, the identification number, and the storage or shelving number.

*Session C*

**Education and Training**

Educational Networks for Special Libraries—Potentials vs. Pitfalls

RUTH M. KATZ and  
DIANA D. DeLANOY  
Becker and Hayes Inc.  
Bethesda, Md.

During 1970 the authors have become increasingly aware of the urgent need for special libraries to keep abreast of technological innovations which have a current or potential application in a library setting. In spite of this need the special librarian is, due to geographic and other environmental reasons, usually not in a position to afford time away from the job for post-Masters' training. It is also difficult for the special librarian to structure an adequate personal in-service training program. How then can special librarians relate to and get the most from today's information explosion?

This paper defines the various requirements for continued education for special librarians

and presents a plan to meet these requirements by creating appropriate networks. The problems involved in implementing such a plan are discussed as are the benefits. Administrative, economic, and technical issues are explored.

The Library Technician Program: A Survey of Experience from the Library Technician Graduates' Point of View

JOHN E. JAMES  
Wyeth Laboratories  
Radnor, Pa.

In this study a random sample of 200 of the ascertainable 260 library technician graduates (1967-1969) in the United States were sent questionnaires to determine the job titles, duties and salary changes, if any, pertaining to each student's employment before and after library technician training. The results demonstrate that graduates of library technician programs presently benefit in salary during their first year of employment by approximately \$1,250. Job titles are not, in themselves, reflective of advancement in job status, but on the average the salary accompanying a job title shows a definite improvement.

A Model for Continuing Education in the Analysis of Library Operations

EDWIN E. OLSON and  
JAMES W. LIESENER  
University of Maryland  
School of Library and  
Information Services  
College Park, Md.

This paper describes a cooperative agreement between the National Agricultural Library (NAL) and the University of Maryland which brought together library school faculty and students, special librarians and library users in a research team to develop a new approach to training in problem-solving by applying analytical concepts and methods to the problem of providing materials to a single user group.

A model and instructional materials have been developed which provide the basis for initiating a similar training program in any special library within commuting distance of a library school.

Session D  
Information Systems

The North Carolina Technical Information Center: A Statewide Service for Industry

WILLIAM C. LOWE  
North Carolina State University  
Technical Information Center  
Raleigh, N.C.

The Technical Information Center provides information services to industrial firms throughout the state of North Carolina. Methods employed by the center to serve a widely dispersed

and diversified group of users are described. Emphasis is placed upon the results achieved through coordinating the center's operations with those of the Industrial Extension Service Program of the School of Engineering at NCSU. This coordinated effort has been highly effective in meeting the needs of North Carolina industry for information and technical assistance.

Increasing Usability of an Air Pollution Information System through Automation

FRED RENNER and  
PETER HALPIN  
National Air Pollution  
Control Administration  
Raleigh, N.C.

BERNARD E. EPSTEIN  
Franklin Institute Research Laboratories  
Philadelphia, Pa.

A rapidly expanding collection of 12,000 documents pertaining to all aspects of air pollution outgrew the practical capacity of the semi-manual optical-coincidence storage and retrieval system in which they were stored; in addition, the ability of the system to regularly provide statistical data about its use, or to publicize new acquisitions, was severely limited. To serve the increasing information needs of its government and public users, the system was converted to computer-based operation, using a combined file search program which retained the hierarchical indexing scheme already in use. The converted system provides a computer-generated monthly abstract bulletin; fully automated searches using unlimited combinations of nearly 1,500 thesaurus terms, resulting in printouts of pertinent citations and abstracts; and periodic reports and listings including frequency of term use, and corporate and personal authors. In support of the automated system, all hard copies of documents in the system were microfilmed and microfiche was available to selected users.

An Information Network Using Remote Computer Terminals

MARY W. COVINGTON  
Battelle Memorial Institute  
Columbus, Ohio

The Copper Data Center of the Copper Development Association is the nerve center of an on-line network of easy-to-use computer terminals. These bring the power of a time-shared computer immediately and economically to a user's desk via a simple telephone call. The data base consists of world literature on copper and copper alloys coordinate-indexed with a controlled vocabulary. This paper gives practical details and presents the results of operational experience, including a comparison of

the search strategy for two proprietary software programs. The paper will conclude with an on-line demonstration.

*Session E*

**Special Papers**

**Graphic Presentation of Library/Information Statistics as a Management Aid**

P. O'N. HOEY  
J. Lyons and Company, Ltd.  
London

Graphic treatment of simple statistics is being developed to help evaluate library and information functions by comparing the usage of individual operations over defined periods, while simultaneously holding the total function in view. The effect on existing services of newly introduced documentation handling techniques can be shown and used as an aid during resource budgeting. In a large company the changes in divisional usage of the library/information function can be demonstrated in like manner. The technique is explained and some illustrations from the author's experience given.

**Book Budget Allocation: Subjective or Objective Approach?**

BETTE DILLEHAY and  
MARY WEBB  
A. H. Robins Company  
Richmond, Va.

Budgetary control and financial management are keys to efficient utilization of resources invested in industrial libraries. While present methods of acquisition are geared to random selection of books based on user requests, such methods bear little relation to a balanced collection.

A study was initiated to determine if an objective approach to budget allocation should be developed. Previous acquisitions were correlated with book circulation, books published, book costs and total research budget. The results indicate that acquisitions based on user requirements combined with a computer analysis of existing holdings produce a collection most valuable to the user community.

**Design for Future Service in a Developing Country: A Case Study of a "Special" Library Project**

Dr. FRED J. HARSAGHY, Jr.  
Inter American University Library  
San German, Puerto Rico

This report covers the development—literally from nothing—of a collegiate library in Saudi Arabia, during its initial four-year period (1965–1969), as an integral part of Phase I of an overall, 20-year futuristic Master Plan for campus

development. The "special" design characteristics revolved around two important foundation points: a) educational needs of the developing country to train specialists and managers who would be instrumental keys in exploiting the mineral resources of Saudi Arabia, especially petroleum, natural gas, and petrochemicals; and b) technological needs to bridge the generation gap between the desert-pastoral life of the nomadic bedouin, practically unchanged since the time of Jesus Christ, and the futuristic world of computer technology evolving today. This is a success story of special training and information management under the Saudi Government at the College of Petroleum and Minerals, Dhahran.

