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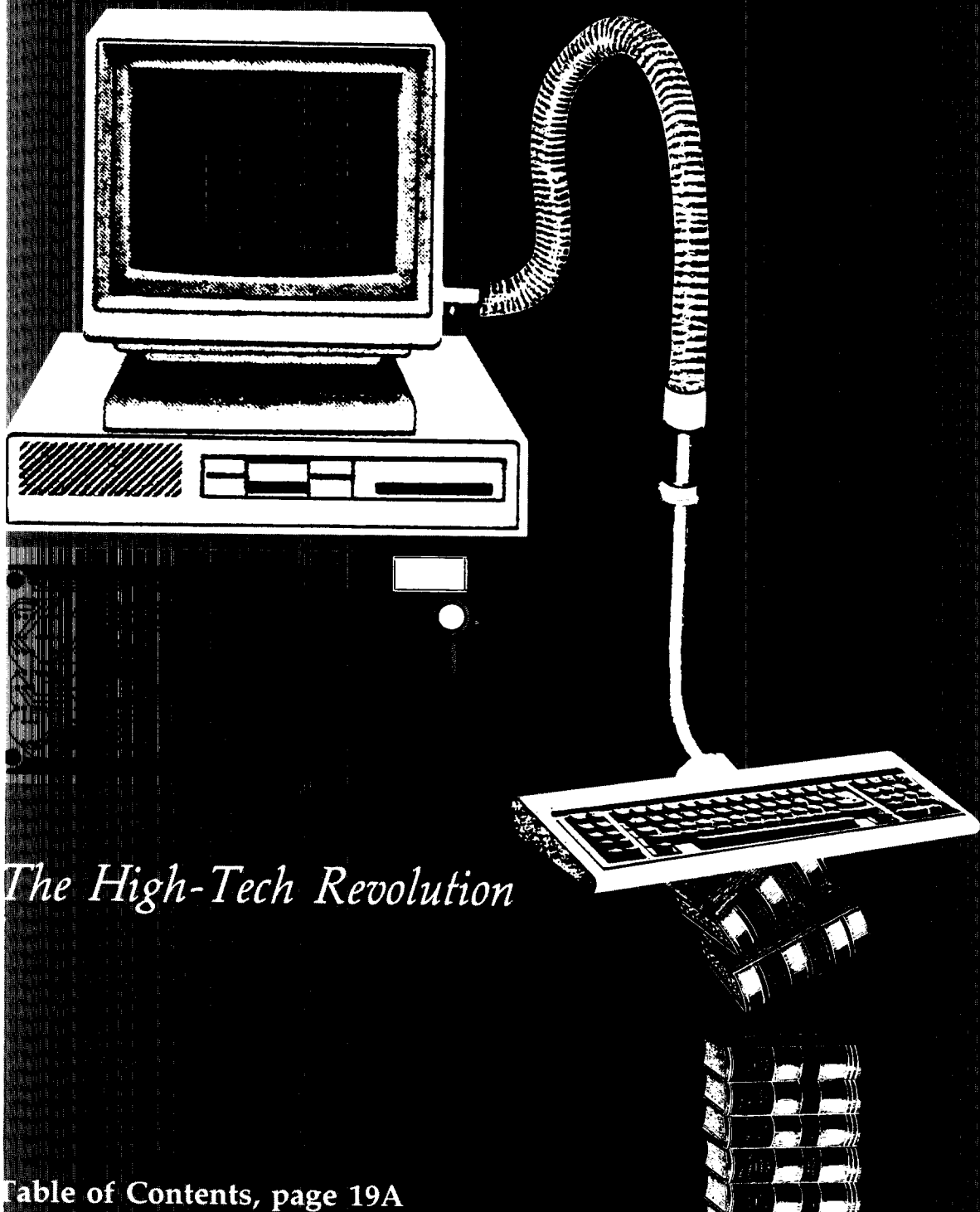
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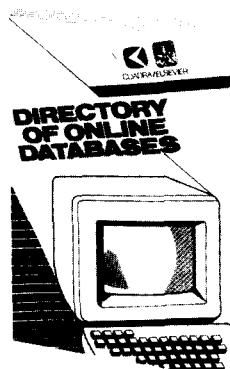
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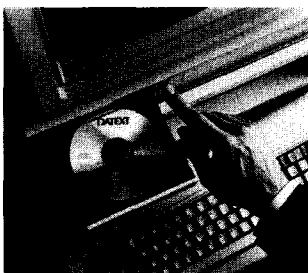
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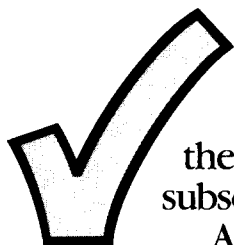
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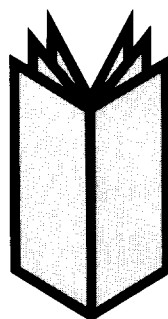
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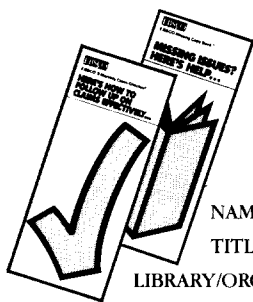
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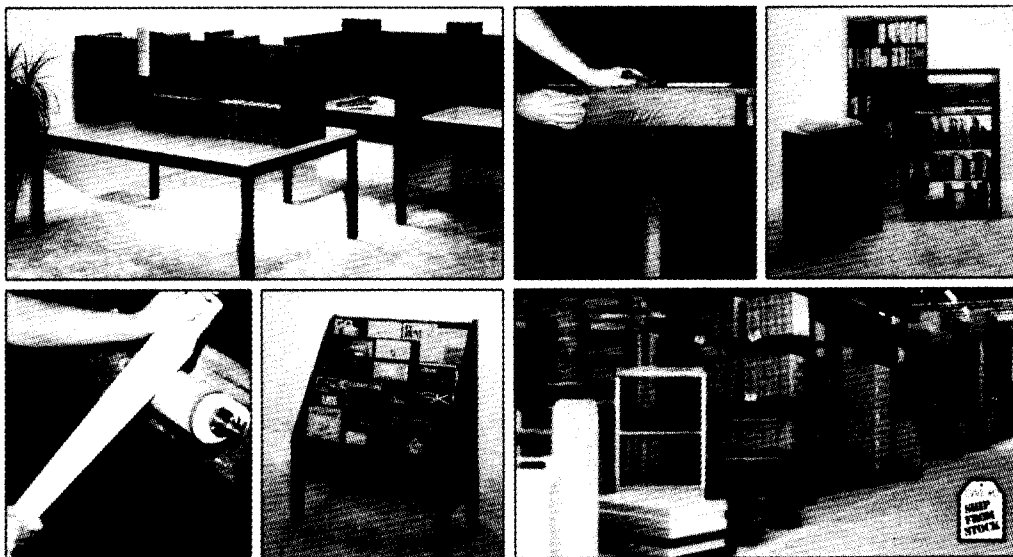


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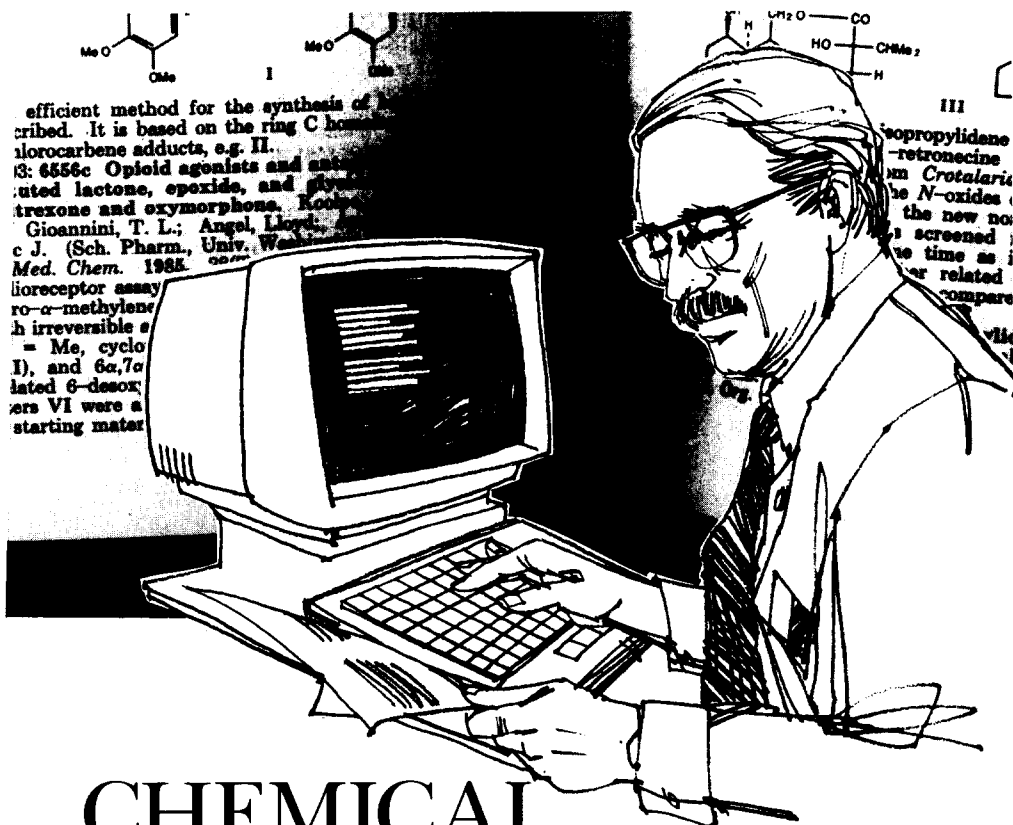
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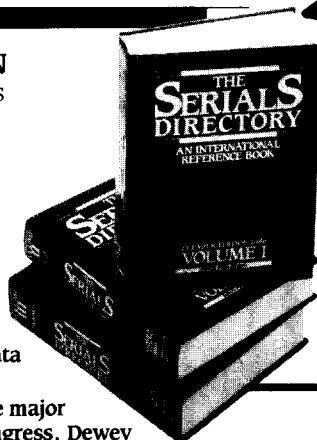
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The High Tech Revolution

Robert Arnold Russel

Orba, Inc.
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■ This article was presented as a keynote address at the Special Libraries Association 76th Annual Conference in Winnipeg, Manitoba, Canada, on June 10, 1985.

Visitors to the World's Fair at Tsukuba, Japan, come back amazed at the intelligence and skills of the robots on display. There is a robot which sight-reads music, and plays an organ in real-time with its digital manipulators. There's a robot that draws your picture. It takes about two minutes, and the likeness is very good. They're working on rescue robots which can climb the side of a building. There's even a thirty-inch robot that can ski down the side of a hill. It looks like the automation rush of the fifties is about to take off again.

Harder to appreciate is the work going on with Fifth Generation computers at the ICOT center in Tokyo, now in the third year of its ten-year plan, and by latest report, ahead of schedule. By 1990, in less than two thousand days, ICOT expects to demonstrate a thinking, talking, highly-informed computer, which will listen to your question, clarify it by a few well-placed queries, search the appropriate data bank, and give you the answer in terms you can understand. Sounds to me like they're building a special librarian. You should get to know your competition. Maybe you can sell

them memberships in the SLA. Just as long as you don't give them the vote.

You know, they're not so incredible when you think that American military pilots "talk" to their planes as they fly, that military satellites can read Pravda's headlines in Moscow's Red Square, that location satellite-computers can place a battleship, tank, or bomber within a few feet of anywhere on or above the globe.

Two things are clear. We're in a revolution, and it's happening much faster than we're aware. Which explains why, as a futurist, I've spent the last six years studying revolutions, Western economic revolutions, the serious kind. I long ago came to the conclusion that there's no use watching the trends, if you don't know which trends to watch.

An economic revolution marks the end of one economic age, and the beginning of another. Our High-Tech Revolution marks the end of the dominance of industrial values and materialistic economics, just as the Industrial Revolution ended the dominance of mercantile economics and values.

The beginning of the revolution is, of course, the unsuspecting end of the previous age. In the eighteenth century, no

one had the least idea that Mercantilism, for all its faults, was not the ultimate economic system. It was the way of the Roman Empire, of the Egyptian before it, and of the Chinese and the Arab which followed. Yet it was succeeded by an industrial economy, which all but the Marxists thought to be the ultimate system, susceptible to reform and fine tuning but not supplanting.

One of the things I discovered was that the new economy is always technologically based. The Corporate Revolution, in which farmers and craftsmen left the feudal manor to set up shop for themselves, was set off by the arrival of Asian agricultural and craft technologies.

The Commercial Revolution, which started in Italy before the Renaissance, and swept Europe in the sixteenth century, was based on Muslim business practices and Chinese navigation.

The Industrial Revolution was set in motion by factories, machines, steam power, and the systems approach to everything, including the process of invention itself.

Our Information, or High-Tech, Revolution is based on a series of truly Faustian technologies, inventions of extraordinary power which are transforming our values and making great demands on our wisdom: atomic energy, powerful enough to end life on earth, or provide us with limitless energy. Genetic engineering busy transforming life itself. Who, before us, would believe that babies would be made in test-tubes, or that we would be walking around with machines in place of our hearts? Would our parents even have dreamed that computers could surpass the human mind in the speed of calculations or the power of their logic? Or that we would dance on the moon and circle our planet with satellites? Or that we all might have electronic theatres in our homes eclipsing the bright lights of Paris, London and New York? Or that robots would run our factories while we sleep? These are truly Faustian technologies. And they are changing our consciousness and our lives in ways we do not understand.

Faced with this storm of technology, our traditional artists have diverged into irrelevance and abstract cacophany. Our priests cannot deal with our troubled relation to nature or to other races and civilizations. Our liberal leaders cannot cope with a world writhing in economic childbirth. Our economists can't account for trade in intangibles, like software and services. We have regressed culturally, religiously, politically, economically, while we sail forward at breakneck speed with neither rudder nor goal.

Very soon, if my historic pattern holds, the confusion will yield to clarity. An economics based on quality rather than quantity will emerge. We can already see a form of Bhuddist ecology answering the spiritual quest of the young, as the West moves beyond Christianity to embrace the no-longer-mysterious East. New values are forming to encourage change and share it with the world. Information Age art forms are appearing: television, of course, and video music, video games, and perhaps most important, software, the imitation of life. These new forms and values will come to be seen as part of a unified whole, worthy of dedication. As this picture comes into focus, sometime in the next decade, the Information Revolution will have ended, and the Information Age begun.

Institutional Change

How will this affect special libraries? Since they are service organizations, their future will depend on what happens to their clients, the institutions, corporations and government departments and which consume their services and approve their budgets.

Institutions both reflect and add to the surrounding chaos. Most were reorganized in the last century as industrial factories for the mass-production of services and the mass-processing of people. Most have long since passed the size where they can be humane, personal and effective, and have become counterproductive. Schools alienate rather than educate.

Hospitals create more disease and accidents than any other single source. Prisons are academies of crime. Old-age homes and orphanages terrorize, degrade and humiliate their helpless wards. Public libraries are bypassed or ignored as the quest for knowledge and entertainment turns from books to more urgent media. Research institutions become staff-heavy and unproductive. Public broadcasting continues to promote industrial values to a declining and aging following. Churches are converted to museums or restaurants, as priests turn to more rewarding careers.

These statements offend our sensibilities because we have been trained to think well of our institutions and those who selflessly serve them. We can't imagine life without them and we do not know what to do to put them right. But the fact remains they are not working, that their situation is deteriorating, and we are denying them funds.

We have been there before. The great monasteries, which dominated the spiritual and economic life of the Corporate Age, collapsed with the Commercial Revolution, and the arts, which were provided free by Church and guild, became commercialized. The colonial system fell apart with the Industrial Revolution, along with the absolute monarchy, while our surviving institutions were transformed and industrialized. If we look at historical patterns, we can be sure there is a resolution to today's institutional crisis. We can even be sure that we will "informationize" our institutions. But we don't know what that means.

Let's see what is happening to education in the current revolution. We suspect that our children will learn far more, and faster, through the patient ministrations of a personal computer than with the collective processes of the industrial school. But we cannot imagine how else to socialize our children, or look after them while we are out there making a living. Perhaps we won't be out there. Perhaps we will socialize them ourselves while we're working at home.

Perhaps the school will computerize its

instruction, providing learning on demand. Perhaps it will fund the transformation through the savings made by computerizing its bureaucracy. It's beginning to rent its courseware from the private sector, replacing it as better and more popular programs arrive. Perhaps it will encourage more learning to take place at home, cutting down on the money spent on buildings, heating, protection, supervision. There's no shortage of money for education, just an unwillingness to waste it on the industrial approach.

Another of our institutions, health care is waiting to be "informationized," cutting back on the bureaucracy, providing more customized diagnosis and information to the individual at home before he/she becomes critical, requiring fewer hospitals, surgeons, nurses, beds and other signs of our collective incompetence. We all know the hospital is the worst place to go when we're sick. It's full of disease, administrative confusion, unnecessary procedures, it's highly accident-prone, and it's ruinously expensive. We're just waiting for an alternative.

Cultural institutions, which in the Industrial Age were replacing the churches as spiritual centers, are becoming rapidly "informationized". We no longer have to go out to hear a concert or opera, see a play or a movie. Great books are brilliantly serialized on television. Even the remotest farmhouse can enjoy a cornucopia of excellence for the price of a dish antenna. Rather than hear the Oshkosh symphony grind away at Brahms, we can listen to the greatest orchestras impeccably reproduced on digital disc, or see the latest and most imaginative Music Videos. In the offing are wide-screen, high-definition sets. Flooded with the cultural marvels of the global marketplace in our very homes, we now seem prepared to let our heavily-subsidized local "cultural institutions" wither.

