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## Special Libraries, February 1972

Special Libraries Association

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# *special libraries*

*February 1972, vol. 63, no. 2*

- Lessons of Automation
- Journal Explosion
- Map Deterioration
- Librarians and NSRDS



1972 Boston Conference Program





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*Editor:* JANET D. BAILEY

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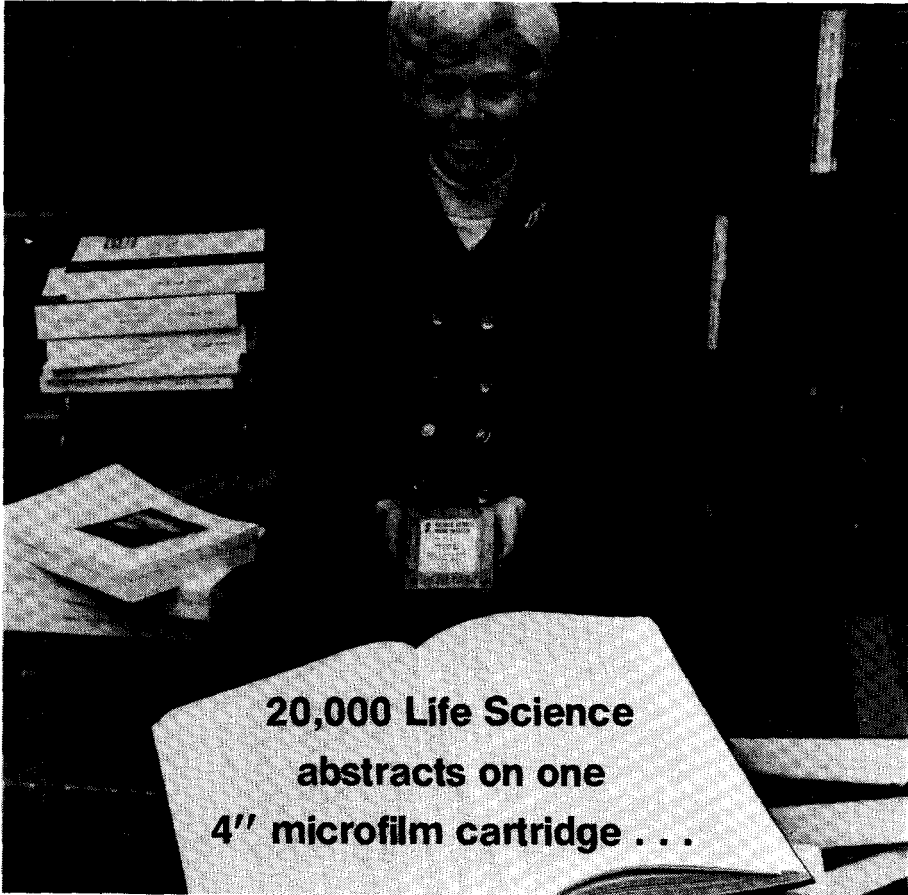
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obtained from New Zealand geothermal resources, first put in 1925, had demonstrated the worth of nationalization in the Andes and his associates applied native Mexican ingenuity to development of an enterprise that is now financing the investment interests of the World Bank.

Among the earliest Yankees to recognize the significance of the Mexican geothermal resource was geologist Robert S. Anderson. In 1961, he was doing research for Standard Oil of California, using heat-flow measurements to determine feasible sites for oil wells in the Imperial Valley. Oil and steam do not mix, because the heat required for the latter dissolves and washes away the hydrocarbon constituents of the former. In the 1920s, there had been drilling for steam at the southern end of the Salton Sea, which has grown popular as a sportsmen's haunt since it formed in a below-sea-level pocket of the valley between 1905 and 1907 when the Colorado River flooded and shifted course disastrously. Hot water had been recovered from these 1920 steam wells, but the project was left abandoned because it was too costly to be profitable.

Assignment in the 1960s boiled under government... the low... The Bureau of Reclamation of the Interior contributed a generous share of Professor Rex's... for the Bureau's objective is measurable only in the grand dimension of promises solemnly made in the name of American democracy. By treaty in 1944 agreed that Mexican Colorado River water as much as benefit from dilution of the salinity of consumers north of the border would be not, of course, built on pure altruism. Yankee farmers and other water with salt water from the Pacific Ocean geothermal reservoir... The Bureau of Reclamation's hopes of the cost... rather than deteriorating... can... further... The

water and more... geothermal resources, first put in 1925, had demonstrated the worth of nationalization in the Andes and his associates applied native Mexican ingenuity to development of an enterprise that is now financing the investment interests of the World Bank.



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# Mansell

*3 Bloomsbury Place, London WC1A 2QA England*

## Age Discrimination?

I have been told by the deans of three library schools that it is purposeless for someone over the age of 50 to seek to become a librarian because libraries don't hire older people. However, there is a law against discrimination because of age in employment—or are libraries exempt from that law?

What is your opinion?

**Rubin Lishinsky**  
Brooklyn, N.Y. 11238

ED. NOTE: See the 1970 SLA Salary Survey [*Special Libraries* 61 (no.6): p.333-348 (Jul/Aug 1970)]. The Salary Survey showed that the majority of SLA members are between ages 40 and 59.

## Another Method of Preparing a Master Card from the NUC

Having read the article by Schertz and Shavit in the November 1971 issue of *Special Libraries*, I would like to call attention to what is a cheaper, and, probably, a method of equal quality. At Drexel University we have been using a Xerox 1-2-3 to make an enlargement (in size, close to that of an LC card) from the NUC citation. This enlargement is then trimmed and used in the same way as a Polaroid or Minolta master. The cost of the Xerox master is the same as for a 914 exposure—\$.045. The same machine is used for enlarging and one-to-one production.

We found advantage in the reduced cost of the master copy, the need for only one copying machine, and good copy only two generations removed from the original; that is, NUC to master to cards. I think that we have found our answer to card production from NUC copy, pending, perhaps, a conversion of NUC to machine readable format.

**Jack Slater**  
Drexel University Libraries  
Associate Director of Libraries  
Philadelphia, Pa. 19104

## Sheltered

After reading the November 1971 issue of *Special Libraries*, I was curious to know if the publication of an article on "How to

## LETTERS

Survive in Industry," authored by a librarian who was in industry when the article was accepted for publication, but had returned to the groves of academe by the time it was published, was intentional or coincidental irony. It does make one rather more cautious about relying on the statistical method for an otherwise "unsold" management to justify the existence of a company library.

**Mark Baer**  
Hewlett-Packard Co., Inc.  
Palo Alto, Calif. 94304

## So Be It

I will be editing one of the Gale Research Company Management Information Guide Series entitled *Industrial Safety Information Sources*. The completion date is tentatively set for June 1973.

I would like to be in contact with as many librarians as possible who have interest and concern with this type of information and would appreciate your including this notice in *Special Libraries*.

Thank you for your cooperation.

**Theodore P. Peck**  
University of Minnesota  
Wilson Library  
Minneapolis, Minn. 55455

## More on LOLITA

It was pleasing to see that Caryl McAlister ["On-Line Library Housekeeping Systems," *Special Libraries* 62 (no.11): p.457-468 (Nov 1971)] included information on LOLITA, the on-line book order and fund accounting system developed and used at the Oregon State University Library. Since July 1971, LOLITA has also been used by the Oregon College of Education Library, Monmouth, Oregon.

Persons wanting more detailed information on LOLITA are referred to the following two articles:

Spigai, Frances G. and Thomas Mahan / On-Line Acquisitions by LOLITA. *Jour-*

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*nal of Library Automation* 3(no.4): p.276-94, Dec 1970

Baker, Robert S., Larry Auld, and Ruth K. Mitchell / LOLITA: An On-Line Demonstration." American Society for Information Science. *Proceedings* 8: p.397-400, 1971

The Spigai and Taylor article cited by Ms. McAllister describes a pilot project demonstration which preceded LOLITA. Although the pilot project provided valuable experience, there is scant resemblance between it and LOLITA. The fact that LOLITA works so well is a major result of that experience.

Larry Auld  
Oregon State University Library  
Corvallis, Ore. 97331

**Engineering Journals Available**

SLA members in engineering libraries may be interested to know that some extensive back runs of engineering journals have recently been sent to the United States Book Exchange, and are available there to USBE members.

The Libraries of the Los Alamos Scientific Laboratory, in New Mexico, have been forced by space restrictions to dispose of many journals in the fields of electrical engineering, electronics, civil and mechanical engineering, metallurgy, and plastics.

Approximately 2,000 bound volumes and an almost equal number of loose issues were sent to USBE. More than 25 volumes of each of the following (generally pre-1960) were included: *Electrical Communication, Electrical Construction and Maintenance, Electrical Journal, Electrical World, Electro Technology Newsletter, Electronic Design, Electronic Engineer, Electronic Technology, Electronics, Electronics World, The Engineer, Engineering, Engineering Journal, Engineering News Record, Engineers' Digest, Factory* (formerly *Modern Manufacturing*), *Heating, Piping and Air Conditioning, Indiana Academy of Sciences, Proceedings, Illuminating Engineering, Iron Age, Industry Week* (formerly *Steel*), *Machine Design, Machinery, Material Handling Engineering, Ma-*

*terials in Design Engineering, Metal Finishing, Metal Progress, Modern Castings, Modern Plastics, Popular Photography, Power, Power Engineering, Product Engineering, Products Finishing, Progressive Architecture, Radio Electronics, Science Digest, Steel Times, Tool and Manufacturing Engineer, Western Machinery and Steel World.*

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**Mrs. Lois E. Godfrey**  
**University of California**  
**Los Alamos Scientific Laboratory**  
**Los Alamos, N.M. 87544**

### **Well?**

I read with interest Miss Little's "Open Letter to SupDocs" in the November 1971 issue of *Special Libraries*. "Please don't do it" (emphatic as it was) is not enough.

Both the Government Printing Office (GPO) and the National Technical Information Service (NTIS) are looking for ways to cut costs, and the possibility of merging the GPO *Monthly Catalog* and the NTIS *Government Reports Announcements* looks attractive. Both have said, however, they want to preserve the essential elements for the users.

Who will decide what those essential elements are? If we want to be heard, we must come up with data on use that will be persuasive. This requires detail. If the indexes should not be merged, why not? Who uses them, how, and for what purpose? If economies are inevitable (and they are), what really should be retained in each, what changed, what dropped? If it is difficult to find items in GRA (and it is), just why is it so hard to use?

A persuasive user group in the Washington, D.C. area recently tackled the GRA index problem (at the suggestion of NTIS). They issued a report, *Distinction Is All; NTIS from a Technical Librarian's Point-of-View* (The Document Procurement Subcommittee of The Committee on Information Hang-Ups, Washington, D.C., November 1971. Chairman: Lorna Moore, TRW Systems, McLean, Va.). The report had an impact. Hu Sauter, NTIS, arranged to meet with the group to get further reactions and recommendations on details.

At least 74 regional user groups have been identified throughout the country. Two SLA chapters (Dayton and Boston) have begun to coordinate the activities of the user groups in their area, as Chapter projects. The Government Information Services Committee communicates with these user groups and lets them know when feedback appears to be required or is requested by the Government agencies. Unfortunately, not all of the groups are responsive. Those who do respond with enthusiasm and add a significant contribution to the weight of evidence which influences policy decisions. In this "Age of the Consumer" we are finding that the Government will listen, especially when user problems are well stated, reflect a consensus of users, and are based on the actual work situation. What an opportunity this is!

At present, no user groups have been located in Delaware. Couldn't we persuade Miss Little to call together other concerned librarians in the Wilmington area and really add clout to her convictions? She sounds like the kind of go-getter who could do it. Then, when in unison they say "please don't do it" (with the supporting evidence on why), I guarantee they will be heard.

**Mrs. Ruth S. Smith**  
**Institute for Defense Analyses**  
**Arlington, Virginia 22202**  
**(Chairman, SLA Government**  
**Information Services Committee)**

### **SLA's Consumers**

I wonder if SLA members know that we have our own "Department of Consumer Affairs" in the form of the Publisher Relations Committee (a standing committee of SLA). If publishers' practices sometimes drive you up the wall—if "this new edition" turns out to be the one published in 1964—a line to the Chairman, Robert G. Krupp, New York Public Library, will bring an official SLA inquiry.

Since publishers wish to sell books, and SLA comprises many customers, publishers listen to the Publisher Relations Committee. Often publishers are grateful for suggestions about what information librarians need to make book selection decisions. We have a means to tell them; let's use it.

**Florine E. Hunt**  
**Public Service Electric and Gas Company**  
**Newark, N.J. 07101**

# Cardiovascular Research

The contents of the January 1972, Volume 6, No. 1,  
issue of this journal are set out below

**An *in vivo* study of aortic flow disturbances:** R. M. Nerem and W. A. Seed

**Factors determining myocardial oxygen consumption (MVO<sub>2</sub>) during elevation of aortic blood pressure: 1. Relation between MVO<sub>2</sub> and changes in mechanical performance at control and high levels of adrenergic activity:** B. Bugge-Asperheim, O. D. Mjøs, and F. Kiil

**Factors determining myocardial oxygen consumption (MVO<sub>2</sub>) during elevation of aortic blood pressure: 2. Relation between MVO<sub>2</sub> and free fatty acids:** O. D. Mjøs, B. Bugge-Asperheim, and F. Kiil

**Direct measurement of tension within left ventricular wall of the dog heart:** Bohdan Lewartowski, Grzegorz Sedek, and Anna Orolska

**Reactive pulmonary arterial hypertension after pulmonary venous constriction in the calf:** Eric D. Silove, W. D. Tavernor, and Colin L. Berry

**Influence of counterpulsation on collateral circulation after acute occlusion of the left anterior descending coronary artery in dogs:** R. S. Reneman, A. H. M. Jageneau, W. K. A. Schaper, F. A. S. Brouwer, and W. Van Gerven

**Chronic hypertension in rabbits induced by bilateral placement of rigid casts around the carotid sinus regions:** Peter G. Burstyn, David F. Horrobin, and Ieuan J. Lloyd

**RNA synthesis and RNA content of nuclei prepared from hearts during hypertrophy:** K. J. Kako, K. Varnai, and M. Beznak

**Changes in peripheral venous compliance after myocardial infarction:** B. F. Robinson, J. Collier, and Ch. Nachev

**Transmembrane potential in isolated human heart:** G. E. Freud

**Electrophysiological effects of magnesium and its interactions with potassium:** Yoshio Watanabe and Leonard S. Dreifus

**Electron microscope study of myocardial tissue space contents in rat heart:** Haukur Melax and Thomas S. Leeson

**Left ventricular stiffness during diastole and systole: the influence of changes in volume and inotropic state:** Gordon H. Templeton, Roger R. Ecker, and Jere H. Mitchell

**Platelet electrophoresis: effect of defibrination by ancrod (Arvin):** A. G. G. Turpie, G. P. McNicol, and A. S. Douglas

**This journal is published in association with the British Cardiac Society.** Cardiovascular Research is mainly for the publication of basic research. The range of subjects covered by the journal includes physiological, pathological, pharmacological, biochemical, haemodynamic, surgical, and similar advances in the study of the heart and circulation. This journal is published six times a year in January, March, May, July, September and November.

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# Automation and Its Lessons

Charles K. Bauer

Lockheed-Georgia Company, Marietta, Georgia

---

■ When the Technical Information Department of Lockheed Georgia Co. automated in 1962, considerable thought and preparation went into the system to be programmed. Although it was realized that the contemplated system would not meet all requirements, it was felt that the best automation program was

developed. Today, the system is in the fourth generation of the automation program, because too many problems were discovered while utilizing the mechanized system. Could these problem areas have been avoided when the automation began?

---

**AUTOMATION**, a topic of concern to every member of this complex society, is exceptionally important to workers in the field of information storage and retrieval. The much-described "information explosion" is really a vast river that threatens to drown us all in a flood of materials in various forms and stages of publication. Imaginative means of coping with this problem are urgently called for, and new developments appear every day. In most cases, it is thought that automated systems offer the best answers.

The most obviously attractive feature of automation is the promise that it can fatten profits by reducing labor costs, production inefficiencies, and other business expenses. However, such decisions must be made with extreme care. In fact, automation is such a costly process that it does not always increase a company's profits. In addition to the high cost of automation equipment, major problems arise from the need to hire or train skilled workers, and from the need for especially clever planning.

The Technical Information Department of the Lockheed-Georgia Company began to automate in 1962, and it is still in process.

There are two principal aspects of automation: the theoretical, or systems area, and the practical or production side. This paper will outline the lessons we have learned and the problems we have encountered in planning and implementing our automation program, rather than the detailed experience gained by the implementer in guiding the complicated apparatus from inception to completion. I recall a statement I made about ten years ago: "To wait for the perfect automation system before implementation is utopian; one must start with something and once the start has been made, converting to a more sophisticated system is easier." Although I have not changed my philosophy in this respect at all, it is important to realize how much more difficult the task rapidly becomes as the system is made more complicated. As in any application, the computer cannot do anything by itself;



it can only follow the scope built into the system and not the thoughts and needs of the librarian or the user. And here begins the rough road that must be traveled in an effort to automate successfully. When librarians suddenly shoulder the load of the automation expert, we should not forget that this work cannot be finished overnight, nor can it simply be left alone to produce favorable results.

### The Lockheed Experience

Although most know better than to create automation purely for its own sake, the temptation to automate is captivating, and most begin to dream in terms of mechanizing the library. The next step is to sit down and make an inventory of all the required tools a library needs to make its services functional: a card catalog consisting of author file and corporate author, and a subject file, and a shelf list, and a file by report numbers, and perhaps a title file, and so forth ad infinitum. The librarian may then go with a lot of enthusiasm and a slim budget to his friends in the Data Processing Department and ask them to convert the conventional system *as is* into an automated system, lock, stock, and barrel. And, as a special bonus, why not get an accession list and a journal list, and yes, let us automate our charge-out system, too. Let the imagination run free! The data processor is perplexed by the job at hand; perhaps this is the first time he has even thought of the possibility that a library's functions might be automated. Thus, the first task may be to teach the programmer librarianship in five easy lessons.

### The KWIC System

This is exactly the situation experienced at Lockheed ten years ago. It was apparent then that the collection and the demand for services were large enough to justify mechanizing the Lockheed-Georgia library system, which then consisted of seven mission-oriented information centers with total holdings of

more than 60,000 technical reports, 15,000 books, and 550 current periodical subscriptions with an expected 15% annual increase. The most popular system then on the market was the late H. P. Luhn's permuted index, better known as the KWIC Index or Keyword In Context. Instead of developing something new, funds were conserved by adopting the KWIC system for subject retrieval. The programmer was instructed to provide computer-produced 3" x 5" catalog cards for each of the seven information centers, and as a spinoff, an accession list announcing new materials and a charge-out system. Two keypunch machines and operators were provided, and the operation began—to the envy of many colleagues.\*

### The KWOC System

Although there was a built-in capability to expand the keywords used in titles by adding terms, it did not take long to find out that using "keywords" from the title was not sufficient nor effective for a proper, uniform subject approach in literature searches. This uncontrolled thesaurus forced the librarian to look up many similar terms in literature searches. After long and tedious conferences with the programmer, a system which we called "KWOC" (Keyword Out of Context, a name now widely used among librarians and documentalists) was developed and applied. Basically, the system ceased using keywords from the title and converted to a tailor-made, mechanically performed indexing arrangement by appropriate subject terms. At the same time our own authority file was developed, based on the Engineer's Joint Council Thesaurus as a guide. Now the print-out showed a remarkable improvement by presenting keywords "outside" and to the left of the title, followed by the complete entry, including locator codes to assist the in-

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\* Bauer, C. K. / "Practical Applications of Automation in a Scientific Information Center—a Case Study," Lockheed-Georgia Company, Marietta, Georgia.

formation centers and users. An updated, cumulated authority list, today consisting of more than 8,000 keywords, was generated as a by-product.

Another flaw in the approach to mechanization was the fact that the 3" x 5" computer-prepared catalog cards had to be filed manually in seven locations. To bypass this time-consuming task, a sheaf print-out was developed in lieu of the conventional 3" x 5" card file. Perhaps foresight then helped Lockheed to become one of the first information centers in the country to adopt a completely automated and cumulated book catalog of all holdings.

At the same time a uniform corporate author listing was also developed, for which over 4,000 prepunched entry cards were prepared. Thus, within one year a second-generation automation program was in use, a vastly improved system and a new breakthrough in many respects.

### Computer Control

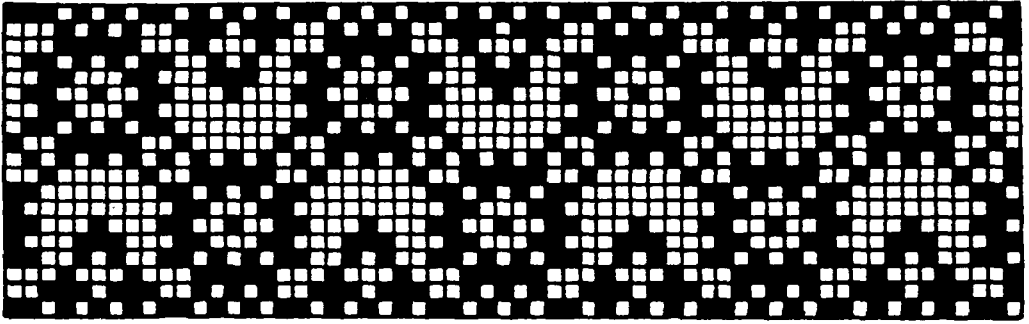
Although Lockheed was now moving toward a new type of library system, problems still had to be solved, such as those created by the many "rejects by the computer" due to wrong entries, key-punching mistakes, and other discrepancies. Either out of ignorance on the part of the programmer or due to a lack of funds for installing verifying equipment, input still had to be proofread manually. This remained a tedious, inefficient task. What emerged was the need for a print-out record that would show and verify the changes in the master record each month.

The present program includes an editing system for the input activity called INPACON. The program also provides automatic correction or rejection and display of machine-identifiable key-punching errors and a keyword and corporate source filter to prevent unauthorized activity of this sort from being included in the final input activity for updating the master record. Common errors are prevented or corrected by checking for certain allowed combinations of data, comparing the input ac-

tivity against a master list of allowed terms or titles, and rejecting any irregularities. One element in INPACON compares our keyword activity with a master thesaurus of valid keywords and rejects all activity which is not valid. Thus, Lockheed entered the third generation or third expansion in its automation system.

### Automated Literature Search and SDI

The development of INPACON paved the way for a further but long-overdue improvement in the system: the capability to perform a truly automated literature search using a combination of keywords for finding reports with a common denominator. In the past, to produce a literature search on airframe fatigue, for example, it was necessary to look up all the references under airframes and all those listed under fatigue, and then to copy the accession numbers to be keypunched and submitted to the computer. The result was a final listing with all bibliographic data on all items in the collection which included either of the keywords as an index term. The list then had to be reviewed and those items marked which had been indexed under both keywords, these items presumably being on airframe fatigue. This was a very unprofessional and time-consuming method of doing business. However, the development of a controlled thesaurus with the KWOC system and the unflinching control of this thesaurus with the help of INPACON encouraged a request for additional funds for reprogramming that part relating to literature searches. The new system, using Boolean algebra to coordinate the keywords by computer, produces a pertinent list of references having a common denominator in terms of subjects. Furthermore, in applying the literature-search technique in reverse, the system has a somewhat unique SDI capability which works very well. Although user profiles cannot be matched against document, appropriate keywords germane to the user's profile can be selected at random to generate an updated literature search on an auto-



matic scale. Thus, the fourth and present system came into being.