4:30–5:30 p.m.  
**Consultation Service Committee**  
OPEN MEETING

5:30–10:00 p.m.  
**Chemistry Division**  
RECEPTION, DINNER, and BUSINESS MEETING  
Stagecoach Restaurant, 44 Montgomery St.

6:00–7:30 p.m.  
**Pharmaceutical Division**  
RECEPTION (Division members only)

7:00–9:30 p.m.  
**SLA Past Presidents' Dinner**

7:30–10:00 p.m.  
**Museum Division**  
RECEPTION and TOUR, M. H. DeYoung Memorial Museum (tentative)  
(Open to all Conference registrants)

8:30–10:00 p.m.  
**Geography and Map Division**  
BUSINESS MEETING

9:00 p.m.–  
**Aerospace, Business and Finance, Engineering, Military Librarians, and Science-Technology Divisions**  
Open Houses

10:00 p.m.–  
**Documentation Division**  
Open House





**TUESDAY, JUNE 8**

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7:00–8:30 a.m.  
**Biological Sciences Division**  
BREAKFAST and BUSINESS MEETING

7:00–8:30 a.m.  
**Documentation Division**  
BREAKFAST and BUSINESS MEETING

7:00–8:30 a.m.  
**Food Librarians**  
BREAKFAST

7:00–8:30 a.m.  
**Petroleum Division**  
BREAKFAST and BUSINESS MEETING

7:00–8:30 a.m.  
**Social Sciences Division**  
Planning, Building and Housing Section  
BREAKFAST and BUSINESS MEETING

7:00–8:30 a.m.  
**Social Sciences Division**  
Social Welfare Section  
BREAKFAST and BUSINESS MEETING

8:00 a.m.–5:00 p.m.  
\* **REGISTRATION**

9:00–10:30 a.m.  
● **FOURTH GENERAL SESSION**  
**Educating the Special Librarian of  
the Seventies**

**Moderator:** RAY BRIAN  
California Academy of Sciences  
San Francisco, Calif.

**Speaker:** ANDREW H. HORN  
University of California  
School of Library Services  
Los Angeles, Calif.

What are library schools doing, and what should they be doing? Are there visible trends which reconcile the positions of the traditionalist and the information scientist? Does feedback from the profession influence curricula? Does a school feel a responsibility for the updating of its graduates? These are some of the questions the speaker will attempt to answer.

10:00 a.m.–5:00 p.m.  
\* **EXHIBITS**

10:30–Noon  
Open Time for Exhibits and Informal  
Information Exchange

11:00 a.m.–Noon  
Board Proctors and Committee Chairmen

11:45 a.m.–2:00 p.m.  
**Advertising & Marketing Division**  
LUNCHEON, World Trade Center  
TOUR of Center and California Division of  
Mines Library  
(Limit 30; Division members only)  
**Host:** Center for Advanced Studies in  
International Business  
Los Angeles, Calif.

Noon–2:00 p.m.  
**Aerospace Division**  
LUNCHEON and PROGRAM  
Earth Resources Program—Data Collection  
and Interpretation  
**Speaker:** To be announced

Noon–2:00 p.m.  
**Business and Finance Division**  
LUNCHEON—Within Our Circles:  
a) Public and Government Circle  
b) University Circle  
c) Banking Circle  
d) Business Organizations Circle

Noon–2:00 p.m.  
**Engineering Division**  
LUNCHEON and BUSINESS MEETING

Noon–2:00 p.m.  
**Geography and Map Division**  
LUNCHEON and PROGRAM  
Names on the Land  
RICHARD H. DILLON  
California State Library  
Sutro Branch  
San Francisco, Calif.

Noon–2:00 p.m.  
**Insurance Division**  
LUNCHEON for Informal Shop Talk  
Location to be announced  
(Division members only)

Noon–2:00 p.m.  
**Metals/Materials Division**  
LUNCHEON, BUSINESS MEETING, and  
HONOR AWARD

**TUESDAY, JUNE 8 (contd.)**

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Noon-2:00 p.m.  
**Museum Division**  
**Picture Division**  
**JOINT LUNCHEON**  
Cooperation for the Small Special Library  
**FAYE SIMKIN**  
METRO (N.Y. Metropolitan Reference  
and Research Library Agency)  
New York, N.Y.

Noon-2:00 p.m.  
**Natural Resources Division**  
**LUNCHEON and PROGRAM**  
Solving Environmental Problems: What It  
Really Takes  
**JOHN MILES**  
Ecological Consultant  
Eureka, Calif.

Noon-2:00 p.m.  
**Newspaper Division**  
**LUNCHEON and PROGRAM**  
The Income Potential of Your Newspaper  
Microfilm  
**RICHARD E. SCHMIDT**  
Bell and Howell  
Micro Photo Division  
Wooster, Ohio

Noon-2:00 p.m.  
**Nuclear Science Division**  
**LUNCHEON and BUSINESS MEETING**

Noon-2:00 p.m.  
**Picture Division**  
See Museum Division

Noon-2:00 p.m.  
**Publishing Division**  
**LUNCHEON and BUSINESS MEETING**

Noon-2:00 p.m.  
**Social Science Division**  
**LUNCHEON**  
Special Interest Group Round Tables

Noon-2:00 p.m.  
**Transportation Division**  
**LUNCHEON and BUSINESS MEETING**

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2:30-5:00 p.m.  
● **ADVISORY COUNCIL MEETING**

Presiding: **KEITH G. BLAIR, Chairman**  
Advisory Council  
General Dynamics  
Convair Division Library  
San Diego, Calif. 92112

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5:30-9:00 p.m.  
\* **Cruise of San Francisco Bay for the  
SLA Scholarship Fund**  
**TWILIGHT ON THE BAY**—A boat cruise  
under the Golden Gate Bridge and around  
Alcatraz Island, with glorious views of Marin,  
the East Bay and The City as night ap-  
proaches. Complimentary hors d'oeuvres will  
be served and a no-host bar will be available.