Education at home. Work at home. Home diagnosis and medical information. Home culture and entertainment. It would seem that the one growing insti-

tution of the Information Revolution is the home. And those who serve its soaring information needs are likely to prosper at the expense of those working in Industrial Age institutions.

Another major client of the special library is government. Throughout the Industrial Age, *Government* proliferated, gathering power by providing ever-increasing services to the public, ever-increasing protection to the consumer, ever-increasing support for the producer. And as Parkinson so amusingly informed us, it kept growing larger, regardless of the work, if any, to be performed.

During an economic revolution, a bloated government is either forcibly dismantled, or its thicket of regulation is cut away. Since 1975, the deregulation process has been gathering speed. Since 1975, government has almost ceased to grow, which in fact means it is consuming all its budget just to pay its rent and salaries, without doing any work. For a decade, our civil servants, have been backpedaling or marking time, while consuming between third and a half of all we produce. It's just as well, for there has been no consensus on what they should be doing, other than taking the system apart.

But that situation is about to change, as we enter the concluding phase of the Information Revolution. Soon the new tasks ahead of government will become clear: paving the way for international trade; hurrying the process of technology transfer; helping entrepreneurs create new wealth and new jobs; funding basic research; eliminating laws which stand in the way of beneficial change; closing the doors on international crime; keeping infrastructure costs down.

Our bureaucrats despair of their constraints. But they will learn to tackle these vital new jobs with the old resources, since there are no new funds. In my scenario, they will voluntarily abandon the old games, and turn to information technology. In their search for fulfillment, they will be forced to informationize. Parkinson's Law will collapse of its own accord. This process will con-

tinue for a generation, until government is running as lean and as proud as a greyhound.

Now for my final client group. The *Corporate World* loves to sit back and take pot shots at government. Yet, they too are fat at the top, and the bigger they are, it seems, the fatter their bureaucracy. And yet, at present there is literally no connection between the size of the bureaucracy and the output of the corporation. Toyota is said to have four levels of management between the boardroom and the shop floor, and Ford to have fourteen. Both produce the same number of cars.

Since the war, we have witnessed the automation of power stations, of chemical plants, and more recently of the production line. There are factories in Japan running two shifts a day unmanned, while the day shift stands by, watching the machines. Skeleton crews man the supertankers. Great dams and power plants run almost unattended. Will the office follow that route and "informationize?" Will we see a skeleton office crew run a giant corporation, supervising the computers, watching the dials, fine-tuning the programming?

That process is already under way. In 1975, the word processor appeared. In the early 80s, the personal computer was smuggled into the office. Telecommunications breakthroughs followed, tying these pieces together, and making telecommuting, or working at home, a desirable alternative. But productivity gains are elusive. There are three vital technologies missing, before the great transformation can occur. Voice processing is one of these. Electronic storage is the second, and smart programs the third. As these three technologies invade the premises over the coming decade, we will see the informationizing, that is the decimation of the office as we know it. Nothing will be the same.

All that nonsense about executives not touching equipment, about the permanence of paper, of the need for office people to gather and socialize, will disappear in a competitive race to garner

world markets. When faced with closure, the hierarchy will transform itself into a network so fast our teeth will come unstuck. We'll be talking to our electronic filing cabinet from the phone in our car. We'll be working out of our homes because we're doing business with Tokyo at one time of day, and London at another. Once the office vacancy rate hits 25 per cent, we'll be converting those skyscrapers to condominiums. By the nineties that could be one of our biggest industries.

How fast will all this happen? I believe the informationization of our institutions, government departments, and corporate offices will occur with surprising and devastating speed once our three technologies are in place. It's true, the diffusion rate of previous technologies was relatively slow. The plow and the watermill took centuries to cross Europe. But the compass moved faster, and the factory and the steam engine, faster still, pushed by the printing press. Now we talk about the learning curve, as more and more powerful chips, computers, programs, satellites, and telephone switches take over the market each year. I'll bet my 22 years as a futurist that, by 1990, the informationization of our organizations will be in full swing, that hierarchy will be a dirty word, and that network organization will be the golden way.

This is the nexus as I see it, the goal toward which the West and the East are rushing with all possible, competitive speed. There are three triggers, all important, all interrelated: Network organization, information technology, and human capital.

I will begin with *Information Technology*. I include in this all forms of high technology which are information based: genetics, lasers, nuclear energy, robotics. But I am specifically referring to smart programs, or softer software, as they're starting to call it, better interfaces, such as voice processing and graphics, massive low-cost memory, talking filing cabinets, toll-free long-distance, teleports and smart buildings, truly personal shirt-pocket work stations. The object here is

to bring the quality of information and information products and tools under personal control. Judgement embedded in silicon. If you will remember what I said about the robots at the Tsukuba Fair and the smart technology used by the military, it isn't that far away. As they say in the commercials, "the future is now!"

Another trigger is *Network Organization*, how we put things together, from the simplest relationship all the way to the global firm and the family of nation states. Networks used to be hard-wired systems, like canals and railroads, highways and power lines; hierarchical in their structure, limited in their capacity, distance sensitive in their costs, and immutable in their geography.

Our organizations were like that too. Today's corporation was structured to serve the railroad in the 1850s, before the American Civil War, and is totally inappropriate in our high-tech world. It is as hardwired in place by a mare's nest of legislation, procedure manuals, standard accounting practices, adversarial relationships, business school teachings, mammoth investments in hardware and software, and hardlearned experience so that it seems like God's Own Way. It is not. It is merely stupid and counterproductive. It is a house of cards about to be scattered by the proverbial winds of change. In its place is arising a network structure, in which connections are organic, changing with need, and its nodes are super-people, supported by smart technology. Their product, quality service, is costly, but effective, and used—and paid for—only as and when needed.

Which brings me to nexus three, placed appropriately at the top of the triangle: *Human Capital*. Quality here means a combination of skill and relevance, appropriate ability, a dynamic combination when motivated and set in a network supported by smart technology. The skills required to operate in this environment are very different from those required to function effectively in a hierarchy, where delegation, the management of others, and the ability to take the credit, while covering one's ass and

shifting the blame are how careers are built.

It all comes down to quality, the magic ingredient, missing from most equations, sales projections, marketing strategies, contract negotiations, and what's worse, from products and services. Quality is also the missing element in our systems of measurement, right up to GNP. It is one of the most important forces in the world, up there with love and peace and plenty, at the top of the pantheon. It is quality, or rather, "quality-control," that euphemism for shoddiness, that has brought America down. It is the achilles heel of democracy, the missing ingredient in industrial economics, and our greatest challenge. If we do not define it, learn how to evaluate it, and pursue it with all our ingenuity and heart, we will fall back. Wait a moment. We are falling back. We will fall back further still.

Information Specialists

Now let's apply this to special libraries, or rather, special librarians. If our three main clients (institutions, governments and corporations) "informationize" over the next decade, what's to become of the special library? Perhaps more important, what's to become of the information specialist?

The special library is itself a typical institution of the Industrial Age. Its function was to interface the industrial organization with the industrial research community, as seen through the industrial press, a typical library function requiring typical library skills.

In the Information Age, as the pace of innovation quickens, the information specialist becomes increasingly important. As the host organization "informationizes," flattening its hierarchy, moving to network mode, in search of ever-increasing productivity, it will turn to the special library for new and extended services. If the special library can rise to this challenge, it will become a node in the corporate network; if not, it will be bypassed.

Part of the challenge is in the nature of the information required. As each day goes by, the information required is less in the public domain, more in the minds of specialists, who are increasingly to be found "offshore," perhaps writing in Japanese or Korean. Often an exotic new discipline is developing, and the information must be gathered through idiosyncratic means. To acquire these new kinds of information, the special library must "informationize," and "globalize," a process begun with access to data banks, but by no means confined to them. Automatic translation will become a central instrument. Automatic scanning. Automatic identification of specialists and new innovators, and building files on them. The corporation can no longer entrust this job to the technical press. The information specialist is entering the province of industrial intelligence and espionage.

As its host organization "informationizes," the quality of information passing through its network becomes increasingly important, and the special library will be called on to "qualitize" its output, checking the accuracy and assuring the relevance of every piece of intelligence it introduces into the corporate stream. The information specialist could be called on to improve the quality control of information throughout the entire corporate network, not merely that which the library provides.

The constant search for productivity gains in the office will mean ongoing purges of whole levels of personnel, and activities that are superfluous or can be bypassed by information technology. As the trends I have been describing unfold, this means the special library and the information specialist must either expand their roles or face the guillotine. As it becomes easier to consult the data banks, and as network executives become "terminalized," and as more important information goes online or becomes available on optical discs, the industrial library as we know it will become dispensable.

A second consequence for the search

for productivity is that each remaining executive in the network will become increasingly important to the organization, and will have to be more efficiently supported with information, and helped to become more flexible and capable. The information specialist can look after information support of the nodal executive, but the training role has not yet been permanently assigned. Traditionally it has been handled by the Personnel or Human Resources Department, often in seminar mode. Increasingly, this training will be built into software, and as such could fall into the province of the information specialist. The personnel department will also become increasingly superfluous in the automated organization. If you see your role as becoming the intellectual support and broadening of the nodal executive or researcher, you, too, can become a node in the shrinking but ever more powerful executive network.

As the pace of competition grows and becomes increasingly global, the demand for pattern recognition will rise accordingly. A cloud on the horizon no bigger than a man's hand may soon grow into a storm. It is thus important for the information specialist to devise intelligence patterns to spot these handshaped clouds, and to interpret them for the network. This "interpretive" function has heretofore been reserved for the executive, but the information specialist must become an executive if he or she is to survive, and assume a full measure of responsibility for the success of the organization.

In essence, I am saying there are three kinds of information for which you must assume responsibility if you are to play a nodal role in tomorrow's network organization: Tactical, Strategic, and Structural.

Tactical information you know all about. Getting detailed intelligence to the people who need it. Updates, searches, alerts. Of course, you will be held responsible for its quality. But since much of this will be automated and piped directly to executive workstations, your responsibility will have as much to do with the

pipes as with their contents. But that is structural information, and I am getting ahead of myself.

Strategic information deals with trends, with technological change and developments in competitive behaviour. Here we are more concerned with knowledge than information, and particularly new knowledge, new fields of knowledge, new attitudes, new approaches, new business. At the strategic level, we are more concerned with the book, the consultant's report, the overview, and how to extract and weigh their essence. The quality of the information specialist's strategic information is the yardstick by which his or her advancement or decline will be measured.

Structural information has to do with the changes taking place in the host organization and its operating environment, and in the opportunities these provide. It has to do with the quality of human capital, and anything that will help it appreciate. It has to do with the changing structure of the organization, with that of its clients and suppliers, with that of its information providers, and with changes in its complex relationship to various government departments at various levels, including the global. And structural information has to do with the integration of the information flows between all of these organizations. For each organization is becoming a node in someone else's network, and the more automated these flows become, the better informed each will be.

If the information specialist understands this transformation, and the technology making it possible, and can provide structural information, then he or she will be called on to play a central role in the process. If the specialists resist, they could be bypassed, and their information center, as it grows increasingly redundant, could be farmed out. You should not overlook the possibility of buying the information center from your organization, modernizing it, and contracting back the service to it, and to similar organizations.

Which brings me back to my metaphor

about economic revolutions. In the Industrial Age, when our whole emphasis was on the manufacture of things, information was a necessary evil, like janitoring. Governments gave it away, treated it like a public good, valuable but unsellable. As the Information Age rolls in, the task before us is to economize the flow of information. This means learning how to measure its quality at each stage in the process, and putting a price on it. Once we have learned to do that, we can

begin to improve the productivity of the information process, assure its quality, improve its input into the production of other goods and services, and create a fair, honest and efficient information marketplace, in which we all may prosper.

Robert Arnold is a well-known Canadian futurist.

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David R. Bender
Publisher

The High Tech Revolution: A Canadian Library Perspective

Carroll D. Lunau

National Library of Canada
Ottawa, Ontario, Canada

TO QUOTE from the description of this session, I was asked to describe the impact of various trends on Canadian special libraries, as well as to give brief descriptions of innovative techniques and services that have been developed to meet the challenges presented by these trends. I very quickly discovered that, even though I had the resources of the National Library of Canada available to me, had been active in the Canadian Association of Special Libraries and Information Services, and had worked in libraries in different parts of the country, the information required to address this topic was not readily available. There is very little published information about what Canadian special libraries are doing, consequently, the examples which I will describe are highly selective and are based on personal contacts rather than data gathered by means of a comprehensive survey or formal research.

Mr. [Robert] Russel has provided us with a very thought-provoking description of the coming "informationization" of society and of the organizations of which we, the special library or information centre, are a part. In my talk, I

will primarily concentrate on Mr. Russel's comments on the role of the information specialist and the challenges which are facing our profession and our institutions. Secondly, I will describe some recent developments and indicate what their impact might be.

Access to Information

Special libraries, more than academic and public libraries, have always emphasized the provision of information rather than the provision of citations. Manual files, both from the public and the private domain, of "who knows what" and "where to find what" have always existed. The advent of microcomputers and more or less user-friendly software packages such as INMAGIC has allowed libraries of all sizes to create automated data bases of this information. The challenge now is to find a way to cost-effectively share these files.

The Office for Network Development of the National Library of Canada has undertaken a number of research projects to test the feasibility of developing an electronic decentralized nation-wide library and information network in Can-

ada. Future participants in this network will not only include all types and sizes of libraries, but also related sectors of the information industry such as bibliographic utilities, publishers, booksellers, and information providers. This will be a true information network. The Open Systems Interconnection Reference Model, a model for a series of protocols which will allow different makes of computers and terminals to connect and communicate with other computers, was adopted in principle by the National Library in 1980 as the most likely technical strategy for the network.

As part of the network program, a project is underway to implement a directory protocol which will enable users to determine what services are available in the network from which organizations and under what conditions. In an open network, it is also essential to provide an index of what data bases and services are available in that network, the terms and conditions of their use, hours of service, etc. The directory service protocol provides for these functions. It assumes that the directory data base will be distributed across many systems with minimal replication of records and provides functions which will permit users to effectively query and update distributed data bases. A model of this protocol is currently being implemented on a SPECTRIX multi-tasking microcomputer at the National Library but this implementation will remain in the laboratory environment for at least another year.¹

The potential that this protocol holds for improving service is tremendous. An information specialist will be able to access the directory, determine where the information is and then access the data without having to worry about problems of hardware compatibility.

In this case, technology is being harnessed to help "globalize" and expand, amongst others, the "where to look" and "who knows what" files. Imagine the tremendous resource that would be available if all of these types of files held in every special library in Canada were available to you where and when you

needed them. Ultimately, the day may come when this is reality.

This scenario, of course, assumes that the information specialist is authorized to access the data. Appropriate safeguards are being incorporated into the data base to ensure that restricted data is kept confidential and it will be the prerogative of the individual or organization creating the directory to determine who can view the data and under what conditions he can do so.

"Qualitization" of Output

Recently there has been a growing trend within the corporate community towards merging the library function with other records functions. In some cases, the library has assumed responsibility for the records management function and the librarian has moved up within the corporate hierarchy. Many of these libraries have been able to use existing automated systems to code and provide improved access to the corporate memory of the organization. This improved control and access have served to "qualitize" the output since the information specialist is able to provide an integrated approach to accessing all relevant public and corporate data on a specific topic or issue. Examples of libraries which have merged the library and records management function are: Home Oil Library and Information Centre, Alberta Energy Company Ltd., Montreal Engineering, and Dome Petroleum. These examples are all in Calgary; however, I understand that the Alcan Aluminium Ltd. Group Information Centre in Montreal handles library, internal documents, and archives as well as administering the records centre. A representative from Home Oil Company will be speaking at the session "Closing the Gap between Information Management and Information Processing: New Roles" on Wednesday afternoon. This session will provide a description of how the merger was carried out.

Another approach to the "qualitization" of output is the merger of the li-

brary and the editing functions. At Currie, Coppers and Lybrand this has been done and the library is involved in ensuring that documents meet high quality control standards.

Support for the Nodal Executive

Special librarians have always provided support to their clients in new and innovative ways. The "terminalized" executive need not be seen as a threat to the role of the special librarian since technology is providing new ways for the librarian to provide that service.

An interesting example of support for the "terminalized" executive has been developed by Bell Northern Research. Their system, called EDIS (Electronically Distributed Information System), allows a researcher in his office and an information specialist in the information resource centre to work together to jointly develop a search strategy and carry out an online search. The researcher's and information specialist's terminals are linked and, if necessary, others may also be brought in to help refine the search. The system facilitates moving from data base to data base since it provides automatic connection once a simple command is issued. Search results may be downloaded to the researcher's file and he can then flag the items he wishes to see. Once this has been done, the system will check the references against the BNR union periodicals list, determine to which information resource centre the request should be sent and, finally, queue the request for pickup at the appropriate centre. This system is an excellent example of an innovative use of technology to provide support for nodal executives no matter where they are physically located. The problem of geographic proximity to the library in order to quickly and effectively use its resources has been overcome.²

If EDIS is unable to locate the requested item within the BNR system, a more traditional interlibrary loan must be initiated. The National Library of Canada and the Canada Institute for Scientific

and Technical Information are the major net lenders in Canada, and, in fact, according to recent ARL statistics, CISTI is the largest interlibrary loan provider in North America with 239,225 loans. The National Library provided 72,788 loans, placing it eighth in North America. The combined figures for the two institutions exceeded those of the Library of Congress, National Library of Medicine and National Agricultural Library put together.³ Thus, it is not surprising, that the National Library is actively searching for a means to optimize the ILL services it can provide.

There are two major areas where the timeliness of the ILL process can be improved. The first is in determining a location for the item and its availability for loan at that location. The second is the actual receipt of the material.