### **Direct Access Retrieval System (DIALOG)**

The Technical Information Department is continuing to look for new ways to respond to the ever-increasing demands of technology. As a matter of fact, groundwork has already been prepared for a much more spectacular system that will involve the conversion of the present batch process to an "on-line" direct-access retrieval system and expand it to a Lockheed Retrieval Network. This Network will embrace not only combined Lockheed holdings but also NASA, DDC, AEC, NTIS, MARC, Chemical Abstracts, PANDEX and ERIC tapes and other special interest files. With these data cases, Lockheed Information Centers will have at their disposal the largest on-line retrieval base in the world.

### **The Lessons**

The deficiencies encountered in each system actually led to an improved development in another system, thus leaping from one system to another. Although this did create a "patchwork" of subsystems, it was done purposely to maintain the capability to revert to those if needed. As an example, the capability of our KWIC indexing system was retained and it was used for the issuance of an updated RFQ (Request for Quotation) and RFP (Request for Proposal) index. Having started with a KWOC index

for the internally generated reports, this index was kept up to date in this uniform style. Since the department also serves as a consultant to all levels of management in solving special problems related to project information retrieval and indexing, the various "patchwork" systems frequently come in handy.

In retrospect, one may seriously question whether the progress made in so many steps, compounded by confusion, delays, and high cost factors, really served the cause well. It is clear that, were the job to be done all over again, surely a better course could be charted because of the lessons that have been learned. Following are nine major guidelines:

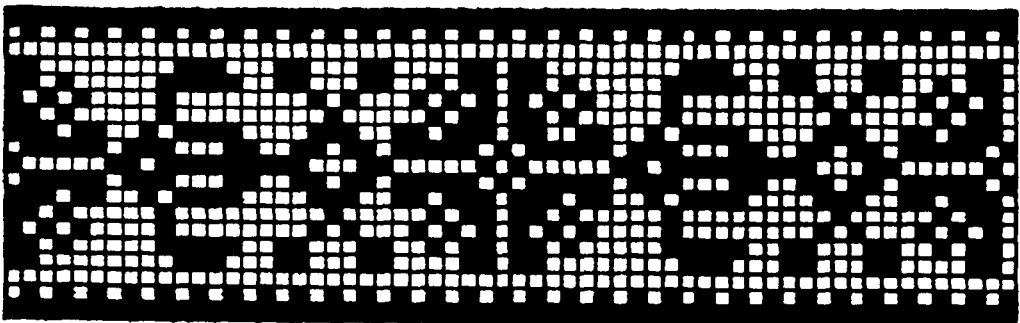
1. With the aid of a systems analyst, determine your goals and what you hope to achieve by automation. A feasibility study may determine that, to achieve these objectives, it is not necessary to automate at all! Systems analysis could reveal that the goals which have been set can be met by revamping your manual processes and procedures. After all, and this is a critical factor, with library funding becoming more tenuous, you might meet your objectives at far less expense than through automation.
2. If you decide to automate, make sure that you maintain your old system during the transition period. It is amazing how often one finds out that systems look and work fine on paper but are less useable in reality.
3. Do not automate with rules of the conventional library in mind. Auto-

mation forces us to break away from the old concepts and to think in terms of the user's needs and what he expects from the library. Unfortunately, some librarians still make the fundamental error of planning to convert approved, conventional systems into automated ones. At Lockheed this mistake was only realized several years after the automation program had begun. After all, are you automating simply to replace conventional card catalogs with sheaf print-outs or to assist your users? It seems that the librarian says, "What do I want to computerize?" whereas he should ask, "What does the user need and how will we supply it?" It is the client who must be reached; it is the client who must be considered. In no way should the desires of the librarian be foremost if they do not fully serve the users. Do not compromise to meet the existing abilities of your library staff. Instead, you must remold, reshape, retrain your librarians to adapt to the new system. Your users' requirements must have first priority, and you should realize that there may have to be a change of thinking habits on the part of your library staff. From the managerial point of view, it is much more advisable to train people to the jobs that must be met rather than to build jobs around people.

4. Do not copy anyone's system without first having compared their requirements with yours. Avoid the mistake of getting someone else's program to save programming costs. Although this might save money, you will have

to compromise certain aspects that may be highly important to your users.

5. When you do automate, turn the job over to a systems analyst, one who knows all the angles of the game: the librarian's role, the library's missions and objectives, the user's requirements and expectations of service, the company's present and future goals, the computer's capability, and the programmer's limitation and language.
6. If a systems analyst is not available, you or a responsible person on your staff should learn enough programming to talk intelligently to the programmer assigned to the data processing activities. At the same time, make sure that the programmer is sufficiently experienced in systems analysis, has good understanding of the subject, and is permanently assigned to your project. This will spare you a lot of frustration and lengthy delays in implementing the project.
7. Make sure that your systems analyst or programmer supplies you with systems flowcharts, specifications, sample print-outs, and cost data before you give the go-ahead. These will assure you that: you do understand the recommended system, the programmer will meet the established specifications and cost estimates, and you are in complete control of your automation project.
8. Keep your program as variable and as flexible as possible, and allow for small changes without the need to rewrite the entire program.



9. Make sure that you have an assured budget, since anything you plan or do will depend on it. Unfortunately, Lockheed was not in that enviable position. Since the company has always been very budget conscious, the first KWIC system had to be "bootlegged." Luckily, when top management saw the first print-out and understood what could be achieved with this new technique, they gave the official go-ahead signal and more money. However, it is an extremely unsteady approach to put the cart before the horse. Therefore, do your best to secure the necessary budget before you start your automation program, since insufficient funding may require

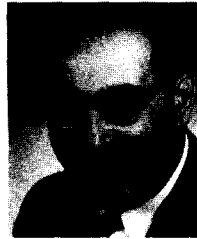
unsatisfactory compromises, sacrifices, or trade-offs.

Following the above experiences, the whole situation can be easily summarized: Be extremely careful in making your decision about whether to automate at all. If you do decide to go ahead, automate correctly, thoroughly, and in full response to the needs of your library clientele.

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# Scientific Journals

## Page or Price Explosion?

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■ Data on page and issue increases are revealed as well as the more traditional subscription price increases for twenty physics journals between 1959 and 1969. A significant portion of subscription price increases is traced to the increases in pagination, but this depends to a great extent on the publishers of the journal. The fluctuations in cost per page give an insight into the economies employed by the journal publishers and demonstrate the effectiveness of the page

charge concept. Page charge publishers are noted as able to increase pagination while increasing subscription price only a fraction of the page increase. The data presented provide library management with quantitative evidence for increases in staff, budget, and space in order to cope with growing journal publications while demonstrating the relationship between page increase and subscription price increase.

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REFLECTING national economic trends, there has been an alarming increase in the cost of all types of library materials in the past decade. Increases in subscription rates for scientific journals have been so marked as to appear astronomical and thus have become a matter of particular concern to library management. I have investigated subscription rate changes in a group of physics journals over a ten year period, 1959–1969, in order to identify more precisely both the nature and magnitude of price increases, as well as to pinpoint some of the causes of these price increases.

Physics journals were selected for this investigation because they are among those periodicals with the highest average current subscription costs (1). Data

on subscription rates, number of issues, page charges—a per page fee levied against the author's institution for the publication of his article (2)—and number of pages per year are presented in Table 1 for the years 1959 and 1969. A comparison of these data, provided in Table 2, summarizes the relationship between page growth and price increases for these technical journals.

The American Institute of Physics (AIP) publishes eight of the twenty journals surveyed, while commercial publishers account for six of the titles. Other non-profit or society publications make up the remaining six titles in this survey. This sample group thus makes possible comparisons among the three different groups of publishers.

## Findings

As a group, the twenty physics journals investigated show an average price increase of 202% between 1959 and 1969, with a 147% average increase in pagination (see Table 2), *demonstrating that these journals grew substantially in size as well as cost. The page growth of these titles accounts for the bulk of the price increase, and provides the key to the reasons for rising journal subscription rates.* If the percent of page increase is subtracted from the percent of price increase, the true percent of price increase for the ten years surveyed can be calculated at 55% or only 5.5% per year.

When the titles in this survey are considered by type of publisher (see Table 2), differences among them in subscription price and page growth give an indication of which publishers are providing the library with the most economically produced titles. Page and price data can then become an informative tool for the librarian. For example, AIP journals are shown in Table 2 to have increased more in pagination than in price. AIP's favorable publishing record can be used to judge the economics of the other journal publishers. The journals of the commercial publishers and the other non-profit or society publishers, as recorded in Table 2, show far greater increases in price than in pagination, indicating that these journals contribute most to the true price increases for the library.

The record of page growth has important implications for other areas of library operation. For instance, Table 2 testifies to an 82% increase in the number of issues produced by these journals, measurably increasing the work load of checking-in journals in the Serials Section of the library. The page growth in these titles demands more frequent binding, placing an increased burden on yet another area of library operations. Naturally, the shelving space required to store these large journals increases in direct proportion to the increased number of issues and the record of page

growth is one indication of how much additional storage space will have to be planned for and provided.

## Methodology and Definitions

The list of journals surveyed (see Table 1) was taken from data supplied by the Technical Information Project (TIP) at Massachusetts Institute of Technology and represents a rank listing of the most frequently cited journals in *Physical Review* between January and March of 1969 but not listing those titles which began publication after 1959. (No inference is implied or intended that these are the leading physics journals.) This list was used as a starting point for an investigation of the growth and cost of physics journals.

The data presented for each title in Table 1 were collected by the author from the journals themselves and do not reflect the official statistics of the publishers or the societies. The subscription price recorded is the cost of the title to a library in the United States for one year (3). Previous investigations have established that net income from advertising does not produce significant revenue for technical journals (4). Thus, advertising income has not been considered in this study. Federal subsidies, when acknowledged by a journal, are noted in Table 1, as subscription rates are affected by such subsidies.

AIP's publishing activities make it the largest publisher of physics literature in the world (5). No discussion of physics literature could be considered complete without some explanation of AIP's publishing role. A federation of leading physics societies in the U.S., AIP publishes 23 journals and translates 14 Soviet physics periodicals for itself and its member societies. The member societies are The American Physical Society (referred to as APS in Table 1), The Optical Society of America, The Society of Rheology, The American Society of Physics Teachers, The American Crystallographic Association, and The American Astronomical Association. This publications program makes AIP responsible

for 87% of the physics journal articles produced in the United States and gives it a 35% share of the physics journal article production of the world (6). Since AIP does play such a significant role in the publication of the physics journal literature and because 8 of the 20 journals surveyed are part of its publication program, AIP journals are considered separately. If these titles had been included in the category of society or non-profit publishers, where by definition they belong, AIP's economical publication record might not have shown through as clearly.

The page charge was conceived by one of AIP's member societies during the depression years to raise needed revenue in order to finance journal publications. Page charges are voluntarily paid to the journal scheduled for publication. In recent years, the page charge practice has spread to nearly all scientific and technical fields, although it is most heavily used in the fields of physics and chemistry (7). The income derived from page charges is used to offset publishing costs, which, in turn, lowers the subscription rate for the journal.

## Conclusions

On the basis of the material presented in this study, recommendations are addressed to publishers and to librarians with the intention of initiating a dialogue among them on the problems associated with journals. As journals grow larger in size and price, the library becomes a more important consumer of journal publications. Studies such as Koch's have shown that individual subscribers are increasingly finding it more convenient to use library copies of a journal than to subscribe personally, because of the cost, size, and storage problems associated with these expanding technical publications (8). As the library's role as subscriber grows in importance, publishers of the journals will hopefully want to seek to meet some of the special needs of library subscribers, especially the need for more and better data on journal cost and growth.

AIP, through its Information Division, has the capability to develop data for library subscribers on cost per page, page growth and the like. This division has directed this type of information at AIP members in the past (9) and the time has come when libraries can reasonably expect similar studies on their behalf. The subscription records to *Physical Review* indicate that libraries are rapidly becoming the largest single group of subscribers to this journal; and, as such, this group of subscribers should not be ignored. If AIP publications are to be a measure of other publications—even if only in physics—more information about publishing practices, subscription rates and the role of page charges should be fed into library communication channels.

Careful examination of Table 1 reveals that, among the commercial journal publishers, two have increased pagination more than price during the last ten years. The publisher of *Philosophical Magazine*, Taylor and Francis, Ltd., and the publisher of *Zeitschrift für Physik*, Springer Verlag, accomplished this feat; other commercial publishers would do well to examine the economics of their publishing systems. Springer Verlag is the only commercial publisher surveyed that levies page charges and an accounting of their successes and problems with this system would be very useful. The challenge to the commercial publisher of producing an economical journal is one with which library management should be vitally concerned.

The results for the non-profit publications summarized in Table 2 are surprising and not readily understandable, considering their non-profit status and the excellent record of the AIP publications. Fortunately, a summary of economical methods of publication and proper utilization of page charges which was prepared especially for society and other publishers of journals is available in the *Report of the Task Group on the Economics of Primary Publication* (10).

Librarians must more actively seek explanations for journal price increases, either by asking that publishers provide



Table 1. Data for 1959, 1969

Journal/Pub.	Year	No. of Volumes	No. of Issues	No. of Pages	Library Subscription Rate	Cost Per Page	Subscription Price Increase	Page Increase	Page Charge
Physical Review (APS)	1959	4	24	6,838	\$ 40.00	\$0.006			\$30.00
	1969	12	72	25,793	100.00	0.004	150%	277%	75.00*
Physical Review Letters (APS)	1959	2	24	1,137	10.00	0.009			35.00†
	1969	2	52	3,037	30.00	0.010	200	167	65.00
Nuclear Physics (North Holland Publishing Co.)	1959	4	21	2,825	60.00	0.021			None
	1969	23	46	16,374	391.00	0.024	551	480	None
Nuovo Cimento, Including Supplements (Societa Italiana di Fisica)	1959	4	12	6,209	25.00	0.004			None
	1969	11	26	7,919	48.00	0.006	92	28	20.00
American Physical Society, Bulletin (APS)	1959	1	7	492	5.00	0.010			None
	1969	1	12	1,321	12.00	0.011	140	168	None
Journal of Chemical Physics (AIP)	1959	1	12	1,720	25.00	0.015			30.00
	1969	2	24	10,362	70.00	0.007	180	502	60.00
Royal Society. London. Proceedings. Sect. A (Royal Society)	1959	5	20	2,917	55.30	0.019			None
	1969	6	20	3,511	96.00	0.027	73	20	None
Reviews of Modern Physics (APS)	1959	1	4	1,077	6.00	0.006			None
	1969	1	4	808	12.00	0.015	100	— 25	None
Journal of the Physics and Chemistry of Solids (Pergamon Press)	1959	4	12	1,588	72.00	0.045			None
	1969	1	12	2,798	150.00	0.054	108	76	None
Soviet Physics. JETP (AIP)	1959	2	6	2,561	35.00‡	0.014			None
	1969	2	12	2,525	95.00	0.038	171	— 1	None
Zeitschrift für Physik (Springer Verlag)	1959	3	14	1,948	99.36	0.051			
	1969	12	60	5,979	228.00	0.038	129	207	.075

\* Page charge from Jan 1969 through Feb 5, 1969, \$60.00 per page. From Feb 10, 1969 through Dec 1969, page charge, \$75.00.

† Page charge at the beginning of 1959 was \$30.00.

‡ Special library rate, reflecting in part a National Science Foundation subsidy.

Table 1. Data for 1959, 1969 (Contd.)

Journal/Pub.	Year	No. of Volumes	No. of Issues	No. of Pages	Library Subscription Rate	Cost Per Page	Subscription Price Increase	Page Increase	Page Charge
Physical Society of London. Proceedings§ Sect. A (Physical Society)	1959	2	12	1,814	\$ 35.28	\$0.020			None
	1969	3	30	4,648	175.00	0.038	419%	156%	None
Annals of Physics (Academic Press)	1959	3	12	1,548	45.00	0.029			None
	1969	5	15	3,001	115.00	0.038	155	94	None
Philosophical Magazine (Taylor and Francis Ltd.)	1959	1	12	1,404	46.70	0.033			None
	1969	2	12	2,643	64.30	0.024	38	88	None
Physical Society of Japan. Journal (Physical Society of Japan)	1959	1	12	1,836	10.00	0.005			None
	1969	2	12	3,590	45.00	0.013	350	96	
Physica (North Holland Publishing Co.)	1959	1	12	1,417	6.64	0.005			None
	1969	4	12	2,562	54.00	0.021	713	81	None
Review of Scientific Instruments (AIP)	1959	1	12	1,174	11.00	0.009			\$25.00
	1969	1	12	1,713	15.00	0.009	36	46	60.00
Progress of Theoretical Physics (Research Institute of Fundamental Physics and the Physical Society of Japan)	1959	2	12	2,305	15.00	0.007			None
	1969	2	12	3,306	35.00	0.010	133	46	10.00
Canadian Journal of Physics (National Research Council of Canada)	1959	1	12	1,572	9.00	0.006			None
	1969	1	24	2,920	15.00	0.005	67	86	¶
Soviet Physics Solid State (AIP)	1959	1	12	1,214	25.00**	0.020			None
	1969	1	12	3,095	95.00	0.030	280	155	None

§ In 1968 Physical Society of London. Proceedings divided into five separate journals under the collective title, Journal of Physics. Page and price data for 1969 are based on Sections A, B and C which are parts of the new journal that reflect the coverage of the old title.

|| Page charge based on the following formula:  $\$0.23p^2 + \$6.00p + \$14.00A$  where  $p$  = number of pages and  $A$  = number of art pages.

¶ A page charge of \$20.00 went into effect on Jun 30, 1969 only on papers presenting work originating outside of Canada.

\*\* Special library rate, reflecting in part a National Science Foundation subsidy.

Table 2. Summary Statistics

A. COST AND GROWTH DATA FOR THE TWENTY JOURNALS

Year	Subscription Price	Number of Issues	Number of Pages
1959	\$ 648.28	264	43,596
1969	1,954.30	481	107,959
% Increase	202%	82%	147%

B. PRICE AND PAGE INCREASE BY PUBLISHING GROUP

	AIP Journals (8)	Commercial Journals (6)	Other Society or Non-Profit Journals (6)
Page	161%	171%	72%
Price	157	283	189
True Price Increase	- 4%	+112%	+117%

more detailed cost data or by producing it for themselves. If existing price indexes for journal publications were adapted to include more of the kind of data found in Tables 1 and 2, this need could be met. *Full data on journal growth is necessary not only for an explanation of rising subscription costs, but also as background information for library administrators who must prepare requests for increased journal budgets, determine personnel requirements and make space allocations. Scientific management of libraries depends on the availability of such data.*

Acknowledgment

The author is grateful to Dr. M. M. Kessler, Director of the Technical Information Project, MIT, for making the rank list of journal titles available.

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9. For example, see material presented in Koch, William / *Economics of Primary Journals.* *Loc. cit.*, p.16-23.
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# Maps

## Their Deterioration and Preservation

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■ Certain properties of the paper in twelve U.S. Geological Survey (U.S.G.S.) maps printed between 1918 and 1971 were measured and the data obtained were used to estimate the condition of map collections. A statistical analysis of the present-day M.I.T. folding endurance data suggests that the probable useful life of U.S.G.S. maps is approximately 100 years. These findings imply that U.S.G.S. maps are aging at rates similar to the deterioration rates of most 20th century book papers. The ex-

ension of map life obtained through air-conditioning, e.g., by storage at reduced relative humidities and temperatures, is discussed. The experimental data presented indicate that both aqueous and nonaqueous deacidification treatments increase the potential life of most maps and that nonaqueous treatments can produce more protection against the development of harmful acidity in the future than aqueous treatments can produce.

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MAP PAPERS are made from cotton fiber or chemical wood pulps or a mixture of these fibers, depending upon their intended use. The important properties of map papers include finish, printing quality, dimensional stability (to avoid poor register), good folding properties, and in some cases (for example, road maps) high opacity. Frequently, map papers are manufactured specifically for high wet strength, water repellency, mildew resistance, luminescence, abrasion resistance, or other properties required for a particular use.

Paper used for maps weighs about the same per unit area as paper used to manufacture books. In general, however,

map papers are more durable and have greater dimensional stability than book papers. Both types of paper are composed primarily of paper fibers which in turn are mostly cellulose. Hence, cellulose, the fundamental material in paper, is the structural element upon which to focus this discussion about the useful life of paper. Chemically speaking, cellulose is the same regardless of source. Consequently, existing knowledge about book papers can be applied to examine the potential future for map papers.

Cellulose is a relatively stable chemical and it is resistant to most forms of deterioration. The causes of aging in paper, which is composed primarily of industrial cellulose, include the effects of 1) acid-catalyzed hydrolysis, 2) oxidative reactions, 3) photochemical attack, 4) biological attack, and 5) the effects of

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use on cellulose. The work of many investigators has demonstrated unequivocally that the principal cause of book stock loss in American libraries is the acid-catalyzed hydrolysis of the cellulose in paper fibers (1).

### Condition of Library Book Collections

The size of the problem which libraries face is summarized in Table 1 for 20th century publications. Table 1 indicates, based upon folding endurance data on paper in books from four different library collections, that most books published between 1900 and 1966 will be so weak by the time these books are 60 years old that they cannot be bound by the conventional library binding methods. The paper in these same books will probably become so embrittled by the time they are one hundred years old that their leaves will break if they are turned. Librarians can evaluate the va-

lidity of these statistical predictions on the basis of their professional experience. For example, the leaves of books published during the 1870's and 1880's regularly break when they are turned. Library binders are finding it difficult today to rebind the books published during World War I. Hence, Table 1 merely documents the fact that research libraries are falling surprisingly short of their goal to retain books for whatever period they are needed by patrons.

It is rather depressing to report that these findings and more were anticipated 50 years ago by Sudborough and Mehta (2). (Their article as well as the articles of Chapman (3) are recommended because they contain information on the deterioration of book collections that is not reported elsewhere.) In 1920, research techniques differed greatly and much of the experimental methodology we take for granted had not even been imagined. Nonetheless, Sudborough and

Table 1. Expected Life of Paper in Years from Date of Publication\*

Study No.	Origin of Books Studied	Books Published Between	No. of Books Tested	Expected Life in Years (with 95% Confidence Limits) Until	
				Leaves Are Too Weak To Rebind	Leaves Break When Turned
1	Lawrence Univ. Library, Appleton, Wisconsin	1923-1964	20	58 ± 28	107 ± 43
	The Newberry Library, Chicago, Illinois	1923-1964	20	54 ± 20	95 ± 31
	The Research Libraries, New York Public Library, New York, New York	1923-1964	20	34 ± 9	64 ± 17
2	The Newberry Library, Chicago, Illinois	1900-1966	231†	55 ± 9	88 ± 13
	The Newberry Library, Chicago, Illinois	1900-1966	231†	56 ± 9	98 ± 13
	The Newberry Library, Chicago, Illinois	1900-1966	231†	62 ± 12	99 ± 17
3	Discards from Libraries in the Richmond, Va. area	1900-1949	500	55 ± 7	90 ± 11

\* See Smith (4) (p. 37-46, 215-20) for methodology, discussion, and sources of data. The data for study no. 1 will be published in early 1972 as *Restaurator*, Supplement no. 2, "A Comparison of Paper in Identical Copies of Books from the Lawrence University, The Newberry, and The New York Public Libraries."

† Three leaves were tested in each of the 231 books. The first figure reports the expected life for leaves at the one third point, the second for leaves at the middle, and the third for leaves in the final signature of the book.

Mehta were able to verify that retention of folding endurance was the most sensitive physical test available to evaluate aging rates. They also verified that acid attack was the chief cause of deterioration over prolonged periods of time. The causal relationship of acidity to deterioration was demonstrated by soaking badly deteriorated acidic papers in water and then drying the extract into new paper. Accelerated heat aging studies (at 60° C for 30 days plus 30 days at 80° C with moisture maintained) demonstrated that acid-treated papers deteriorated more rapidly than their untreated counterparts.