9:00 p.m.—  
**Business and Finance Division**  
Open House

10:00 p.m.—  
**Documentation Division**  
Open House



**WEDNESDAY, JUNE 9**

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7:00-8:30 a.m.  
**Museum Division**  
**BREAKFAST**

7:00-8:30 a.m.  
**Natural Resources Division**  
**BREAKFAST and BUSINESS MEETING**

7:00-8:30 a.m.  
**Picture Division**  
**BREAKFAST**  
"Show and Tell"  
Picture Problems and Their Solution

7:30-8:30 a.m.  
**Standards Committee**  
**BREAKFAST and OPEN MEETING**

8:00 a.m.—2:30 p.m.  
\* **REGISTRATION**

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9:00-11:30 a.m.  
● **ANNUAL MEETING**  
Presiding: **FLORINE A. OLTMAN, President**  
Special Libraries Association  
Air University Library  
Maxwell Air Force Base, Ala.

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10:00 a.m.—5:00 p.m.

**\* EXHIBITS**

Noon—2:00 p.m.

**Chemistry Division**

**LUNCHEON and PROGRAM**

Non-Written Forms of Communication

**ARTHUR POULOS**

American Chemical Society

Chemical Executive Audionews

Washington, D.C.

Noon—2:00 p.m.

**Geography and Map Division**

**LUNCHEON and PROGRAM**

Fairmont Hotel, Mason and California Sts.

Save the Land

**IRWIN LUCKMAN**

People for Open Space

San Francisco, Calif.

Noon—2:00 p.m.

**Government Information Services Committee**

**LUNCHEON**

Noon—2:00 p.m.

**Insurance Division**

**LUNCHEON and PROGRAM**

Association-wide Function to Inaugurate the Ferguson Communications Award

**Moderator:** To be announced

The aim of this Awards Program is to inspire fresh material from new talent which will effectively explain the functions and services of a special library, and establish clearer channels of communication and understanding between the library staff and its potential, as well as actual, clients.

Noon—2:00 p.m.

**International Relations Committee**

**LUNCHEON**

Noon—2:00 p.m.

**Newspaper Division**

**LUNCHEON and PROGRAM**

(Division members only)

Bardelli's Restaurant, 243 O'Farrell St.

**Speaker:** To be announced

**Host:** San Francisco Chronicle

Noon—2:00 p.m.

**Public Utilities Division**

**LUNCHEON and PROGRAM**

(Limit 35, Division members only)

Pacific Telephone and Telegraph Co., 140 New Montgomery St.

Communications and the

Public Utilities Library

**Speaker:** To be announced

**Host:** Pacific Telephone and Telegraph Co.

Noon—2:00 p.m.

**Social Science Division**

Planning, Building and Housing Section

**LUNCHEON and PROGRAM**

"Toward a Social Report": Library Reporting

**SOPHIE MITRISIN and**

**EVELYN LEASHER**

City of New York

Department of City Planning

New York, N.Y.

Library reporting on progress or retrogression is placed into a society-conscious or user-related framework. The methods recommended for this in the HEW publication, *Toward a Social Report*, were tested in an analysis of user-oriented library services and procedures, library management, and library expectations. In particular, the authors examine reporting of library effectiveness of a special library where size of the collection and numerical measure of use seem to be less suited for such a study. Questions and problems arising from this will be discussed.

A Report on European Planning Libraries

**KARL A. BAER**

National Housing Center Library

Washington, D.C.

Noon—2:00 p.m.

**Transportation Division**

**LUNCHEON and PROGRAM**

Economics of Transportation

**J. MONROE SULLIVAN**

Interolsen Agencies, Inc.

San Francisco, Calif.

2:30—4:30 p.m.

**• FIFTH GENERAL SESSION**

**The On-Line Society: A Way of Life**

**Moderator:** MARJORIE GRIFFIN

IBM Corp.

Advanced Systems Development Division

Los Gatos, Calif.

**Speakers:**

Mrs. **CARYL McALLISTER**

University of California, Berkeley

Department of Librarianship

Berkeley, Calif.

**HILLIS L. GRIFFIN**

Argonne National Laboratory

Argonne, Ill.

**JOSEPH BECKER**

Becker and Hayes, Inc.

Bethesda, Md.

The 1970's offer us many challenges as new technologies and systems emerge. Along with projections to 1980, the panelists will discuss the status of on-line library systems, their inevitable problems (such as conversion and learning periods) and many benefits, and the types of assistance librarians can expect from Project MARC.

4:30—5:30 p.m.

**Education Committee**

**OPEN MEETING**

WEDNESDAY, JUNE 9 (contd.)

6:30-7:30 p.m.

\* CONFERENCE-WIDE RECEPTION

7:30-10:00 p.m.

\* BANQUET

Followed by Irish Coffee à la San Francisco,  
courtesy of San Francisco Bay Region  
Chapter, SLA

10:00 p.m.-

Documentation Division  
Open House



THURSDAY, JUNE 10

8:00-9:00 a.m.

\* REGISTRATION

9:00 a.m.-4:30 p.m.

CONTINUING EDUCATION SEMINARS

Four day long concurrent sessions. Luncheon served  
Noon-1:30 p.m. Registration fee \$35.00 includes  
luncheon. Conference registration is required.

Session I

Participation and Persuasion Techniques  
(Limit 40)

Coordinator: Mrs. LINDA A. BRIGANTI  
Oakland, Calif.

Speakers: J. G. ROBBINS and BARBARA JONES  
University of Colorado  
Adult and Organizational  
Communications Program  
Boulder, Colo.

A seminar for working in and through groups  
in today's age of committees. The speakers have  
styled a workshop on methods for effectively  
leading and participating in the organizational  
environment. Accomplished group leaders them-  
selves, the team will demonstrate how problems  
can be solved and decisions made in a group  
setting.

Session II

Library Publications, In House and Out  
(Limit 50)

Coordinator: Mrs. MARGARET D. URIDGE  
University of California, Berkeley  
General Reference and  
Interlibrary Borrowing Services  
Berkeley, Calif.

Speakers: ROCCO CRACHI  
California Institute of Technology  
Jet Propulsion Laboratory  
Pasadena, Calif.

STEFAN B. MOSES  
California Library Association  
Sacramento, Calif.

Panel:

MARY W. McCAIN  
Standard Oil Company of California  
San Francisco, Calif.

Mrs. MARIA K. FEDER  
University of California  
Lawrence Radiation Laboratory  
Berkeley, Calif.

EARL VOGT  
Chevron Research Company  
Richmond, Calif.