Data processing and telecommunications are converging rapidly and this convergence is providing a partial resolution of these problems. Electronic messaging services have been very quickly adopted by libraries and are being used for both reference and ILL requests. At the present time, 45% of all ILL requests received by the National Library are sent via an electronic messaging system.

Another solution to the problem of providing a location service was adopted by the National Library when it established the DOBIS search service. The DOBIS data base contains over three million records, including both source files and the selected holdings of 718 libraries. The over 100 customers of this service are able to search the data base and determine for themselves whether or not the requested item is held by one of the contributing libraries. It is no longer necessary to send a location request to the National Library. It is interesting to note that 20% of the search service clients are special libraries.

One of the first protocols developed by the National Library was an ILL protocol which allows users to exchange messages such as ILL requests, overdue notices, recall notices, etc. A common delivery service interface has been devel-

oped to access two telecommunications services—ENVOY 100 (Telecom Canada), and EOS (CNCP) so that the receiving library can accept requests from either messaging service by using the same workstation and procedures. It is no longer necessary for ILL staff to learn different equipment. Eventually, as more and more requests are able to be received through the workstation, large libraries will be able to replace their current jungle of incompatible terminals with an intelligent multifunction workstation which can access several systems. A sample implementation of the ILL system has been developed for the IBM PC. This protocol is currently being tested and evaluated by 10 institutions which are participating in a field trial. At the end of the trial, any changes to the protocol identified during the evaluation will be made.

The National Library is attempting to foster the widest possible acceptance and successful implementation of OSI possible within the Canadian bibliographic sector; however, it was assumed from the outset that the Library itself would not market or support the products. Not only does such a role properly belong to the private sector, but the National Library alone does not have the resources to support nationwide implementation in any case.

Accordingly, it has been decided to utilize a distribution methodology of royalty-free licensing of multiple distributors, subject to given terms and conditions. Presently, a series of licensing agreements pertaining to the products is being developed and a publicity program will be devised to alert the private and public sectors when the agreements are finalized.⁴

The Canada Institute for Scientific and Technical Information has developed a system called CANDOC. This system allows information specialists and researchers to search the CAN/OLE data bases and to order documents found in those data bases from a variety of suppliers. If an item has not been located, the system will also allow the user to

formulate and send a traditional ILL request.

These developments address the problem of quickly determining a location and requesting an item but they do not address the problem of document delivery. The Canadian postal system is notoriously slow; consequently, libraries have been using couriers and developing their own delivery services. Such a service is managed by the National Library for the federal library community. As well, the Public Services Branch of the National Library is planning to undertake a pilot project to test the feasibility of using telefacsimile for document delivery. The pilot will use leased Panafax MV-3000 equipment and will be carried out between the National Library, the University of Alberta and the Nova Scotia Provincial Library later this year.

The Training Function

The move towards end-user searching of commercial data bases need not be seen as a threat to the librarian. This trend should be viewed as an opportunity to expand into a more active training and advisory role. At many academic libraries, the librarians have seized the opportunity to make equipment available to clients and to provide seminars on services such as Knowledge Index and BRS AfterDark. Special libraries are providing similar services and, in some cases, are training clients to search highly specialized scientific data bases.

The training function has also become more formalized and learning resource centres, staffed with training specialists, are being incorporated into some information centres. At the Richardson Lab of Bell Northern Research, arrangements have been made through the information centre to bring in graduate university courses for the researchers.

Integration of Information Flows

One of the aims of the overall network program is to try to create the technological base that will allow libraries to

strengthen their role in the information age and to reduce the threat that they will be bypassed. Ingredients are easy economic access to many data bases, file transfer of records to and from any data base, format conversion on demand, directories to keep track of what is available, ILL and acquisitions to acquire material faster, faster document delivery, etc.

Within the applications layer of the OSI protocol model, the National Library has been instrumental in the development of specific application protocols, such as interlibrary loan, acquisitions and cataloguing, as well as support protocols such as directories, information search and transfer, file transfer and document delivery. Some of these protocols are being tested in pilot projects while others are still in the early stages of development and preliminary discussion. Nonetheless, it is evident that this ability to link incompatible hardware and software systems quickly and easily will provide a powerful tool for the integration of information flows between all sectors of the information community.

Charging for Information

The trend towards putting a price on information has been the cause of a great deal of soul-searching within the library community. Traditionally library services have been free; however, with the advent of computer services and cutbacks in library budgets many libraries have had to adopt a policy of cost-recovery for some services. The debate within the public and academic library community over charging for services is far from resolved.

Within the special library community, a trend was noticed within consulting engineering firms a few years ago. While it has not been uncommon to charge outside users, as the economic recession worsened, the companies began to charge more and more services back to the client. Formulae for calculating charges, which had been common in other sections of the company, were applied to the library services which were provided in support

of a project. The formulae included such factors as research time, online charges, equipment and overhead. It appears that this trend has been accepted and has not generated a controversy within the Canadian special library community.

Smart Systems

Mr. Russel has referred to smart systems as technologies now on our doorstep. The Canada Institute for Scientific and Technical Information has used a DBMS and 4th generation language called ORACLE to develop a circulation inventory control system which is now being used in a 2-month pilot project. One of the objectives of the project was to see if these new tools would improve programmer productivity and the results have indicated that substantial productivity gains can be realized. For example, it has been shown that it is possible to implement client-requested changes to screen layouts within twenty four hours.

Elements of expert systems technology are also being used by Informa-Log Inc. of Montreal (who has recently been acquired by Sobeco) to develop a format converter. The format converter will allow a librarian to define various criteria for converting records from one format to another without requiring the intervention of a programmer. This system is format specific at the moment but the concept holds a great deal of promise for libraries who must convert records between formats and the National Library is investigating the possibility of developing a generalized format converter which could be used with any system.

Windowing capabilities are also providing opportunities for libraries to better exploit the capabilities of current software. Four years ago, when I was involved in defining the requirements for an integrated library system, we identified the need to be able to simultaneously view records from multiple sources and to be able to select specific fields and to use cut and paste techniques to combine the data to form a local record. Microcomputers, mouse technology and win-

dowing are now starting to turn these concepts into reality. ABALL Software Inc. of Regina and the National Library of Canada are starting to investigate the requirements of a multifunction cataloguer's workstation which would incorporate some of these capabilities.

These developments hold a lot of promise for improving productivity and for helping librarians, as end-users, to better control and refine the systems which form the basis for our service offerings. Perhaps it is the programmer rather than the librarian who is becoming an endangered species!

Conclusion

In concluding, I would like to say that the coming "informationization" of the corporate environment will bring with it a number of challenges to the Canadian special library community. The examples which I have briefly described, be they operational or research, serve to indicate that Canadian libraries are meeting the challenge head-on and are using technology to provide better and more innovative services.

Technology is advancing upon us rapidly like a tidal wave. It would be interesting to reconvene this group in 1990 to see how many of the developments talked about today have come to fruition and what their impact has been. For the sake of whomever might undertake such a task, I want to make a plea to Canadian special librarians to publicize what you are doing. The *Canadian Library Journal* has

recently instituted a new series which profiles special libraries and information centres—send them an article. The Library Documentation Centre of the National Library acts as a clearinghouse for information about Canadian library activities and developments. Extensive vertical files are maintained so send in any reports of activities, descriptions of services, etc. which you have available. Remember, as well as creating the tools to assist our clients to become nodal executives we must also create the tools we need to become important network nodes ourselves.

Thank you.

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Automation Challenges of the 80's: What to Do Until Your Integrated Library System Arrives

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■ A medium-sized aerospace library has developed interim solutions to automation needs by using software and equipment that were available in-house. Automated processes were authors' file, journal routing (including routing slips), statistics, journal acquisitions, and on-line search log/index. An Automation Committee has been established to plan and set priorities for projects. This approach helps in preparing for an expected Integrated Library System (ILS) by (1) cleaning up records; (2) identifying which files should be included and in what format; (3) training and orienting staff to automation; (4) alerting management that automation is a "normal" library function; and (5) giving an understanding of and appreciation for automation benefits.

Challenges to library services that are characteristics of the 1980s include shrinking staff, shrinking budgets and increasingly sophisticated demands on the services. How can the electronic revolution help the library cope?

The first solution is usually an Inte-

grated Library System, known commonly as ILS. The ILS has emerged as a means of pulling together and automating many library functions. But this system is a large and expensive package, and it takes time and a coordinated effort to get such a system approved and installed.

Meanwhile, problems occur that need

to be resolved, especially those of records management. For example, statistics require periodic calculations which are time-consuming and repetitive. A method is needed for keeping track of on-line searches, especially periodically reporting them by subject and/or requestor. Acquisitions systems for books and periodicals, which require various listings and accounting, can be cumbersome when done manually. And lastly, the perennial problem in libraries: routing slips for periodicals must be continually updated.

Programmers can help, but developing internal systems such as these by working through an assigned programmer can be difficult to accomplish because:

- Libraries have low priorities in most companies and universities.
- Programmers get replaced often, so frequently continuity is lost.
- Copies of software and documentation may get lost, or not be updated. (In fact, documentation may never be provided.)
- The process is "mysterious" and there is no personal involvement.
- Personalized programming is expensive.

Intermediate Steps

The above presents the problems that are universal in libraries and are no different for the Lockheed-California library, known as the Technical Information Center. Of course, eventually we will need an ILS. However, there are intermediate steps that can be taken and are feasible because they:

1. Don't cost much;
2. Can be done by the present information center staff internally;
3. Can use resources that are readily available; and
4. Most importantly, fit in with the company's overall automation objectives.

While waiting for our ILS, our staff has utilized a word processor and a report-writing system, ADRS II (A Departmental Reporting System published by IBM Corporation). We define a report-writing system as a general-purpose time-sharing system that organizes and assists in ap-

plications involving data analysis, inquiry, and report generation.

Through the use of these resources and some tailored programming we have developed several automated applications over the past two years. Table 1 shows the chronology of our developments since the set-up of what we could call our "first-generation automated application" in 1975. This particular data base, called LIRS (Lockheed Information Retrieval System), is a retrieval system for the internal research reports of Lockheed. This data base (which has been called a "half-generation") now needs modification.

We will highlight some of the applications we have set up in the order of their development. These are:

1. CALAC Authors;
2. Routing System for Journals;
3. Statistics;
4. Journals Acquisitions; and
5. On-line Search Log and Index.

Automation Committee

Recently, an Automation Committee has been formed to plan better and to set priorities for suggested projects. Several project teams composed of all the staff members involved with particular procedures are designated to monitor any new applications being implemented. Using this procedure, we hope to avoid some of the experiences and false starts present in the applications that will be discussed. Also, this committee oversees the staff training on terminals, so there will be properly trained people when the time arrives to implement the projects.

CALAC Authors

The CALAC (Lockheed-California) Authors' File (or data base) contains bibliographic citations of articles, presentations and books authored by Lockheed-California employees. Every author is required to obtain a clearance before the work is presented or published and to send a copy to the Information Center.

At the end of the year the collected

Table 1.
Chronology of Automation Developments

1975	LIRS
1981	CALAC Authors (Lockheed-California Company Authors)
1981	Routing System for Journals
1981	Statistics
1982	Journal Acquisitions
1983	Online Search Log and Index
1983 (December)	Automation Committee
1984	Statistics—condensed
1984	CALAC Authors—new format
1984	Routing Systems Completed
1987	ILS

data are organized by COSATI numbers for publication in the company's Independent Research And Development summaries (IRAD). Over the years, maintaining these records manually had become unmanageable. In a first attempt at automation, they were put on the word processor the same way they had been put on 5" × 8" index cards when they were manipulated manually. Problems occurred because:

1. Too many unnecessary fields were retained.
2. No time was saved.
3. Data were being lost during sorting on the word processor.
4. The word processor would destroy data.
5. The procedure was too complex and required a high level of experience with the word processor.

After the Automation Committee reviewed the data and the input procedure, it decided that the unnecessary information needed to be dropped in order to make a truly automated, simple and time-saving data base.

We considered putting the data base on a report-writing system, available via IBM 3278 terminals. Further investigation showed that this possibility was not feasible, so we decided that the word processor was still the best medium. The reasons for this decision were:

1. Once tailored for the application, the data can be sorted easily.
2. The data need to be manipulated about once a year, twice at the most.
3. Information can be batch input every 3 months are so.

4. Manipulation of long strings of text is difficult with the software available for the report-writer.
5. More personnel are trained in using the word processor.

We are, however, studying the possibility of merging this file with our in-house reports file.

Routing System for Journals

About 400 copies of journals are routed to about 500 different people at diverse locations throughout the plant. The traditional slip method was used for many years. The biggest difficulty was, and still is, the continual movement of users among facilities, including users in different buildings and as geographically far removed as 50 miles. This system has built-in logistic problems; therefore care must be taken to group similar buildings together. Also care must be taken to put certain people at the top of the list, either for reasons of rank or need. These two constraints led to many corrections and updates. The first attempt at automation was done on the word processor. This approach gave clean and presentable copies, but took almost as much time as the manual system since all lists were placed on the pages by where they fit, not in any logical or alphabetical manner. Also, all lists had to be paged through to reach the one that needed to be corrected.

Next, an abortive attempt was made to program a menu-driven system on the report-writing system. This ran into

problems because the original parameters given the programmer were woefully underestimated. The intention was to access personnel files automatically for current addresses. This stalled for several reasons. First, employee IDs had to be obtained for each user, since there was no direct access by name. Second, a survey showed that 20% of the records in the personnel files were inaccurate in some part of the mailing addresses.

Subprograms were written to take care of some of these problems. However, bugs developed, and input became tedious and garbled. After many hundreds of hours, this project was abandoned. In spite of what was said earlier about a programmer, this is an area on which the programmer has been working. This project has now become a prototype for the whole division to follow: automatically available addresses for distribution. Including diverse applications, however, slowed down the time schedule for the Information Center's application, since the project was passed on to another computing area for programming. The project was completed and operable in late 1984.

Statistics

Statistics is probably one of the oldest ongoing projects in the Information Center. Everyone feels that statistics are needed to justify personnel additions, budget increases, avoid personnel reductions, track performance, etc. This was the first automation project attempted because it was considered vital for the Information Center's existence. The first effort was to put it on the word processor. This ended up being a very cumbersome and time-consuming process because diskettes had to be constantly changed to do calculations, sorting, and other operations. This approach finally stalled because:

1. No time was saved.
2. Too much data were being input.
3. The only person in the TIC who could do the statistics on the word processor left the company.

After analyzing the nature of the input, it was decided to change to the report-writing system because this software is made for calculations, and its sorting capability is more than adequate.

At the beginning of 1984, the Automation Committee reviewed the statistics and discovered that several items included had lost their meaning over the years. So the statistics were reconstructed and condensed until, instead of having four pages of statistics, there was one page. Currently, we are in the process of putting these on a spread-sheet package in a personal computer. The nature of statistics makes it easier to move from one system to another, since the size of the data base does not grow significantly.

Journals Acquisitions

Journals ordered at Lockheed-California fall into three categories:

1. Journals ordered to be sent directly to individuals in various departments.
2. Journals ordered for the Information Center and then routed (See "Routing System For Journals").
3. Standing orders for both individuals and the Information Center.

Under the manual system, day-to-day records were kept in a file, white cards by title and blue cards by receiver. Standing orders were kept by title only on yellow cards. There was no overall list of journals received, this was the only record. Since the files were kept in acquisitions, frequent phone calls were received from elsewhere in the Information Center with questions such as, "How many copies do we order?" or "Which subscriptions does 'User' receive?"

The biggest drawback to the manual approach came during the annual approval for renewal. Although the journals are paid for from the Information Center budget, approval to purchase each journal comes from the various division heads. This became a project in itself each year as the cards were sorted by department. The total came to more than 1000 items. The addresses first had to be

verified and updated. Then lists were typed, again manually, for distribution. Throughout the whole process, the cards were unavailable for a period of two months.

The report-writer seemed to be the appropriate tool to automate these files for constant public access and to simplify the yearly renewal chore. This has been truly an evolutionary process. Files were split as workspace was outgrown, some reports were discarded and new reports were written. The manual system was retained, since the staff felt that they needed it for a crutch. But, after eight months, it was discovered that the cards were not being updated, so the manual approach was discontinued. This particular application has been used for 2 years now and has been very well received by upper management.

On-line Search Log and Index

The On-line search log and index is a monthly accumulation of the searches conducted by the on-line research and reference area. Until 1983, this report log was typed manually each month from beginning to end. Because of the monthly time involved in sorting the cards and typing, we decided to put it on the report-writing system. Sorting can now automatically be done by departments, requestor's name, searches completed versus searches open, etc. Monthly re-

typing is no longer necessary and additions are made once a week. As an added bonus, at the end of the year, a listing can be produced of all searches conducted for the entire year.

Conclusion

With the report-writing system, every librarian, with a minimum amount of training, can become a programmer. Access is interactive and the reports can be modified as necessary. By using the flexibility of the report-writing software, we have combined programming flexibility with the ease and minimal training of purchased software. The same advantages hold true for the word processor.

So what does working on these applications do in preparing for an ILS?

1. It cleans up records;
2. It identifies what needs to be included, such as which format and which files;
3. It trains staff and orients them to automation; and
4. It accustoms management to accept automation as a "normal" library function and to appreciate the benefits.

Report-writing combined with word-processing, or a spreadsheet, or a data base management system, or whatever, will not solve every problem while you are waiting for your ILS, but it will provide a good start in preparing your staff, your files, your management and your attitude.