### Effect of Storage Conditions

Sudborough and Mehta as well as Chapman also investigated the condition of identical copies of various titles in library collections located in different climates. The comparative data indicated that although detrimental quantities of acidic materials were introduced into paper during manufacture, even larger quantities developed in paper during library storage as a consequence of natural aging processes.

The combination of relative humidity and temperature was found to be a critical factor in the life of many books. Copies of books from libraries located in the cool Himalayan foothills were found to be in excellent condition while identical copies of these same books from libraries on the hot Indian plains were completely embrittled. The book stock of libraries which had been on the hot plains and then was moved to the cool foothills was in an intermediate condition, a finding which demonstrates the merit in air-conditioning existing collections. A persuasive argument for low relative humidity storage was established when Sudborough and Mehta found that books stored in Madras (hot and humid) were more deteriorated than books stored in Calcutta (hot with wet and dry seasons).

The effect of storage conditions (relative humidity and temperature) on the expected life of paper is given by Table

2. An expected life factor of 1.00 was assigned for an average annual relative humidity of 50% and temperature of 77° F. Then expected life factors were computed for other combinations of relative humidity and temperature on the basis of published data. The results indicate that air-conditioning should be considered as one choice when libraries desire to stretch the useful life of their collections. For example, the 34 year period from date of publication to non-rebindability, shown for books from The New York Public Library in Table 1, would change to 126 years ( $3.71 \times 34$ ) if the books were stored at 68° F and 30% relative humidity rather than at 77° F and 50% relative humidity.

Table 2 explains one reason why so many books published during the 15th, 16th, and 17th centuries still exist. It suggests that their future life will be shorter than their life to date. Libraries were not heated until relatively recent times. The average annual relative humidity and temperature inside library book stacks probably were similar to the humidity and temperature outside the library. In Europe, the relative humidity averages about 70%. The average temperature varies from about 50° F in the north to 59° F in the south. Thus, from Table 2, we can estimate (assuming that the practice of heating book stacks commenced about 1900) that present-day storage conditions in American libraries may have caused incunabula to age more during

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**Table 2. Expected Life Factors for Paper at Various Relative Humidities and Temperatures\***

Average Annual Storage Temperature	Average Annual Storage Relative Humidity					
	70%	50%	40%	30%	20%	10%
95° F	0.14	0.19	0.23	0.30	0.41	0.68
86° F	0.32	0.43	0.52	0.67	0.93	1.53
77° F	0.74	1.00	1.22	1.56	2.17	3.57
68° F	1.76	2.38	2.90	3.71	5.16	8.49
59° F	4.30	5.81	7.08	9.05	12.6	20.7
50° F	11.1	15.0	18.3	23.4	32.6	53.5

\* See Smith (4) (p. 54-57) for additional discussion and expected life factors.

the last 70 years than they aged during the previous 400 years.

The standard recommendation for relative humidity in libraries has become 50%, probably because paper has optimal physical strength around 50% R.H. This recommendation makes sense if one believes that books should have maximum durability today rather than as long a life as possible. The effect of relative humidity on maximum durability now and expected life is shown in Figure 1.

Figure 1 indicates that although paper is more durable at 50% relative humidity than it is at lower relative humidities, its permanence or expected life is greater when it is stored at lower relative humidities. In other words, conventional storage recommendations favor the present-day user, but they are detrimental to the interests of future patrons because they accelerate paper deterioration. Although paper does lose some of its physical strength at lower relative humidities, there is a wide range of relative humidity wherein paper remains more than strong enough for library purposes (5). In time, as depicted by Figure 1, paper stored at lower relative humidities (e.g., 20% to 30% R.H.) will come to be much stronger than paper stored at 50% relative humidity (6).

Unfortunately, maintaining a book collection through air-conditioning is expensive. The air-conditioning plant (for cooling and dehumidification) to

keep a 1,000,000 volume book stack at an annual average temperature of 68° F and 30% relative humidity instead of 77° F and 50% relative humidity might increase building costs by \$250,000 or \$0.25 per volume. The cost of maintaining and operating the facility might run \$100,000 annually or \$0.10 per volume per year.

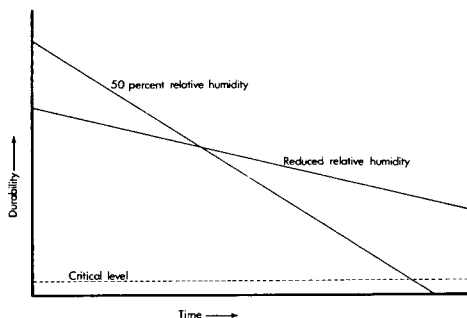
The accepted method for slowing the rate at which acidic papers deteriorate is deacidification, but accepted deacidification treatments use aqueous solutions which are harmful to whole books. Aqueous deacidification methods are slow and expensive. They require dismantling the books and treating each leaf separately. Librarians know these treatments are effective in prolonging book life but they also recognize that aqueous deacidification is out of the question because of its cost. Many books will not be available to patrons in the future because libraries cannot afford to spend \$50.00 to \$80.00 per book to deacidify and rebind them. For this reason, a new, low cost method of deacidifying paper and books has been developed and it is reported upon in "The Nonaqueous Deacidification of Paper and Books" (4, 7).

### Deacidification Treatments

Our understanding of the mechanisms of paper deterioration suggests that the deterioration of map papers is analogous to the deterioration of book papers. However, no empirical data exist upon which librarians may argue for the preservation of map collections. Therefore, the remaining objectives of this study are 1) to characterize the probable condition of map collections and 2) to estimate how map life could be extended by a deacidification treatment.

Essentially, the purpose of deacidification treatments is to reduce the probability that the cellulose in paper fibers will be attacked by acids. Deacidification treatments do not extend the life of paper indefinitely. They are believed to extend the potential life of many book papers two to three or more times.

Figure 1. Effect of relative humidity on the useful life of books



Most present-day deacidification treatments introduce more than a sufficient quantity of an alkaline chemical to neutralize the acidic components of paper. The excess is deposited to protect against the future development of an acidic condition. These deposits typically produce a water extract pH for the treated papers ranging from 8.0 to 10.5. Many deacidification treatments have been proposed but the treatments generally accepted by conservators fall into two groups: aqueous and nonaqueous treatments.

Aqueous deacidification processes typically consist of soaking paper in or spraying paper with a saturated solution made up of water as the solvent and a calcium or magnesium bicarbonate, car-

bonate, or hydroxide as the deacidification agent. Frequently, a substantial quantity of carbon dioxide is dissolved into the water because the carbon dioxide forms bicarbonates with the calcium or magnesium and increases their solubility. The background required by inexperienced librarians who wish to practice aqueous deacidification is presented by Smith (7) (p.65-70,124-5,226-32).

Nonaqueous deacidification processes consist of impregnating paper and books with a nonaqueous solution containing an organic solvent and an alkaline deacidification agent. Organic solvents are used because they wet paper more rapidly than water, have less swelling or distorting effect on paper, and are easier

Table 3. Some Properties of Selected U.S.G.S. Maps

Date Printed	Years Since Map Was Printed	pH*	Fiber Content†		No. of M.I.T. Double Folds at 1.0 kg Tension‡
1971	0	6.30	Rag	27%	152.3
			Bleached kraft softwood	42%	
			Bleached kraft hardwood	31%	
1968	3	6.00	Not tested		313.3
1962	9	6.05	Rag	58%	139.8
			Bleached sulfite softwood	trace	
			Bleached kraft softwood	42%	
			Bleached kraft hardwood	trace	
1957	14	6.00	Not tested		66.6
1953	18	6.00	Rag	66%	363.9
			Bleached kraft softwood	31%	
			Bleached kraft hardwood	3%	
1948	23	5.50	Not tested		168.5
1944	27	6.00	Not tested		89.1
1937	34	5.95	Rag	71%	145.5
			Bleached sulfite softwood	14%	
			Bleached kraft softwood	trace	
1932	39	5.70	Not tested		28.3
1927	44	5.20	Rag	50%	13.9
			Bleached sulfite softwood	50%	
1924	47	5.50	Not tested		61.4
1918	53	5.35	Rag	29%	1.6
			Bleached sulfite softwood	64%	
			Bleached kraft hardwood	7%	

\* See (8), T509su-68, "Hydrogen Ion Concentration (pH) of Paper Extracts—Cold Extraction Method," 1968, for test method.

† See (8), T401m-60, "Fiber Analysis of Paper and Paperboard," 1960, for test method.

‡ See (8), T423m-50, "Folding Endurance of Paper (M.I.T. Folding Endurance)," 1950, for test method. The portions of U.S.G.S. maps tested were chosen randomly and conditioned at 73° F, in 95%, 11% and 50% relative humidities for 24 hours respectively prior to testing. Values reported are the antilogarithms of the means of the logarithms of the folding endurance data for the test specimens.



to dry from paper than water. The solvent selected dissolves the deacidification agent and carries it throughout the article during treatment. The quantity of deacidification agent dissolved in the solution is selected 1) to neutralize the existing acidity and 2) to deposit an excess of alkaline buffering residue in the treated paper and books. This residue provides long-term protection against acid attack. The solution may be applied by immersion, spraying, brushing or other techniques provided the solution impregnates the article being treated. The solvent may be removed by any drying method that deposits the deacidification agent throughout the treated article.

### Properties of U.S. Geological Survey Maps

Twelve maps, ranging from 0 to 53 years of age, were donated by the U.S. Geological Survey (U.S.G.S.) for the experimental work conducted in this study. Some properties of the paper in these maps are presented in Table 3. The pH, fiber content, and folding endurance data suggest that these U.S.G.S. maps had excellent durability at the time of manufacture and would be expected to have a useful life substantially longer than that of the book papers discussed previously. This latter possibility was investigated by using a standard least squares statistical method (4) (p.39-40, 215-20) to regress the present-day folding endurance of the map papers on their age (taken as the number of years since printing). The results of the analysis, presented in Figure 2, suggest that paper from the average U.S.G.S. map will break halfway through the first fold at 1.0 kg tension 97.2 years after the map was printed. The 95% confidence limits for this estimate are  $\pm 7.0$  years. In other words, these results imply that the condition of paper in the average U.S.G.S. map will be equivalent to the "leaves break when turned" category of Table 1 about 100 years after the map is printed. The assumptions underlying this interpretation include the belief that the

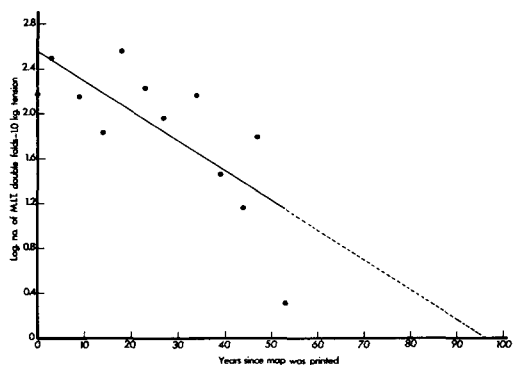
end point for loss of folding endurance on aging is similar at both 1.0 kg tension and 0.5 kg tension. (If a 0.5 kg tension had been used, it is believed that the expected life prediction would have been greater than 97.2 years but probably less than the upper 95% confidence limit of 104.2 years.) In any event, the prediction of  $97.2 \pm 7.0$  years for useful life is remarkably similar to the expected length of time that would be required for books to deteriorate to the point where their leaves would break when they are turned.

A lifetime for U.S.G.S. maps of 100 years probably is sufficient for almost all normal uses of these maps. Research libraries, however, also aim to serve indefinitely as libraries of record and their librarians may be interested in examining the possibilities for stretching out the useful life of map collections. The factors given in Table 2 can be used to evaluate the benefit that relative humidity and temperature control might bring to map libraries. For example, storage at 30% relative humidity and 68° F theoretically could increase the useful life of the average U.S.G.S. map paper 3.71 times, that is, from 97.2 years to 361 years.

### Effects of Deacidification Treatments

Although treatment costs have not been established for production scale operations, experience to date indicates

Figure 2. Folding Endurance of U.S. Geological Survey Maps



that nonaqueous deacidification treatments offer a less expensive method than air-conditioning does for extending the useful life of maps. Without knowledge of their properties, six of the twelve U.S.G.S. maps used in this study were selected to evaluate the potential benefit of deacidification to the life of maps. Four of these six maps were used to compare the merit of aqueous and nonaqueous deacidification treatments developed by this author. The other two maps were used to investigate the effect of the water, naturally present in paper, on a nonaqueous spray treatment.

The maps selected for use in the comparison of treatment study were cut in half again and again until 16 equal-sized rectangular pieces were produced. Four of these pieces, chosen at random, were treated by each of the methods described in Table 4. The M.I.T. folding endurance test specimens were cut in the machine direction (grain direction) of the map. Only eight test specimens could be cut from each of the four randomly selected pieces. These eight test specimens were placed one after another as they were cut into one of four groups. One of these four groups of eight test specimens was randomly selected for control purposes, that is, it was not aged. Each of the other three randomly selected groups was aged for five, or ten, or fifteen days at 105° C. After aging, the five, ten, and fifteen day test specimens were treated at relative humidities of 95%, 11% and 50% for 24 hours respectively to reduce dried-in stains and produce a consistent moisture content (9).

The M.I.T. folding endurance data were analyzed by a statistical method analogous to the method previously described by the author (4) (p.110, 112). In essence, a computation was made to determine the time required for the treated and untreated specimens to deteriorate to the point where they would break halfway through the first fold. Then, measures of treatment value were obtained by dividing the expected life-time of the treated papers by the expected life-time of the respective untreated standards. These standardized measures

Table 4. Comparison Study—  
The Deacidification Treatments

Treatment	Treatment Solution	Treatment Method	
		Immersion Time (minutes)	Spray
1	Standard; no treatment	0	—
2	Saturated solution of magnesium bicarbonate in cold Canada Dry soda water, air dried	20	—
3	7% Magnesium methoxide in methanol-trichlorotrifluoroethane (1-3 parts by volume) air dried (maps were conditioned at 50% R.H. before treatment)	8	—
4	Same as Treatment 3	—	Both sides until wetted thoroughly

Table 5. Comparison Study—  
The Value of Treatment Indices\*

Date Printed	Years Since Printed	Treatment No.†			
		1	2	3	4
1971	0	1.00	0.99	1.19	1.20
1953	18	1.00	1.08	1.21	1.59
1937	34	1.00	2.55	4.01	3.18
1918	53	1.00‡	2.49‡	1.58‡	1.27‡

\* The value of treatment indices is computed using M.I.T. folding endurance retention data obtained in an accelerated aging study. Folding endurance specimens cut in machine direction of paper. Folding endurance data analyzed essentially as described by Smith (4) (p.110, 112).

† See Table 4 for a description of the treatments.

‡ Tension of M.I.T. Folding Endurance Tester set at 0.5 kg tension because the paper in the U.S.G.S. map was greatly deteriorated. All other value of treatment indices are based upon folding endurance data obtained at 1.0 kg tension.

are presented in Table 5 as value of treatment indices.

Table 5 indicates that nonaqueous spray and immersion deacidification treatments using magnesium methoxide as the deacidification agent produce results equal or superior to those obtained by an aqueous process using magnesium bicarbonate. The results also indicate that near-neutral papers (e.g., the 1971 map) have greater resistance to accelerated heat aging than the more acidic papers do (e.g., the 1937 map). A partial explanation for the variations between the value of treatment indices of the nonaqueous deacidified papers may be that only 32 M.I.T. folding endurance specimens were available per treatment to evaluate the effect of deacidification. Nonetheless, the effect of deacidification, from the statistical standpoint, was strong. The one-tailed Student's *t* statistics comparing the slopes of the untreated to treated regression lines were significant at the 5% level for all but the 1971 map. However, it is possible that the effect of deacidification would become significant for the paper in the 1971 map because the paper probably will become more acidic as a consequence of the acidic reaction products which develop in paper during natural aging.

The two maps selected to evaluate the effect of water naturally present in paper on nonaqueous deacidification treatments were cut into 16 rectangular sections as described above. These sections were randomly divided into four groups and one of the four treatments described in Table 6 was applied to each group. The amount of water taken up by the maps during the different relative humidity treatments was not determined. The preparatory procedure was first exposure for 24 hours at 95% relative humidity, second exposure for 24 hours at 11% relative humidity, and third exposure for 24 hours at 50% relative humidity. After exposure, the samples were maintained at the respective relative humidities until they were sprayed with the nonaqueous deacidification solution. Then, the samples were air-dried and the

**Table 6. Variation in Relative Humidity Study—The Deacidification Treatments**

Treatment	Treatment Solution	Relative Humidity of Paper When Sprayed
1	Standard; no treatment	—
2	7% Magnesium methoxide in methanol-trichlorotrifluoroethane (1-3 parts), air dried	11%
3	Same as Treatment 2	50%
4	Same as Treatment 2	95%

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**Table 7. Variation in Relative Humidity—The Value of Treatment Indices\***

Date Printed	No. of Years Since Printing	Treatment No. (See Table 6)			
		1	2	3	4
1962	9	1.00	2.33	1.79	2.21
1927	44	1.00	1.28	2.25	1.57

\* The value of treatment indices is computed using M.I.T. folding endurance retention data obtained in an accelerated aging study. Folding endurance specimens cut in machine direction of paper. Folding endurance retention data analyzed essentially as described by Smith (4) (p.110, 112).

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M.I.T. folding endurance specimens were cut. After aging, the five, ten and fifteen day test specimens were treated again at relative humidities of 95%, 11% and 50% for 24 hours to reduce dried-in strains and produce a consistent moisture content.

The value of treatment indices presented in Table 7 imply that the water naturally contained by air-dry paper is not a critical factor when single sheets of paper are deacidified. This implication is supported by a statistical analysis (based on Student's *t* statistics for the slopes of the regression lines) which indicates that the effect of all the deacidification treatments was significant at the 1% level. Although these findings indicate that librarians may ignore the practice of drying maps before deacidifying them by a nonaqueous spray process using magnesium methoxide, the data are

insufficient to establish the relative humidity at which optimum results may be obtained.

Certain properties of the 1937 and the 1962 maps were investigated after aging at 105° C for fifteen days. The cold extraction pH value and buffering capacity values presented in Table 8 were obtained using a one gram sample of paper taken from the M.I.T. folding endurance specimens after they were tested. Both the pH determination and buffering capacity titration were carried out on the same sample extract. The function of buffering capacity is to evaluate the degree of protection that the deacidification treatments produce when an alkaline residue is deposited. The pH values are not satisfactory for this purpose because they only indicate the balance between the hydrogen and hydroxyl ions. The buffering capacity (reported in milliequivalents— $\times 100$ )—of acid or alkali required to change the pH of a 70 milliliter extract of one gram of paper by

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**Table 8. Some Properties of the 1937 and 1962 U.S.G.S. Maps After Heat Aging**

Year Printed	Treatment No. (See Tables 4, 6)	Properties After Aging at 105° C for 15 Days		
		pH*	Folding Endurance†	Buffering Capacity‡
1962	1	6.00	49.9	0.4
	2	10.50	84.2	7.0
	3	10.48	84.7	10.8
	4	10.50	79.5	7.3
1937	1	5.80	12.5	0.3
	2	8.08	56.5	1.0
	3	10.42	73.2	5.7
	4	10.50	58.8	6.4

\* See (8), T509su-68, "Hydrogen Ion Concentration (pH) of Paper Extracts—Cold Extraction Method," 1968, for test method.

† See (8), T423m-50, "Folding Endurance of Paper (M.I.T. Folding Endurance)," 1950, for description of test procedure. Values reported here are the antilogarithms of the means of the logarithms of the test specimens after aging.

‡ Buffering capacity is reported as the quantity of acid or alkali (in milliequivalents  $\times 100$ ) required to change the pH of a 70 milliliter extract of one gram of paper by one pH unit at a pH of 7.

one pH unit at a pH of 7) measures the ability of a paper to resist changes in pH. In other words, the pH value is a measure of the current acid-alkali relationship within a paper while the buffering capacity evaluates the ability of a paper to maintain this relationship. Hence, the results may be interpreted as indicating 1) that both the aqueous and nonaqueous treatments are effective in deacidifying paper, and 2) that the nonaqueous treatments provide much more protection against the development of harmful acidity in the future.

### Acknowledgments

This investigation was made possible through assistance from and facilities made available by the Graduate Library School of The University of Chicago, Chicago, Illinois; the Chicago Paper Testing Laboratory, Chicago, Illinois; the Graphic Conservation Department of R.R. Donnelley and Sons Co., Chicago, Illinois; and The Institute of Paper Chemistry, Appleton, Wisconsin. The author is also grateful to the U.S. Geological Survey, Washington, D.C., for selecting and donating the maps studied in this investigation.

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5. See W. Gally / Cellulose-Water Relationships. In *Pulp and Paper Science and Technology*, Vol. 1, *Pulp*, edited by C. E. Libby, McGraw-Hill Book Co., 1962, p.444, for a graph of burst, tensile, tear, and folding endurance properties of paper over the range of 20 to 80% relative humidity.
6. Some conservators, noting that leather, parchment, and vellum as well as other bindings are dimensionally sensitive to fluctuations in relative humidity, have expressed concern about detrimental side effects from storage at lower relative humidities. The potential benefits probably are analogous to those described above for paper. Obviously, since bindings are thicker and less able than paper is to adjust for dimensional change, appropriate attention must be given to allow for strain release within the binding. The proper practice is to effect relative humidity changes gradually, at a rate slow enough that the moisture content of the book changes uniformly. It may also be necessary to include conditioning treatments for purposes of insuring that bindings composed of leather, parchment, and vellum remain soft and pliable.
7. The author initially described his Chicago Process in "Guidelines for Preservation," *Special Libraries* 59: p.346-52 (May-June 1968). His article "New Approaches to Preservation" containing additional information appeared in the *Library Quarterly* 40: p.139-71 (January 1970) and in Reference 1(b) p.139-71. Two U.S. patent applications covering novel aspects (deacidification is one aspect) of the Chicago Process have been allowed and will issue as patents in 1972.
8. Technical Association of the Pulp and Paper Association. *TAPPI Standards and Suggested Methods*. New York, Technical Association of the Pulp and Paper Industry, various dates.
9. Some brownish component of the brown contour line on certain maps was soluble in water. A sufficient quantity of this component was transported during wetting and drying to cause staining. Such staining also occurred on the specimens of Treatment 1 as a consequence of the 95% relative humidity treatment. (It is believed this type of staining could be eliminated under controlled drying conditions.) No effect was observed with the other printing inks on the maps.

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# Technical Librarians and the National Standard Reference Data System

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■ Because technical librarians often serve as intermediaries between National Standard Reference Data System publications and their users, the Office of Standard Reference Data surveyed by mail 2,700 selected members of the Special Libraries Association to check their knowledge and use of NSRDS publications as well as to learn the problems they encounter in providing the publications or their data to their users. On the basis of a 22% response, the survey results showed that almost 88% of the responders have heard of the NSRDS

and that about 59% have indicated that their libraries carry NSRDS publications, but less than 44% of the responders have used an NSRDS publication; however, 94% of this latter percentage (the users) indicated that they have found NSRDS publications very or to some extent useful. The survey revealed that distribution and dissemination procedures of NSRDS publications need improvement and that better ways need to be found to acquaint both librarians and users with the data and information contained in NSRDS publications.