H. A. COVICI  
University of California, Berkeley  
General Reference Service  
Berkeley, Calif.

Two speakers and a panel will examine all  
phases of producing many types of library pub-  
lications: bulletins, guides, news summaries, in-  
telligence reports, and other specialized services.  
Problems to be considered include starting a  
publication, planning its contents, editing, deal-  
ing with outside printers and mailers, and de-  
veloping it for maximum effect. Emphasis will  
be placed on a practical "how to do it" ap-  
proach. Chapter and Division bulletin editors  
will also find this seminar useful.

Session III

Reference Update

Coordinator: ROBERT S. MEYER  
Library Consultant  
Walnut Creek, Calif.

Speakers: To be announced

The seminar will cover significant reference  
developments in a wide range of subjects, focus-  
ing on the last five years. It is not a basic refer-  
ence course, but is designed to aid librarians in  
updating their knowledge of reference tools, es-  
pecially in fields other than their own. Recogn-  
ized authorities will discuss the new reference  
works, including cost, special features, compari-  
sons with other similar tools, and the types of

users and libraries for which they are best suited. The contents are selected from a Continuing Education Course which has been successfully presented there by the San Francisco Bay Region Chapter.

*Session IV*

People and Jobs

**Coordinator:** ELINOR M. ALEXANDER  
Pillsbury, Madison and Sutro  
San Francisco, Calif.

**Speaker:** BOYNTON S. KAISER  
Stanford University Libraries  
Stanford, Calif.

This session will deal with people—how to get and hold the right ones, or improve a bad situation if you have wrong ones on your staff. Topics to be covered include recruitment, selection and appraisal from the increasing labor pool, on-the-job evaluation, counseling for improvement and growth, warning, and replacement. Examples will be shown of new techniques from industrial and corporate management which have applications to libraries.

**DIVISION ACTIVITIES**

9:30 a.m.—6:00 p.m.

**Advertising & Marketing Division**

TOUR and PROGRAM

*Morning*

Visit to Lane Publishing Co., Menlo Park

*Luncheon*

Tresidder Union, Stanford University  
(with Business and Finance Division)

*Afternoon*

Tour of Stanford University, Graduate School of Business Library, and other parts of campus  
Reception, see Business and Finance Division

8:00 a.m.—4:30 p.m.

**Aerospace Division**

TOUR and PROGRAM

*Morning*

Tour of NASA Ames Research Center, Sunnyvale, with demonstration of NASA/RECON System

*Luncheon*

*Afternoon*

Tour of United Airlines facilities  
San Francisco International Airport

9:00 a.m.—5:00 p.m.

**Astronomy Librarians**

TOUR and PROGRAM, California Academy of Sciences, Golden Gate Park

8:00 a.m.—5:30 p.m.

**Biological Sciences Division**

TOUR and PROGRAM (Limit 50)

*Morning*

Tour of Stanford University, with visits to Lane Medical Library and Falconer Biology Library

*Luncheon*

Stanford Faculty Club

*Afternoon*

Tour of California Academy of Sciences, Golden Gate Park  
Visit to Japanese Tea Gardens

8:15 a.m.—6:00 p.m.

**Business and Finance Division**

TOUR and PROGRAM

*Morning*

Stanford University,  
Graduate School of Business  
Panel Discussion on Implications of Emerging Social and Economic Priorities for the Business and Financial Communities

Educational Programs in the Field of Urban Management

**Moderator:** GEORGE LELAND BACH

Stanford University  
Graduate School of Business  
Palo Alto, Calif.

Research in the Public Policy Areas

**ROBERT C. LIND**

Stanford University, and  
Institute for Public Policy Analysis  
Department of Engineering-Economic Systems  
Palo Alto, Calif.

Financing the Priorities

**KENT O. SIMS**

Federal Reserve Bank of San Francisco  
San Francisco, Calif.

Problems in Urban Management

**ALAN K. McADAMS**

Stanford University  
Graduate School of Business  
Palo Alto, Calif.

What Future Would You Choose for the Cities?

**WILLIS W. HARMAN**

Stanford University, and  
Stanford Research Institute  
Department of Engineering-Economic Systems  
Palo Alto, Calif.

*Luncheon*

See Advertising & Marketing Division

*Afternoon*

Tour of J. Hugh Jackson Library, Graduate School of Business, with discussion about its Serial Records Automation Program, and other parts of the Campus

Reception at home of Mrs. Marion M. Smith,  
819 Esplanada Way, Stanford, joint with  
Advertising & Marketing Division

8:00 a.m.—5:00 p.m.

**Chemistry Division**

TOUR and PROGRAM

(Pre-registration required)

**Morning**

Tour of Stanford Research Institute,  
Menlo Park, visiting production facilities of  
"Chemical Economics Handbook" and  
"Directory of Chemical Producers"

**Luncheon**

Stanford Research Institute

**Afternoon**

Tour and Program at IBM Corp. Libraries,  
Los Gatos or San Jose

8:00 a.m.—1:00 p.m.

**Documentation Division**

TOUR, IBM Corp. Libraries, Los Gatos or  
San Jose (Limit 70, Pre-registration required)

9:00 a.m.—Noon

**Documentation Division**

TUTORIAL on *Introduction to Direct Access  
Computer Storage—Use, Organization and  
Access Techniques*

2:00—5:00 p.m.

**Documentation Division**

TOUR, George Lithographers, 650 Second  
St. (Limit 35)

This company produces printed book catalogs  
for many local libraries on FR-80 COM (com-  
puter-output-microfilm) equipment. The library  
computer tape is converted to microfilm (with  
upper/lower case, boldface, italics, etc.), then to  
masters, and then to full-size bound book catalog.

9:30 a.m.—4:00 p.m.

**Engineering Division**

TOUR, see Transportation Division

8:15 a.m.—5:45 p.m.

**Geography and Map Division**

TOUR and PROGRAM

U.S. Geological Survey, Menlo Park

**LUNCHEON**

Allied Arts Guild, Arbor Road and Creek Drive,  
Menlo Park

7:30 p.m.—

**Geography and Map Division**

RECEPTION and DINNER

Jake's Verdi Cafe, 673 Union St.

10:00 a.m.—3:00 p.m.

**Insurance Division**

TOUR to Sausalito

9:00 a.m.—4:30 p.m.