Ferne Allan



Joyce Shields

End-User Training at the Amoco Research Center

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■ The Information Center at the Amoco Research Center in Naperville has developed a two-part approach to end-user training. The first part involves classroom instruction, which introduces interested scientists to the fundamentals of literature searching, including both printed and online sources of scientific information. The second part of the program involves individualized, hands-on training for those motivated end-users who, after completing the classroom instruction, decide to go one step further and learn to do their own commercial database searching. This paper gives a brief history of the project, examines the objectives and structure of the Amoco in-house training program, and takes a look at future directions for end-user education at the Amoco Research Center.

In 1981, Aldona Valicenti and Robert Buntrock, respectively supervisor and member of the Information Retrieval and Analysis Group in the Information and Computer Services Department, perceived a growing interest among scientists at the Amoco Research Center in Naperville to learn more about the technology and techniques of online literature searching. At this time, several obvious questions were raised by our searchers and information managers, such as: how will end-user searching impact on the existing role of professional

searchers? Will they take away our business? Is end-user searching cost-effective? Can end-users, specifically scientists in our case, be trained to perform accurate and complete online searches?

Our Information Center searchers and management considered these questions and weighed the alternatives, as other organizations have done, and reached two main conclusions:

1. Motivated end-users, i.e., interested and competent information users, will take the next logical step in our research

environment, which is to learn to do their own online searching—whether we choose to help them or not.

2. Information professionals and professional searchers should cooperate in the end-user training process for the following reasons:
 - It will reinforce and even extend existing or traditional search services;
 - It will save the searchers' time because end-users will be able to take over some of the search burden, preferably the routine and simple searches;
 - It will be cost-effective because scientists who become better informed about online searching will also learn to formulate better search requests as well as to do some of their own "online research," thus saving online time and needless exploratory expense.

Amoco Training Approach

Instead of ignoring this "end-user phenomenon" in hopes it would "go away", the Amoco Information Center at Naperville chose to play an active, leadership role in end-user education. Since in-house online training programs for end-users were relatively unknown in 1981, we decided to develop our own approach. Two basic assumptions underlie our unique program's design:

- Some end-users want only an increased awareness of literature sources and searching methods. They are not interested or do not want to take the time to do their own online searching;
- A somewhat smaller percentage of end-users want to do both: acquire a greater knowledge of available literature sources, and learn to do their own online searching.

To satisfy both groups of end-users, the Information Analysis and Retrieval Group developed a two-part end-user training program:

Part I: All interested end-users must take a structured course which, through lecture, hand-outs, and online demonstration, describes the various literature sources, databases, and online searching methods involved in obtaining infor-

mation in a particular subject area, such as chemistry.

Part II: After completing the classroom training noted above, end-users can apply for an SDC or DIALOG password and receive individualized online training on one (or both) of these systems.

There are some unique aspects of our training program, which merit further discussion. First of all, both parts of the training (the classroom instruction as well as the individualized hands-on tutorials) are conducted in-house, by our experienced searching staff. This group is comprised of chemists, engineers, and biologists, many of whom have advanced degrees in these scientific disciplines. They are information scientists, with the accent on scientific expertise, who work very well with and communicate at the same technical level with the scientists who use their search services.

Secondly, the classroom instruction has been divided into two courses, which can be taken independently of each other. In the past, both courses have consisted of three one-hour sessions. The first course, **Literature Searching I**, covers Chemical Abstracts and discusses the content, scope, organization, and searching of both the printed product and its online counterparts. This course was primarily designed for chemists and chemical engineers from all three companies on site: Amoco Chemicals Corp., Amoco Oil Company, and Amoco Corporation Corporate Research. It has been given ten times in the past four years. The actual structure of this course may also be of interest.

Session 1 covers printed chemical sources and search methods, primarily from Chemical Abstracts. Session 2 features a demonstration of online searching, using appropriate Chemical Abstracts files. Session 3 is more personalized and relevant to the students. The Information Center instructor prepares and demonstrates online searches from topics that were solicited from the students prior to the third meeting.

In all three sessions of Course I, the emphasis is on learning or becoming bet-

ter informed of the chemical literature. Online searching is employed only as a demonstration tool. Students are notified beforehand that the actual instructions for online searching are included in Part II of the training program.

In contrast to the first course, **Literature Searching II** covers a much wider variety of literature and online files, or almost anything that does not have to do with Chemical Abstracts. For example, the next course that the searching staff will host this fall will cover chemical reference material and physical properties data, API files, patent information, business and marketing sources (i.e., PRECASTS databases and DISCLOSURE/microDISCLOSURE), and other technical indexes/databases in the areas of engineering, electronics, physics, and metallurgy. This course has been designed to reach a different group of end-users on site. It has been given only three times, including the offering this fall.

Some of the details of the second part of our end-user training program, which consists of individualized, hands-on searching instruction, also merit further discussion. As noted earlier, we anticipated at the start of our program that not all end-users will decide to "go online" after completing the classroom instruction. This assumption has been confirmed time and again in our training experience. We have found, for example, that only the most motivated and/or most computer-oriented of the end-users completing Course I or II—which represent about one-third of our classroom participants—decide to request their own SDC or DIALOG password and become bonafide online searchers. The majority of end-users "graduating" from the classroom part of the program are seemingly satisfied to "stay offline" and bring their search requests to our searching staff as they have done in the past.

For those end-users who do sign up for the second part of the program, this part of the training is necessarily more personalized and is based a great deal on the end-user's own levels of literature and online awareness as well as his or her

subject interests and expertise. At this point—after the end-user's own password arrives—the end-user sits down at the terminal (preferably his own, because our Information Center does not provide the hardware) with a member of our searching staff and has an individualized tutorial on SDC or DIALOG. In addition to the individualized instruction, the new end-user is also provided with his own set of vendor search guides, such as the *SDC Quick Reference Guide* or the *Dialog Blue Sheets*.

Although follow-up tutorials are not required or scheduled, most new end-users return frequently to their trainers within the first few months of their searching experience, usually for the following reasons: to get a review of search commands and search logic; to seek help in planning and structuring a search topic; and to obtain advice on which databases to search for a given time period or subject. Even "old timers", i.e., end-users that have been searching after over two years consult with their search trainers or other members of the Information Retrieval and Analysis Group from time to time on the more complicated or comprehensive searches they perform.

This continued contact between end-user and search professional confirms what we hoped would happen when end-users decided to "take to the terminal." That is: our searching business does not vanish with the advent of the end-user or scientist-searcher. Instead, our own searching role has shifted and even expanded. In addition, then, to our searching staff continuing to handle online search requests for the vast majority of clients on site (i.e., those who for various reasons are content to use our basic search service), our searchers have been elevated to the role of instructor and consultant as a result of this new training and advisory relationship with the end-user group.

Outside/Vendor Training

We all know as information professionals that there is a great deal to learn

about online searching. Just when we get to a point where we are comfortable and feel competent in searching our favorite subject areas or files, new files or new loadings of existing files are released, which further complicate or challenge our searching expertise. So, how must an end-user feel when he is just learning the ropes, and it keeps sliding out of his hands?

To combat some of this frustration (and also to take some of the burden of the training off of our own staff) we also invite and host vendor training sessions on site. To date we have sponsored a wide variety of vendor training sessions at the Amoco Research Center, before which have also included the usual handy on-line practice time for all seminar participants. These include:

- SDC Basic Skills
- SDC Advanced Chemistry
- DIALOG Advanced Chemistry
- CAS ONLINE Introductory Training
- API indexing and database training
- Derwent Dictionary Searching
- DIALOG Business Files

Vendor training is not limited to the group sessions we arrange on site from time to time. We also encourage our end-users to sign up on their own for various DIALOG training courses, which are conveniently available in the DIALOG office and training facility in downtown Chicago.

Current Status of Project

In addition to training interested end-users to search commercial databases, we also handle several important administrative tasks connected with the program, including the acquisition/distribution of passwords and the coordination of invoice payments. Based, then, on the very detailed records we keep on our program, these are some of the "vital statistics" from our four-and-a-half years of end-user training:

Total # of ARC staff taking classroom instruction, i.e., Course I or II	155
---	-----

Total # holding active passwords (some end-users have more than 1 password or search more than 1 system)	64+
--	-----

# SDC passwords	50
# DIALOG passwords	23
# CAS ONLINE passwords	6+
# BRS AFTER DARK passwords	1

Future Directions

As new user training begins to level off and our end-user community becomes more experienced, we have become aware that we may have to shift our emphasis away from promoting new end-user training toward providing more effective, and perhaps more diverse, support of our trained end-users. In short, we perceive a growing need for continuing education. One approach to continuing education is to broaden our end-users' existing online knowledge and experience by introducing them to potentially useful databases and bibliographic sources in different but still relevant subject areas. This approach will be taken in our revision and revival of the Literature Searching II course this fall. We anticipate here that our "chemical searchers", particularly those working on marketing or engineering applications, may be eager to learn more about what PREDICASTS, API, DERWENT, or COMPENDEX (to name only a few new sources) can do for them.

A second approach to continuing education involves making some of our classroom instruction available on cassette. Our chief instructor and current end-user project manager, Robert Buntrock, has created audio cassettes for the first two sessions of Literature Searching I. These cassettes, along with his extensive handouts and search examples, provide new end-users with an informative introduction to chemical literature and existing end-users with an excellent review of chemical literature searching fundamentals.

In addition to offering an updated Literature Searching II class and providing cassettes of Literature Searching I, we have also developed a bimonthly current awareness publication called "ARC ONLINE." The purpose of this newsletter is two fold. On one hand, it is designed to provide useful and time-saving information about various database services and online searching techniques; and on the other hand, we hope it will also promote a better, more consistent information exchange between our staff searchers and the many end-users on site.

We also continually survey (See Appendix) our end-users to discover how they view our training program and what they would like to see next. Our newsletter, "ARC ONLINE," in fact, is a product of just such a survey. We also plan to upgrade and update our written training materials in order to provide our end-users (especially any new ones) with more useful and concise—more "end-user friendly"—searching guides and examples. This suggestion to improve our handouts and search guides also came from our surveys.

The class structure may also change in the future because end-users surveyed recommended a one-and-a-half hour session over the existing one hour time period/class. The next step in our end-user training program then depends more upon the feedback we receive via surveys and response to the newsletter than it does from our own desire to change the program. In this way, we are basically satisfied with our approach to end-user training and believe that this program goes one step further in fulfilling the specialized and sophisticated information

needs of our corporate research environment.

Finally, the success of this program should be credited to three different groups at the Amoco Research Center:

- The entire Information Retrieval and Analysis Group, but most notably Robert Buntrock, project manager of end-user education, for designing, promoting, and maintaining the program, which has involved a great deal of extra work during the peak training periods;
- Amoco Research Center management at all levels for approving and supporting the staff involved in this program;
- The end-users themselves for being motivated and interested enough to want to become better aware of and/or more personally involved in the information search process. It is important to remember here that in our training and research environment, end-user interest and support are the key factors. After all, end-users must volunteer for the program, we do not draft them.

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APPENDIX:

Sample Amoco Research Center End-User Survey (January 1985)

The Information Center is attempting to improve and expand its end-user Training Program. At this time we need some information and assistance from our end-user community in order to update our online training approach and make it more directly applicable to our end-users' individual searching needs. Please complete and return the questionnaire below to: Cheryl Kirk (End-user Coordinator) by: (3 week deadline). Thank you for your time and thought.

Name: _____

Department: _____ Mail code: _____

A. Online Training Experience:

1. Which Information Center training sessions have you attended:

- ____ Literature Searching I
- ____ Literature Search II
- ____ Individual/Hands-on Tutorial
- ____ Other _____

a. How would you rate this inhouse training experience overall?

- ____ Very good
- ____ Adequate
- ____ Inadequate/not useful

b. What part of the current training program did you like best/find most useful?

- ____ Literature Searching class(es)
- ____ Hands-on/individual training
- ____ Both (equally useful)

c. If you found our inhouse training to be inadequate in any way, what suggestions do you have for improving our training?

2. What kinds of outside/vendor training seminars have you attended?

- ____ SDC Basic Skills
- ____ SDC Advanced Chemistry Searching
- ____ DIALOG System Seminar
- ____ DIALOG Chemical Files Searching
- ____ Derwent/Patents Seminar
- ____ API/LIT and API/PAT training
- ____ DIALOG Business Seminar
- ____ Predicasts
- ____ CAS ONLINE
- ____ BRS
- ____ Other: _____

a. How would you rate your vendor training experience overall?

- ____ Excellent/very useful
- ____ Interesting but more detailed than I needed
- ____ Adequate
- ____ Confusing/not useful
- ____ Other comments: _____

- b. Can you suggest any other vendor training seminars that we could host on site (such as those noted in question 2)?
-
-

B. Online Searching Experience:

1. How long (approximately) have you been searching online databases (i.e., SDC or DIALOG)? ____ years ____ months
2. How frequently do you search? (Select only 1 option below)
____ times per week
____ times per month
____ times per 3-month-period
____ times per 6-month-period
____ very infrequently (less than above)
3. What database systems do you use most often?
____ SDC
____ DIALOG
____ CAS ONLINE
____ OTHER: _____
4. Which databases do you routinely search?
____ Chemical Abstracts files
____ CIN
____ COMPENDEX
____ Derwent/Patent files
____ PREDICASTS
____ BIOSIS
____ Business files
____ OTHER: _____
5. What kinds of searches are you likely to perform on your own (i.e., without assistance from our searching staff):
____ Author
____ Quick subject (without many keywords)
____ Complex/in-depth subject (many keywords/extensive research)
____ Other _____
6. What kinds of computer equipment do you use for searching?
____ Dial-up (TI700)
____ DEC
____ PC
____ Mainframe/VM
____ Other: _____
____ I have difficulty locating suitable equipment to use

C. Your Own Online Searching Goals:

1. If you are searching only infrequently, what is preventing you from searching on a more regular basis (i.e., 2 times/month)?
____ My current project does not require or fund online searching
____ I do not have time
____ I do not have the right equipment
____ I could use some additional training before I start searching
____ I anticipate doing more searching in the near future/next year
____ Other reasons: _____
2. The Information Center is planning to offer a new Literature Searching II class. Which sections of our class might be of use or interest to you?
____ Reference/physical property materials
____ Physical sciences, other than chemistry (e.g., physics and engineering)
____ Patents
____ API literature and patents
____ Business/marketing sources and databases
____ OTHER topics of interest? _____

3. Can you suggest any new end-user activities that would be of interest or benefit to you, such as:

___ Newsletter: to highlight new databases, searching tips, etc.

___ ARC Online Users Group meetings: to share search information

___ Literature/online searching review classes

___ Other ideas: _____

Resource Sharing Through Integration of an Intelligent Gateway and Library Support Software

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■ The integration of an intelligent gateway system with a commercial, online library support system is undergoing prototype testing for the Department of Defense (DOD) libraries. The objective is to create an integrated system to promote resource sharing in a distributed environment. The DOD model should be of interest to much of the general library community because of the similar communications needs of other library networks.

THE STRUCTURE of the Department of Defense (DOD) library system is common to many environments. The central headquarters

unit, the Defense Technical Information Center (DTIC), has a centralized database relevant to DOD as a whole. There are also field libraries of varying sizes which

utilize subsets of the central database in order to develop supplemental, specialized local library files. In addition, the field libraries require access to a variety of external resources, such as commercial search services, federal database systems, and library utilities.

To enhance information production, transfer, and utilization by headquarters and field libraries, DTIC has sponsored several projects. An early program was the Shared Bibliographic Input Network (SBIN) (1) which allowed field units to input DOD technical report cataloging data to the central DOD database, the Defense RDT&E Online System (DROLS), in much the same way that other libraries input monograph data into OCLC. If a field library finds that the cataloging information for a report is already in the Technical Reports database (the central DTIC/DROLS online file), the cataloger simply appends additional holdings information instead of reentering the full catalog record.

Integrated Bibliographic Information System (IBIS)

While the SBIN project has resulted in a substantial decrease in duplicative cataloging of the same technical report (TR), it has not eliminated double keyboarding, in which a field library must catalog a report to accommodate the centrally determined DROLS format and then recatalog it to meet its local format. The elimination of this redundant effort is one objective of a current project to design an integrated bibliographic information system (IBIS), serving central and local needs (2).

The overall objective of this project, however, is more than simply to eliminate redundant cataloging. Instead, the general goal is to improve resource utilization by facilitating information sharing while responding to unique information requirements and patron interests of individual technical libraries. The integrated software to support this resource sharing model should have widespread appeal to the general library

community because so many library networks have similar communication needs.

To develop a prototype, integrated bibliographic system, three major objectives had to be carried out:

- 1) Identification of commercially available software/hardware to support the traditional, in-house bibliographic service functions, such as online cataloging, reference, circulation control, etc. In the absence of suitable systems, the development of inhouse software would be considered (See Figure 1).

- 2) Development of information transfer and format conversion mechanisms between headquarters (DROLS) and the local field libraries (See Figure 2).

- 3) Integration of the results of 1 and 2 with a gateway system to provide for access to, and utilization of, external information resources necessary to support the local user community (DIALOG, OCLC, etc.)

In preparing for the first objective, DTIC commissioned an evaluation of commercially available software, and identified five packages as candidates for extensive testing and evaluation. (3)

Objectives two and three could be accomplished by using an intelligent gateway. Use of such a gateway was a critical part of the DTIC strategy since the gateway could support the controlled access to resources and maximum system flexibility. The possibility of expanding the integrated system was a prime consideration to meet the varying local needs of the more than 500 DOD libraries. Not only do these field libraries vary in size, patron interest and funding, but they also report administratively to their local parent organization. This makes it very difficult in the short term to establish effective data exchange standards. Instead, by developing a flexible system, DTIC plans to eliminate the barriers to information exchange caused by lack of data format standardization. This approach should offer significant incentives for information sharing, integrated access to resources, and reduction of duplication of manual and intellectual efforts.