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**THE NATIONAL** Standard Reference Data System (NSRDS) is a nation-wide program whose mission is to provide the U.S. technical community maximum access to critically evaluated reference data. In its eight years of existence, the NSRDS has made a significant impact on critical data evaluation in this country and abroad. The program has established more than 25 data centers in a number of high-priority technical areas. These centers together with some smaller projects have generated approximately 50 reference data compilations and an equal number of bibliographies and ancillary publications within the following technical subject areas: Atomic and Molecular Data, Thermodynamic and

Transport Properties, Chemical Kinetics, Solid State Data, Nuclear Data, and Colloid and Surface Properties. Nearly all of the publications have been printed by the U.S. Government Printing Office and sold by the Superintendent of Documents. Individual volume sales have varied from several hundred to more than two and one-half thousand. In addition to distribution by these sales, the Superintendent of Documents and the National Bureau of Standards have dispensed between six and eight hundred copies of each publication to depository and other libraries with whom the National Bureau of Standards has an exchange agreement.

From time to time information has

reached the Office of Standard Reference Data (OSRD), the program management vehicle within the NBS of the National Standard Reference Data System, that difficulties are experienced by persons who wish to locate and use publications of the program. To check this experience, personnel of the Office of Standard Reference Data, on visits to university and other science and technical libraries, sometimes take the occasion to ask for a publication of the National Standard Reference Data System series. In the library of a prominent northeastern university, a member of the staff of the OSRD, consulting the library catalog cards, found that the volumes of the NSRDS series of publications were listed by their series number but not otherwise identified. That person found it difficult to obtain a particular NSRDS publication from a librarian of the university though he had specifically identified it with full bibliographic detail.

### **Purpose of Survey**

Because this experience has been variously repeated, the Office of Standard Reference Data thought it might be informative to survey science and technical librarians who often are the logical intermediaries between the NSRDS publications and their users. The survey was to have the following objectives:

1. To check the knowledge and use of NSRDS publications by technical librarians;
2. To learn the problems librarians encounter in providing NSRDS publications to the intended users;
3. To serve as a means for acquainting technical librarians with the program if it were unknown to them;
4. To provide information that will help assess the impact the program has both on intended users and the intermediate custodians of the publications; and
5. To obtain feedback in the form of comments and suggestions that might help improve the program's services.

### **The Survey Procedure**

With these objectives in mind, a survey questionnaire was constructed to be directed to all members of the Special Libraries Association in the seven Divisions deemed within the possible scope of the NSRDS. Specifically, persons in the following Divisions were surveyed: Chemistry, Science and Technology, Nuclear Science, Metals and Materials, Engineering, Aerospace, and Petroleum. Approximately 2,700 survey questionnaires were mailed out over a three week period in July 1970, to all members of those seven Divisions as listed in the 1969/70 *Directory of the Special Libraries Association*. A transmittal letter was sent with the survey questionnaire. By the cut-off date, Sep 10, 1970, 604 returns were received, of which 20 were considered non-responsive. These 20 non-responsive returns were either from retirees or from persons who indicated they were not employed in an activity pertinent to the survey. The percentage of returns was 22%. Table 1 is a tabulation of the answers to Questions 1 through 11, and to Question 13. Table 2 contains tabulations of replies to Question 12 and to a previous survey noting physical and chemical properties of substances most often sought in the literature. Table 3 is a tabulation of NSRDS publications identified by responders as being used by the organizations they represent, as answered in Question 4.

### **Discussion of Result**

While some satisfaction might be obtained from the data in Table 1 showing that 513 (87.8%) of the special librarians responding to the questionnaire declare themselves as either well acquainted with or having knowledge of the NSRDS program, other data provide information of a less satisfying nature. For example, only 301 (58.6%) of the 513 have indicated that their libraries carry NSRDS publications. (Included in the 513 total are 50 librarians in depository libraries which automatically receive NSRDS publications.) Further, only 224 (43.6%) who know about the program have used

**Table 1. Tabulation of Replies to Questions 1-11 and 13 of Questionnaire for Scientific and Technical Librarians**

**1. Personal Knowledge of NSRDS?**

Never Heard of It	Have Heard of It	Well Acquainted With It	Non Responsive	Total Counted
71	343	170	20	604
Total No. of Responses*				584

**2. How Acquainted with NSRDS?**

NSRDS Mail Brochure	Word of Mouth	Library of Congress Cards	Professional Literature	No Answer
181	86	14	330	20
Total Counted	Total No. of Responses*			
513	611			

**3. Have Seen NSRDS Publications?**

Yes	No	Non Responsive	Total Counted	Total No. of Responses*
371	135	7	513	506

**4. Have Used NSRDS Publications?**

Yes	No	Non Responsive	Total Counted	Total No. of Responses*
224	134	13	371	358

**5. Does Your Organization Library Carry NSRDS Publications?**

Yes	No	Non Responsive	Total Counted	Total No. of Responses*
301	196	16	513	497

**6. Type of Bibliographic Control in Library?**

Cataloged As a Collected Set	Cataloged by Author or Title	Not Cataloged	Other	Non Responsive
109	83	34	76	13
Total Counted		Total No. of Responses*		
301		302		

**7. How NSRDS Series Shelved?**

By Collected Set	With Other U.S. Gov. Publications	Other	Non Responsive	Total Counted
121	86	99	16	301
Total No. of Responses*				
306				

**8. How NSRDS Series Circulated?**

Open Shelf	Reference	Other	Non Responsive	Total Counted	Total No. of Responses*
184	83	45	11	301	312

**9. How Informed of Availability of NSRDS Publications?**

NSRDS Mailing	LC Catalog Cards	Supt. Doc. Mailing	Monthly Catalog of U.S. Gov. Publications	
146	4	188	213	
Request by Users	Other	Non Responsive	Total Counted	Total No. of Responses*
84	48	115	513	683

**10. Do You Do Literature Searching for Your Organization?**

Yes	No	Non Responsive	Total Counted	Total No. of Responses*
386	106	21	513	492

**11. Do You Help in Locating Data?**

Yes	No	Non Responsive	Total Counted	Total No. of Responses*
452	32	29	513	474

**13. Usefulness of NSRDS Publications in Bibliographic Searching and/or Locating Information?**

Very	Some	Little	Non Responsive	Total Counted	Total No. of Responses*
46	165	61	29	301	272

\* More than one answer was possible in these questions.



an NSRDS publication. It is gratifying that 211 (94%) of those who have used the NSRDS publications have found them very or to some extent useful. Very few NSRDS titles, however, could be recalled by respondents. The most any single publication was recalled was 29 times and only 8 publications were recalled more than ten times. An examination of title listings of NSRDS publications (see Table 3) suggests that the overly long and highly technical titles cause recall difficulty. The title recalled most had the least number (5) of words—*Thermal Conductivity of Selected Materials*. The title not recalled at all had 21 highly technical words including mathematical expressions—*Tables for the Rigid Asymmetric Rotor: Transformation Coefficients from Symmetric to Asymmetric Bases and Expectation Values of  $P^2_{2z}$ ,  $P^4_{2z}$ , and  $P^6_{2z}$* .

The intent of Questions 6 and 7 was to check whether NSRDS publications were adequately cataloged and shelved for ready retrieval. While it is reassuring to find that only 34 of 301 libraries indicated that they did not catalog NSRDS publications, the other responses to these two questions did not provide enough specificity to show whether procedures were adequate for ready retrieval, since, for example, catalog cards could very well list the publication by NSRDS number without any further bibliographic detail, as mentioned earlier. Within our own NSRDS Library, NSRDS publications are cataloged as follows: **U.S. National Bureau of Standards. National standard reference data system series.** The NBS Library also catalogs each publication under individual authors, with full bibliographic information on both catalog card listings. Because Question 6 was not designed with precision, it is difficult to know from the responses how adequate the catalog details are within the surveyed libraries for the purposes of ready retrieval.

Similarly, the wording of Question 7, which called for shelving arrangements, did not elicit an adequately informative response to indicate just where within the shelving classification scheme of the

**Table 2A. Properties of Substances Sought Most in the Literature as Noted by 381 Special Libraries Association Survey Respondents**

Solubilities	208
Melting Points	203
PVT	194
IR Spectra	190
Conductivities	185
Boiling Points	173
Viscosities	173
Colloid & Surface Properties	133
Refractive Indexes	123
Crystallographic Data	122
UV Spectra	117
Heats of	112
NMR	102
Nuclear Data	100
Kinetic Rate Data	98
Ionization Constants	92
Other	55

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**Table 2B. Properties of Substances Sought Most in the Literature by American Chemical Society Survey Respondents**

Boiling Point	2990
Melting Point	2767
Solubilities	2495
Infrared Spectra	2126
Thermodynamic Properties: Heats of, Conductivities	1786
UV	1449
NMR	1021
Physical Properties: Specific Gravities & Densities	910
Mechanical Properties	728
Free Energies	721
Equilibrium Constants	679
Viscosities	660
Heat Capacities	638
Refractive Indexes	606
Chromatographic Data	591
Toxicity	449
Thermal Conductivity	418
Molecular and Atomic Weights	402
Thermochemical Data	333
Phase Relations	323
Corrosion Data	312
Crystallographic Data	281
PVT Data	276
X-ray Data	253
Kinetic Rate Data	228
Chemical Reaction Data	226
Optical Rotation Data	224
Stabilities	212
Entropies	204
Visible Spectra	200
Electric Resistivity Data	177
Diffusion Data	177
Azeotropic Data	158
Structure Data	146
Mass Spectra	141
Decay Data	126
Absorptivity	101

**Table 3. Specific Titles or Numbers of NSRDS Publications Recalled by All Respondents**

Title Recalled	Number of Times Mentioned	Title Recalled	Number of Times Mentioned
NSRDS-NBS 1, National Standard Reference Data System—Plan of Operation	9	NSRDS-NBS 18, Critical Analysis of the Heat-Capacity Data of the Literature and Evaluation of Thermodynamic Properties of Copper, Silver, and Gold from 0 to 300°K	7
NSRDS-NBS 2, Thermal Properties of Aqueous Uni-univalent Electrolytes	5	NSRDS-NBS 19, Thermodynamic Properties of Ammonia as an Ideal Gas	6
NSRDS-NBS 3, Sec. 1, Selected Tables of Atomic Spectra, Atomic Energy Levels and Multiplet Tables, Si II, Si III, Si IV	12	NSRDS-NBS 20, Gas Phase Reaction Kinetics of Neutral Oxygen Species	4
NSRDS-NBS 3, Sec. 2, Selected Tables of Atomic Spectra, Atomic Energy Levels and Multiplet Tables, Si I	6	NSRDS-NBS 21, Kinetic Data on Gas Phase Unimolecular Reactions	1
NSRDS-NBS 4, Atomic Transition Probabilities, Vol. I, Hydrogen Through Neon	6	NSRDS-NBS 22, Atomic Transition Probabilities, Vol. II, Sodium Through Calcium	4
NSRDS-NBS 5, The Band Spectrum of Carbon Monoxide	6	NSRDS-NBS 23, Partial Grottrian Diagrams of Astrophysical Interest	2
NSRDS-NBS 6, Tables of Molecular Vibrational Frequencies, Part 1	13	NSRDS-NBS 24, Theoretical Mean Activity Coefficients of Strong Electrolytes in Aqueous Solutions from 0 to 100°C	4
NSRDS-NBS 7, High Temperature Properties and Decomposition of Inorganic Salts, Part 1. Sulfates	13	NSRDS-NBS 25, Electron Impact Excitation of Atoms	7
NSRDS-NBS 8, Thermal Conductivity of Selected Materials	29	NSRDS-NBS 26, Ionization Potentials, Appearance Potentials, and Heats of Formation of Gaseous Positive Ions	8
NSRDS-NBS 9, Tables of Bimolecular Gas Phase Reactions	8	NSRDS-NBS 27, Thermodynamic Properties of Argon from the Triple Point to 300 K at Pressures to 1000 Atmospheres	6
NSRDS-NBS 10, Selected Values of Electric Dipole Moments for Molecules in the Gas Phase	6	NSRDS-NBS 28, Molten Salts: Vol. 2, Section 1. Electrochemistry of Molten Salts: Gibbs Free Energies and Excess Free Energies from Equilibrium-Type Cells	9
NSRDS-NBS 11, Tables of Molecular Vibrational Frequencies, Part 2	12	NSRDS-NBS 29, Photon Cross Sections, Attenuation Coefficients, and Energy Absorption Coefficients from 10 keV to 100 GeV	6
NSRDS-NBS 12, Tables for the Rigid Asymmetric Rotor: Transformation Coefficients from Symmetric to Asymmetric Bases and Expectation Values of $P_x^2$ , $P_y^2$ , and $P_z^2$	0	NSRDS-NBS 30, High Temperature Properties and Decomposition of Inorganic Salts, Part 2. Carbonates	9
NSRDS-NBS 13, Hydrogenation of Ethylene on Metallic Catalysts	5	NSRDS-NBS 31, Bond Dissociation Energies in Simple Molecules	4
NSRDS-NBS 14, X-Ray Wavelengths and X-Ray Atomic Energy Levels	5	NSRDS-NBS 32, Phase Behavior in Binary and Multicomponent Systems At Elevated Pressures: n-Pentane and Methane-n-Pentane	0
NSRDS-NBS 15, Molten Salts: Vol. 1, Electrical Conductance, Density and Viscosity Data	14		
NSRDS-NBS 16, Thermal Conductivity of Selected Materials, Part 2	19		
NSRDS-NBS 17, Tables of Molecular Vibrational Frequencies, Part 3	13		

library the NSRDS publications were located. Data on circulation procedures provided in responses to Question 8 are more satisfying: 267 of 301 librarians indicate their libraries make NSRDS publications available through the usual open shelf and reference shelf channels.

The OSRD has been interested in the experience of depository libraries with NSRDS publications since they receive them automatically. Responses from librarians at depository libraries were culled. There were 50 such libraries represented. Table 4 presents a breakdown

**Table 4. Depository Libraries' Response to Questionnaire**

Depository Library Bibliographic Control	
Catalogued as a collected NSRDS Set	16
Catalogued by individual author or title	4
Catalogued with Gov. Publications, etc.	12
No Response	3
How Shelved	
As NSRDS Set	18
With Other Gov. Publications	16
Other	5
No Response	2
How Circulated	
Open Shelf	20
Reference	11
Other	5
No Response	3

Total of 37 persons answered these questions.

of responses.\* There are no surprises in the data. Percentage of acquaintanceship and use is slightly less than the SLA group as a whole: 84% compared to 87.8% and 43.6% compared to 45%, respectively. What might, off hand, be disturbing to OSRD is that libraries receiving NSRDS publications automatically and without cost do not put them to more use. A question to be examined is, should we expect more usage from depository libraries than from those which take a positive action to purchase NSRDS publications? A question of more somber significance for us to ponder is, *Why don't librarians who frequently do literature searching and more frequently need to locate specific information and data put NSRDS publications to greater use?*

Perhaps the answer lies in considerations related to the replies to Question 12, "Which physical and chemical properties of substances librarians seek most in the literature?" It is logical to assume that at least the 381 of the 584 responsive librarians who noted in their answer the chemical and physical properties of substances they seek in the literature are in activities within the scope of the mission of the NSRDS.† It is therefore disappointing to find in response to Questions 10 and 11 that while 386 responding special librarians do literature searching and 452 help in locating specific data and information, only 224 librarians have used NSRDS publications. The poignancy is double edged since 94% of the users have found NSRDS publications very or to some extent useful. The reason for the limited usage, it is logical to speculate, is that NSRDS publications do not now cover the full

spectrum of substances and their properties; therefore, it is unlikely that the full range of the technical community would find use for the modest range of properties covered in the present NSRDS publications. Further, as we shall see in a moment, some of the more sought after properties data, e.g., melting points, boiling points, and solubilities, are not now covered by NSRDS publications.

Table 2 lists the properties of substances most often sought in the literature in the present survey (Section 2A) and in a 1965 survey of American Chemical Society members (Section 2B). It is interesting to see a very strong correlation between the two surveys, even though one queries technical librarians and the other chemists. The category of colloid and surface properties which did not appear prominently in the 1965 survey commands importance in the present instance. The explanation, one might surmise, is that these properties are important to pollution control and are now receiving much greater attention.

### Survey Comments and Suggestions

The survey questionnaire asked for comments and suggestions. The OSRD was gratified that many comments praised the NSRDS program and that there was not a single remark derogatory to the program and its mission. A number of interesting suggestions was received. Several responders suggested a yearly cumulative index. There were a few unfavorable comments on the NSRDS numbering system—the assigning of separate NSRDS numbers to succeeding sections of data on the same subject matter—such as, NSRDS-NBS 6, 11 and 17, *Tables of Molecular Vibrational Frequencies*, by T. Shimanouchi. On the other hand, we use the same NSRDS number for the three separately published sections of NSRDS-NBS 3, *Selected Tables of Atomic Spectra*, by Charlotte E. Moore. This inconsistent approach to numbering is confusing not only to the users but also to professional librarians. (A cumulative author and

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\* While there are 537 Depository Libraries receiving NSRDS publications, we had no way of determining how many SLA Librarians received the survey questionnaire and what the percentage of response, therefore, was from depository libraries.

† One has reason to assume a larger number are in activities within the scope of the NSRDS, since 435 responders asked to be added to the mailing list of the program.

material-property index would be helpful, as has been suggested.)

There were suggestions for extending the coverage and making current data, not as yet published, available by some sort of request service. The OSRD has an information services operation and, at times, has provided coverage of available unpublished data. The Information Service provides replies to inquiries to the extent of its resources.

There were a number of comments which confirmed the problems motivating the survey; the following two are excerpted as examples:

*NSRDS publications are received as depository items by the university. They are not kept in the Science Library, but are shelved with other government publications; hence, they receive little use, because students and faculty are not aware of their existence.*

*This questionnaire has prompted us to look further into availability and use. We find information about NSRDS a little difficult to locate in our professional literature and availability of critical data is highly important to research level scientific technical activities on this campus.*

A number of respondents indicated a need for better promotion and distribution of NSRDS publications. Comments offered ample evidence of difficulty in ordering and obtaining the publications, even if they were known to the librarian.

One of the most thoughtful comments came from a librarian from a graduate School of Librarianship:

*It is my conclusion and that of my students that the NSRDS is an important means of providing scientists and engineers with standard data. We believe that something had to replace the International Critical Tables, which is still used although outdated. We are finding, however, that the NSRDS series is ending up in government document collections where it is less accessible than the International Critical Tables or the McGraw-Hill Handbooks. Perhaps librar-*

*ians should be encouraged to put the series in the reference collection despite the fact that the format makes it sort of unsuitable for a reference collection, where one expects to find hard cover durably bound volumes. Many libraries are not ordering LC cards for the individual items in the series. This means that the items are not finding their way into the catalogs of many libraries across the land. This is unfortunate because then the engineer has only the Monthly Catalog of U.S. Publications as the Key to this collection. It upgrades the value of the Monthly Catalog but it limits access to this collection to that tool.*

*Format. Publications have varied in physical dimensions. Not much, but enough to destroy the idea of a uniformly published series. Color of covers is not always the same. Two rather dreary colors are currently used; they don't seem to serve a useful purpose. If you wish to color code, as NASA does in its formal technical report series, why don't you select colors for the different categories of physical properties. I believe you have eight different categories. This would serve as a convenient finding device for the user, including the information scientist and the librarian.*

*Eventually, after the series has grown to some dimensions, it might be considered worthwhile to republish by category something like the old International Critical Tables. And have McGraw-Hill publish it. Then I'm sure it would find its way into the reference collections of science-engineering libraries and information centers.*

A number of respondents used the Comments section to ask for specific help in the form of requests for data or information. Replies to these requests were provided. Further, all comments were carefully culled and where a response was called for, a response was sent. One of the suggestions from a responder requested the availability of standing orders for all new publications coming from the program. The OSRD is exploring with the National Technical

Information Service the possibility for making NSRDS publications available on standing order basis through NTIS.

### Conclusions

The returns have provided the information set in the objectives of the survey:

1. If the proportion of responders is representative of scientific and technical librarians, most—87.8%—minimally have heard of the NSRDS program.

2. Slightly more than half of the libraries contain among their holdings some NSRDS publications.

3. Users find NSRDS publications helpful in meeting their data requirements.

4. There is some evidence that holding libraries do not catalog and shelve NSRDS publications so that they can be clearly identified and retrieved.

5. Nor, generally, are circulation procedures conducive to easy browseability of NSRDS publications.

6. Titles of the NSRDS publications, while specific and indicative, are far too long and awkward for purposes of recall and bibliographic control.

7. There were 435 librarians who asked to be added to the program's mailing list. This seems to demonstrate that the survey created and furthered interest in the NSRDS.

8. Worthwhile feedback to the program was provided in the form of comments and suggestions.

9. This survey, as did the earlier ACS one, confirmed the judgments made by the OSRD in giving priority to the areas of Thermodynamic and Transport Properties and to Atomic and Molecular Properties compilation activities.

10. It is interesting that in this survey, as in the previous ACS one, properties data related to melting points, solubilities, and boiling points were among the data most sought in the literature, but the OSRD, because of fund limitations, has not supported compilation projects in these areas.

11. Colloid and surface properties data have moved up considerably in interest activity since 1965.

12. Depository Libraries automatically receiving NSRDS publications generally have the same cataloging and shelving procedures as other special libraries which purchase the publications.

13. Distribution and dissemination procedures for NSRDS publications could be improved.

14. Better ways must be found to acquaint both librarians and users with the data and information capabilities of NSRDS publications.

### Recommendations

We would like to suggest to technical librarians (whose organization's subject interest is within the scope of the NSRDS) that they:

1. Investigate the NSRDS as a source of reliable reference data.
2. Make this source readily available to the users of your library.
3. Send the OSRD comments and suggestions on how the NSRDS might help meet the data requirements of their users.

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## A Brief Note on Documentation Activities in Korea

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FROM ITS EARLY DAYS, Korea had been very fortunate in many ways in the development of culture and knowledge.

Koreans discovered, early in history, the paper manufacturing process that provided a durable and usable material for recording the writings of earlier authors.

It was Korean inventors who developed the first printing press system using movable metallic type produced by the metal casting system. This system was originated in 1234 AD some 210 years earlier than Gutenberg's invention of a similar system in Europe. This invention enabled the mass production of written documents.

The country has been the home of many authors and skilled artisans. The General Catalogue of Korean Ancient Books published recently by the Korean National Assembly Library notes that approximately 12,000 authors are known to have existed during 1,400 years between 500 and 1900 AD.

In earlier days a primary educational organization called the *Seodang* was established in most villages throughout the country. A secondary educational system called *Hyangyo* existed in each administrative district and had the responsibility to receive, deposit and preserve books, manuscripts and other cultural items and to open their facilities for use by authors and researchers.

The earlier Korean governments established organizations securing the preservation of precious books. These structures were called *Sago* which means "Storehouse of Historical Literature." They were constructed in out-of-the-way

places to prevent destruction from natural calamities and warfare.

It is regrettable that early favorable elements for the development of sciences could not be continued and be developed into modern day systems due to unfortunate domestic circumstances and foreign intervention that interrupted such developments.

### Situation Today

As a result of those circumstances that slowed progress in economic and social development, Korea is now faced with reconstruction of its overall economy to regain its prior status as an Asian power.

The Republic of Korea, however, has started to recover the vitality of its earlier days. The Korean nation now has the confidence, and its people will soon be able to enjoy a prosperous future in common with the more developed nations of the world.

Stagnation was the general picture of Korean documentation activities prior to the First Five-Year Economic Plan-

Seodang	書堂
Hyangyo	鄉校
Sago	史庫

ning Program. Even now, KORSTIC, the Korea Scientific and Technological Information Center, for example, has only one-tenth of the budgetary scale and only one-tenth of the service load as compared to the Japan Information Center for Science and Technology.

However, in view of the rapid progress in economy and science currently being experienced in Korea, it is obvious that the demand for information services will increase at a faster rate. The importance of the information services is now generally recognized by the nation and by potential users. The demand for KORSTIC's services will increase as the capabilities presently available become more widely publicized in the near future.