**Metals/Materials Division**

TOUR and PROGRAM (Limit 80; Division  
members given preference)

**Morning**

Tour to Kaiser Aluminum and Chemical  
Corp., Center for Technology, Pleasanton

Welcome: **Dr. T. R. PRITCHETT**

Vice President and Director of Research  
Aluminum Division

Slide Presentation on Kaiser Center for  
Technology

Award-Winning Movie: "Why Man Creates"

**Luncheon**

Host: **Kaiser Aluminum and Chemical Corp.**

**Afternoon**

Tour of Wente Bros. Winery, Livermore

9:00 a.m.—5:00 p.m.

**Military Librarians Division**

TOUR and PROGRAM, see Nuclear  
Science Division

9:00—11:00 a.m.

**Museum Division**

**Picture Division**

JOINT ROUND TABLE DISCUSSION

New Problems and Goals of Museum and  
Picture Librarianship

**Dr. STANLEY T. LEWIS**

Queens College of the  
City University of New York  
Graduate School of Librarianship  
Queens, N.Y.

**Mrs. IRENE SIMPSON NEASHAM**

Wells Fargo Bank  
San Francisco, Calif.

**JACK GOODWIN**

Smithsonian Institution  
National Museum of History  
and Technology  
Washington, D.C.

11:00 a.m.—5:30 p.m.

**Museum Division**

**Picture Division**

JOINT TOUR

Luncheon and tour of Oakland Museum,  
followed by visit to the new University of  
California Art Museum at Berkeley

9:00 a.m.—5:00 p.m.

**Natural Resources Division**

Field trip to Marin County: a Delicate  
Environment Undergoing a Massive Urban  
Assault

Trip through Nicassion Valley, Point Reyes  
National Seashore, and the Audubon Canyon  
Ranch, where luncheon will be served. Trip will  
survey an archetypal encounter between rural,  
scenic values and metropolitan population ex-  
plosion.

9:30-11:30 a.m.

**Newspaper Division**

Subject Heading Control for a Newspaper  
Clipping File

**REX SCHAEFFER**  
Rochester Times-Union  
Democrat and Chronicle  
Rochester, N.Y.



Noon-2:00 p.m.

**Newspaper Division**

**LUNCHEON**

Instant Information Speeds Banking Service

**PETE OVERMIRE**  
Wellsco Data Corp.  
San Francisco, Calif.

9:00 a.m.-11:00 a.m.

**Picture Division**

**ROUND TABLE DISCUSSION,**  
See Museum Division

2:30-4:30 p.m.

**Newspaper Division**

**TOUR** of Wells Fargo Bank information  
retrieval facilities, 464 California (Division  
members only)

11:00 a.m.-5:30 p.m.

**Picture Division**

**TOUR,** See Museum Division

9:00 a.m.-5:00 p.m.

**Nuclear Science Division**

**Military Librarians Division**

**JOINT TOUR and PROGRAM**

Lawrence Radiation Laboratory, Berkeley  
(Attendance limited; Pre-registration  
required)

**Morning**

Tour of Lawrence Hall of Science

**Luncheon**

**Afternoon**

Tour of Laboratory, including Bevatron and  
Heavy Iron Linear Accelerator  
Program on International Nuclear  
Information System (INIS)

8:00 a.m.-5:00 p.m.

**Public Utilities Division**

**TOUR,** Pacific Gas and Electric Co.  
Geysers Steam Plant, Geysers, Calif.  
(Division members and guests only)

**Host:** Pacific Gas and Electric Co.

10:00 a.m.-5:00 p.m.

**Publishing Division**

**TOUR**

**Morning**

John Howell Books, 434 Post St., and  
Sierra Club, 220 Bush St.

**Luncheon**

Alta Mira Hotel, Sausalito

**Afternoon**

Visit to Muir Woods

10:00 a.m.-5:00 p.m.

**Petroleum Division**

**TOUR and PROGRAM**

**Morning**

Visit and tour of Chevron Research Co.  
Library and Facilities

**Luncheon**

Point Orient Restaurant, Richmond

**Afternoon**

Tour of Marin County, including Marin  
County Civic Center; U.S. Army, Corps of  
Engineers San Francisco Bay Model, and  
Sausalito

8:30 a.m.-5:00 p.m.

**Social Science Division**

**TOUR** of Napa Valley Wine Country

**Morning**

Tour of Robert Mondavi Winery, Oakville

**Luncheon**

At Winery

**Afternoon**

Tour of Silverado Museum, St. Helena,  
devoted to life and works of Robert Louis  
Stevenson

9:30 a.m.-4:00 p.m.

**Transportation Division**

**TOUR,** joint with Engineering Division

**Morning**

Visit to Institute of Transportation and Traffic  
Engineering, Richmond

**Luncheon**

Berkeley restaurant

**Afternoon**

Visit to BART, Bay Area Rapid Transit District

9:00 a.m.-3:00 p.m.

**Pharmaceutical Division**

**TOUR and PROGRAM,** Syntex Laboratories,  
Palo Alto

Contraception: Present and Future

**Dr. CARL DJERASSI**  
Syntex Research  
Palo Alto, Calif.

**FRIDAY, JUNE 11**

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7:30-8:30 a.m.

**Geography and Map Division**  
BREAKFAST

8:30 a.m.-6:00 p.m.

**Geography and Map Division**  
TOUR and PROGRAM, University of  
California, Berkeley

*Morning*

Map Workshop Panel on Planning a New  
Library

**Moderator: GERARD ALEXANDER**  
Map Division  
New York Public Library  
New York, N.Y.

The Architect's Viewpoint

**EZRA EHRENKRANTZ**  
Building Systems Development, Inc.  
San Francisco,  
and  
University of California, Berkeley  
Department of Architecture  
Berkeley, Calif.

The Map Librarian's Viewpoint

**STANLEY D. STEVENS**  
University of California  
Santa Cruz, Calif.

Selecting Furnishings and Equipment

**WILLIAM DALE EBERSOLE, Jr.**  
University of Toledo Libraries  
Toledo, Ohio

Descriptions of New Map Libraries

**MARY FORTNEY**  
Northwestern University  
Evanston, Ill.

**ALBERTA G. KOERNER**  
University of Michigan  
Ann Arbor, Mich.

LUNCHEON and PROGRAM, Golden Bear  
Restaurant, Student Union  
Geographic Applications of Aerial and  
Space Photography

**ROBERT N. COLWELL**  
University of California, Berkeley  
Space Sciences Laboratory  
Berkeley, Calif.

*Afternoon*

Visit to Map Library, Bancroft Library, and  
Earth Sciences Library

9:00 a.m.-5:00 p.m.