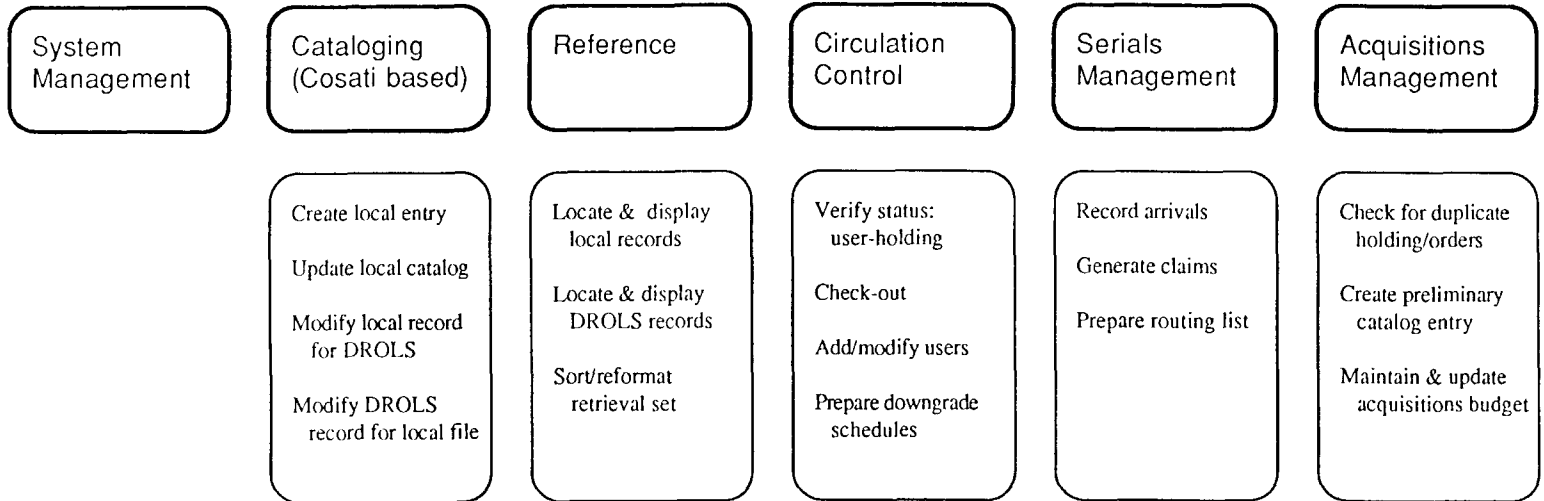


Figure 1. In-house library functions

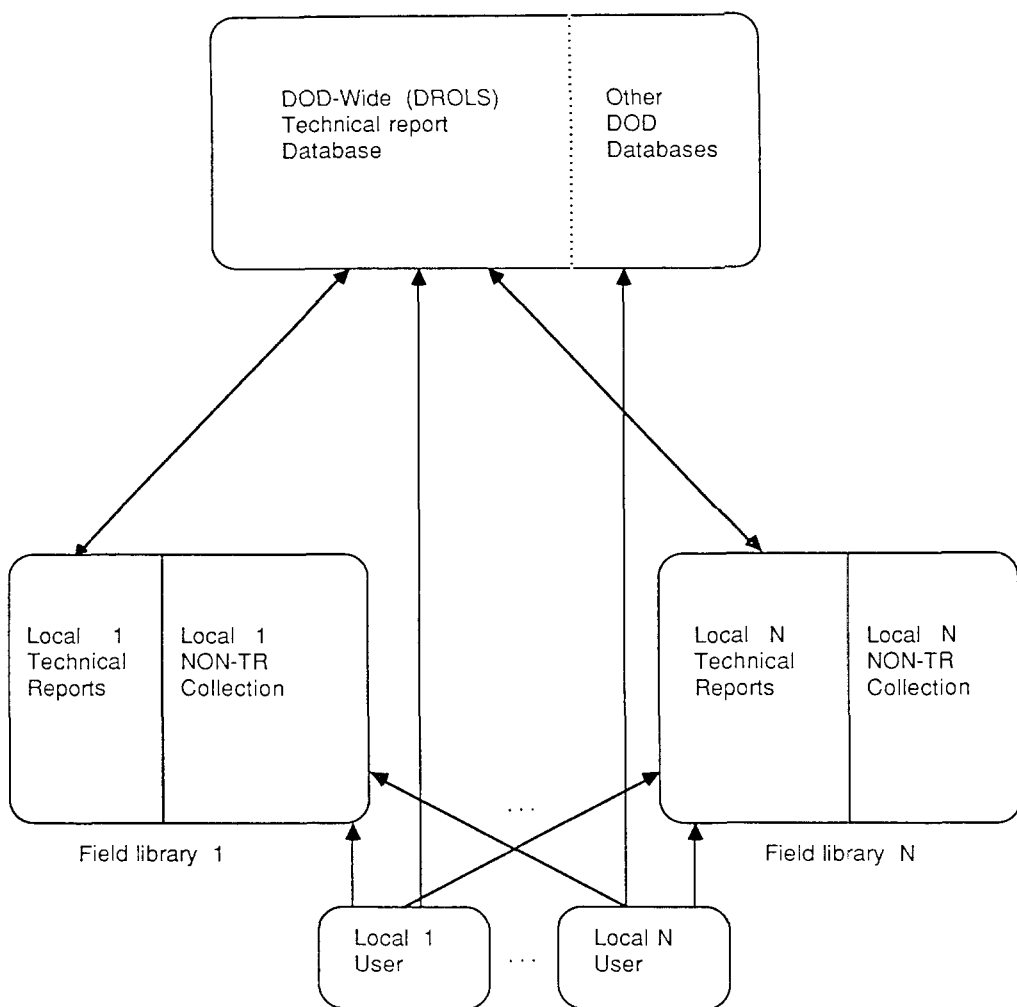
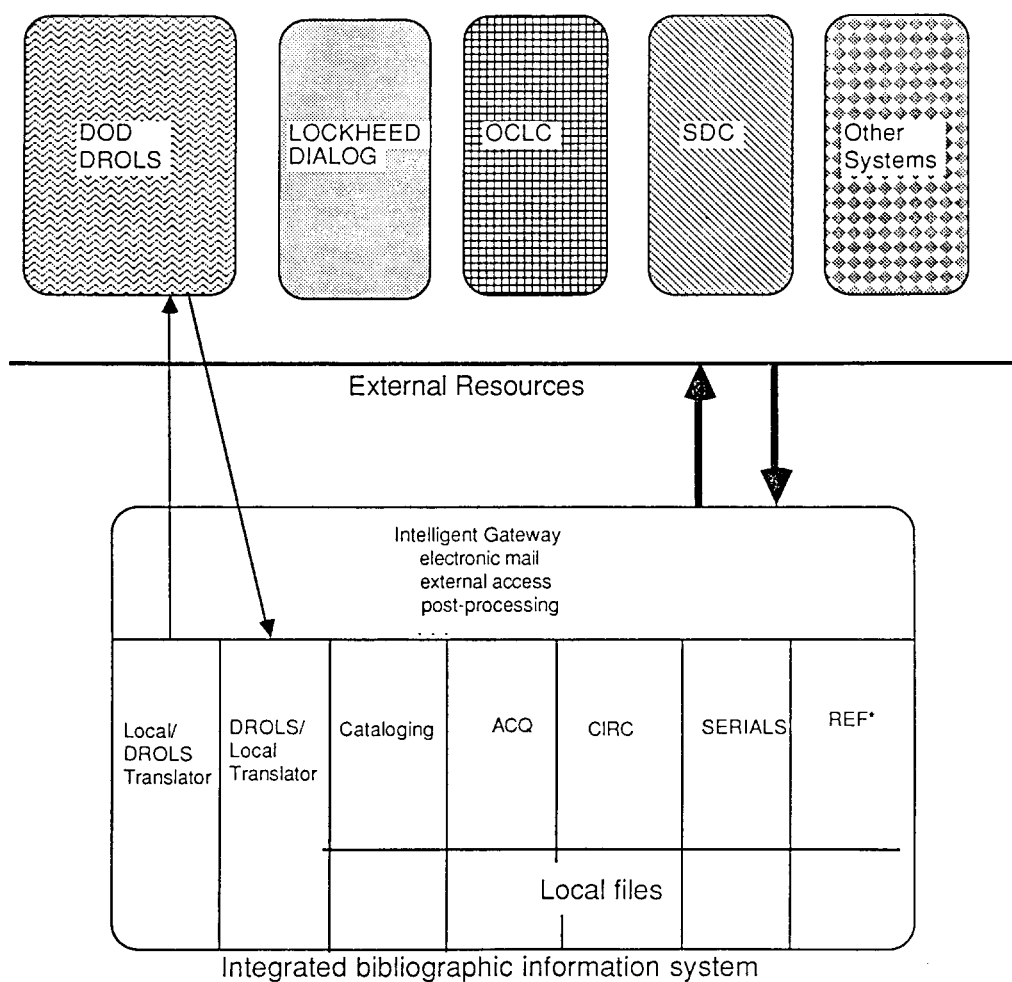


Figure 2. Traditional DROLS/Field Library Information Transfer

Use of an Intelligent Gateway

By incorporating the intelligent gateway (4), it was possible for DTIC to demonstrate a system which would provide a dynamic resource environment, including use of heterogeneous external and internal resources. For example, there is an integrated library support system

on the local computer on which the gateway software resides. This provides full support of the various in-house administrative functions, such as circulation, serials control and acquisitions. It also allows simultaneous connection to the local holdings file and the non-local DOD/DROLS files as well as any other locations, such as relevant DOD field librar-



*Searches can be user-defined to be single or multi-system based.

Figure 3. Gateway-based Information Transfer

ies. Furthermore, information such as cataloging records or search results can be uploaded or downloaded at any time by simply entering a control sequence from the user's terminal keyboard. Figure 3 presents a schematic of the information transfer patterns supported by the model. The gateway will transfer information to or receive records from the designated machine at speeds up to 9600 baud.

Since the field library data format is known and the central DROLS format is a given, it is possible to program

conversion routines so that, as required, the downloading/uploading process becomes a convert/transfer or transfer/convert process depending on the data recipient or requestor. For example, if a DOD field librarian finds catalog records in DROLS for items still uncataloged locally, the records are downloaded, converted to the local format as far as the information supports, and then the librarian is prompted to add any missing information such as call number, local indexing terms, holdings, etc. For reports

not yet added to the central DROLS Technical Reports database, the field librarian is prompted for those data elements specific to DROLS, but not used locally. The local records are then converted into the DROLS format.

This transfer/conversion capability allows maximum flexibility to the local environment where in-house conditions and user needs may vary widely from library to library. Yet it also allows and supports increased productivity by improving resource sharing while eliminating duplication of effort. The computer, rather than the librarian, provides the extra effort and tedium required to deal with a large-scale production system based on centralized policies (in this case DROLS) which cannot easily be changed. Furthermore, rigid standardization is no longer mandatory and users need not be coerced (or worse) into compliance.

Further Applications for Resource Sharing Models

The applicability of the library automation model is far-reaching. For example, most university libraries must create and use distributed files. Universities with multiple campuses, such as California or New York, find this resource sharing to be critical (5). Government libraries, such as the National Agricultural Library or the Library of the Department of the Interior, would benefit immensely from such bi-directional resource sharing capabilities. The impressive success of the cataloging utilities, such as OCLC, RLIN, WLN, and others demonstrates the validity of this concept in a narrower field of library automation. DOD's integration of the intelligent gateway concept with library support software enables the desired sharing of all library resources and is, therefore, more easily accepted by the user.

For example, to access geographically distributed, frequently-used information systems, complex protocols need not be mastered. For resources that are frequently accessed, the gateway adminis-

trator simply adds the access procedures to the table-driven gateway telecommunications software. Less frequently-used services can be accessed by telephone via the "dial" command, followed by the telephone number of the target computer or a "connect tymnet" or "connect telenet" command, followed by only the requisite log-on information. A more specific command, such as "connect dialog" or "connect sdc," in addition to navigating alternative telecommunications paths, selecting the optimum available route, and logging the user into the desired system, can contain additional instructions beyond the telecommunications and log-on procedures. For a particular user, for example, the command could result in the automated selection of certain databases and search strategies. Less knowledgeable users can be switched into the help/tutorial mode. The capability exists also to tailor a set of information resources to individual or group preferences.

Thus, in addition to the support of local library functions, the gateway can be used to integrate information obtained from other sources or for other functions, such as electronic mail or teleconferencing. Data can be downloaded from an external host, such as SDC's ORBIT or Mead Data Central, reviewed in the local library, and then sent on to a patron via electronic mail. Citations from the local collection can be merged with data from commercial search services to create special products. Each function is either supported or provided by the gateway. The location of the resource is transparent to the user who exercises similar short commands to use locally—resident resources (for example, "em" calls up the gateway electronic mail subsystem) or geographically dispersed resources (where "connect SDC" takes the user out of his local system and logs him into SDC in Santa Monica).

Conclusions

Fundamental to the operation of most libraries are the requirements to:

- Obtain information from a designated point, either local or external;
- Modify that information as required; and
- Send it either into a local collection or, further, to a centralized repository, a cataloging utility, or a remote utility.

Significant economic barriers prevent short-term reliance on monolithic standards as the means for facilitating information resource sharing. However, the currently available gateway technology provides the means to support this transfer and communication. Furthermore, it can provide this support in such a flexible, transparent fashion that the librarian will be able to devote the majority of his/her intellectual effort to creating and analyzing information rather than locating, moving and repackaging/redistributing it. Furthermore, the historical distinction between use of internal resources and access to [distributed] exter-

nal resources will disappear as far as the gateway user is concerned. A single terminal can provide the full spectrum of information resources required, whether bibliographic, administrative, or computational.

This work was performed under the auspices of the U.S. Department of Energy by the Lawrence Livermore National Laboratory under contract number W-7405-ENG-48.

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4. The term "intelligent gateway" was first used by Viktor Hampel in 1978 to describe the "Intelligent Gateway Computer" of the Technology Information System, Lawrence Livermore National Laboratory, University of California, Livermore, California. For a fuller description of the TIS Intelligent Gateway, see:

Viktor Hampel, et al. *"TIS" An Intelligent Gateway Computer for Information and Modeling Networks Overview*, University of California, Lawrence Livermore National Laboratory, UCRL-53439. August 1983.

Viktor Hampel, et al. *Intelligent Gateway Processors as Integrators of CAD/CAM Networks*, University of California, Lawrence Livermore National Laboratory, UCRL-93115. July, 1984.

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History of Science at the Newberry Library: A Hidden Treasure Revealed

Jean S. Gottlieb

The Newberry Library
Chicago, Illinois

■ The Newberry Library of Chicago has a choice collection of early scientific books, which has gone virtually unnoticed. A current checklist already includes over fifteen hundred titles in science, medicine, technology, and pseudo-science, dating from the Renaissance through the Enlightenment.

The first section of this paper sketches the Library's early history for the purpose of explaining how the Newberry acquired its collection, and why it is so little known to scholars. The second section shows how the science holdings at the Newberry parallel major developments in the history of science from the Middle Ages through the seventeenth century "scientific revolution." The paper concludes with a description of the methodology devised for identifying these hidden and dispersed materials.

The Newberry Library of Chicago is a privately-endowed research library known for its fine collections in the history of the Italian Renaissance, intellectual history, music, and other humanistic disciplines. It also deserves to be known as a center for the study of the history of science and technology.

Scattered among the Library's holdings, and unknown to most readers, is a

choice collection of over two thousand books and manuscripts in early science. The range of subjects represented includes the natural sciences, the physical sciences, medicine, the pseudo-sciences, instrument building, and metallurgy, printed between the mid-fifteenth and the mid-eighteenth centuries. The collection includes landmark works (many in first editions) by Newton, Boyle, Galileo, Descartes, and Francis Bacon, as well

as works by such lesser-known authors as Gaffarel, DuLaurens, Thomas Hill, and Johann von Jessen.¹

Science materials are not always catalogued by subject and since the titles of these early works do not necessarily reveal scientific content, e.g., Isidore of Seville's *Etymologia*, or Marin Mersenne's *Quaestiones Celeberrimae in Genesim*, they can be overlooked by researchers. Though it was assumed that most of the Newberry's holdings in science and medicine had been transferred to the John Crerar Library by 1906, a checklist is being compiled which presents substantial evidence to the contrary. It will bring the science volumes together—conceptually at least—and will reveal the same broad range of disciplines in the Newberry's early science collection as appears in its holdings in the humanities. The Library's claim to interdisciplinary strengths can now be extended to include the sciences and the new philosophy, including writings of Cardano, Ficino, Gassendi, Mersenne, Pico della Mirandola, Hegius, Peurbach, Bruno, Dee, Comenius, Pirckheimer, Bacon, Boyle, Reuchlin, and Della Porta. While it may not be altogether out of place to find science in a library that emphasizes intellectual history, it is uncommon for the sciences and the humanities to be undifferentiated, as they are at the Newberry. It makes the projected checklist a useful research tool.