By the end of 1976, the target year of the Third Five-Year Plan for Korea's Economic Development, KORSTIC will be subscribing to 5,000 titles of current journals, will be able to process 300,000 items of information and will be able to provide 100,000 cases of reprography service annually. By 1976, KORSTIC's services will be computerized.

### KORSTIC Services

Services rendered by KORSTIC are divided into 7 broad categories. They are:

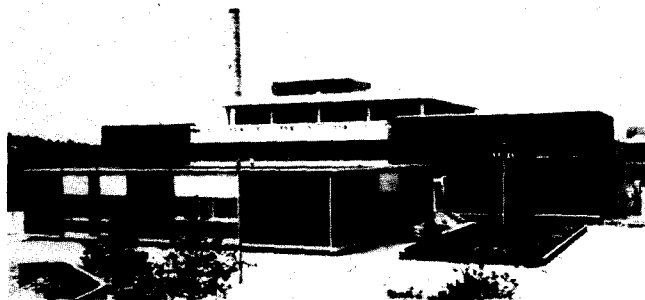
1. Current Awareness Service,
2. Literature Searching Service,
3. Recopy Service,
4. Referral and Consultant Service,
5. Library Service,
6. Dissemination of Documentation Technique Service, and
7. International Exchange Service.

1. *Current Awareness Service* is provided through: a) Publication of indexes to current scientific and patent literature. These indexes are divided into six types, four published monthly and two published semi-monthly; b) Distribution of reproduced table of contents sheets of journals, mainly to college and university professors; c) Publication of *Journal of Technology*, a bi-monthly periodical of scientific and technological highlights from overseas, distributed mainly to industrial organizations and high school teachers of scientific subjects.

2. *Literature Searching Service* is provided upon users' requests. The purpose of this service is to give information on results of previous researches in order to help Korean scientists and engineers add others' findings to their own research works, and to prevent duplication of works in the same field.

3. *Recopy Service* is rendered upon request. There are about 2,200 requests per month. In 1970, there were about 1,400 requests per month. In 1970, requests were from: 1) Industries—47% out of 17,000 cases, 2) Research Institutes—26%, 3) Colleges and Universities—11%, 4) Individual Users—11%, 5) Miscellaneous Organizations—5%.

4. *Referral and Consultant Services*. Referral service is performed to inform the customers of further materials available at the other organizations throughout the country. In order to facilitate this service, KORSTIC compiles a union catalog of foreign scientific journals held by various types of libraries in Korea. For this service we are also going to have an information file of scientists and engineers in Korea.



Headquarters building of Korea Scientific & Technical Information Center (KORSTIC) in Seoul. The Center also has a branch in Pusan.

Consultant service is provided by our staff who visit organizations and provide advice on how to organize information services in their firms.

5. *Library Service* is rendered by providing reading space, circulating materials, and providing reference works.

6. *Dissemination of Documentation Technique Service* is provided through: Holding workshops in general information management several times every year; holding symposiums on information management for specific fields; publishing a journal, *Documentation and Information Service*, bi-monthly.

7. *International Exchange Service*. For the international exchange service, we publish two kinds of English abstracts of Korean scientific works: 1) Korean Scientific Abstracts (KOSAB), a bi-monthly publication, 2) Korean Medical Abstracts (KOMAB), a bi-monthly

publication. Using these abstracts as vehicles for international exchange, 787 titles of foreign journals are acquired from 605 organizations in 37 countries.

The British National Lending Library for Science and Technology, and United States Library of Congress are the largest counterparts of KORSTIC's exchange activities; 39 and 35 titles respectively of scientific journals are exchanged between the said libraries and our Center.

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## This Works For Us

### Form Cards for Specialized Cataloging

Anne T. Protopopoff

California Teachers Association, Burlingame, California

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■ Pre-printed form cards are used to advantage in a specialized situation. They allow for individualized cataloging practices and simplicity of clerical follow-up.

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**T**HE RESEARCH LIBRARY of the California Teachers Association, which functions as part of the Research Department, has a small staff. It handles many

pamphlets and reports, and its catalog contains cards for three times as much of this material as for book material. It is a browsable library dealing with the problems of the teaching profession. The collection of current social science material keeps fairly closely within the subject framework of the library's cross-discipline system. The non-book material is shelf filed, and it follows the same order as the books although they are separate. The library uses three basic pre-printed labeled forms for catalog cards.

We began using forms in order to



have a simplified process for a part-time clerk. We were not big enough at the outset for other reproduction means. With form cards we now find we can produce more in less time for our kind of library, and they create a file with a visible pattern for different kinds of entries.

Our cards are used with a classified catalog, but it would not be necessary to have a classified catalog to use form cards. We also use our own classification scheme, which will be seen from the illustration, but classification is not the subject of this paper.

### Cataloging Process

A pamphlet *main entry* is done on a salmon-colored card on which the cataloger has leeway for disciplined creativity in the wording. This card has labeled spaces for 1) "By," 2) Title, 3) Personal author, 4) Date, 5) Pages, and 6) Filed. There is also a spot to note additional copies. The main entry name is very often an organization commissioning or sponsoring a publication. However, publications are primarily entered under the author's name if he has orig-

inally done the work on his own, even though the publication was sponsored by an organization (and here "By" and personal author are the same). We chose the word "By" as the simplest general-purpose word with the fewest semantic attachments for the main entry designation.

When a publication is entered under an organization, this organization is in most cases the publisher for which there is further information available elsewhere in the library. If the publisher is not recognizable in the "By" part of the form it must be put in parentheses in the title section. Additional information like an address may even be shown there if it would otherwise be difficult to locate.

*Titles* are normally worded exactly as seen on the publication, but the cataloger has the option of cutting one short with the punctuation of a period for a useable title, or of putting together two parts to end with one period if that is best to convey the meaning. The placement of the period is important for the follow-up of the clerk. She does not have to copy what follows after the period in the title space of the other cards to be made.

<table border="1"> <tr> <td>"By":</td> <td>National Council of Teachers of English</td> </tr> <tr> <td>Title:</td> <td>Paraprofessionals: a bibliography. (Issued by ERIC Clearinghouse on the Teaching of English)</td> </tr> <tr> <td>Personal author:</td> <td>Tim E. Moreland</td> </tr> <tr> <td>Date:</td> <td>1968</td> </tr> <tr> <td>Pages:</td> <td>8</td> </tr> <tr> <td>Filed:</td> <td>6.315 PARAPROFESSIONALS</td> </tr> <tr> <td>F702-R67</td> <td>Added copies:</td> </tr> </table>	"By":	National Council of Teachers of English	Title:	Paraprofessionals: a bibliography. (Issued by ERIC Clearinghouse on the Teaching of English)	Personal author:	Tim E. Moreland	Date:	1968	Pages:	8	Filed:	6.315 PARAPROFESSIONALS	F702-R67	Added copies:	<table border="1"> <tr> <td>Filed:</td> <td>6.315 PARAPROFESSIONALS</td> </tr> <tr> <td>"By":</td> <td>National Council of Teachers of English</td> </tr> <tr> <td>Title:</td> <td>Paraprofessionals: a bibliography.</td> </tr> <tr> <td>Personal author:</td> <td>Tim E. Moreland</td> </tr> <tr> <td>Date:</td> <td>1968</td> </tr> <tr> <td>Pages:</td> <td>8</td> </tr> <tr> <td>F701-R67</td> <td></td> </tr> </table>	Filed:	6.315 PARAPROFESSIONALS	"By":	National Council of Teachers of English	Title:	Paraprofessionals: a bibliography.	Personal author:	Tim E. Moreland	Date:	1968	Pages:	8	F701-R67	
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Example of a briefly cataloged pamphlet. The reverse of the main entry (upper left) has tracings for the other cards, that of the "location subject" (Filed) being preceded by an asterisk in the tracing.

*Tracing* for other cards is on the back of the main entry. The tracing always calls for the reverse-order "Filed" classification which is preceded by an asterisk. This is the second form. Briefer added entries, if any, will be made on the third form with no top line pre-printing, and they may be alphabetic or numeric. In addition to numeric subjects the tracing may call for personal author, contributor, title, titles of internal parts, committee chairmen, supporting foundations, publisher if there is any unusual reason to do so, or any key-word "handles" that may be really useful.

Short parenthetical statements following some of the added entry words have no bearing on the filing order. In some instances these notes constitute what could be called "analytics."

### Follow-Up by the Clerk

Typing of the other cards is a matching process. Both the location subject and added entry cards are printed on blue stock. The location subject card is made first. Although this is the complement of the main entry it may have less information because, as noted previously, nothing is picked up in the "title" section following the period. This card is used as a model for any added entries while the reverse side of the main entry is facing up to show the tracings to be copied on the top lines. The clerk, after she is experienced, does her own checking of key spots and the required number of cards for a "set." However, a librarian does review the filing before it is locked into the file.

The information which is apparently missing on some cards might disturb proper librarians who see our form. It must be pointed out that library users need to have a basic understanding in using the catalog. There is an instruction posted on the catalog to refer back to the main entry for additional information not supplied on the other cards. It tells the significance of the word "By," and how to go to the main entry. It also lets them know they may want to ask for help. But those who are familiar in the

searched field of information are usually able to take over by themselves.

### Cataloging of Books

The description to this point has been about cataloging of pamphlets since these form the larger part of our collection. Main entries for books are conventionally cataloged on plain white cards. All the follow-ups are on forms made on white stock from the same stencils used for pamphlet cards. The subject heading linked to the "location" classification number does not appear on the face of the main entry (nor does it appear on the book itself), but it appears in all other places.

### Appearance of the Catalogs

The cards end up in two catalogs—alphabetic and numeric. The pattern of the *alphabetic file* is of salmon and white main entries and blue and white added entries. Filing is simple, but we have a few special rules of our own.

The *classified catalog* is in straight numeric-alphabetic order. The pattern shows location subjects and added entries in both white and blue. The identifiable location cards serve also as shelf list.

*Received for review Aug 16, 1971. Revised manuscript accepted for publication Dec 15, 1971. Presented as a contributed paper at the Third General Session on Jun 7, 1971, during SLA's 62nd Annual Conference in San Francisco.*



Anne T. Protopopoff is research librarian, California Teachers Association, Burlingame, Calif.

# Routing Slips from the Computer

Joan Blair

Arthur D. Little, Inc., Cambridge, Mass. 02140

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■ 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. Bi-weekly a print-out of new or needed lists is ordered. Lists stay neat and up to date. In addition, each time the program is run print-outs are produced of all journals in the system, and of each employee and his route choices.

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WHEN A LIBRARY routes journals, its users are constantly reminded of the services their library does and can provide. The Management Sciences Library at Arthur D. Little, Inc. (ADL) was committed to keeping in touch with its clientele in this way. However, because the changes necessary to keep routing slips up to date were cumbersome and time consuming, the desire to automate the system led to a joint effort between librarian, staff member and the ADL computer laboratory.

The Management Sciences Library is one of six division libraries at ADL. The collection consists of 1,800 books, division case reports, and 200 periodical titles to serve the 100 professionals in the division. As with the other libraries, service is specific to the division. Procedures, save for a union list of serials received by all the libraries, are not automated.

The idea to experiment with computer-produced routing slips suggested itself during a conversation between a division member and the librarian. Both were interested in improving library

service, and the problem of the much-corrected, crossed-over routing slip was under attack. Computer production and correction was a natural conclusion. The staff member agreed to write the necessary computer program using the key-punch facilities and IBM 360/40 at ADL. The librarian agreed to supply library indoctrination.

## The Manual System

Fortunately, there was a sound manual system for both with which to work. The steps in this system were as follows:

1. Create a numbered list of titles to be routed and distribute to staff members who will indicate their choices and return to the library;
2. Create an index card for each journal title;
3. Record selections on journal title cards;
4. Type routing lists;
5. Reproduce routing lists.

To insure that route choices reflected current interests, lists were generated ac-

ording to this process annually and updated manually upon request.

Altogether, the initial process took 18–20 hours of library staff time. However, keeping up with changes of interest, office moves, selections of new staff members, journal additions or deletions, journal title changes, and even staff name changes when female members marry, turned out to be a time-consuming problem. Pre-printed slips became messy looking and many had to be re-typed and mimeographed again.

### The Automated System

The automated solution consists of a COBOL program which creates a master file from initial requests, and prints original sets of routing slips. Upon request it changes and prints corrected slips as well. Procedures follow these steps:

1. Create a numbered list of titles to be routed and distributed to staff members who will indicate their choices and return to library (the same procedure as Step 1 of the manual system).
2. Fill in program coding forms as required;
3. Have keypunch laboratory punch appropriate data cards;
4. Run computer program—output will be eight printed copies of each routing slip.

These steps take approximately nine hours. Most of this time is devoted to creating the list from which selections are made and to coding. Computer time is only several minutes. Built into the program are priority codes to insure that project leaders receive journals first, and building location codes to bring neighboring room numbers together on the lists, thereby smoothing the flow of distribution which is handled by inter-office mail.

### Updating

To update the program only several minutes of computer time are required.

A series of codes has been established which, when coupled with updating information, will do the following:

1. Enter a journal into the routing system
2. Delete a journal from the system
3. Change the name of a journal already in the system
4. Enter an employee and his route choices into the system
5. Delete an employee from the system
6. Change the name or room number of an employee in the system
7. Add an employee's name to a journal list
8. Delete an employee's name from a journal list
9. Add, change or delete priority status of an employee

As needed, a print-out of new slips is ordered by submitting the necessary coded changes to the keypunch center and requesting a run of the update program. An easy-to-follow *User's Guide* for librarians and assistants was written to provide explicit instructions for coding changes. Consequently clerical help previously unfamiliar with library or periodical procedures can rely on the *User's Guide* for coding instructions. The computer prints eight copies of each slip involved in a correction. Obsolete slips are destroyed when new ones are printed. With this print-out we also get a "throw-away" section which lists each division member in employee number order, his room number, the titles of journals currently routed to him, and priority codes attached to these journals if any. A list of all titles in the system is also part of the "throw-away" section. Thus, the need to keep these records manually is eliminated and when the time comes for an annual revision, subscribers can be sent a list of journals they presently receive to facilitate their selection.

Furthermore, we can readily see the average number of journals received by a subscriber, the most popular journal (indicating perhaps the need to order extra copies), and the least popular

journal (indicating the possible elimination of a title). If desired, the program could be modified so these statistics could be received on a regular basis. Other valuable information could be extracted, too. For instance, we enter our subscription order with an agency only once a year. Orders at other times are placed directly with publishers to expedite receipt. A modified program could call for a reminder of orders to be placed with the agency, that is, a listing of journals added to the system during the preceding year.

Besides these statistical benefits, the system has public relations advantages. Lists stay neat and up to date. Other

ADL libraries have shown an interest in the system, and their involvement may lead to larger scale joint projects. In addition, certain divisions internally route their own newsletters and a possible application of the system lies here. Moreover, our computer-oriented staff members appreciate our efforts to improve library service and that, after all, is what we are after.

*Received for review Jun 14, 1971. Manuscript accepted for publication Nov 19, 1971. Presented at the Third General Session on Jun 7, 1971, during SLA's 62nd Annual Conference in San Francisco.*

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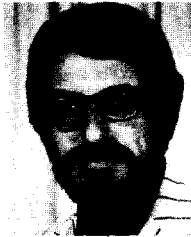
Joan Blair is a member of the staff of the Management Sciences Library, Arthur D. Little, Inc., Cambridge, Mass.

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## 1972 CANDIDATES FOR SLA OFFICE

### For President-Elect

DAGNESE



FRAPPIER



**Joseph M. Dagnese** is Director of Libraries and Audio-Visual Center, Purdue University, Lafayette, Indiana. He received a BA in English from Boston College (1949), an MA in English (1951) and an MSLS (1952) from Catholic University of America. He attended Heidelberg University, Germany (1954/55).

He was assistant head, cataloging division, library, Catholic University (1955/57); document librarian, Nuclear Metals, Inc. (1957/60) where he planned new library facilities. He then went to Massachusetts Institute of Technology where he became head, Acquisitions Department (1960/62); science librarian and head, Circulation Department (1962/66); assistant director of libraries for technical services (1966/71) and was involved in automating acquisitions functions and catalog card production. He was library consultant on a Ford Foundation sponsored program at Birla Institute of Technology and Science, India (1967). He assumed his present position in 1972.

Mr. Dagnese has been a member of ALA and NMA, is a member of the program committee for New England Technical Services Librarians, and is a member of UNITEL (University Information Technology Corporation)—a joint MIT-Harvard venture to investigate areas of cooperation. He has gathered data for various research projects,

attended several seminars and courses, has given talks, and is active on local committees.

*SLA Chapter Activities.* In the Boston Chapter Mr. Dagnese was chairman, Education Committee, Science-Technology Group (1962/64); vice-president (1963/64); president (1964/65).

*SLA Division Activities.* He is a member of Science-Technology and Documentation Divisions.

*At the Association Level.* Chapter Relations Committee (1969/70); Chapter Liaison Officer (1970/72); Deputy Conference Chairman, 1972 Boston Conference. A member of SLA since 1962.

**Gilles Frappier** is Associate Parliamentary Librarian, Library of Parliament, Ottawa, Canada. He received a BA and BPh from the University of Ottawa (1954) and a BLS from the same University (1955). He took additional extension courses in library science from McGill University, Montreal (1957/62).

He started his career as a public librarian in Northern Quebec for the Baie Comeau Community Association (1955/57). In the fall of 1957, he joined the Pulp and Paper Research Institute of Canada in Montreal, where he was responsible for setting up the Woodlands Library for the Institute (1957/59). His next assignment was with United Aircraft of Canada Limited, in Montreal, where he was mainly responsible for the establishment of the Company's Library (1959/63). He then went to Canadair Limited, Montreal, a subsidiary of General Dynamics, as library supervisor for their engineering libraries (1963/69). He was then appointed director, Science Libraries, University of Montreal (1969/70). He was appointed to his present post by the Prime Minister of Canada in August 1970.

He is a member of the Canadian Library

Association (CLA), l'Association Canadienne des Bibliothécaires de Langue Française (ACBLF), the Corporation of Professional Librarians of Quebec and of the Canadian Micrographis Society (CMS). Several times he has been Guest Lecturer at the School of Library Science, University of Montreal.

*SLA Chapter Activities.* In the Montreal Chapter, he served as secretary (1964/65), vice-president (1967/68), president (1968/

69). He was president of the Montreal Chapter at the time of the SLA Conference in 1969. In addition, he served as bulletin editor (1967/68) as well as on several Chapter committee assignments.

*SLA Division Activities.* Documentation Division Nominating Committee (1971/72).

*At the Association Level.* Standards Committee (1969/73). A member of SLA since 1957.

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#### For Chairman-Elect of the Advisory Council

ELLENBERGER



**Jack S. Ellenberger** is librarian, Covington & Burling, Washington, D.C. He received a BSFS from Georgetown University School of Foreign Service (1957) and an MSLS from Columbia University School of Library Service (1959).

He was law librarian, U.S. Department of Health, Education & Welfare, Washington, D.C. (1957); librarian, Carter, Ledyard & Milburn, New York City (1957/60); librarian, Jones, Day, Cockley & Reavis, Cleveland, Ohio (1960/61); librarian, Bar Association of the District of Columbia, Washington, D.C. (1961/63). He became librarian, Covington & Burling, in 1963.

Mr. Ellenberger has been an instructor in law librarianship, U.S. Department of Agriculture Graduate School, since 1962. He also serves as a consultant for law libraries in the Washington, D.C. area. He is a member of American Association of Law Libraries and has been active in many capacities. He is also a member of ALA and District of Co-

McNIERNEY



lumbia Library Association. He was chairman, District of Columbia State Advisory Council to the District of Columbia Public Library System under the Library Services and Construction Act as amended (1970). His publications have appeared in the *Law Library Journal*, *Library Trends*, *The Practical Lawyer* and the library book review media since 1959.

*SLA Chapter Activities.* He was chairman, Social Science Group, Washington, D.C. Chapter (1964/65) and president, Washington, D.C. Chapter (1968/69).

*SLA Division Activities.* He was chairman, Social Science Division (1967/68).

*At the Association Level.* He is chairman, Copyright Law Revision Committee (1970/72). A member of SLA since 1957.

**Mary A. McNierney** is librarian, New York Library, Price Waterhouse & Co. She received a BS in Education from New Jersey State College, Trenton (1948), a BLS from Douglass College (1950), and an MALS from Columbia University School of Library Service (1960). She has done graduate work at New York University School of Business in Finance (1956/57).

She was a reference assistant in the Business Information Bureau of Cleveland Public Library (1950/52). In Germany and France, she was successively field librarian,

post librarian and acting southern area command librarian for Special Services Section, U.S. Army Europe (1952/56). She went to Standard & Poor's Corporation in New York where she was reference librarian (1956/60); librarian, Bache & Co. (1960/67); and supervisor of libraries, Public Relations Staff, General Motors Corporation (1967/70). She joined Price Waterhouse & Co. as a Financial Information Specialist (Jun 1970/Jan 1972).

Miss McNierney has been a member of ASIS and ALA. She was President of the Alumni Association of Columbia University School of Library Service (1970/71).

*SLA Chapter Activities.* In the New York Chapter, she was a member of the Advisory Council and chairman of the Business and

Finance Group (1965/66); Consultation Services Committee (1967).

She was co-chairman of a workshop on Sources of Financial Information (1968), designed to assist new librarians in the community locate specialized resources. The workshop resulted in a definitive annotated bibliography available to SLA members.

*SLA Division Activities.* She is a member of the Nominating Committee of the Business and Finance Division (1970/72).

*At the Association Level.* Publisher Relations Committee (1967/70); Tellers Committee (1967/69). A member of SLA since 1950.

Miss McNierney was editor of the *Directory of Business and Financial Services*, 6th edition, published by SLA (1963).

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#### For Director 1972/75

GABRIELSON



Erna E. Gabrielson is library systems analyst, Boeing Aerospace Library and library services technical advisor, Boeing Computer Services, Inc., Seattle, Washington. She received a BA from Wartburg College (1950) and an MSLS from the University of Washington (1961).

She joined the Boeing Library Technical Processes staff in 1951. As chief cataloger she was responsible for developing and implementing information handling systems in the Boeing Libraries. She participated in DOD-EJC Project LEX. She assumed her present duties in 1970.

Mrs. Gabrielson is a member of ASIS, American Library Association, Pacific Northwest Library Association, Beta Phi Mu—Western Washington Professional Chapter, LARC Association, American Society of In-

ROESS



dexers, Washington Library Association, National Microfilm Association and University of Washington Alumni Association. She is a charter member of the NMA Northwest Chapter and is its secretary (1971/72). From 1969/71, she served as a Director on the Executive Board of the Washington Library Association, and was appointed to the Washington Statewide Library Development Council (1969/71). Mrs. Gabrielson is a member of the curriculum Advisory Committee for the Library Technical Aide Program at Clover Park Education Center, Lakewood Center, Washington.

*SLA Chapter Activities.* In the Pacific Northwest Chapter she was secretary-treasurer (1964/65), program chairman (1966/68), vice-president (1968/69), president (1969/70), Chapter director (1970/71), co-chairman, Continuing Education Committee (1971/72).

*At the Association Level.* Government Information Services Committee (1969/71). A member of SLA since 1960.

Anne C. Roess is supervisor, Library Services, Institute of Gas Technology, Chicago, Illinois. She received a BA in science from the Pennsylvania State University (1955)



and an MS in library science from Simmons College (1956). She has done graduate work at the Graduate Library School, University of Chicago.

Before joining the IGT staff in 1962, Miss Roess worked as a reference librarian in the Technology Department of the John Crerar Library for six years. In 1959 she became principal reference librarian in that department. At IGT she is responsible for supervising the IGT library and IGT's monthly abstracting journal, *Gas Abstracts*.