**BOARD OF DIRECTORS**

**Presiding: EFREN W. GONZALEZ**  
President 1971/72  
Special Libraries Association

Bristol-Myers Products  
Hillside, N.J.

**SATURDAY, JUNE 12**

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8:30 a.m.-6:00 p.m.

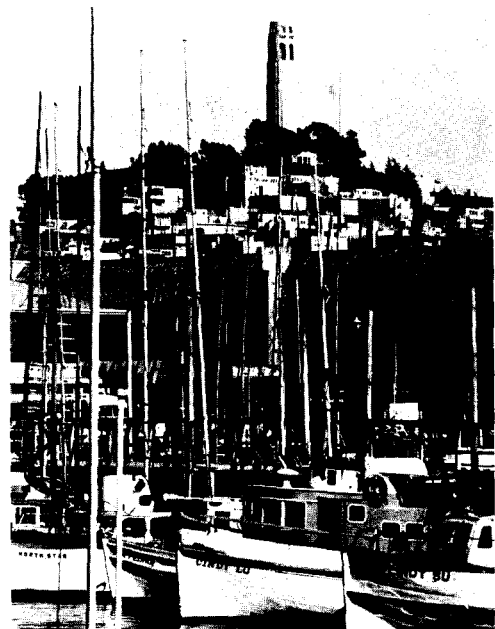
**Geography and Map Division**  
PROGRAM, The Nut Tree Restaurant,  
Vacaville, Calif., joint with Western  
Association of Map Libraries

The Cartography of Nova Albion, 1581-1846

**ROBERT H. POWER**  
Nut Tree Restaurant  
Vacaville, Calif.

Panel on Aerial Photography

**Moderator: MARY MURPHY**  
U.S. Army Topographic Command  
Washington, D.C.



San Francisco Convention & Visitors Bureau

Division Programs at a Glance

	Sun		Mon			Tues			Wed			Thu			Fri			Sat					
	AM	Eve	B	L	PM	Eve	B	L	Eve	B	L	Eve	AM	L	PM	Eve	B	AM	L	PM	AM	PM	
Advertising & Marketing			X	X	X								X	J7	X								
Aerospace			X	X		O							X	X	X								
Biological Sciences					J3								X	X	X								
Business and Finance	O				X		X	O					X	J7	X								
Chemistry					X			X					X	X	X								
Documentation	O		X	X	X	O	X	O							X								
Engineering					J4								X	J8	J8								
Geography and Map	O		X	X	X	X	X	X					X	X	X	X							
Insurance			X	X	X	X	X	X					X	X	X	X							
Metals/Materials	X				X			X					X	X	X	X							
Military Librarians																							
Museum			X	J2	J5	O	X	X															
Natural Resources			X	X	X	X	X	J6	X	X			X	J10	J10								
Newspaper	O		X	X	X	X	X	X					X	X	X								
Nuclear Science					J4			X					X	J9	J9								
Petroleum	O		J1	J3	J3	X	X	X															
Pharmaceutical			X	X	X	X	X	X					X	X	X								
Picture	XO		J2	J5	J5			J6	X	X													
Public Utilities	O		X	X	X	X	X	X					X	J10	J10								
Publishing	O				X			X					X	X	X								
Science-Technology			X	J4	J4	O																	
—Paper and Textiles			X	X	X			X					X	X	X								
Social Science																							
—Planning, Building and Housing																							
—Social Welfare																							
Transportation	O				X		X	X					X	J8	J8	J8							

L—Luncheon

J—Joint Meeting

O—Open House

## HAVE YOU HEARD ?

### National Atlas

*The National Atlas of the United States of America* is now available for public sale. The volume includes 765 maps on both general reference and special subjects which cover various national characteristics. The *Atlas* costs \$100 per copy prepaid, with a 25% discount for orders of 25 or more, and may be purchased from the Washington Distribution Section, U.S. Geological Survey, 1200 South Eads St., Arlington, Va. 22202.

### Quebec Library Association

The Quebec Library Association now has a permanent Secretariat with an executive secretary and telephone. All inquiries to the Association should be addressed to: Miss Suzanne Sabourin, Executive Secretary, Quebec Library Association, c/o Dawson College Library, 535 Viger Ave., Montreal 132, P.Q. The telephone number is: 849-2351, Ext. 358.

### SHE

Bill M. Woods, executive director of Engineering Index, Inc., announced the publication of SHE (Subject Headings for Engineering). SHE is the major tool for organizing and searching the abstracts and notations of content reporting all major engineering literature. SHE is the alphabetical list of subject terms currently used by Engineering Index's technical editorial specialists. SHE is available to the public for \$15.00 per copy from Marketing and Business Services Division, EI, 345 E. 47th St., N.Y. 10017. SHE will be distributed to the corporations now leasing COMPENDEX as a support tool in searching the Engineering Index data base as well as to organizations licensed to search the data base for sale of output to third parties.

### A New Who's Who

*A Biographical Directory of Librarians in the United States and Canada*, 5th edition, has been published by ALA. Pre-

viously titled *Who's Who in Library Science*, it contains basic data and professional information on approximately 20,000 librarians in the United States and Canada. Order from: Order Dept., ALA, 50 E. Huron St., Chicago, Ill. 60611.

### Plastic Card Proceedings

Proceedings of the Data Input with Plastic Cards Seminar, held Dec 1-3, 1970, will be available to the public in March. The publication, which will cost \$25.00 per copy, may be obtained from the Data Processing Supplies Association, 1116 Summer St., Stamford, Conn. 06905.

### Project INTREX

The Council on Library Resources has made a \$400,000 grant to MIT to support, for one year, experimental operation of a computer-based technical library system that could be a prototype for future libraries. INTREX, Information Transfer Experiments, contains a literature base on more than 12,000 articles in materials science and engineering that users can reach from remote display controls. Reproductions of desired pages may also be made.