Accessions History

How has the Newberry Library acquired this history of science collection? Over much of its history, it appears to have done so in approved Renaissance fashion, or by collecting broadly in the humanities, rather than in science *per se*. Its first Librarian, William F. Poole, observed in 1892: "The Newberry Library is eventually to be a very large collection of books, and its ultimate scheme, I think, should be a very broad and comprehensive one, embracing every department of science, literature, and human knowledge, excepting such as are now, or will

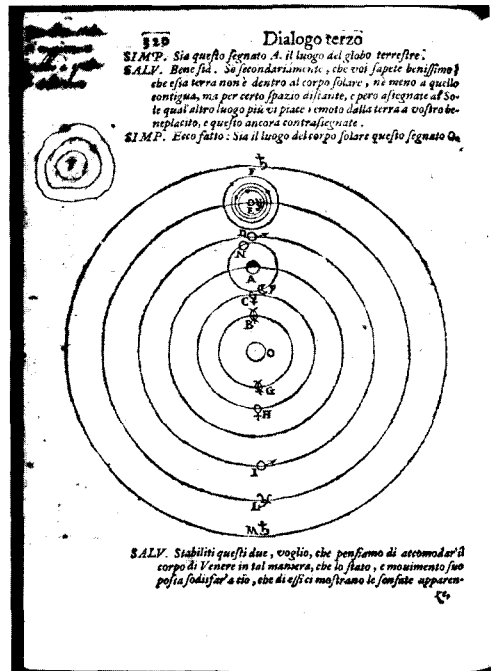


Plate I. Galileo, *Dialogo dei Due Massimi Sistemi del Mondo*, Florence, 1632. Manuscript notes are found throughout this presentation copy of the work that brought Galileo to Rome to testify before the Inquisition. Accused of violating an earlier edict by discussing matters of faith in the *Dialogo*, and sentenced to life imprisonment in Rome, the seventy-year old Galileo had his sentence commuted, and was remanded to the custody of Archbishop Ascanio Piccolomini in Siena. From the Louis L. Silver Collection.

be, fully supplied by other libraries of the city or vicinity."²

In 1890, three years after it had opened its doors, the Library became the Medical Reference Library for Chicago. In that same year, it also bought the 2500-volume Henry Probasco Collection. This acquisition set the Library firmly on the path of acquiring rare books and incunabula.

Shortly after the John Crerar Library was founded (1894), the Newberry, the Crerar, and the Chicago Public Library determined the areas of specialization on which each would concentrate. The purpose was to avoid costly duplication of books, and to ensure that there would be adequate representation in all fields of learning. The Chicago Public would collect in law and patents, and be the City's circulating library. The Crerar would be the repository physical and natural science (popular, practical, and applied), and the useful arts and technology. The Newberry's share of the intellectual disciplines included literature, language, history, philosophy, religion, medicine, and rare books.

The Newberry Library transferred most of its scientific books and pamphlets to the John Crerar Library in 1896, "...reserving from such sale, however, all cyclopedias and works of a broad general character upon scientific subjects."³ The Newberry also reserved approximately 3150 science volumes that related to its medical collections, such as works on chemistry, mineralogy, biology, botany, zoology, and anthropology. But collecting focused increasingly on subjects other than the sciences. In December 1897 it was decided "to discontinue the collection of ornithological books," hence "several hundred ornithology works with colored plates" were sold to the Crerar Library.⁴

In 1906, the Newberry's tenure as Chicago's medical reference facility was ended in order to consolidate all the city's science holdings. Therefore, books and manuscripts on science, medicine, and technology entering Newberry's collections after that date did so for reasons other than their scientific content. These works were acquired as examples of early printing or development in the history of typography, or because they related to discovery and travel, lexicography, literature, or to an aspect of intellectual history within the purview of the Library. Yet the Library continued to acquire some works whose content was scientific.

Though *collecting* in the sciences was

CAPVT II.
De mixtura utriusque sexus feminis, eiusque libidinitas & forma.



Postquam autem uerius, quod genitale feminei sexus uentreum est, uiri genitricem conceperit, suum quoque semen illi admittit, ita ut ex ambobus

Plate II. Jakob Rueff, *De Conceptu et Generatione Hominis*, Frankfurt, 1587. Woodcuts by Jobst Amman. The men in the background are poised to cast the horoscope of the infant at the moment of birth. The stars may represent the constellation Leo. I am indebted to Sara S. Genuth of the Adler Planetarium of Chicago for astronomical evidence from contemporary star atlases. This volume was bought from the collection of Nicolas Yemeniz by Henry Probasco in the 1870's, and came to the Library in 1890 with the Probasco Collection.

virtually halted, the Library's holdings were not purged of scientific materials. Most of the Probasco Collection remained at the Newberry. This collection included the first Greek edition of the *Works* of Aristotle, 5 vols. (1495-98), Ermolao Barbaro's *Castigationes Plinii* (1492-93), and two zoological works by Pierre Belon, one on fish and one on birds.⁵ The collections on military arts and sciences and on fishes and angling were also kept as well as "such material from the Senn

[medical] Collections as is suited to the Library." The Prince Louis-Lucien Bonaparte Collection on European Dialects and Lexicography, said to be one of the most complete of its kind, was acquired in 1901. Among more than 13,800 titles listed in its catalogue is an astrological tract written in the Bolognese dialect: *Quinta Scienza Cavà pr Fora d'Inzegn. . .*, printed in Bologna circa 1654, and a Latin-Catalan *Dictionarium Medicum* by Elio Antonio Lebrija, Barcelona, 1653.⁶

With the establishment of the John M. Wing Foundation in 1919, the history of printing, typography, and the book arts became an important subject area in the Newberry Library, emphasizing technical and graphic arts history. Incunabula, type specimen books, and other rare items have brought the Wing Collection national recognition. Many of its holdings are fine specimens of important works in early science, such as Euclid's *Elementa Geometriae* (1491), Giordano Bruno's *De Imaginum, Signorum, & Idearum* (1591), and the first edition of Dioscorides' *Materia Medica* (1499).

Other funds, established for the purchase of rare books and manuscripts, strengthened the Library's holdings in literature, which sometimes meant scientific literature. In 1929, however, during the tenure of Librarian George B. Utley, "about 15,000 volumes in the natural sciences, technology and other fields now outside the scope of the Library," were sold.⁷ Mr. Utley later stated that "The Newberry Library has practically no books on science and technology, leaving those subjects to the John Crerar Library. Our field is generally spoken of as the Humanities, and two of our chief subjects are history and literature."⁸ In fact, as this paper argues, much of the Newberry's science collection entered the Library early and remained there, surviving successive weeding because the books were scattered in various collections, and were not regarded as science.

Navigation, exploration, and discovery in the Greenlee Collection on Portuguese exploration (1937) and books on the Western Hemisphere, Americana, and

cosmography in the Ayer Collection (1911) relate to plant lore and other aspects of science: the Greenlee Collection holds a 1507 edition of Pliny's *Historia Naturalis*, edited by Alessandro Benedetti. Vannuccio Biringucci's alchemical work, *Of the Generation of Metalles* (in Richard Eden's *The Decades of the New Worlde. . .* 1555), is in the Ayer Collection.

In 1964, the Newberry Library made its famous purchase of the Louis Silver Collection of rare books, which included a number of outstanding early scientific imprints. A first edition, first issue of Newton's *Principia* (1687) and the *Dialogo* of Galileo (1632), said to be the author's presentation copy, are among the holdings in the Silver Collection.

This brief survey of some of the Library's collections reveals that, though it divested itself of science, the Newberry has always had a history of science collection, both because of its commitment to broad representation in the humanities, and because of the non-specialized character of pre-modern science. It has continued to acquire scientific books and manuscripts, though they usually enter the collections as philosophy, history of civilization, literature, typography, or "rare" books. It has accepted (and sometimes sought) individual books in early science, a "creative inconsistency" that has probably enhanced the richness and variety of the science collection. By adopting this flexible and eclectic approach, no single volume, be it sorcery or surgery, is out of scope.

Historic Trends

Major historic trends in science between the fifteenth and eighteenth centuries are reflected in some representative titles from the Library's holdings.

Medieval Tradition. The Medieval tradition is evident in such works as *Herbarius* (Augsburg, Schönsperger, 1485), a superb specimen of the German vernacular herbal. The Newberry Library's copy is one of two in the United States.⁹ Originally in the Probasco Collection, this volume now carries the Wing Collection book-

plate as well. The Newberry Library has over thirty herbals dating from 1485 to 1667.

Humanistic Science. Renaissance humanistic science is abundantly represented at the Newberry in editions of and commentaries on Aristotle, Pliny, Ptolemy, Hippocrates, and Galen, the latter's *De Sanitate Tuenda* (Paris, 1538) being but one example.

Botany. Among the Library's botanical works is an important early title by Theophrastus: *De Historia et Causis Plantarum*, part of a collection of tracts (some by Aristotle) edited by Theodoro Gaza. Theophrastus' descriptions of non-native plants, evidently based on examination of specimens brought from Syria and the Near East, mark *De Historia et Causis Plantarum* as a precursor of scientific botany. Leonhard Fuchs' *De Stirpium* (Basel, Isingrinus, 1542), with its elegant woodcuts of plants, is an example of a scientific work catalogued as part of the Wing Collection on typographical history.

Hermeticism. The late fifteenth century Hermetic revival, which also played a significant role in humanistic science, is represented by, among other examples, Marsilio Ficino's translation of the *Pimander*, in editions of 1481, 1493, and 1532, as well as a 1554 Paris edition.

Chemistry and Alchemy. The Library's early chemistry and alchemy, dating from the sixteenth and seventeenth centuries, includes the *Opera* of Arnaldus de Villanova (Basel, 1585) and Michael Maier's *Arcana Arcanissima* (Oppenheim, 1614). Other English and Continental chemical and alchemical authors represented at the Newberry Library include Elias Ashmole, Robert Fludd, John Dee, Robert Boyle, Sir Kenelm Digby, Athanasius Kircher, Giovanni Pico della Mirandola, and Andreas Libavius. Thomas Sprat's *History of the Royal Society* (London, 1667) is in the Library, as is an early two-volume reprint of the *Journal des Sçavans* (Cologne, 1665-1666), the only copy in the United States, according to *The National Union Catalog*.

Medicine. Among the Library's seventy titles in early medicine (1470 to 1700) are

works by Greek, Arab, Turkish, Spanish, Hebrew, Italian, French, German, and English physicians. Nearly four centuries of medicine are represented by Aulus Cornelius Celsus' *De Medicina*, 2nd edition (Milan, 1481), the 1587 edition of Jacob Rueff's *De Conceptu et Generatione Hominis*, in the Probasco Collection, a work on sympathetic medicine by Sir Kenelm Digby *Theatrum Sympatheticum* (Nuremberg, 1660), and a Siamese medical or anatomical manuscript which, judging by its archaic language form, is probably a late eighteenth or early nineteenth century copy of an earlier original.

Astronomy. Works on astronomy include four editions of Gemma Frisius' *De Principia Astronomiae*: Louvain, 1530; Antwerp, 1544; Paris, 1557; and Cologne, 1578. Regiomontanus' *Ephemerides, sive Almanach Perpetuum* (Venice, 1498) and *Calendario* in two examples dated 1476 and 1483, both printed in Venice, are indicators of Newberry's strengths in this area of the sciences.

Mathematics. Practical arithmetics, treatises on mathematical philosophy, and books dealing with higher mathematics are found in the collection. The *Protomathesis* of Oronce Finé (Paris, 1532) and the *Somma di Aritmetica Geometria Proportioni & Proportionalità*, by Luca Paccioli (Venice, 1494), an early vernacular work by an important mathematician, are examples of the Newberry's works on mathematics.

The Scientific Revolution. The cross-currents of the Scientific Revolution in the seventeenth century are represented in the Library's collections by works on philosophy, religion, science, and by some important works on educational reform. John Webster, in *Academiarum Examen* (London, 1654) and Seth Ward in his heated rebuttal, *Vindiciae Academiarum*, (London, 1654) are both critical of earlier educational philosophy, though Ward's treatise defends current university education as being increasingly responsive to the intellectual requirements of the new science.

The Occult. Materials on witchcraft, the occult, and magic are an important part



Plate III. Oriental Manuscript 801. From the Eames Collection. Little is known about this accordion-folded work, black and red ink on paper. It consists of thirty-eight folded leaves with forty-one illustrations. I am indebted to Professor Frank Reynolds, Department of South Asian Language and Literature, the University of Chicago, for providing me with a rough translation of some specimen leaves and information about the history of this type of manuscript.

of the Library's science holdings, though they are thought of as an aspect of the history of the Renaissance and the Inquisition. These books were, in fact, vehicles for the dissemination by Italian religious emigrés of Renaissance ideas,¹⁰ and scientific thought figured prominently in them. An example is Tommaso Campanella's *De Sensu Rerum et Magia* (Paris, 1637). A very scarce treatise by Angelo de Forte, *Dialogo de Incantamenti* (Venice, 1553), discusses the bewitching powers of women over men. A copy is also held in the British Library.

Astrology. The Newberry Library holds works by the Arabic astrologers Albu-

masar and 'Abd Al-Aziz ibn 'Uthman, al-Kabisi. John Eastwood's *Summa Astrologiae Judicialis* (Venice, 1489), and a broadside epitome of the *Seven Planets* (printed in Germany approximately 1460) further indicate the range of its astrological materials, among which are a number of almanacs.

Rosicrucianism. The Library holds over a dozen seventeenth century Rosicrucian writings, including a copy of Johann Valentin Andreae's *Fama Fraternitatis*, bound with Andreas Libavius' *Wolmeinendes Bedencken von der Fama und Confession der Bruderschaft*, both printed in 1617, the *Fama* in Leipzig and Libavius' attack on the Rosicrucians in Erfurd.

Mechanical Philosophy. Works by the great mechanical philosophers of the seventeenth century, Galileo, Newton, Boyle, and Descartes, are held in exceptionally fine specimens, generally first editions, and often first impressions as well. The Library's copy of Galileo's *Discorsi* (Leyden, 1638) is a first edition which came into the Library with the Probasco Collection. Descartes' *Discours de la Methode* (Leyden, 1637), from the Silver Collection, and Robert Boyle's *Occasional Reflections upon Several Subjects* (London, 1665), purchased in 1926, are first editions.

Manuscripts. Among the Newberry Library's manuscript holdings is Trapezuntius' "Commentarij & Expositiones Georgij Trapezuntij in Aphorismis Libri Fructus Ptolomei" (Naples c. 1455). Part of the third section of this manuscript and many of its marginalia are said to be in the author's hand.

The Library holds a Turkish medical manuscript and several English manuscript fragments on science and medicine: remarks on "variola," a "Quaestio medica & therapeutica," a leaf dealing with "apoplexia," and what appears to be a manuscript copy of part of a treatise on natural philosophy.

Post-1750. A number of facsimiles, post-1750 reprints, and translations of works not otherwise represented at the Newberry round out the science collection. The 1678 edition of *The Works of*



Plate IV. Angelo de Forte, *Dialogo de Incantamenti*, Venice, 1533. This exceedingly rare and unusual volume, which relates psychological characteristics to complexion, presents both sides of the argument that women cast amorous spells on men. It is something of a bibliographical oddity, as the inner formes of some of the gatherings are printed in gothic, whereas all outer formes and the remainder of the inner formes are in roman type. From the Wing Collection.

Geber, Englished by Richard Russell, reprinted in London, 1928, supplies the Library with an interesting edition of an important Arab alchemical work. In medicine, *La Grande Chirurgie de Goy de Chaoliac* is held in a French edition of 1890, and in an Early English Text Society edition of 1971, acquired by the Library in 1979. This relatively recent accession illustrates the importance to the Newberry of works on science and medicine, because they offer another perspective on the history of ideas. Kepler, Copernicus, and Avicenna

are among the other important men of early science whose canon is represented by facsimiles or modern reprints, as well as by original editions.

Two works of Charles Darwin, both first editions, are among important nineteenth century holdings; *On the Origin of Species by Means of Natural Selection*, published in London in 1859 (possibly the second issue), and *The Descent of Man*, London, 1871 (probably the fourth issue).

Methodology

Searching for these hidden titles necessitated a study of the classification systems the Library has used to catalogue its accessions over its ninety-seven year history, such as the Cutter classification system and the fixed location system, which preceded the Library of Congress classification system now in use.

Other ways of ferreting out obscure authors involved compiling lists of Medieval and Renaissance scientists, examining primary and secondary sources, and consulting historians of science and Library staff members. The resulting names were compared to entries in the Library's card catalogue, and located items were added to the preliminary checklist. Historians of science have been and will continue to be consulted for help in translation and in clarifying ambiguities. Comparison of the books with the card catalogue data will result in a useful and authoritative final product which will be selectively annotated.

It is difficult to convey the nature and quality of this collection on science and pseudo-science as it emerges from its formerly scattered state. Neither the number of titles within a given subject area, nor their publication dates and authors' names capture the variety, richness, and interest of these books and manuscripts. Moreover, the authors and titles omitted from this paper are as significant as the ones described. As an introduction to a little-known and very interesting history of science collection, it is hoped that this brief summary will whet the scholarly appetite for exploration and discovery in

the Newberry Library's newly revealed history of science collection.

Acknowledgments

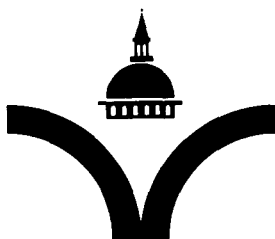
The idea for this paper was suggested by Allen G. Debus, Morris Fishbein Professor of the History of Science at the University of Chicago. He compiled the first list of works on the history of science at the Newberry Library (100 titles) in the course of research for his *Man and Nature in the Renaissance*, Cambridge and New York, Cambridge University Press, 1978. He generously shared the fruits of his research and has consistently supported my efforts, giving time and thought unstintingly.