Miss Roess is a member of the Advisory Committee for Library Technology Programs, Chicago City Colleges and Biblio-

graphic Consultant for the American Power Conference. She is also a member of ASIS and is the current vice-chairman and program chairman for the Chicago Chapter of ASIS.

*SLA Chapter Activities.* In the Illinois Chapter she was vice-president (1965/66) and president (1966/67) and has served on and chaired various committees.

*SLA Division Activities.* In the Public Utilities Division she was vice-chairman (1969/70) and chairman (1970/71).

*At the Association Level.* Membership Committee (1969/71). A member of SLA since 1957.

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#### For Director 1972/75

LEWIS



Stanley T. Lewis is associate professor of library science, Queens College of The City University of New York. He received a BA from New York University (1949), an MA and PhD from Ohio State University (1953), and an MLS from Columbia University (1957).

He was a Fellow in the Acquisitions Department of the Brooklyn College Library (1950/51), on the faculty of the School of Fine and Applied Arts, Ohio State University (1951/55), and lecturer at the Columbus (Ohio) Gallery of Fine Arts (1951/52). He was head librarian of the Dover (N.J.) High School (1955/56), and art librarian of the Queens College Library (1956/67). Since 1967 he has been teaching in the Department of Library Science at Queens College. He also taught the course in art librarianship at Columbia University's School of Library Service (1959/64).

STEVENS



Mr. Lewis was a member of the founding committee of The Ohio State University Theatre Collection and was Consultant Editor of the Collection's *Bulletin* (1954/55). He has served as a consultant to numerous visual projects and reprint programs, including those of Bro-Dart Industries and the Arno Press, Inc. He has authored articles and is the Associate Editor of *Reinhold Visuals; Aids for Art Teaching*, 8 vols. (Van Nostrand Reinhold). He has given addresses before annual conferences and meetings of various library and related organizations. He was a member of the Documentation Committee, International Council of Museums, UNESCO (1965), has participated in seminars and workshops, and served on a Middle States Association evaluation team accrediting an art college (1966). He is a past Vice-President of the United Federation of College Teachers (AFL-CIO), and is currently on a leave of absence serving as an appointed officer of the Legislative Conference of The City University of New York.

His memberships include ALA, Beta Phi Mu, the American Society for Aesthetics, the Association of American Library Schools, the College Art Association of America, the Grolier Club, the Society of Architectural Historians, and the Typophiles.

*SLA Chapter Activities.* He was Vice-Chairman of the New York Picture Group (1962/63) and Chairman (1963/64).

*SLA Division Activities.* In the Picture Division he was Membership Chairman (1964/67), Program Chairman (1966/67), and was the Features Editor of *Picturescope* (1963/66). He prepared a Picture Division recruitment brochure, "Work with Pictures?" (1965).

*At the Association Level.* A member of SLA since 1950.

**Charles H. Stevens** is associate director for library development, Project Intrex, Massachusetts Institute of Technology, Cambridge, Massachusetts. He received a BA from Principia College (1949), a BSLS from University of North Carolina (1952) and an MA (English) also from UNC (1955).

At the University of North Carolina he served as a reference assistant while attending library school. Following graduation in 1952 he was appointed librarian to initiate and operate the U.S.A.F. Air Ground Operations School Library (1952/54). He was then appointed aeronautical engineering librarian at Purdue University (1954/56). Purdue appointed him in 1956 to be in charge of sci-

entific documentation for the Thermo-physical Properties Research Center (1956/59). In 1959 he became associated with M.I.T. and has served at that institution in several capacities. From 1959/62 he was director of the Lincoln Laboratory Library. In 1962 he added the position of director of publications to that of librarian. In 1965 he joined the staff of Project Intrex.

Mr. Stevens is a member of the ALA Council, ASIS, Sigma Xi, COSATI Panel on Library Programs, Engineering Index Board of Trustees, Committee on Library Automation.

*SLA Chapter Activities.* In the Boston Chapter, he was Recruitment Chairman (1961/62); Chapter bulletin editor; Consultation Officer.

*SLA Division Activities.* Engineering Section chairman (1963/64); Science-Technology Division chairman (1965/66).

*At the Association Level.* Chairman, Non-Serial Publications Committee (1962/65); SLA Professional Award and Hall of Fame Committee (1966/68); Advisory Council chairman (1967/68); John Cotton Dana lecturer (University of Texas). A member of SLA since 1955.

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Officers and directors who will continue to serve on SLA's Board of Directors in 1972/73 are:

**Edward G. Strable** who automatically succeeds to the office of President; and **Zoe L. Cosgrove** who automatically succeeds to the office of Advisory Council Chairman. **Efren W. Gonzalez** will serve as Past President. **John P. Binnington** and **Miriam H. Tees** will serve the third year of their three-year terms (1970/73) as Directors. **Mark H. Baer** and **Molete Morelock** will serve the second year of their three-year terms (1971/74) as Directors. **Janet M. Rigney** will serve the third year of her three-year term (1970/73) as Treasurer.

Ballots and voting instructions will be mailed from the Association's New York offices in late March or early April.

# Preparing for a Conference

## Suggestions for a First Conference Attendee

Anyone who has been to Annual Conferences knows that they can be not only exciting and intellectually stimulating but also confusing and exhausting, especially for first-timers. Some of the first-timers at the 1971 SLA Annual Conference revealed that they had not planned very well, even though it would have been easy to do so. The following recommendations are offered to those who will attend their first SLA Conference this year.

### Before the Conference

1. Study the program published in *Special Libraries* carefully (see p.93). Anyone who pre-registers has to do this anyway, but it is easy to overlook many events. When selecting programs to attend, watch for the following:

- Programs which may be divided into parts or connected with a series given over several days;
- The form of programs (panel discussions and seminars allow much more opportunity for audience participation than general sessions);
- The time allowed for each program (cramming too many events into a day leaves no time for informal discussions with new friends; some events overlap);
- The repetition of certain topics (By the time one attends the third or fourth event on the same subject, he may find that he is wasting his time. On the other hand, following one subject area throughout the conference creates continuity and helps reinforce one's memory of new ideas.);
- Division programs (Following a Division program is one way to obtain continuity without much repetition. Furthermore, this is an excellent way to meet people with interests in common.);
- Names of speakers (Become familiar with the background and ideas of speakers before the Conference. Ask experienced Conference-goers for their recommendations.)

2. Make a tentative schedule. Include not only time for speeches but also time for plenty of rest and non-Conference activities such as sightseeing and errands. Write let-

ters to arrange social meetings ahead of time. Locating people at a Conference is harder than it may sound. Information booths are often busy; finding hotels and leaving notes is *time-consuming*. Make notes about products you wish to discuss with exhibitors and problems for which you are seeking answers.

3. Plan your trip. Schedule transportation to the Conference so that there will be plenty of time to get settled before the first program you have scheduled. Leave space in your luggage for souvenirs and the tons of literature picked up at exhibits. Pack clothes suitable to the climate where the Conference is being held. Bring clothes which are comfortable—physically and psychologically. Just about anything goes. Most people dress semi-formally for the Conference banquet.

### At the Conference

1. Get settled. Make sure you will be comfortable in your hotel room. Check over your belongings and plans and take care of any urgent errands.

2. Register as soon as possible. If pre-registered, pick up the kit prepared for you at the registration booth. If not pre-registered, register as soon as possible.

3. Read through the program. Compare it with the tentative schedule you made, noting any changes or new additions of interest. Become familiar with the Conference hotel, making sure of the locations for the events, exhibits and association booths.

### A Word to Host Chapter Members

Now is your chance to get to know members of your own Chapter and make a contribution. Volunteer to work at the Conference. There are a number of jobs that have to be done which do not require any unusual skills.

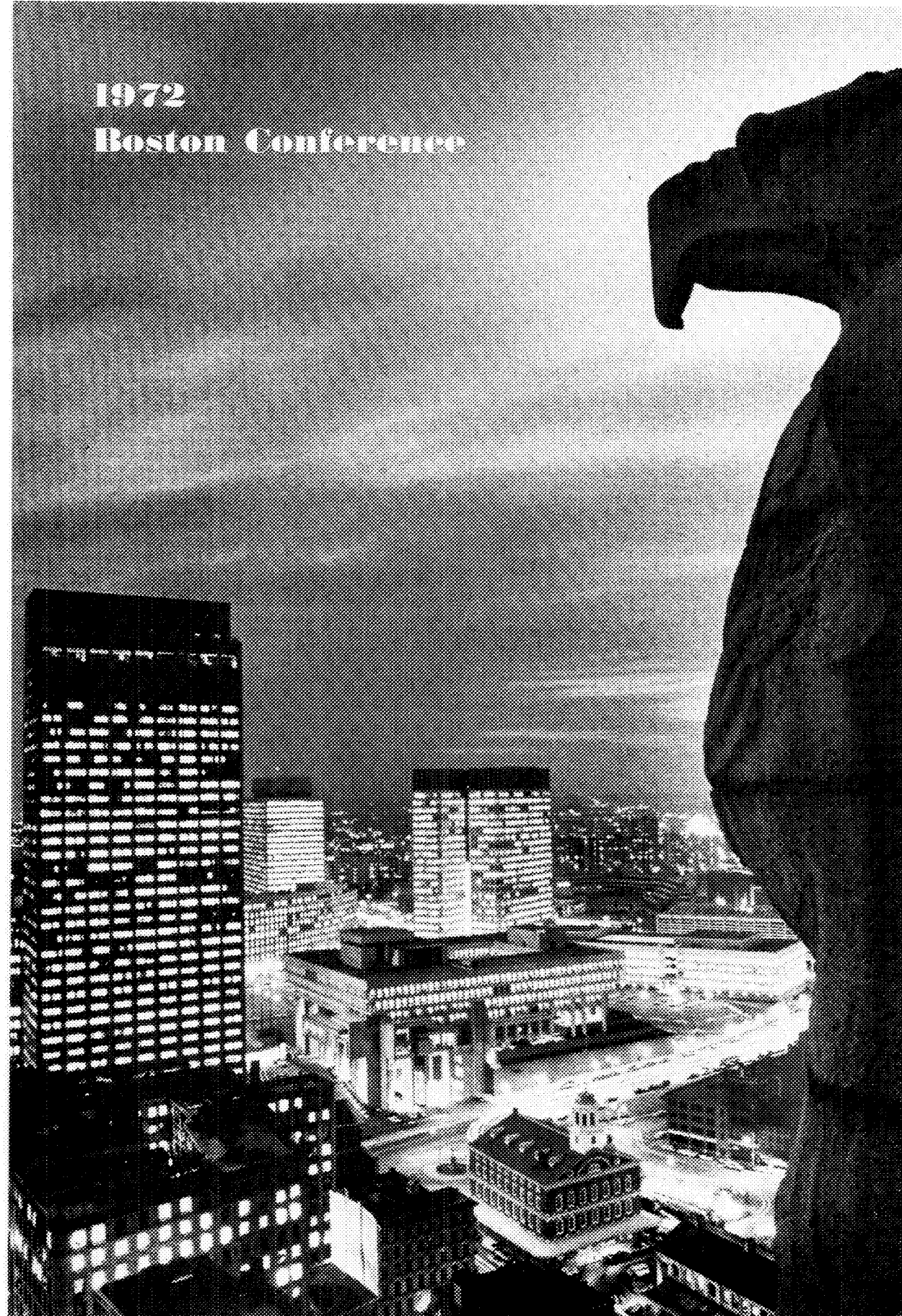
### Remember

Conferences always have peaks of excitement. No one does everything he planned; everyone leaves with some disappointments. Post-Conference depression is to be expected but it won't last long. There is plenty to work on before the next year.

Georgia Mulligan  
Shell Development Company Library  
Emeryville, California

1972

Boston Conference





“Fired the shot heard round the world”—we hope will be as true for SLA conference attendees, as it was to the Minutemen. SLA members have “fired-up” enthusiasms which peak in an active exchange of ideas at each Annual Conference. Revolutionary will be many new techniques and applications which will be presented in Boston.

Nor can anything suppress the sheer delight of living when the New England Winter gives way to the new life of Spring. That new life is still awakening when you will arrive here in June. Also if you haven’t visited Boston in recent years, you will be surprised at our “new” city.

We invite you to thumb through the following pages of our conference program, for we feel that it will offer something “special” for everyone.

Looking forward to welcoming you in June.

**Loyd Rathbun**  
**Boston Conference Chairman**

**63rd SLA Conference Program  
PEOPLE-CENTERED SERVICES**

**June 4-8, 1972  
Statler-Hilton Hotel  
Park Square, Boston**

**Registration**

Member	Advance Registration	\$30.00
	At Conference	40.00
	Daily	20.00
Nonmember	Full Conference	45.00
	Daily	25.00

The advance registration rate closes with mail postmarked May 10.

**At the Conference, registration and tickets desks will be open:**

Saturday Jun 3	1- 6 p.m.	Tuesday Jun 6	8 a.m.- 2 p.m.
Sunday Jun 4	11 a.m.- 6 p.m.	Wednesday Jun 7	8 a.m.- 2 p.m.
Monday Jun 5	8 a.m.- 2 p.m.	Thursday Jun 8	8-10 a.m.

**SLA Employment Clearinghouse**

Sunday Jun 4	1- 5 p.m.	Tuesday Jun 6	9 a.m.- 5 p.m.
Monday Jun 5	9 a.m.- 5 p.m.	Wednesday Jun 7	Noon-4:30 p.m.

① 9:00 a.m.–5:00 p.m.  
**BOARD OF DIRECTORS**

1:00–6:00 p.m.  
**\* REGISTRATION**

② 9:00 a.m.–Noon  
**BOARD OF DIRECTORS**

11:00 a.m.–6:00 p.m.  
**\* REGISTRATION**

Noon–6:00 p.m.  
**\* EXHIBITS**

③ 1:30 p.m.  
Chapter Officers and Bulletin Editors  
Presiding: **JOSEPH M. DAGNESE**  
Chapter Liaison Officer

Purdue University Libraries  
West Lafayette, Ind.

④ 1:30 p.m.  
Division Officers and Bulletin Editors  
Presiding: **BESS P. WALFORD**  
Division Liaison Officer

Philip Morris, Inc.  
Richmond, Va.

⑤ 2:00–3:30 p.m.  
**First-Conference Attendees  
Reception**

An informal personal welcome to the SLA Conference with a slide presentation of many of the Boston Chapter special libraries, interspersed with scenic views and presented with a lively commentary.

⑥ 4:00–6:00 p.m.  
**\* CONFERENCE-WIDE  
RECEPTION**

Exhibits areas, on mezzanine

⑦ 8:00–9:30 p.m.  
**● FIRST GENERAL SESSION**

Ballroom East  
Opening Formalities:

**LOYD RATHBUN**  
Conference Chairman

**Keynote Address**

Dr. **LEON H. SULLIVAN**  
Zion Baptist Church  
Philadelphia, Pa.

Dr. Sullivan is the founder and continuing prime energy source of OIC, Opportunities Industrialization Center, created in 1964. He has been active in the establishment of over 90 of these centers in the U.S. and four in Africa, as well as specific skill centers which are burgeoning in the Caribbean. A member of the Board of Directors of General Motors Corporation and a Baptist minister, his innovations, starting from nothing but ideas, have brought great practical benefits to disadvantaged minority peoples throughout the United States. He has infectious driving faith in human beings and in their abilities. His experiences can teach and inspire innovation in others whose services are also people centered.

9:45–10:45 p.m.  
**Geography and Map Division  
MEETING of OFFICERS and  
COMMITTEE CHAIRMEN**

10:00 p.m.–  
**Advertising & Marketing, Biological Sciences, Business and Finance, Chemistry, Documentation, Engineering, Insurance, Military Librarians, Museums, Arts & Humanities, Newspaper, Nuclear Science, Pharmaceutical, Public Utilities, Publishing, and Science-Technology Divisions**  
Open Houses

⑩ 7:00–8:30 a.m.  
**Documentation Division  
CONTINENTAL BREAKFAST**  
Division Suite  
(Outgoing Division Officers and Committee Chairmen only)

⑪ 7:00–8:30 a.m.  
**Petroleum Division  
BREAKFAST and BUSINESS MEETING**  
(Advance registration required for breakfast)

⑫ 7:00–8:30 a.m.  
**Social Science Division  
Planning, Building & Housing Section  
BREAKFAST and BUSINESS MEETING**  
(Advance registration required for breakfast)

⑬ 7:00–8:30 a.m.  
**Social Science Division  
Social Welfare Section  
BREAKFAST and BUSINESS MEETING**  
(Advance registration required for breakfast)

8:00 a.m.-2:00 p.m.

\* **REGISTRATION**

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9:00-11:30 a.m.

● **SECOND GENERAL SESSION**  
Ballroom East, and Stanbro Hall

**Idea Exchange—The Scheduled Opportunity to Talk Shop**

More than 100 informal discussion circles. No introductions, no speeches, no structure, no summaries. (Subject list and names of "ring leaders" will be in the registration kits.)

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

\* **EXHIBITS**

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Noon-2:00 p.m.

**Advertising & Marketing Division**  
LUNCHEON and PROGRAM

(Advance registration required for luncheon)

"Why Man Creates," an Academy Award winning motion picture produced by Kaiser Corporation

16

Noon-1:30 p.m.

**Aerospace Division**  
LUNCHEON and BUSINESS MEETING

(Advance registration required for luncheon)

17

Noon-2:00 p.m.

**Business and Finance Division**  
LUNCHEON and BUSINESS MEETING

(Advance registration required for luncheon)

18

Noon-3:00 p.m.

**Documentation Division**  
LUNCHEON, BUSINESS MEETING and PROGRAM

(Advance registration required for luncheon)

The Acquisitions, Document Processing and Information Analysis Aspects of ERIC/CLIS

J. I. SMITH  
ERIC/CLIS  
American Society for Information Science  
Washington, D.C.

19

Noon-1:30 p.m.

**Geography and Map Division**  
LUNCHEON and PROGRAM

Top-of-The-Hub, Prudential Center  
(Advance registration required for luncheon)

The U.S. Navy's Atlas of the American Revolution

W. BART GREENWOOD  
U.S. Navy Dept. Library  
Washington, D.C.

Noon-2:00 p.m.

**International Relations Committee**  
LUNCHEON, BUSINESS MEETING, and PROGRAM

20

A Look at United Nations Publications and Information Media

Moderator: VIVIAN D. HEWITT  
Carnegie Endowment for International Peace  
New York

The Value of U.N. Publications, Their Dissemination and Effective Use

N. I. TYULINA  
United Nations  
Dag Hammarskjold Library  
New York

Resource Material and Automation in the Library of the International Atomic Energy Agency

H. A. YESPREY  
International Development Research Center  
Ottawa, Canada

21

Noon-1:30 p.m.

**Museums, Arts & Humanities Division**  
LUNCHEON and BUSINESS MEETING

(Advance registration required for luncheon)

22

Noon-1:30 p.m.

**Newspaper Division**  
LUNCHEON and BUSINESS MEETING

(Advance registration required for luncheon)

23

Noon-1:30 p.m.

**Nuclear Science Division**  
LUNCHEON and BUSINESS MEETING

(Advance registration required for luncheon)

24

Noon-2:00 p.m.

**Picture Division**  
LUNCHEON and BUSINESS MEETING

(Advance registration required for luncheon)

25

Noon-1:30 p.m.

**Public Utilities Division**  
LUNCHEON and BUSINESS MEETING

(Advance registration required for luncheon)

26

Noon-1:30 p.m.

**Publishing Division**  
LUNCHEON and BUSINESS MEETING

(Advance registration required for luncheon)

27

Noon-2:00 p.m.

**Science-Technology Division**  
LUNCHEON, BUSINESS MEETING and PROGRAM

Mid-Career Appraisals  
(Advance registration required for luncheon)



**28** Noon-1:30 p.m.  
**Social Science Division**  
 Miscellaneous Interest Circles  
**LUNCHEON**  
 (Advance registration required for luncheon)

**29** Noon-1:30 p.m.  
**Transportation Division**  
**LUNCHEON and BUSINESS MEETING**  
 (Advance registration required for luncheon)

**30** 2:30-5:00 p.m.  
**● THIRD GENERAL SESSION**  
**Electronics in Libraries**  
**Terminal Display Session**  
 Ballroom East

The Terminal Display Session brings together in one room a variety of computer based information handling systems. These operating systems demonstrate information handling techniques useful to libraries of all sizes. The cathode ray tube and typewriter terminals display the versatility of these systems. The use of off-site batch processing is described. Cost data are available.

This session will have no formal presentations. Persons are free to move from display to display at will. Concurrently are offered the *Contributed Papers* on computer applications to libraries.

2:30-4:30 p.m.  
**CONTRIBUTED PAPERS**

**31** **Session A**  
 2:30 p.m.  
**A Mechanized Library Ten Years Later**  
**G. E. RANDALL and**  
**J. G. OXTON**  
**IBM**  
 Yorktown Heights, N.Y.

An integrated library record-keeping system introduced ten years ago is still viable. Unanticipated fringe benefits have been interspersed with an occasional unanticipated faux pas. Computer costs, equipment requirements, and the possibilities for the future are covered.

**32** 3:00 p.m.  
**Threshold of Acquisitions Automation**  
**ROGER P. BRISTOL**  
 University of Virginia  
 Engineering Library  
 Charlottesville, Va.

In small special libraries there is a threshold below which automation should not be attempted. A reasonably successful operation is reviewed, including cost figures for computer use and for staff time *after* installation.

3:30 p.m.  
**The Computerized File Management System—A Tool for the Reference Librarian**

**SCOTT J. BUGINAS and**  
**NEIL B. CROW**  
 Lawrence Livermore Laboratory  
 University of California  
 Livermore, Calif.

A powerful search tool for a library reference group, the system described produces both SDI and retrospective searches from several diverse data bases. Costs are reasonable; an average batch mode SDI search requires 22 seconds of CDC 6600 time.

4:00 p.m.  
**A Time-Series Sample Approach for Measuring Use in a Small Library**  
**WILLIAM GOODRICH JONES**  
 Institute for Social Research  
 University of Michigan  
 Ann Arbor, Mich.

A simple means of estimating patron use is described. Over a year's time about 100 observations were obtained which were extrapolated to produce estimates of library use by hour, day of week, month and university term.

**Session B**  
 2:30 p.m.  
**Personal Information Systems: Implications for Libraries**

**HILARY D. BURTON**  
 Agricultural Research Service  
 U.S. Dept. of Agriculture  
 Beltsville, Md.

The author analyzed the effects which personal systems have on formal library and secondary information services use. Conclusions are that personal information systems are not "personalized libraries"; formal library services should concentrate on developing complementary programs.

3:00 p.m.  
**Automated Cataloging of Technical Reports Via Optical Scanning**

**HELEN STILES and**  
**JOAN MAIER**  
 National Oceanic and Atmospheric Administration  
 Environmental Research Lab.  
 Boulder, Colo.

The system was established during 1971. Only one cataloging work/input sheet is produced. It is optically scannable. The twice-per-month output is an updated book catalog, an announcement bulletin, demand bibliographies, and an SDI notification sys-

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**34**

**35**

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tem. Benefits include a 600% increase in report usage, and a 10% decrease in catalog maintenance.

4:30-6:00 p.m.  
**Geography and Map Division**  
**BUSINESS MEETING**

40

37 3:30 p.m.  
**How the Small Library Can Harness the Computer**

**HERMAN OSBORNE and**  
**WILLIAM STEINHOFF**  
 Atlantic Richfield Company  
 Harvey Technical Center  
 Harvey, Ill.

The Technical Center Library's program for an evolving computer supported system is described. The discussion points out how small libraries might use the program.