### Book Conservation

A conservation laboratory has been established by The New York Public Library with the help of an anonymous gift of \$100,000. The laboratory is geared to treat books and paper in the research collection and will also perform routine qualitative analysis of paper materials used in the Research Libraries of NYPL. H. Wayne Eley, Jr., a conservative specialist, is in charge.

### New Dean at CWRU

Professor William Goffman has been appointed Dean of the School of Library Science at Case Western Reserve University effective Feb 1, 1971. Dean Jesse J. Shera retired last year.



## Microfilm Survives Fire

A fire in the corporate research library at American Telephone and Telegraph's New York City headquarters destroyed all the library's contents except for 350 rolls of 35mm microfilm. It was fast thinking on the part of Lillian McCue, microfilm systems supervisor, that saved the film.

When the wreckage was examined, it was found that the microfilm, stored in a metal desk, was untouched by fire but had been drenched by water. Because moistened film is liable to stick together on the rolls, undergo serious image deterioration due to chemical reactions, and be susceptible to various forms of rotting and damage by fungus, Miss McCue rushed the film to a Kodak microfilm processing laboratory where



each roll was washed, dried, and repackaged. As a result, every roll of film was salvaged and will be available in the new corporate library scheduled to open soon.

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## PUBS

### BIBLIOGRAPHY

**Apartment Houses . . . A Selected List of References in the National Housing Center Library.** Washington, D.C. Washington, D.C., Natl. Housing Center Libr., 1970. 101p. pap. \$5.00.

**Application of Aerial Photographs and Remote Sensing Imagery to Urban Research and Studies.** G. Lenis Berlin and William W. Ray, comps. Monticello, Ill., Council of Planning Librarians, 1970. 16p. pap. \$1.50. Exchange Biblio. #119.

**Computers and Data Processing: A Guide to Information Sources.** Chester Morrill, Jr. Detroit, Mich., Gale Research Co., 1969. 275p. \$11.50. Mgt. Info. Guide 15.

**The Negro in the United States: A Selected Bibliography.** Dorothy B. Porter, comp. Washington, D.C., Libr. of Cong., 1970. viii, 313p. \$3.25.

### LIBRARY AND INFORMATION PRACTICE

**Book Selection and Censorship in the Sixties.** Eric Moon, ed. N.Y., R. R. Bowker Co., 1969. xi, 421p.

**Great Britain's National Lending Library.** Peter G. Watson. Los Angeles, Univ. of Calif., Sch. of Libr. Serv., 1970. iv, 93p. pap. \$4.00.

**Information Storage and Retrieval Systems for Individual Researchers.** Gerald Jahoda. N.Y., Wiley-Intersci., 1970. xiii, 135p. \$8.95. Info. Sci. Ser.

**Interlibrary Loan Involving Academic Libraries.** Sarah Katharine Thomson. Chicago, ALA, 1970. viii, 127p. pap. \$5.00. ACRL Monograph No. 32.

**The Subject Approach to Information.** A. C. Foskett. Hamden, Conn., Archon Bks., 1969. 310p. \$7.50.

**The Subject Departmentalized Public Library.** Michael A. Overington. London, The Libr. Assn., 1969. 167p. 40s; 32s to members.

### SERIALS

**Business & Industry Management Abstracts.** C. C. Cuitino, ed. Glen Ellyn, Ill., P.O. Box 380, 1970. Subscription \$75 per calendar year, U.S. and Canada. Bi-monthly.

**European Periodical Literature in the Social Sciences and the Humanities.** Paul E. Vesenyi. Metuchen, N.J., Scarecrow Pr., 1969. 226p.

**Selected Current Primary Serial Publications in the Biological Sciences.** C. Grace Gurtowski. Bethesda, Md., Fed. of Amer. Societies for Exper. Biol., 1970. x, 30p. pap. COBSI Working Document No. 1.

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## PLACEMENT

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"Positions Open" and "Positions Wanted" ads are \$1.50 per line; \$4.50 minimum. Current members of SLA may place a "Positions Wanted" ad at a special rate of \$1.00 per line; \$3.00 minimum. There is a minimum charge of \$10.00 for a "Market Place" ad of three lines or less; each additional line is \$3.00. There are approximately 45 characters and spaces to a line.

Copy for display ads must be received by the tenth of the month preceding the month of publication; copy for line ads must be received by the fifteenth.

Classified ads will not be accepted on a "run until cancelled" basis; twelve months is the maximum, unless renewed.

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## POSITIONS WANTED

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**Librarian**—Female, BSLS, with several years' experience in research and academic libraries, seeking position. Speaks Spanish. Box C-161.

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## POSITIONS OPEN

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**Assistant Librarian**—Position with research center library involves a variety of activities, including standard library routines, but with emphasis on technical information services such as literature searching, etc. Prefer college graduate with some academic background in engineering or science. Position requires knowledge of scientific/engineering vocabulary, basic knowledge of library management and acquaintance with information sources. One to three years' experience. Please send résumé, starting salary requirement, in complete confidence to D. W. Pearl, Personnel Manager, Research Division, Carrier Corporation, Syracuse, New York 13201.

**Assistant Head Cataloger**—Biology and Agriculture. The H. W. Wilson Company in New York City has an immediate opening for a librarian with several years of cataloging and supervisory experience to assist the Editor on the Biological & Agricultural Index. B.S. or M.S. in biology or related sciences required. Excellent benefits. Salary negotiable. Direct résumé and inquiries to: Personnel Office, The H. W. Wilson Company, 950 University Avenue, Bronx, New York 10452.

**Two Assistant Librarians**—Needed in large and growing southern university law library. Law library experience not needed. Apply Box C-159.

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## THE MARKET PLACE

**Back Issue Periodicals**—Scientific, Technical, Medical and Liberal Arts. Please submit want lists and lists of materials for sale or exchange. Prompt replies assured. G. H. Arrow Co., 4th & Brown Sts., Philadelphia, Pa. 19123.

**For Sale**—*Chemical Abstracts*, 1909–1938, 1941–1963. Many complete volumes, single issues, and duplicates. Best offer. Box C-160.

**Quart. Cumul. Index Medicus**—1918–1952, nearly complete. Make offers, part or all. Dr. Lee Otto, UMKC Med. Lib., 24th & Cherry, Kansas City, Mo. 64108.