Notes

1. Jacques Gaffarel, *Unheard of Curiosities: Concerning the Talismanic Sculpture of the Persians; the Horoscopes of the Patriarkes; and the Reading of the Stars. . .*, Englished by Edmund Chilmead, London, printed by G. D. for H. Moseley, 1650; François Du Laurens, *Solutiones Aliquot Quaestionum, quibus Vera Primae Philosophiae Principia Astruuntur. Opus Metaphysicum. . .*, The Hague, A. Vlaq, 1693; Thomas Hill, *Pleasant History Declaring the Whole Art of Physiognomy. . .*, London, printed by W. Iaggard, 1613; Johann von Jessen, *Zoroaster*, Wittenberg, ex officina Cratoniana, 1593.
2. William F. Poole to the Committee on Books, October 31, 1892. Poole papers, The Newberry Library, Chicago.
3. "Trustees Record," pp. 373-374, June 18, 1896.
4. *Ibid.*, p. 405, December 6, 1897.
5. Aristotle, *Works* [Greek], 5 vols., Venice, Aldus Manutius, 1495-98. Ermolao Barbaro, *Castigationes Plinii et Pomponii Melae*, Rome, Eucharius Silber, 1492-93. Pierre Belon, *La Nature & Diuersite des Poissons*, Paris, chez C. Estienne, 1555. Pierre Belon, *Portraits d'Oyseaux, Animaux*, Paris, 1557.
6. *Attempt at a Catalogue of the Library of the Late Prince Louis-Lucien Bonaparte* by Victor Collins, London, Henry Sotheran & Co., 1894. The Catalogue is arranged by language groups, and has no alphabetical index.
7. Typed letter, signed "George B. Utley, Librarian, To the Board of Trustees, [of The Newberry Library] 7 October 1929." Appended to the "Minutes of the Meetings of the Trustees," vol. 3, 1918-29, p. 258. I have not been able to trace the whereabouts of any of these books.
8. Read on "Radio Line," over Station WGN (*Chicago Tribune*, 1931). George B. Utley Papers, photocopy of typescript, "p. 2," in "The Newberry Library—Printed Sources to the History of the Library," looseleaf binder, n.p., n.d.
9. *The National Union Catalogue: Pre-1956 Imprints, and Supplement*, London, Mansell, 1968-81, is the source for statements about holdings in the U.S., unless otherwise indicated. It is henceforth referred to as *NUC*.
10. I am indebted to Dr. John A. Tedeschi, formerly Director of the Center for Renaissance Studies at The Newberry Library, and now Curator of Special Collections at the University of Wisconsin, Madison, for this and many other stimulating and synthesizing insights into the interdisciplinary world of the Renaissance.



Jean S. Gottlieb has served as Editorial Assistant on the *Bibliographie Internationale de l'Humanisme et de la Renaissance*, Editor of the Council of Planning Librarians bibliography series, *CPL Bibliographies*, and has taught bibliography and book conservation. A Newberry Library Fellow, Dr. Gottlieb is compiling a checklist on the Newberry Library's printed books on early science.



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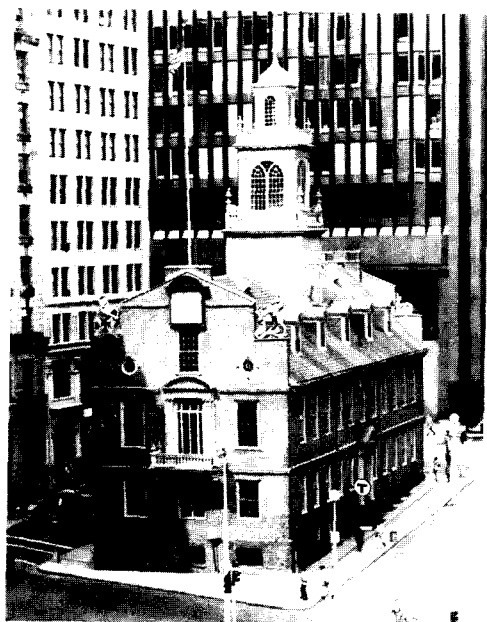
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3. You can improve your purchase management and budget development.
4. You can learn of developments on the horizon.



The Old Statehouse in downtown Boston. Photo courtesy of The Greater Boston Convention & Visitors Bureau, Inc.

5. You can compare products and services of various exhibitors more effectively.
6. You can develop a list of exhibitors (personal contacts are more effective than a general letter) who supply the information products in your area of specialization.
7. You can influence new applications of information technology by informing appropriate exhibitors of the needs of your clientele.
8. You can save enormous amounts of time by not having to arrange appointments with each vendor wanting to visit your library.
9. You can talk to exhibitors about their products and make suggestions for improvements or alternate uses.
10. You can help SLA keep present exhibitors happy and attract future exhibitors by filling the exhibit hall—that's good for you and your Association.

In Boston this year, the Exhibit Area will be located in the Lower Level of the Sheraton Boston Hotel.

If you are unable to register for the program sessions for the conference, but are interested in examining the various products and services in the Exhibit Hall, write for a complimentary exhibit hall pass, and specify the number of persons attending. Send a self-addressed, stamped envelope to: Manager, Conference and Exhibits, Special Libraries Association, 1700 18th Street NW, Washington, DC 20009.

The Exhibits will be open Sunday, June 8 to Wednesday, June 11. Special events are also planned for the Exhibit Area, including an Opening Reception. Make plans to come.

General Sessions. The two General Sessions planned for the Boston Conference are entitled, "Managing for Excellence" and "Innovations in Technology." Top-notch speakers will provide attendees with many ideas to be implemented in their professional and personal lives.

Meeting Your Peers. One of the advantages to be gained by attending a national conference is the opportunity to meet a wide range of fellow professionals. Many excellent and practical ideas can be gained by interacting with thousands of the best teachers in the field—your peers. Social events have been scheduled to allow time for you to relax with your colleagues.

Employment Clearinghouse and Career Advisory Service. The SLA Employment Clearinghouse is a free service available to all conference registrants and employers.



Cobblestone Street on historic Beacon Hill. Photo courtesy of the Greater Boston Convention & Visitors Bureau, Inc.

Through this service, prospective employees and employers are brought together to discuss future employment.

If you have any questions about the special librarianship and information management field in general, or your career in particular, take advantage of the SLA Career Advisory Service. Experienced SLA members will serve as counselors to help you find the answers you need. Both services are confidential.

Full details will be provided in the Preliminary Conference Program which will be available in early March.

Field Trips. More than one dozen field trips sponsored by SLA and many of the divisions have been scheduled for this year's Conference. Some trips will allow you to visit a place of special interest to your division. Others will allow you to learn about the geographic area and its history. And some are just for your pleasure and enjoyment.

Cost. SLA works hard to help its members get the best value for their money. Seminars, field trips, and special events are planned so that attendees receive the most for each dollar spent. SLA has used its group-buying power to arrange special low prices on hotels and air fares. Take advantage of this service by staying in a designated conference hotel and by using SLA's official travel coordinator.

Boston. The quality of Boston that is most striking is the subtle manner in which the past, present, and future blend to produce one of America's most vibrant cities. Boston, home of the American Revolution and birthplace of U.S. public education, is also a leader in today's fields of high technology, medicine and education. The charming brick streets,



The Massachusetts State House.
Photo courtesy of The Greater Boston Convention & Visitors Bureau, Inc.

fine cuisine, historic sites, world-renown universities, and numerous attractions combine to make Boston an extraordinary city. Plan to join us next June.

Conference Programs

Continuing Education Courses

SLA Continuing Education Courses have been instrumental in providing information professionals with a wealth of knowledge. SLA's Continuing Education Program is designed to meet the changing needs of information specialists by preparing them for new duties and responsibilities in such areas as management, communications, and library automation techniques. Knowledgeable instructors have been chosen for their unique expertise in the topic area, acquired through personal experience as well as academic credentials.

This year's conference will feature approximately 25 continuing education courses. Throughout its existence, the Continuing Education Program has earned an excellent reputation, and has a highly respected resource in the information management profession. Participants will earn 0.6 Continuing Education Units (CEUs) and a certificate upon completion of each course.

Middle Management Institute

The Middle Management Institute (MMI), designed for information professionals with five or more years of managerial experience, is the second phase of SLA's Professional Development Program. Developed to provide practical training in specific areas of management, this certificate program will sharpen

participants' overall organizational and decision-making skills, through expert instruction and interaction with peers.

The MMI is a 75-hour sequence, consisting of five independent, yet inter-related units, including:

1. Management Skills
2. Analytical Tools
3. Human Resources
4. Marketing and Public Relations
5. Technology and Applications

Each unit is a 15-hour, 2½ day session.

MMI units are held in various locations throughout the U.S. and Canada each calendar year. The "Analytical Tools" unit will be offered in conjunction with the 1986 Annual Conference.

Participants will earn an SLA Management Certificate and 7.5 CEUs. Certification is based on completion of all five MMI units within an approximate two-year period.

For further details regarding Annual Conference Professional Development Activities, refer to your Conference Registration Packet which will be mailed to SLA members in March 1986, or contact: Director, Professional Development, Special Libraries Association, 1700 18th Street NW, Washington, DC 20009; (202) 234-4700.

Conference Housing

The headquarters hotel for the 1986 SLA Conference is the Sheraton Boston. The Exhibit Hall and Registration Area will both be located in the Sheraton Boston. Most meetings will also be held in the Sheraton, the Back Bay Hilton, and the Colonnade hotels. SLA has negotiated special room rates with these hotels, in addition to four others, all conveniently located in the historic Back Bay section of Boston. For room rate information, please refer to the December issue of *Specialist*.

Registration

Registration will take place in the Sheraton Boston Hotel. Since we are expecting a sizable attendance at this Conference, we strongly recommend advance registration. In addition to avoiding long, time-consuming lines, advance registration can also save you money. The registration fees for this Conference are as follows.

* Member, Advance (by May 1)	\$ 95.00
* Member, One-Day	\$ 65.00
* Member, On-Site (after May 1)	\$125.00
Non-Member Advance (by May 1)	\$110.00
Non-Member, One-Day	\$ 75.00
Non-Member, On-Site (after May 1)	\$145.00

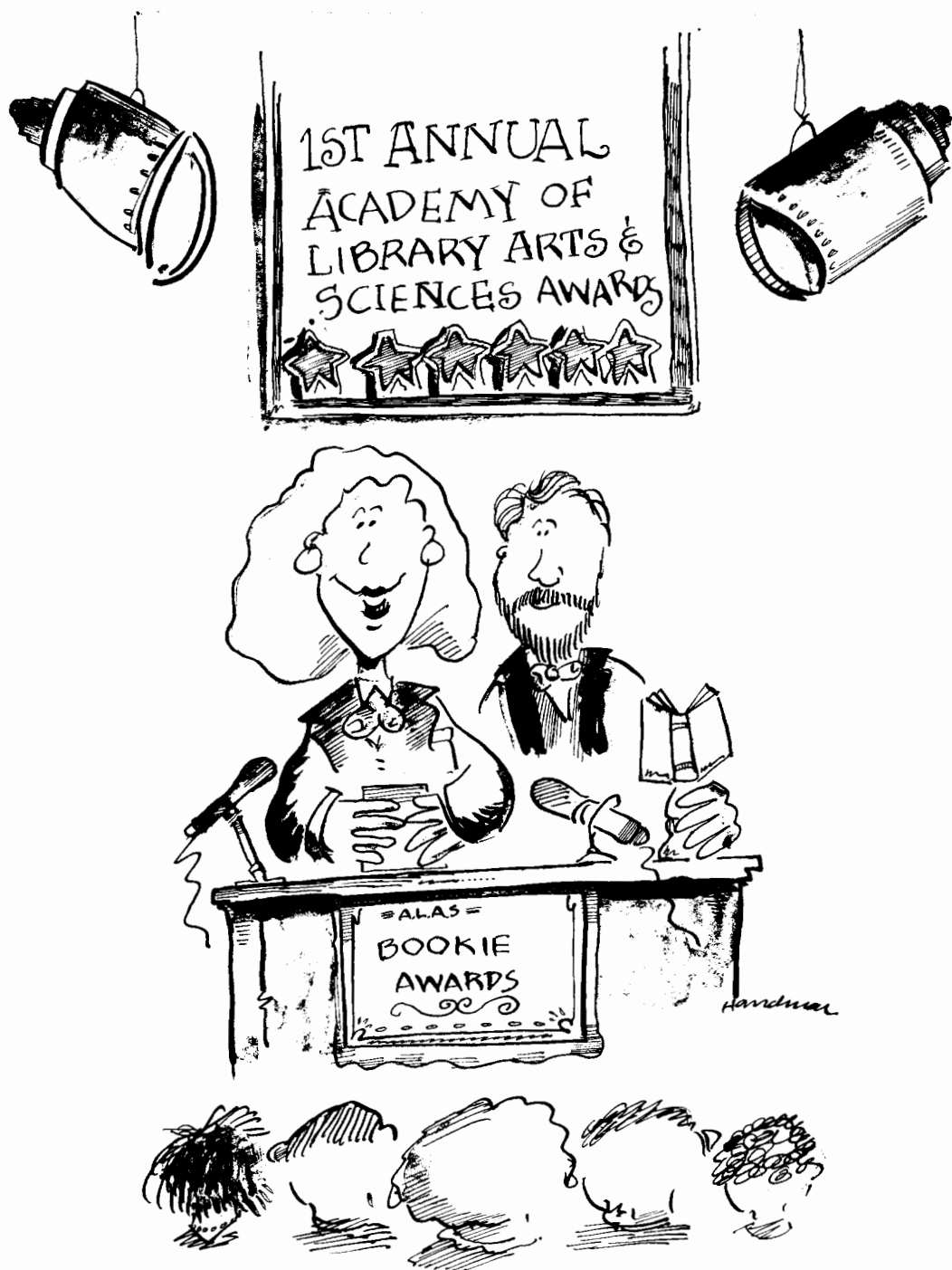
Student/Retired/

Accompanying Person \$ 45.00

*SLA member rates apply to SLA, ASIS, ARLIS/NA and AALL members.

All SLA members will receive full registration and ticket information in the Preliminary Conference Program which will be mailed to you in March. If you have any questions re-

garding the Conference, or if you are a non-member and wish to be placed in the mailing list to receive a Preliminary Program, please contact the Manager, Conference and Exhibits, Special Libraries Association, 1700 18th Street, NW, Washington, DC 20009; (202) 234-4700. *Be a part of SLA's 77th Annual Conference—join us in Boston!*



... AND THE NOMINEES FOR THE BEST SUCCESSIVE ENTRY
CATALOGING OF AN IRREGULARLY ISSUED SERBO-CROATIAN
GOVERNMENT DOCUMENT WITH SEPARATELY ISSUED
SUPPLEMENTS AND ANNUAL INDEXES ARE ...

1986 Candidates for SLA Office

For President-Elect



MOBLEY

• **Emily Mobley** is Library Director, GMI Engineering & Management Institute, Flint, MI.

Past Employment: Engineering Librarian, Chrysler Corporation (1965-69); Science Librarian, Wayne State University (1969-75); Staff Assistant, General Motors Research Laboratories (1976-78); and Supervisor, Reader Services (1978-81).

Education: BA, University of Michigan (1964); AMLS, University of Michigan (1967); additional graduate work at University of Michigan.

SLA Member Since: 1968.

SLA Chapter Activities: *Michigan Chapter:* Bulletin Editor (1972-73); Member, Education Committee (1974-76); Member, Program Committee (1976-79); President-Elect and Chairman of Program Committee (1979-80); President (1980-



TCHOBANOFF

81), Chairman, Long Range Planning Committee (1981-82); Chairman, Nominating Committee (1982-83).

SLA Division Activities: *Engineering Division:* Chairman, Membership Committee (1973-73). *Library Management Division:* Handled local arrangements for 1982 Detroit Conference, secretary (1983-85). *Information Technology Division:* member.

Association-Level Activities: Member, Resolutions Committee (1969-71); Chairman, Resolutions Committee (1969-70); Member, Committee on Positive Action (1972-74); Member, Research Committee (1977-80); Chairman-Elect, Chapter Cabinet (1984-85); Chairman, Chapter Cabinet (1985-86).

Other Professional Activities: Ms. Mobley was appointed by the Governor of the State of Michigan to serve on the Library of Michigan Board of Trustees (1983-87). She has also served on various

task forces and committees for the state. She is adjunct lecturer at the University of Michigan School of Library Science. She is the co-author of *Special Libraries at Work* (Shoe String Press, 1984). Her article, "Library Operations Within a Decentralized Corporate Organization," appeared in *Issues and Involvement* (SLA, 1983, pp. 86-94). The paper had originally been presented at Western Michigan University in 1980. She has also published articles in *Michigan Librarian* and *Michigan Alumnus*.

Other Professional Memberships: ALA, ASIS, National Association for Female Executives, Women's National Book Association.

• **James B. Tchobanoff** is Section Manager, Technical Information Center, Pillsbury Company.

Past Employment: Clinical Medical Librarian, Medical Library, University of Missouri at Kansas City (1972-76).

Education: BS, Chemistry, University of Michigan (1968); AMLS, University of Michigan (1971); post-graduate internship program for science librarians, University of Tennessee—Medical Units.

Member of SLA Since: 1976.

SLA Chapter Activities: *Minnesota Chapter:* President-Elect (1978-79); President (1979-80); Past President/Director (1980-81).

SLA Division Activities: *Food and Nutrition Division:* Chairman, Membership Committee (1981-82); Chairman-Elect (1982-83); Past Chairman/Director (1983-84); Directory Committee Chairman (1981-85).

Association Level Activities: Member, Committee on Committees (1980-84); Board of Directors, Division Cabinet Chairman-Elect (1983-84); Division Cabinet Chairman (1984-85); Member, Long Range Planning Committee (1983-84); Chairman, Long Range Planning Committee (1984-85).

Other Professional Activities: Mr. Tchobanoff has published one book, one research report, two articles in *Special Libraries*, four articles in other journals, and several articles in Chapter and Division Bulletins. Three of his works include "Overview and Highlights of the SLA Long Range Plan," *Special Libraries*, (76(3):177-82, Summer 1985); "A Pragmatist's Approach to Creating a Private File," *Special Libraries* (76(3):115-20, Spring 1985); and "Utilizing the Professional Information Staff: The Role of Professional Librarians in Assimilating Technical Information," in *The Information Connection: Making a Powerful Resource Work for You*, R.H. Dougherty, ed., (Institute of Food Technologists, 1981, pp. 8.1-8.10).