4:30-6:00 p.m.  
**Special Librarians**  
**American Mathematical Society**  
**JOINT MEETING**

41

**Co-sponsors:** **LINCOLN K. DURST**  
 American Mathematical Society  
**ROBERT FIDOTEN**  
 Chairman  
 Science-Technology Division

Open meeting, especially for mathematically interested special librarians, to discuss publications and other matters of mutual interest. Results from a questionnaire sent to Sci-Tech members will provide the basis of the points discussed.

38 4:00 p.m.  
**SDI for the Small Information Center**

**CATHERINE B. McKEE**  
 Colgate-Palmolive Company  
 Piscataway, N.J.

Success of the SDI service will depend upon the information specialist, the link between user and center. Familiarity with basic computer systems and profiling techniques is crucial. Monitoring the output, reviewing and updating the profiles, and interpreting the resulting statistics are an integral part of "house-keeping."

5:00-6:00 p.m.  
**Business and Finance Division**  
**COCKTAILS for Division First-Conference**  
 Attendees and New Members  
 Division Suite

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39 2:30-4:30 p.m.  
**Public Utilities Division**  
**ROUND TABLE DISCUSSION**  
 Information Services and Systems  
 Vis à Vis the Librarian in Public Utilities Libraries

**Moderator:** **ETHEL TIBERG**  
 Edison Electric Institute  
 New York

7:00-10:30 p.m.  
**\* Boston Pops Concert for the SLA Scholarship Fund**

43

The famous Boston Pops Orchestra accompanied by no-host champagne or punch

10:30 p.m.  
**Business and Finance,**  
**Documentation Divisions**  
 Open Houses

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TUESDAY, JUNE 6

46 7:00-8:30 a.m.  
**Aerospace Division**  
 See Government Information Services Committee

Scientific and Technical Information  
**JOE ANN CLIFTON**  
 Litton Industries  
 Woodland Hills, Calif.

45 7:00-8:30 a.m.  
**Food Librarians**  
**BREAKFAST**

Social Science Information  
**MARY LOU KNOBBE**  
 Metropolitan Washington Council of Governments  
 Washington, D.C.

46 7:00-8:30 a.m.  
**Government Information Services Committee**  
**Aerospace Division**  
**Social Science Division**  
**JOINT BREAKFAST ROUND TABLE**  
 Information Hang-Ups and the Regional User Groups

Medical/Agricultural Information  
**BETTY BOYD BROCIER**  
 M.I.T. Lincoln Laboratory  
 Lexington, Mass.

Automation and Information  
**JOAN McNAUGHT**  
 MITRE Corp.

Information Across National Borders  
**W. ERIC CLYDE**  
 National Science Library  
 Ottawa, Canada

**47** 7:00-8:30 a.m.  
**Museums, Arts & Humanities Division**  
**BREAKFAST**  
 (Division members only)  
 Discussion of problems and projects

**46** 7:00-8:30 a.m.  
**Social Science Division**  
 See Government Information Services  
 Committee

8:00 a.m.-2:00 p.m.  
 \* **REGISTRATION**

**48** 9:00-10:15 a.m.  
 ● **FOURTH GENERAL SESSION**  
**Environment and**  
**Information Services**  
**MAX WAYS**  
 Fortune  
 Editorial Board

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

10:15 a.m.-Noon  
 Free Time for Exhibits

**49** Noon-4:00 p.m.  
**Advertising & Marketing Division**  
**LUNCHEON, PROGRAM and**  
**BUSINESS MEETING**  
 Aboard S.S. Peter Stuyvesant, Anthony's Pier 4  
 Restaurant

**50** Noon-1:30 p.m.  
**Biological Sciences Division**  
**LUNCHEON, BUSINESS MEETING**  
**and PROGRAM**  
 The History of Computers in  
 Biological Sciences

**OLIVER H. BUCHANAN**  
 Pratt Institute  
 New York

**ALBERTA D. BERTON**  
 Medical Documentation Service  
 College of Physicians  
 Philadelphia, Pa.

**51** Noon-4:30 p.m.  
**Chemistry Division**  
**LUNCHEON and PROGRAM**  
 Abstracting and Indexing Services

World Data Base of Abstracting and  
 Indexing Services

**Lead Speaker and**  
**Panel Moderator:**

**STELLA KEENAN**

National Federation of Science Ab-  
 stracting & Indexing Services

FID and NFSAIS are jointly preparing a  
 machine readable inventory of information  
 for computer publication as an up-to-date  
 directory to abstracting services of the world.  
 This will be a progress report and a descrip-  
 tion of plans for the future. The kinds of  
 data recorded by the Services will be de-  
 scribed, and examples of data sheets of the  
 services represented by the panelists will be  
 shown.

**Panelists:**

**RALPH O'DETTE**

Chemical Abstracts Services  
 Columbus, Ohio

**Dr. JAMES L. CARMON**

University of Georgia Computer  
 Center  
 Athens, Georgia

**PRISCILLA TEITELBAUM**

New York University Science Library  
 New York

**CAROL A. JOHNSON**

National Agricultural Library  
 Beltsville, Md.

**ARTHUR W. ELIAS**

Information Interscience  
 Incorporated  
 Philadelphia, Pa.

**STEPHEN J. FRYCKI**

E. R. Squibb & Sons, Inc.  
 New Brunswick, N.J.

4:30-6:00 p.m.  
**Chemistry Division (continued)**  
**BUSINESS MEETING**

Noon-1:30 p.m.  
**Engineering Division**  
**LUNCHEON, BUSINESS MEETING**  
**and PROGRAM**

The Engineering Societies Library and  
 What It Can Do for You

**KIRK CABEEN, Director**  
 Engineering Societies Library  
 New York

Noon-2:00 p.m.  
**Geography and Map Division**  
**LUNCHEON and PROGRAM**

The Map as an "Idea": The Use of Maps  
 in the Intellectual History of Diplomacy

**ALAN K. HENRIKSON**  
 Fletcher School of Law and  
 Diplomacy  
 Tufts University  
 Medford, Mass.

**55** 2:30-4:00 p.m.  
**Geography and Map Division (continued)**  
**MAP WORKSHOP PANEL**

Problems of Reproducing Maps in Libraries

**Moderator:** RICHARD W. STEPHENSON  
 Library of Congress  
 Geography & Map Division

**Panel:** Photographer's Point of View  
**CHARLES G. LAHOOD, Jr.**  
 Library of Congress  
 Washington, D.C.

Reader's Point of View  
**GEORGE F. McCLEARY, Jr.**  
 Clark University  
 Worcester, Mass.

Custodian's Point of View  
**RALPH E. EHRENBERG**  
 National Archives  
 Washington, D.C.

3:00-5:00 p.m.  
**Insurance Division (continued)**  
**BUSINESS MEETING**  
 New England Life

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5:00-6:00 p.m.  
**Insurance Division (continued)**  
**RECEPTION**  
 (Division members only)  
 New England Life

**59**

Noon-4:30 p.m.  
**Metals/Materials Division**  
**LUNCHEON, BUSINESS MEETING**  
**and PROGRAM**  
 Ledgeмонт Laboratory, Kennecott Copper  
 Round Table Discussion:  
 Recycling, Reclaiming Metals/Materials  
 Visit Ledgeмонт Laboratory Library

**60**

Noon-4:00 p.m.  
 (Bus leaves hotel at 11:40 a.m.)  
**Military Librarians Division**  
**LUNCHEON, PROGRAM**  
**and BUSINESS MEETING**  
 Charlestown Officers' Club  
 The Requirements of an Information  
 Center in a Materials Research  
 Organization

**61**

**Dr. ALVIN E. GORUM, Director**  
 Army Materials and Mechanics  
 Research Center  
 Watertown, Mass.

12:30-5:00 p.m.  
**Museums, Arts & Humanities Division**  
**Picture Division**  
**JOINT LUNCHEON and PROGRAM**  
 Boston Museum of Fine Arts  
 The Catalogue of American Portraits  
**WILFORD P. COLE**  
 National Portrait Gallery  
 Washington, D.C.

**62**

Slide Lecture  
 Visit to galleries of Boston Museum of  
 Fine Arts and the Isabella Stewart  
 Gardner Museum

Noon-1:30 p.m.  
**Natural Resources Division**  
**LUNCHEON and PROGRAM**

**63**

Organizing Environmental Information  
 for Action and Putting It to Work

**JOHN W. PUTNAM**  
 Boston Environment, Inc.  
 Boston, Mass.

Noon-1:30 p.m.  
**Newspaper Division**  
**LUNCHEON and PROGRAM**

**64**

**56** 4:20-6:00 p.m.  
**Geography and Map Division (continued)**  
**CONTRIBUTED PAPERS**

**Session Chairman:**  
**WILLIAM W. EASTON**  
 Illinois State University  
 Normal, Ill.

Cartographic Resources of the  
 Free Library of Philadelphia

**JEREMIAH POST**  
 Free Library of Philadelphia  
 Philadelphia, Pa.

Acquisition Philosophy and Cataloging  
 Priorities for University Map Libraries

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

Panoramic Maps of American Cities

**JOHN R. HEBERT**  
 Library of Congress  
 Washington, D.C.

Continued Association with Special  
 Libraries Association: Pros and Cons

**MARY GALNEDER**  
 University of Wisconsin  
 Madison, Wisc.

University Map Collections in Ontario:  
 New Trends and Developments

**SERGE A. SAUER**  
 University of Western Ontario  
 London, Ontario, Canada

**57** Noon-2:30 p.m.  
**Insurance Division**  
**LUNCHEON and PROGRAM**

(Division members only)  
 John Hancock Building  
 Health Insurance

**PAUL R. CRAIG**

Automatic Indexing for a  
Computer-Based Retrieval System

J. F. REINTJES  
M.I.T.  
Cambridge, Mass.

**65** 2:30-4:30 p.m.  
**Newspaper Division** (continued)  
TOUR of Project Intrex, M.I.T.

**66** Noon-2:00 p.m.  
**Pharmaceutical Division**  
LUNCHEON, PROGRAM,  
and BUSINESS MEETING  
Speaker: Dr. RUSSELL MILLER

**62** 12:30-5:00 p.m.  
**Picture Division**  
See Museums, Arts & Humanities  
Division

**67** Noon-1:30 p.m.  
**Social Science Division**  
LUNCHEON and BUSINESS MEETING

**68** 1:30-4:30 p.m.  
**Transportation Division**  
Transportation Library Roles in National  
Transportation Information Systems  
Planning

Moderator: BENJAMIN JACOBSON  
Northwestern University  
Evanston, Ill.

Panelists: ALEXANDER HOSHOVSKY  
U.S. Dept. of Transportation  
Washington, D.C.  
KIRBY PAYNE  
Chief, Library Services Division  
U.S. Dept. of Transportation  
Washington, D.C.

MARY ROY  
Transportation Center Library  
Northwestern University  
Evanston, Ill.

Dr. PAUL E. IRICK  
Highway Research Board  
National Research Council  
Washington, D.C.

Also on the panel will be university  
transportation librarians from the  
United States and Canada.

Rapporteur: BILLY E. BAYS  
Air Line Pilots Association Library  
Washington, D.C.

**72** 2:30-4:30 p.m.  
**Aerospace Division**  
See Government Information Services  
Committee

**69** 2:30-4:00 p.m.  
**Biological Sciences Division**  
**Pharmaceutical Division**  
JOINT SESSION

Experience with Multiphasic  
Health Screening

Dr. ROBERT L. BREKENRIDGE  
MEDICHEK, Inc.

A Survey of Patient and Physician  
Opinions About Multiphasic Health  
Testing

Dr. HERBERT A. HAESSLER  
Searle Medidata, Inc.  
Waltham, Massachusetts

General Considerations in Data Base  
Management for Multiphasic Health  
Screening

ROBERT V. CUDDIHY  
Sandoz Pharmaceuticals  
Hanover, New Jersey

Information Parameters for Multiphasic  
Screening Application

JAMES P. MURPHY  
BIOSIS  
Philadelphia, Pa.

2:30-4:30 p.m.  
**Business and Finance Division**  
Within Our Circles

**70**

University and College Circle

LAURENCE J. KIPP  
Harvard University Business School  
Cambridge, Mass.

Business Circle

LILLIAN PLACEK  
Newsweek  
New York

Government Circle

JOAN ELLEN MARX  
Federal Deposit Insurance Corp.

Banking Circle

FRANCES J. BROWN  
First National City Bank  
New York

2:30-4:30 p.m.  
**Documentation Division**  
**Engineering Division**  
JOINT PROGRAM

**71**

Today's Systems and Services  
Available to Libraries

THOMAS C. McDONALD  
Chemical Abstracts Service  
Columbus, Ohio

The large information system can produce  
an array of information services, magnetic  
tapes, printed abstracts, etc. Discussion will  
include policies, problems, and future plan-  
ning.

MARGARET K. PARK  
University of Georgia  
Athens, Ga.

A brief survey of Regional Information  
Centers and their services to many libraries.

Problem elements include manipulating tapes from various sources, providing SDI and search services, costing, etc.

**MARY S. BALDWIN**  
St. Regis Paper Co.  
West Nyack, N.Y.

Experiences of the librarian who has subscribed to several regional services; problems of obtaining funds for service, establishing SDI profiles, update, redundancy, etc.

Operating Experiences with Commercial and Government Data Bases in a Nuclear Science Library

**SCOTT BUGINAS**  
Lawrence Livermore Laboratory  
Livermore, Calif.

The British MARC II Data Tape Service and Projected Developments

**A. J. WELLS**  
British National Bibliography

The U.S. Atomic Energy Commission Recon System Network

**T. HUGHES**  
U.S. Atomic Energy Commission  
Washington, D.C.

**71** 2:30-4:30 p.m.  
**Engineering Division**  
See Documentation Division

**72** 2:30-4:30 p.m.  
**Government Information Services Committee**  
**Aerospace Division**  
JOINT PROGRAM

Feedback: Government Information Sources and the Users

**Moderator:** **MELVIN S. DAY**  
National Science Foundation  
Washington, D.C.

**Panelists:** **LEE G. BURCHINAL**  
U.S. Office of Education  
Washington, D.C.

**MARTIN CUMMINGS**  
National Library of Medicine  
Bethesda, Md.

**ROBERT KLING**  
U.S. Government Printing Office  
Washington, D.C.

**WILLIAM KNOX**  
U.S. Department of Commerce  
Washington, D.C.

**DUDLEY G. McCONNELL**  
NASA

**JOHN SHERROD**  
National Agricultural Library  
Washington, D.C.

2:30-4:30 p.m.  
**Petroleum Division**  
"RAP" SESSION

Strictly unstructured. Share your irritations and balm in this serendipitous atmosphere

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

2:30-4:30 p.m.  
**Publishing Division**  
**Social Science Division**  
**Publisher Relations Committee**  
JOINT PROGRAM

The New Technology:  
Publishers and Libraries

**DAN LACY**  
Senior Vice-President  
McGraw-Hill  
New York

**GORDON HJALMARSON**  
Director, Schools Departments  
Houghton Mifflin  
Boston, Mass.

**RICHARD T. WOOD**  
Manager, Book Programs  
University Microfilms  
Ann Arbor, Mich.

**73** 2:30-4:30 p.m.  
**Nuclear Science Division**  
PANEL

Nuclear Science Data Bases—  
Library and People Centered Services

**Moderator:** **HILLIS L. GRIFFIN**  
Argonne National Laboratory  
Argonne, Ill.

Science Oriented and MARC II Tape Services, An SDI Application

**G. MAUERHOFF**  
National Science Library  
Ottawa, Canada

2:30-4:30 p.m.  
**Publisher Relations Committee**  
See Publishing Division

2:30-4:30 p.m.  
**Science-Technology Division**  
PANEL  
Contract Service Problems for  
Special Libraries

2:30-4:30 p.m.  
**Social Science Division**  
See Publishing Division

**77** 4:30-5:30 p.m.  
**Consultation Service Committee**  
 MEETING for Chapter Consultation  
 Officers, Chapter officers, and all  
 interested members  
  
 Courtesy Consultation—  
 Where Do We Go From Here? How?  
**Presiding:** **AUDREY N. GROSCH**  
 Chairman, Consultation Service  
 Committee  
  
 University of Minnesota  
 Minneapolis, Minn.

**78** 4:30-6:00 p.m.  
**Education Committee**  
 RECEPTION for Library School Faculty  
 members attending the Conference

5:00-6:00 p.m.  
**Simmons College Library School**  
**Alumni Association**  
 REUNION and COCKTAIL HOUR **79**

8:00-10:00 p.m.  
**Advisory Council**  
 OPEN MEETING **80**  
**Presiding:** **FORREST H. ALTER**  
 Chairman, Advisory Council  
  
 Flint Public Library  
 Flint, Mich.

10:00 p.m.—  
**Advertising & Marketing, Business and**  
**Finance, and Newspaper Divisions**  
 Open Houses **81**

**82** 7:00-8:30 a.m.  
**Documentation Division**  
 Division Suite  
**CONTINENTAL BREAKFAST**  
 (Incoming Division Officers and committee chair-  
 men only)

**83** 7:00-8:30 a.m.  
**Museums, Arts & Humanities Division**  
**BREAKFAST**  
 (Division members only)  
 Discussion of problems and projects

**84** 7:00-8:30 a.m.  
**Picture Division**  
**BREAKFAST**

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

**85** 9:00 a.m.—Noon  
 ● **ANNUAL MEETING**  
**Presiding:** **EFREN W. GONZALEZ, President**  
 Special Libraries Association  
  
 Bristol-Myers Products  
 Hillside, N.J.

10:00 a.m.—2:00 p.m.  
 \* **EXHIBITS**

**86** Noon-1:30 p.m.  
**Engineering Division**  
**LUNCHEON and PROGRAM**  
  
 Developing a Company Information  
 System  
  
**DEAN LITTLE**  
 Babcock and Wilcox

Noon-2:00 p.m.  
**Geography and Map Division**  
**LUNCHEON and PROGRAM**  
 Sheraton Boston **87**

Maps That You Will Never Be Able to  
 Store in Your Library  
**DENIS WOOD**  
 Clark University  
 Worcester, Mass.

Noon-1:30 p.m.  
**Government Information Services**  
**Committee**  
**LUNCHEON and PROGRAM** **88**

The Inside Story on Government  
 Planning  
**Moderator:** **RUTH S. SMITH**  
 Institute for Defense Analyses  
 Washington, D.C.

The National Commission on Libraries  
 and Information Science  
**CATHERINE D. SCOTT**  
 Bellcomm, Inc. Library  
 Washington, D.C.

A Library Response to the President's-  
 Departmental Reorganization Plan  
**FRANK KURT CYLKE**  
 Federal Library Committee  
 Washington, D.C.

Noon-1:30 p.m.  
**Insurance Division**  
**LUNCHEON and PROGRAM**  
 Women's City Club of Boston **89**

Institute of Life Insurance  
Trend Analysis Program  
**ARNOLD BROWN**  
Institute of Life Insurance  
New York

**90** Noon-4:30 p.m.  
**Newspaper Division**  
LUNCHEON and PROGRAM  
(Division members only)  
Aboard S.S. Peter Stuyvesant, Anthony's Pier 4  
Restaurant  
The Press and the Pentagon Papers  
**JACK DRISCOLL**  
Boston Globe  
Boston, Mass.

Visit to the Library  
Host: The Boston Globe

**91** Noon-2:00 p.m.  
**Public Utilities Division**  
LUNCHEON and PROGRAM  
(25 Division members only)  
New England Telephone & Telegraph, 185 Franklin St.

"If You Don't Do It, It Won't Get Done"  
**JAY H. WHATLEY**  
Assistant Vice President  
New England Telephone and Telegraph Co.  
Boston, Mass.

Telephone Company Involvement in  
Community Activities  
Host: New England Telephone and Telegraph Co.

**92** 2:30-5:00 p.m.  
**CONTRIBUTED PAPERS**  
*Session A*

2:30 p.m.  
Information Services of a Data Processing  
Library: a Cost/Usage Analysis of  
Library Publications

**JOHN C. ALLEN**  
Pfizer, Inc.  
New York

Uses for this study include: projection and  
revision of budget; charges that can be bud-  
geted to user divisions of the corporation;  
value and usage of library collection, pub-  
lications, and services; evaluation of library  
priorities.

**93** 3:00 p.m.  
Small-Size Technical Libraries in and  
Around Bombay City:  
Their Amenability to Modern Techniques

**Dr. V. A. KAMATH and**  
**N. M. MALWAD**  
Bhabha Atomic Research Centre  
Bombay, India

Bombay is the commercial capital of In-  
dia with about 60 small-size technical li-  
braries with a small budget and one, two,  
or three person information services. The

usual tendency of the parent organizations  
to spend as little as possible on information  
resources and information processing tech-  
niques makes it an interesting subject for  
the study of their amenability to modern  
sophisticated techniques.

3:30 p.m.  
The Specialized Science Fiction Library  
**FRED LERNER**  
City University of New York  
Research Foundation  
New York

The recent formation of the Science Fic-  
tion Research Association is indicative of in-  
creasing academic interest in science fiction  
as a literary form. There are few libraries  
adequate to support research in this field.  
The experiences and resources of private  
collectors will be instrumental in building  
collections of SF for scholarly use.

4:00 p.m.  
A Building and Construction Industry  
Urban Affairs Information Center:  
Planning Big, Operating Small  
**ROSE J. BRATTON**  
N.Y. Building and Construction  
Industry  
Board of Urban Affairs Fund  
New York

A new information unit serving labor uni-  
on and management constituent representa-  
tives is described. Information files and bib-  
liographic procedures are designed for use  
with in-house computer facilities. Collec-  
tion covers thirteen major subject areas. Ef-  
fectiveness of utilizing other library resources  
in the area is discussed.

4:30 p.m.  
Evaluation Techniques for the  
Small Special Library  
**JANICE LADENDORF**  
North Star Research and  
Development Institute  
Minneapolis, Minn.

In today's climate of austerity, the suc-  
cessful library manager must have facts and  
figures to prove that his library is essential.  
Results will be presented from a three-year  
study evaluating the impact of effective li-  
brary services.

*Session B*  
2:30 p.m.  
U.S. Government Publications:  
Acquisitions Procedures for the  
Small Special Library

**Mrs. ANTHOS HUNGERFORD**  
Hurley Hospital Medical Library  
Flint, Mich.



Practical procedures for acquiring government publications are discussed. Procedures range from methods for obtaining publications free, to the deposit account and special subscription services. Advantages of each type of procurement are discussed and recommendations as to when each should be used are given.

**98** 3:00 p.m.  
Emergency Measure Establishes  
Treasure

**JEAN GUNTER**  
Mississippi Dept. of Public Welfare  
Jackson, Miss.

Modified cataloging techniques are employed in indexing vertical file materials. Descriptive cataloging is used as warranted. The vertical file is weeded when the index shows availability of duplicate information in traditional format.

**99** 3:30 p.m.  
Creation and Establishment of the  
Specialized Library

**E. RAE ROBERSON COSGROVE**  
Security Pacific National Bank  
Burbank, Calif.

Today's competition and mass of knowledge necessitates a creative administrative librarian to establish and direct new "Special" and "Special Special" libraries. Basic guides are demonstrated in the formulation of the Security Pacific National Bank Trust Investment Library.

**100** 4:00 p.m.  
Selection of Materials for the  
Special Library or Information Center

**AGNES O. HANSON**  
Cleveland Public Library  
Business Information Department  
Cleveland, Ohio

The basic collection, weeding, current selection, requisites for selectors, procedure, and budget are considered, based on experience in a business information center of a public library which supplies materials to a business-industry clientele.

**101** 4:30 p.m.  
Teaching Bibliographic Reference in a  
Reports Collection

**BARBARA A. RICE**  
Knolls Atomic Power Laboratory  
Schenectady, N.Y.

Bibliographic reference was taught to a non-professional staff member to service an uncataloged collection of AEC, NASA, and DOD research and development reports. The

elements of bibliographic description for reports are stressed, and the main bibliographic reference structure for the collection is outlined.