**For Sale**—*Chemical Abstracts*, vol. 34–57 (1940–1962). Unbound, 7 issues missing, good condition. Reply to J. B. Felker, Trojan-U.S. Powder, 17 N. 7th St., Allentown, Pa. 18105

**Foreign Books and Periodicals**—Specialty: Building Collections. Albert J. Phiebig Inc., Box 352, White Plains, N.Y. 10602.

**Jour. Amer. Chem. Soc.**—Vol. 38, 1916 to Vol. 71, 1949 & *Anal. Chem.* (Wash.) Vol. 1, 1929 to Vol. 34, 1967. Wm. W. Mills, Jr., 5716 Ottawa Rd., Centreville, Va. 22020.

**1971 World Exhibits**—The only comprehensive Directory to all fairs and exhibitions the world over. Thousands of useful references—when, where, participation, organisers' addresses, etc. \$30. Maecenas Publications, P.O. Box 2344, Seal Beach, Calif. 90740.

### INDEX TO ADVERTISERS

Boorum & Pease .....	Cover II
Chemical Abstracts Service .....	7A
Ebsco Subscription Services .....	7A
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The Highsmith Co., Inc. ....	6A
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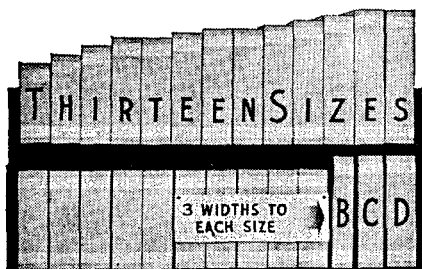
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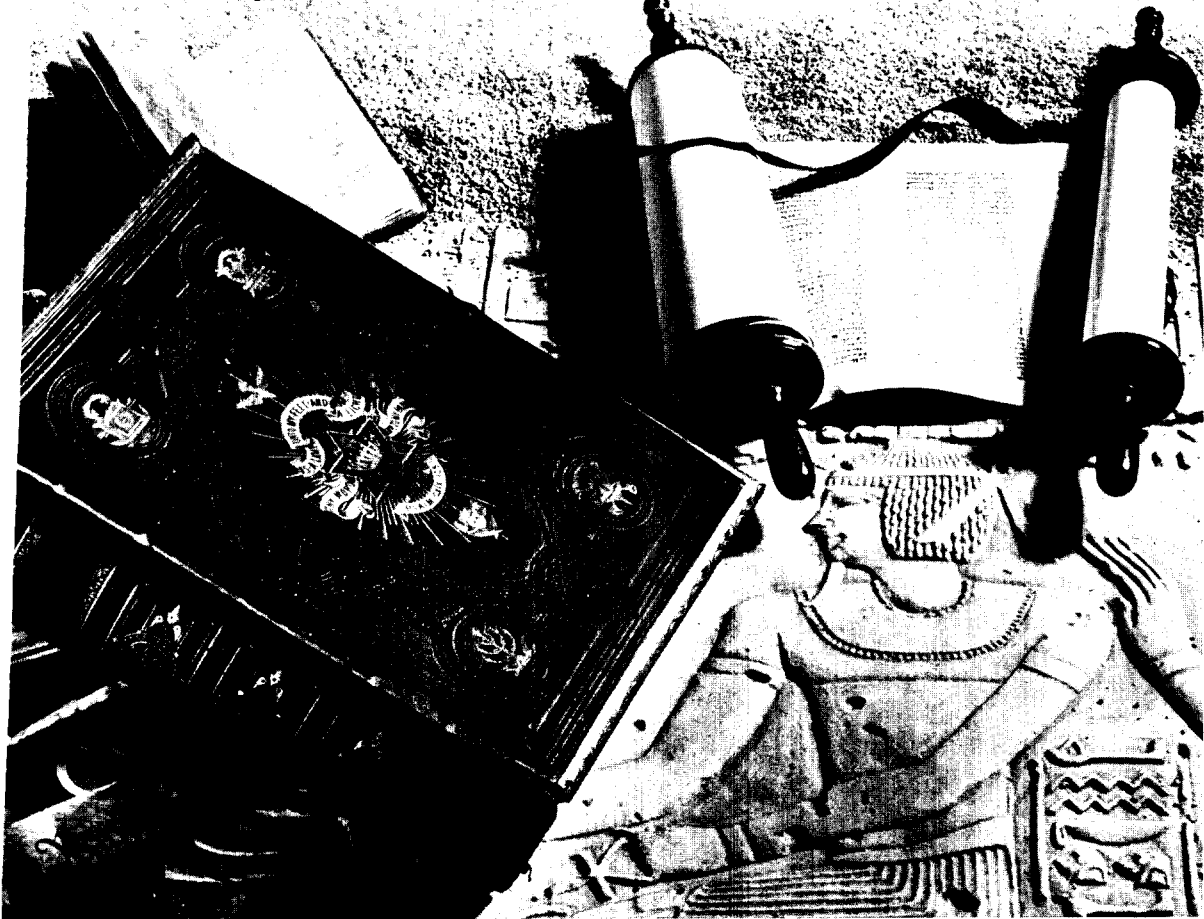
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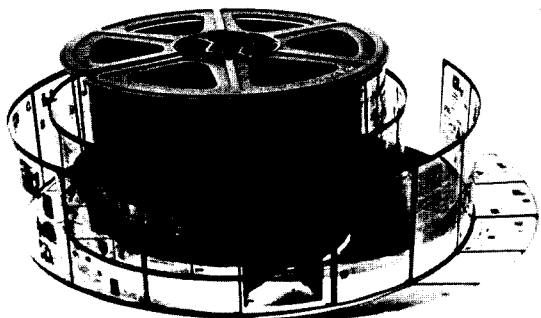
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# 62nd Annual Conference Special Libraries Association

**June 6-10, 1971      San Francisco, California**

See this issue for the Conference Program!

Pre-registration and hotel registration forms will  
be mailed by the San Francisco Conference  
Committee in late February

The San Francisco Hilton  
is the official Conference hotel

***Conference Theme:***

**Design for Service: Information Management**

***General Session Themes:***

**Library Decision Making by Cost Benefit Analysis  
Techniques for the Librarian  
Educating the Special Librarian of the Seventies  
The On-Line Society: A Way of Life**