**Session C**  
2:30 p.m.  
R.I.C.E. Services for the  
Small Company Library  
**CAROLYN MEANLEY and**  
**RITA PADDOCK**  
Rice University  
Houston, Texas

**102**

Field services, referrals and searches of the technical literature by professional information and subject specialists serve a widely dispersed and diversified group of users. Emphasis is placed on the professional interrelationships between the Exchange and the small company library.

3:00 p.m.  
Feasibility of Centralized Processing for  
Special Libraries

**EUGENE B. JACKSON**  
University of Texas  
Graduate School of Library Science  
Austin, Texas

**103**

Research work by four doctoral students under the guidance of the author is reported. Central to the work will be rigorous determination of processing costs and times, to replace the contradictory and shallow figures in the library literature.

3:30 p.m.  
A Three-Pronged Approach for  
Centralized Library Services

**PAULINE M. VAILLANCOURT and**  
**Sister REGINA CLARE WOODS**  
The Catholic Medical Center of  
Brooklyn and Queens  
Jamaica, N.Y.

**104**

A three-phase program whose purpose is drawing together nine small hospital libraries into a cooperative, functional unit is shown. The authors describe the initiation of a strong central library (now 7,000 volumes) to give guidance and to provide liaison to and between each unit of the network.

**101** 4:30 p.m.  
Teaching Bibliographic Reference in a  
Reports Collection

**BARBARA A. RICE**  
Knolls Atomic Power Laboratory  
Schenectady, N.Y.

Bibliographic reference was taught to a non-professional staff member to service an uncataloged collection of AEC, NASA, and DOD research and development reports. The

4:00 p.m.  
The Effect of the R.M.L.P. upon  
Interlibrary Loans in a  
Small Medical Research Library

**KATHLEEN M. PUFFER and**  
**PATRICIA L. SYMES**  
Lovelace Foundation for Medical  
Education and Research  
Albuquerque, N.M.

**105**

The Regional Medical Library Program has been of benefit to small libraries in help-

ing locate needed material within the South Central region. The R.M.L.P. effect on inter-library loans from 1969 through 1971 will be reported.

**106** 4:30 p.m.  
**RUIN: A Network for Urban and Regional Studies Libraries**

**ELIZABETH K. MILLER**  
 The Urban Institute  
 Washington, D.C.

Advantages of the network building among small- to medium-sized libraries will be investigated, and the practical application of "networking" being contemplated among Washington, D.C. area urban studies libraries, tentatively named RUIN (Regional and Urban Information Network), will be discussed in detail.

**107** *Session D*  
 2:30 p.m.  
**A Profile of the Manager of the Special Library**

**PAUL WASSERMAN and  
 JEANNE O'CONNELL**  
 University of Maryland  
 School of Library and Information Services  
 College Park, Md.

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

**108** 3:00 p.m.  
**Organizational Placement of the Special Library and Its Relationship to Success and Survival**

**HERBERT S. WHITE**  
 Institute for Scientific Information  
 Philadelphia, Pa.

Because of the researcher's greater appreciation for library services, it has been generally assumed that special libraries operate more effectively reporting through research than through management. Experiences during the recent wave of industrial retrenchments make re-examination of this assumption appropriate.

**109** 3:30 p.m.  
**Experimental Methods of Teaching Special Librarianship**

**MARTHA JANE K. ZACHERT**  
 Florida State University  
 Tallahassee, Fla. and

**VERONICA S. PANTELIDIS**  
 Florida Dept. of Commerce  
 Tallahassee, Fla.

In order to acquaint SLA members with innovative teaching methods, one group of such methods is described. Potential for both teaching and research into special librarianship is explored briefly.

4:00 p.m.  
**A Computer-Assisted, Sequential Decision-Making Experiment with Students**

**VERONICA S. PANTELIDIS**  
 Florida Dept. of Commerce  
 Tallahassee, Fla. and

**MARTHA JANE K. ZACHERT**  
 Florida State University  
 Tallahassee, Fla.

This is a follow-up to the paper presented by Martha Jane Zichert, which should be heard as background. The program provides students with immediate feedback to simulated administrative decisions they make. The potential of the method for graduate and continuing education and research is explored.

4:30 p.m.  
**Are Hospital Libraries Meeting Physicians' Information Needs?**

**WILLIAM P. KOUGHAN**  
 Lawrence General Hospital  
 Lawrence, Mass.

**JOHN A. TIMOUR**  
 Connecticut Regional Medical Program

Based on a 1970 Connecticut study, three times as many physicians rely on their own personal subscriptions as on hospital library holdings. Only half of their continuing education activity involves reading. With additional statistics, recommendations are offered in the light of these findings.

*Session E*  
 2:30 p.m.  
**Book Purchasing and Processing—A Centralized Service for College and University Libraries in Massachusetts**

**JAMES SOKOLOSKY and  
 MERLE BOYLAN**  
 University of Massachusetts  
 Amherst, Mass.

A successful program of centralized purchasing and processing for 27 state institutions of higher education in Massachusetts is reported. Processing costs approximated \$0.90 per volume, a noticeable cost savings.

**113** 3:00 p.m.  
The Nova University Library System:  
A Unique Application of Small Special  
Libraries to a Graduate-Research  
Oriented University

**ROBERT J. HAVLIK**  
Nova University  
Ft. Lauderdale, Fla.

At Nova University, a new, small, private, graduate science-oriented, research university in Fort Lauderdale, the faculty and students are served by three special libraries, one located in each of the educational-research centers. Each library operates as a special library offering bibliographies and reference services to its respective center. This may have implications for the future of library services in small research-oriented universities.

**114** 3:30 p.m.  
The Special Librarian and the  
Resource-Full Community

**THEODORE P. PECK**  
University of Minnesota  
Minneapolis, Minn.

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

**115** 4:00 p.m.  
An Integrated Corporate Information  
System: The Role of Librarian as  
Coordinator of Small Decentralized  
Library Branches

**JOHN C. ALLEN**  
Pfizer, Inc.  
New York, N.Y. and

**ELIZABETH FIGUEROA**  
First National City Bank  
New York

A Philosophy of Service, a Master Plan, Staff Training, and Management Education

phases are presented as part of the program of integrating information services.

**116** 4:30 p.m.  
Making Foreign Census Documents  
Available and Accessible

**JERRY J. DONOVAN**  
Princeton University  
Population Research Library  
Princeton, N.J.

Heightened scientific interest in the determinants and consequences of population change has generated greatly increased demand for sources of primary data. Problems of obtaining and interpreting these data are formidable. Systematic solutions are under way or planned. Progress made by the International Census Documents Project and other Agencies is discussed.

3:00-5:00 p.m.  
**Pharmaceutical Division**

**117** TOUR: Massachusetts College of  
Pharmacy and Its Library, and The  
Francis A. Countway Library of Medicine  
at Harvard Medical School

4:30-6:00 p.m.  
**Business and Finance Division**  
Banking Librarians

**118** Banking and Financial Publications  
of the Hanover Lamont Corp.  
Representatives of  
Warren, Gorham, and Lamont

6:00-7:00 p.m.  
\* **CONFERENCE-WIDE  
RECEPTION**

7:00-9:30 p.m.  
\* **BANQUET**

9:30 p.m.-  
**Advertising & Marketing Division**  
Open House

**116**

**117**

**118**

**119**

**120**

**121**

8:00-10:00 a.m.  
\* **REGISTRATION**

9:00 a.m.-4:30 p.m.  
**Continuing Education Seminars**

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

**Session 1**  
Technical Report Literature Update

**122** A review of the availability, indexing, format, and cost of technical report literature from DDC, NTIS, NASA, AEC, JPRS, and other major suppliers. A look at the microform equipment to handle the reports. Suggestions on housing a report collection.

- 123** *Session 2*  
**Environmental and Ecological Literature**  
 —Where Does It All Come From?

A look at the various new and old organizations prominent in the environmental and ecological fields. Discussion of the new literature, indexes, etc. How to get to the literature. What are the legal aspects of the field?

- 124** *Session 3*  
**Making and Living with a Budget; Library Service Publicity or Selling Your Product; The Importance of the Annual Report**

Practical discussions on making a budget and how to live within it. How to publicize your library to your users. How to write an annual report that gets the word across to management.

**DIVISION ACTIVITIES**

- 125** 9:30 a.m.—3:00 p.m.  
**Advertising & Marketing Division**  
 See Business and Finance Division

- 126** 8:30 a.m.—6:00 p.m.  
**Aerospace Division**  
 See Chemistry Division

- 126** 8:30 a.m.—6:00 p.m.  
**Biological Sciences Division**  
 See Chemistry Division

- 125** 9:30 a.m.—3:00 p.m.  
**Business and Finance Division**  
**Advertising & Marketing Division**  
**Insurance Division**  
 JOINT TOUR and PROGRAM  
 Harvard Business School

Corporate Responses to the Consumer Movement

**Panel:** E. PATRICK McGUIRE  
 The Conference Board  
 WILLIAM EWEN, Executive Director  
 National Advertising Review Board

Reception and Luncheon  
 Tour of Harvard Business School Library

- 126** 8:30 a.m.—6:00 p.m.  
**Chemistry Division**  
**Aerospace Division**  
**Biological Sciences Division**  
 JOINT TOUR  
 The Woods Hole Oceanographic Institution and the Marine Biological Laboratory in Woods Hole, Massachusetts. Luncheon in Falmouth, Mass.

- Noon—  
**Documentation Division**  
 See Engineering Division **127**

- Noon—  
**Engineering Division**  
**Documentation Division**  
 JOINT LUNCHEON and PROGRAM  
 (Limited to 70 persons)  
 Faculty Club, M.I.T. **127**

Closed Circuit TV Demonstration of Project INTREX

- Noon—  
**Engineering Division**  
**LUNCHEON and PROGRAM**  
 (Limited to 40 persons)  
 Bush Room, M.I.T. **128**

The Model Library Program of Project INTREX

MARIE CANFIELD  
 JEFFREY GARDNER  
 Project INTREX  
 M.I.T.  
 Cambridge, Mass.

TOUR of the M.I.T.  
 Barker Engineering Library

- 8:00 a.m.—6:00 p.m.  
**Geography and Map Division**  
 FIELD TRIP: **129**

Visit to School of Geography and Map Library, Clark University, Worcester. Grist Mill, Red Schoolhouse, and luncheon at Wayside Inn, Sudbury. Bus tour through Concord and Lexington. Visit to Winsor Memorial Map Room, Harvard University.

- 9:30 a.m.—3:00 p.m.  
**Insurance Division**  
 See Business and Finance Division **125**

- 8:30 a.m.—5:00 p.m.  
**Metals/Materials Division**  
 TOUR: M.I.T. Project INTREX; M.I.T. Engineering Library and Materials Center Reading Room **130**

Recycling, Reclaiming Metals/Materials  
 MICHAEL BEYER  
 M.I.T.  
 Cambridge, Mass.

LUNCHEON at Harvard Univ. Faculty Club. Visit Harvard Widener and Gordon McKay Libraries, and the Harvard Museum—glass flowers and rare minerals exhibits

- 8:30 a.m.—3:30 p.m.  
**Military Librarians Division**  
**Federal Library Committee** **131**

JOINT TOUR and PROGRAM  
Federal Library Community:  
An Overview

**FRANK KURT CYLKE**  
Federal Library Committee  
Washington, D.C.

Automation and the Federal Library  
Community

**MADELINE HENDERSON**  
National Bureau of Standards  
Washington, D.C., and

**Dr. LAWRENCE GRAYSON**  
U.S. Office of Education  
Washington, D.C.

The session will discuss the recent System  
Development Corporation study of the  
Federal Library Community

LUNCHEON at Officers' Club,  
L. G. Hanscom Field. Tour of the  
Air Force Cambridge Research  
Laboratory Library

Noon-2:00 p.m.  
**Newspaper Division**  
LUNCHEON and PROGRAM

Picture Problems

**BILL LYON, Jr.**  
United Press International

**HAROLD G. BUELL**  
Associated Press

2:30-4:30 p.m.  
**Newspaper Division**  
ROUND TABLE DISCUSSIONS continue

3. Miracode for a Newspaper Library
4. Update, New York Times  
Information Bank

9:00 a.m.-5:00 p.m.  
**Nuclear Science Division**  
TOUR to Plymouth; morning and noon  
free; visit to Boston Edison Pilgrim  
Station (nuclear generating)

10:00 a.m.-3:30 p.m.  
**Petroleum Division**  
PANEL DISCUSSION and LUNCHEON  
The Petroleum Industry and Its Public

**Panel Leader: GEORGE AQUIRRE**  
Standard Oil of N.J.  
New York

**Panelists: STEVE POTTER**  
American Petroleum Institute  
New York

**KEN KANSAS**  
Humble Oil

**OTTO LERBINGER**  
Boston University

An in-depth look at public relations for  
the industry. Each of five speakers will  
discuss this from a different viewpoint.

10:00 a.m.-Noon  
**Picture Division**  
Boston Public Library

Organization of Picture Collections  
**RENATA V. SHAW**  
Library of Congress  
Washington, D.C.

12:30-4:30 p.m.  
**Picture Division**  
See Museums, Arts & Humanities  
Division

9:00 a.m.-5:00 p.m.  
**Public Utilities Division**  
TOUR: Boston Edison Power plant  
(Division members and guests only)  
**Hosts: New England Gas and Electric Association/  
Boston Edison Co.**

9 a.m.-Noon  
**Museums, Arts & Humanities Division**  
Members are invited to visit Harvard  
University Libraries in Cambridge:

Widener Library, Houghton Library (Rare Books),  
Fine Arts Library (Fogg Art Museum), Carpenter  
Center of the Visual Arts, Busch-Reisinger Mu-  
seum (Germanic Art), Peabody Museum of Archae-  
ology & Ethnology, Geological & Mineralogical  
Museum, Botanical Museum (Glass Flowers), Mu-  
seum of Comparative Zoology (Agassiz Museum),  
Harvard Herbarium & Farlow Herbarium

12:30-4:30 p.m.  
**Museums, Arts & Humanities Division**  
**Picture Division**  
JOINT LUNCHEON and PROGRAM  
Harvard Faculty Club

Round Table Discussion of Manuscripts  
and Archives

**Leaders: ROBERT W. LOVETT**  
Curator of Manuscripts & Archives  
Harvard Business School Library  
Cambridge, Mass.

**ROBERT BROWN**  
Archives of American Art  
Boston, Mass.

8:30 a.m.-6:00 p.m.  
**Natural Resources Division**  
TOUR: Cape Cod National Seashore

9:30-11:30 a.m.  
**Newspaper Division**  
ROUND TABLE DISCUSSIONS

1. Planning a Microfilm Program
2. What's New in Equipment

136

137

138

139

140

133

141

**142** 10:00 a.m.-5:00 p.m.  
**Publishing Division**  
TOUR to G. K. Hall, Boston Athenæum,  
Houghton Mifflin Company  
(Division members only)  
Party

**143** 2:00-4:00 p.m.  
**Transportation Division**  
TOUR of the U.S. Department of  
Transportation Facility, Kendall Square,  
Cambridge, Mass.

**144** 9:00 p.m.-  
**Newspaper Division**  
Open House



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FRIDAY, JUNE 9

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**145** 9:00 a.m.-5:00 p.m.  
**BOARD OF DIRECTORS**  
Presiding: **EDWARD G. STRABLE**  
**President 1972/73**  
**Special Libraries Association**  
J. Walter Thompson Co.  
Chicago, Ill.

**146** 8:00 a.m.-  
**Insurance Division**  
(Division members only)  
TOUR to Life Insurance Agency

Management Association, Hartford  
LUNCHEON at Connecticut General  
Life Insurance Co.

9:00 a.m.-4:00 p.m.  
**Museums, Arts & Humanities Division**  
TOUR: Lexington and Concord historic  
sites; Luncheon at Colonial Inn, Concord;  
Fruitlands and Wayside Museums,  
Harvard, Mass.

**147**

## **Institute on Teaching Special Librarianship**

An Institute on the Teaching of Special Librarianship will be held May 22-23, 1972 at the School of Library Science, The University of Michigan, Ann Arbor.

Elizabeth Ferguson, as chairman of a subcommittee of the SLA Education Committee, will direct the Institute. Dr. Martha Jane K. Zachert (Florida State University) and Barbara K. Becker (president, Michigan Chapter) are also members of the subcommittee. They are working with Dean Russell E. Bidlack (School of Library Science, University of Michigan) in organizing and conducting the Institute. Also participating in the program are Dr. Andrew H. Horn (dean, School of Library Service, UCLA), Charles A. Bunge (director, Library School, University of Wisconsin), Rose Vormelker (Kent State University), and H. Robert Malinowsky (University of Kansas and chairman of the SLA Education Committee).

Several people at the University of Michigan will also participate in the Institute, including Beverley Pooley (director, Law Library), Robert Warner (director, Michigan Historical Collections), William Weichlein (professor of music and library science), Gwendolyn Cruzat (specialist in medical librarianship), Thomas Slavens (a member of the faculty now engaged in making a study of the teaching of special libraries in the accredited schools), and Charles Davis (specialist in information science).

## **COMING EVENTS**

**Apr 4. Management, Instruction and Technology in the Academic Library . . .** at the Statler-Hilton Hotel, New York City. Annual spring institute of Library Association of the City University of New York. Registration (\$8.50 members; \$10.00 nonmembers): Terence Walton, Hunter College School of Social Work Library, 129 East 79th St., N.Y. 10021.

**Apr 4-7. Texas Library Association, 59th conference . . .** in Galveston, Texas. For information: Bob Slaney, College of the Mainland, Texas City, Texas.

**Apr 13-15. Oklahoma Library Association, annual conference . . .** at the Student Union, Oklahoma State University, Stillwater, Oklahoma 74074.

**Apr 24-26. Seminar on Indexing . . .** at the University of Maryland Center of Adult Education. For information: National Federation of Science Abstracting and Indexing Services, 2102 Arch St., Philadelphia, Pa. 19103.

**Apr 30-May 3. Library Applications of Data Processing, 9th annual clinic . . .** at the Illinois Union Building, University of Illinois, Urbana-Champaign. For information: Leonard E. Sigler, Clinic Supervisor, 116 Illini Hall, Champaign, Ill. 61820.

**May 4. National Information Retrieval Colloquium, 9th annual . . .** at Penn Center Holiday Inn, Philadelphia. Registration \$25.00. For information: Susan Nickleach, Research for Better Schools, 1700 Market St., Philadelphia, Pa. 19103.

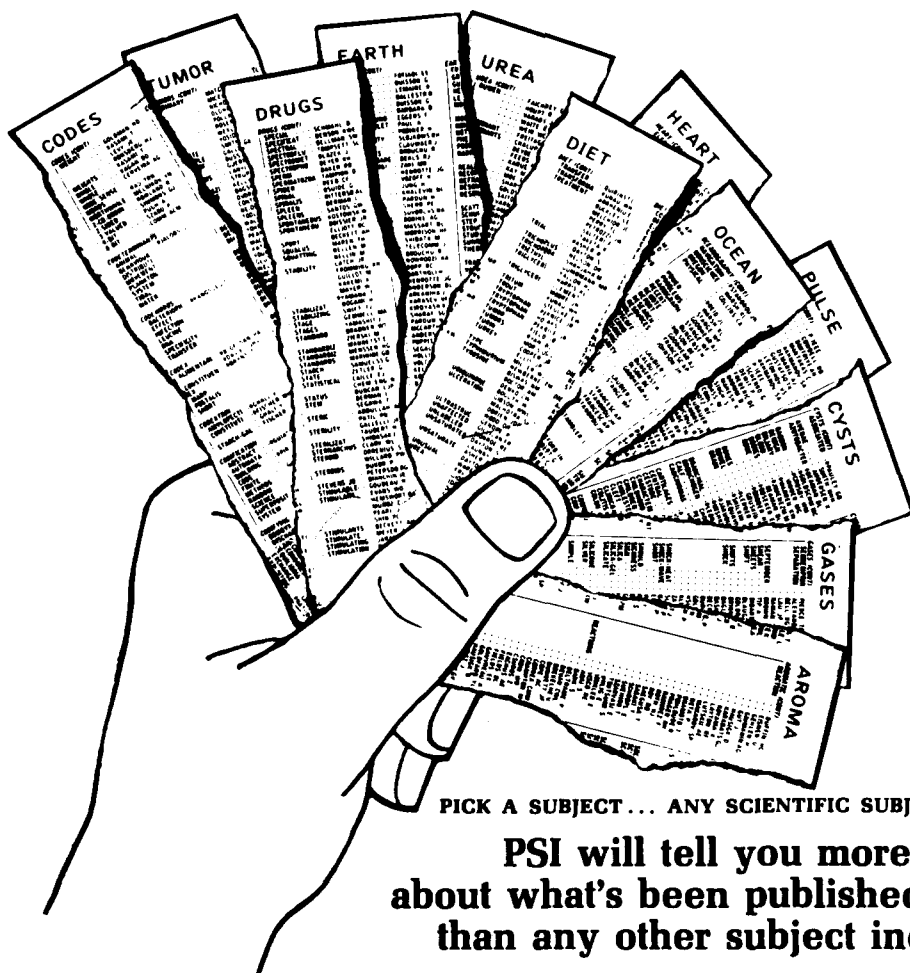
**May 4-6. New England School Library Association (NESLA), spring conference and exhibition . . .** in Portsmouth, N.H. For information: NESLA Spring Conference Chairman, Memorial Junior High School, Laconia, N.H. 03246.

**May 5-6. Role and Function of the Library in an Era of Expanding Educational Technology, conference . . .** in Amherst, Mass. Sponsored by New England College Librarians, New England Technical Services Librarians, and New England Chapter of ASIS. Co-hosts: Robert Taylor (director, Library Center, Hampshire College) and Merle Boylan (university librarian, University of Massachusetts).

**May 6. Books in a Starving World: A Quest for Enrichment, IBY conference . . .** at St. John's University, Jamaica, N.Y. Registration \$8.00. For reservations: Public Relations, St. John's University, Grand Central & Utopia Parkways, Jamaica, N.Y. 11432.

**May 16-18. Spring Joint Computer Conference, SJCC . . .** in Atlantic City, N.J., Convention Hall. For information: AFIPS, 210 Summit Ave., Montvale, N.J. 07645.

**May 19-21. Mid Year Regional Conference, ASIS . . .** at Kennedy Memorial Union, University of Dayton. Theme: "Cost Reduction in Information Systems." For information: Robert McAfee, Jr., ASIS, 1140 Connecticut Ave. N.W., Washington, D.C. 20036.



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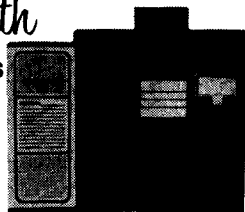
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In each membership year, each unemployed member will be allowed a maximum of two free "Positions Wanted" ads, each ad to be limited to 5 lines including mailing address (no blind box addresses), on a space available basis.

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

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Special Libraries Association reserves the right to reject any advertisements which in any way refer to race, creed, color, age, or sex as conditions for employment.

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**Biological Sciences Librarian**—BS, MS, Biology; MSLS. Research and teaching experience. Seeks challenging position in academic or industrial environment. Box D-180.

**Librarian**—Exp. all phases libr. operation; also abstracting, rsch. Articles publ. free lance. Desire 1 or 2 day a week permanent position (Saturday excepted) or temp. Bess Gordon, 515 Elizabeth Ave., Newark, N.J.

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*Information concerning the Employment Clearing-house to be held at the 1972 Annual Conference in Boston will appear in the March 1972 issue of Special Libraries.*

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