Other Professional Memberships: American Association for the Advancement of Science, American Chemical Society, Medical Library Association, Beta Phi Mu.

For Chapter Cabinet Chairman-Elect



COFFMAN



STURSA

• **M. Hope Coffman** is the Manager of the Technical Information Center at the Charles Stark Draper Laboratory, Inc. in Cambridge, MA.

Past Employment: Acquisitions and Serials Cataloguer Intern at Widener Library, Harvard University.

Education: BA, Boston University

(1969); MS, Simmons College Graduate School of Library and Information Science (1972).

Member of SLA Since: 1975.

SLA Chapter Activities: *Boston Chapter:* Member, Long Range Planning Committee (1984–85); Member 75th Anniversary Committee (1983–84); Chapter President (1982–83); Chapter President-Elect (1981–82); Chairman, Program Committee; Chairman, Education Committee (1979–81); Member, Scholarship Committee (1979).

SLA Division Activities: *Library Management Division:* Chairman (1985–86); Chairman-Elect (1984–85); Program Chairman, New York Conference (1984).

Association-Level Activities: Professional Development Committee (formerly the Education Committee) (1982–).

Other Professional Activities: Ms. Coffman was a guest lecturer at Simmons College Graduate School of Library and Information Science, Special Libraries Course (1980, 1984, 1985). She has given numerous presentations on the "Role of Information Services in a Research and Development Environment."

She has served on the Advisory Training Committee for the Greater Boston United Way (1978–80) and as Corporate United Way Keyperson, Draper Laboratory (1977). She participated in the Senior Management Development Training Program at the Boston College Graduate School of Management (1976). She was a visiting scholar at: Huntington Library, San Marino, CA (1980); Dove Cottage Library and Archives, Wordsworth Trust, Grasmere, Cumbria, England (1977); and at the British Museum, London, England (1977).

She has presented many papers at numerous SLA conferences and seminars and has co-authored "Continuity in Change: Boston, the Oldest Chapter" with Margaret Miller and Ruth Seidman, New York Conference (1984). She has made numerous contributions to SLA's

Boston Chapter Bulletin, the *Library Management Division Bulletin*, and other publications, including "Trends in Industrial Information Resource Centers," which appeared in *Science and Technology Libraries*, 6(3):41–54, Spring 1981).

Other Professional Memberships: ALA, ASIS, Associated Information Managers, Beta Phi Mu (served as president of Beta Beta Chapter, 1983–84), received Cogswell Award (1976) and Outstanding Achievement Award, Greater Boston United Way (1977, 1979).

• **Mary Lou Stursa** is Head, Documents Department, Steenbock (Agricultural and Life Sciences) Library, University of Wisconsin at Madison.

Past Employment: Microbiologist in Industry and Research Positions; Research Librarian, Florida Department of Commerce (1969–70); Information Coordinator, Florida Coastal Zone Planning Agency (1971–78); Instructor (1970–71) and Visiting Lecturer (1978), School of Library Science, Florida State University; and Manager, Information Services, Florida Governor's Energy Office (1978–82).

Education: BS, Industrial/Food Microbiology, University of Wisconsin (1950); MS, Library/Information Science, Florida State University (1969).

SLA Member Since: 1969.

SLA Chapter Activities: *Wisconsin Chapter:* member. *Florida Chapter:* Chairman, Archives Committee (1975–78); President-Elect (1977–78); President (1978–79); Chairman, Bylaws Committee (1980–81).

SLA Division Activities: *Natural Resources Division:* Secretary (1980–82); Bulletin Editor (1972–75, 1984–86); Editor/Compiler of the Division's *Directory of Natural Resources and Environmental Newsletters*. *Food, Agriculture and Nutrition Division:* Member. *Information Technology Division:* Member, Government Documents Section. *Petroleum and Energy Resources Division:* Co-

Project Coordinator and Compiler, *Petroleum Reference and Information Resources: A Course Outline and Syllabus* (University of Oklahoma School of Library Science).

Association-Level Activities: Chairman, Joint Cabinets Archives Study Committee (1978-79); Member, Nominating Committee for Spring 1981 Elections (1979-81); Member, Special Study Committee on Division Structure (1980-81); Director (1982-85); Secretary to Board (1983-84); Board Proctor, Scholarship Committee (1982-85); Board Proctor, Positive Action Program for Minority Groups Committee (1982-85); Board Proctor, Student Relations Officer (1982-85); Chairman, Special Study Committee on Directory Options (1984);

current Chairman, Publishing Relations Committee; Representative, ALA/USDE Accreditation Project—Society-Specific Working Group.

Other Professional Activities: Ms. Stursa's published works include several research reports and bibliographies, three articles in national/international journals (including *Special Libraries*), and several articles in Chapter and Division Bulletins.

Other Professional Memberships/Honors: Wisconsin Library Association/Wisconsin Association of Academic Librarians; University of Wisconsin Librarians Assembly; Vice President, Madison Area Library Council; Phi Kappa Phi, Beta Phi Mu.

For Division Cabinet Chairman-Elect



GERVINO



SEIDMAN

• **Joan Gervino** is Director of Library and Information Services at the American Bankers Association.

Past Employment: Assistant Librarian (1967-68), Librarian (1968-72), Federal Deposit Insurance Corporation; Librarian, Bar Association, District of Columbia (1972-73).

Education: BA, Mount Holyoke College, (1966); MLS, Rutgers University, (1967).

SLA Member Since: 1969.

SLA Chapter Activities: *Washington, DC Chapter:* Program Chair/Chairperson-Elect (1978-79) and Chair of Social Science Group; Member, Chapter Election Committee (1978), Nominations Committee (1978-79); President-Elect/Program Chair (1981-82); President (1982-83). She also assisted the Chapter's Board in revising the Manual for Officers and Committees (1984-85).

SLA Division Activities: *Business and Finance Division:* Coordinator, Bank Libraries Circle (1976-77); Chairperson-Elect (1979-80) and Chairperson (1979-80); Chair, Nominations Committee (1980-81). *Social Science Division:* Member.

Association Level Activities: Member, Nominating Committee (1984-85).

Other Professional Activities: Special Libraries Representative, Librarians Technical Committee, Library Council, Metropolitan Washington, DC Council

of Governments (1985-88); Reviewer, *Law Books in Print*. Ms. Gervino's most recent publication was "The Library and Information Services of the American Bankers Association: A Member Service Function." *Special Collections*, (2(3):31-37, Spring 1983). She has done extensive speaking at professional meetings and in seminars. She led a seminar for the American Society of Association Executive's Executive Development Program on Information Services Management (July 1985). During her tenure at ABA, the indexing service *ABA Banking Literature Index* was developed and made available for sale.

Other Professional Memberships/Honors: American Association of Law Libraries, Associated Information Managers, District of Columbia Library Association, Law Librarians Society of Washington, DC (Treasurer, 1978-79).

• **Ruth K. Seidman** is Director, Research Library, Air Force Geophysics Laboratory, Hanscom Air Force Base, Massachusetts.

Past Employment: Research Assistant, Associates for International Research, Inc., Cambridge, MA (1963-64); Librarian, Russian Research Center, Harvard University (1964-65); Science and Engineering Reference Assistant, Sears Library, Case Institute of Technology, Cleveland, OH (1966-68); Librarian, U.S. Environmental Protection Agency, New England Regional Office, Boston, MA (1970-82).

Education: A.B., Brown University (1960); A.M., Soviet Area Studies, Harvard University, (1963); MSLIS, Case Western Reserve University (1968).

SLA Member Since: 1971.

SLA Chapter Activities: *Boston Chapter:* Tickets Committee, 63rd Annual Conference (1971-72); Speaker, Reference

Update and Governments Documents programs; Program Committee member and Science/Technology Chairman (1976-77); Secretary (1977-78); President-Elect and Program Chairman (1980-81); President (1981-82); Chairman, Nominating Committee (1983-84); Chairman, Chapter 75th Anniversary Program (1983); Chairman, Government Relations Committee and NTIS Liaison (1983-85).

SLA Division Activities: *Metals/Materials Division:* Co-Chairman, Local Arrangements, 63rd Annual Conference, Boston (1971-72); *Science & Technology Division:* Member. *Natural Resources Division:* Speaker, 64th Annual Conference, Pittsburgh (1973); Member, Nominating Committee (1980). *Military Librarians Division:* Chairman-Elect (1983-84); Chairman (1984-85).

Association-Level Activities: Contributed Paper, 68th Annual Conference, New York (1977); Chairman, 1986 Boston Conference Program Committee.

Other Professional Activities: Ms. Seidman has published three research reports, one article in *Special Libraries*, and 12 articles in Chapter or Division Bulletins. Her publications include a contributed paper which she co-authored, "The Oldest Chapter, Boston: Some Reflections on the Occasion of the Association's 75th Anniversary," 75th Annual Conference, New York.

Other Professional Memberships and Honors: ALA; Federally Employed Women; Special Library Representative, New England Library Board Panel of Counselors (1978-82); Phi Beta Kappa; Beta Phi Mu; U.S. Environmental Protection Agency International Women's Year Award (1975) and Special Achievement Award (1973, 1976); Air Force Systems Command Certificate for Management Excellence (1983) and outstanding Technical Librarian (1985); Air Force Outstanding Technical Librarian (1985).

For Directors (1986-89)



COONEY



PATTON



SCOTT



TERNBERG

• **Jane Cooney** is Vice President and Director of Information Services, Bank Marketing Association, Chicago, IL.

Past Employment: Manager, Information Center, Canadian Imperial Bank of Commerce, Toronto (1969-83); Metropolitan Toronto Business Library; McGill University; Calgary Public Library; Montreal *Star*; Teaching Staff, University of Toronto Faculty of Library and Information Science (1974-79).

Education: BA, Marianopolis College, Montreal (1963); BLS, University of Toronto (1964); MLS, University of Toronto (1974).

SLA Member Since: 1969.

SLA Chapter Activities: *Illinois Chapter:* Member. *Toronto Chapter:* Placement Officer (1974-75); President (1976-77); Consultation Officer (1978-79).

SLA Division Activities: *Business and Finance Division:* Director (1977-79); Chairman (1979-80); Chair, Nominating Committee (1981-82). *Library Management Division:* Member.

Association-Level Activities: SLA representative to CASLIS (1980-82); Division Cabinet Chair-Elect (1982); Member, Government Information Services Committee (1981-83); Member, SLA Committee on Canadian Concerns (1984-).

Other Professional Activities: Chairman, Commerce Employee Campaign, United Way of Greater Toronto (1981);

Member, Board, Metropolitan Chicago Council, Campfire Inc. (1983-85). Ms. Cooney has written a number of articles for national and international journals and has contributed to two books.

Other Professional Memberships and Honors: American Society of Association Executives; Chicago Society of Association Executives; Canadian Library Association, Associated Information Managers; Information Industry Association; former member, Library Techniques Advisory Committee, Seneca College, Toronto (1976-81); Member of the Year, SLA Toronto Chapter (1983); Jubilee Award, University of Toronto Faculty of Library and Information Science Alumni (1983).

• **Johnn Patton** is Reference Coordinator of the Suffolk Cooperative Library System, Bellport, NY.

Past Employment: Bibliographer, Ohio State University; Assistant Social Studies Librarian, Wayne State University, Detroit, MI; Reference Librarian, Education Library, University of Chicago; Librarian, University of Guam; Librarian, CBS Television (WBBM-TV); Librarian, Standard Educational Corporation; Consultant Librarian, Faculty of Medicine, University of Saigon, Vietnam; Assistant Director for Collection Department, Nassau County Research Library, Account Representative, EBSCO Subscription Services.

Education: BS, Library Science, University of Oklahoma; Masters, Graduate Library School, University of Chicago.

SLA Member Since: 1964, life member since 1971.

SLA Chapter Activities: *Illinois Chapter:* Chairman, Meals and Meeting Planning Committee (1965–68). *Long Island Chapter:* Director, Executive Board (1974–76); Vice President, President-Elect (1981–82); President (1982–83).

SLA Division Activities: *Advertising and Marketing Division:* Chairman-Elect (1975–76); Chairman (1976–77); Archivist (1979–); Business Manager of *What's New in Advertising and Marketing* (chapter publication) (1965–67). Editor (1968–69).

Association-Level Activities: Chairman, Association of American Publishers, SLA Joint Committee (1981–83); Chairman Publishers Relations Committee (1981–83).

Other Professional Activities: Mr. Patton was consultant to Xerox University Microfilms on their microfilm subscription project and their filmstrip/booklet, "A Microcourse in Microforms." He has also been a consultant to the Korean Development Institute in Seoul, planning their physical facilities and setting up criteria for the staff and the collection. He was a panelist at the SLA Continuing Education Program on "Managing the Business Information Center" in New Orleans and a speaker at the *Collection and Development Management Institute* in New York, sponsored by the New York Metropolitan Reference and Research Library Agency.

• **Catherine Scott** is Chief Librarian, Museum Reference Center, Smithsonian Institution.

Past Employment: Assistant Librarian, Export-Import Bank of the United States (1953–55); Reference Librarian and then Assistant Librarian, National Housing

Center, National Association of Home Builders (1955–72); Organizer and Chief Technical Librarian, Bellcomm (AT&T) (1962–72); Chief Librarian, National Air and Space Museum (1972–83).

Education: BA, English and Drama, Catholic University of America (1950); MSLS, Graduate School of Library and Information Science, Catholic University of America (1955).

SLA Member Since: 1956.

SLA Chapter Activities: *Washington, DC Chapter:* President (1971–72); Vice-President and Program Chairman (1970–71); Corresponding Secretary (1968–69); Chairman, Sci-Tech Group (1969–70); Program Chairman, Sci-Tech Group (1968–69); Member, Bylaws Revision Committee (1973–74); Chairman, Nominating Committee (1966–67); Chairman, Publicity Committee (1963–68, 1973–75); Consultation Officer (1976–).

SLA Division Activities: *Aerospace Division:* Chair (1980–81), Chair-Elect and Program Chairman (1979–80); Secretary (1968–69); Nominating Committee (1969–70); Publications Committee (1978–79). *Museums, Arts & Humanities Division:* member.

Association-Level Activities: Speaker, Consultation Service Committee, 1978 Conference; Member, Publicity Chairman, 1962 Conference; Member, Local Arrangements Committee, 1980 Conference; Speaker, Museums, Arts and Humanities Division, 1980 Conference; Member, Planning and Goals Committee (1972–73).

Other Professional Activities: Publicity Chairman, ASIS 1972 Conference; drafted "Eight Key Issues for the White House Conference on Library and Information Services" (ASIS Public Affairs Committee, 1979); Member, National Commission on Libraries and Information Science (1971, 1972–76), Vice Chairman (1972–73), NCLIS Copyright, Public Relations, and Public/Private Sectors Committees; Delegate, Federal Library

Community, Pre-White House Conference (1978); President, Executive Council, Friends of Catholic University Library (1979-); Member, Board of Visitors, Catholic University, Graduate SLIS, and Catholic University Library (1974-84); Member, Local Arrangements Committee and Publicity Chairman, IFLA 1974 Conference; Delegate, 1976, 1982, and 1985 IFLA Conferences. She has also published three books, seven articles in Chapter and Division Bulletins and six articles in other publications.

Other Professional Memberships and Honors: ASIS, IFLA, Secretary's Exceptional Service Award, Smithsonian Institution (1976); Apollo Achievement Award, NASA (1969); Catholic University of America Alumni Achievement Award for Public Information (1977); Medal for Distinguished Federal Service, National Commission on Libraries and Information Science (1985); Chapter Membership Award to the President, SLA (1972).

- **Milton Ternberg** is Head, Reference/Online Services Social Science/Business Library, University of California at Berkeley.

Past Employment: Reference Librarian, Business and Science Division, New Orleans Public Library (1973-75); Assistant Head, Business and Technology Division, Dallas Public Library (1976-77); Head, Government Publications Division, Dallas Public Library (1977-81);

Business Specialist, Business Administration/Government Documents Department, Middleton Library, Louisiana State University-Baton Rouge (1981-83).

Education: BS, Mankato State University (1969); MA, University of Minnesota (1973).

SLA Chapter Activities: *Texas Chapter:* Associations Liaison (1976); Chairman, Dallas Local Planning Group (1979-81); Auditor (1981). *Louisiana Chapter:* Bulletin Business Manager (1982-83). *San Francisco Bay Region Chapter:* member.

SLA Division Activities: *Business and Finance Division:* Coordinator, Public and Governmental Business Libraries Roundtable (1977-78); Chairman, Hospitality Committee (1982-83); Chairman-Elect (1983-84); Chairman (1984-85). *Social Science Division:* Chairman-Elect, Urban Affairs Section (1981-82); Chairman (1982-83); Chairman, Hospitality Committee (1982-83). *Information Technology Division:* member.

Other Professional Activities: Editorial Board, *Index to Current Urban Documents* (1981-); Visiting Scholar, School of Business and Economics, Eastern Montana College (1984); Consultant, New York Public Library (1985). Publications include "Business Basics: A Guide to Selection Sources" (*Collection Building*, Spring 1983); "BI for Accounting Students" (*College and Research Libraries News*, June 1985); and "Regional Government Organizations and Their Publications" (*Government Publications Review*, September/October 1982).

Reviews

INMAGIC—Micro-16 (Version 6.3, Release 2). Published by INMAGIC, Inc., 238 Broadway, Cambridge, MA 02139. Requires 192K RAM, two disk drives. Additional memory, hard disk recommended.

INMAGIC is text management software originally developed for minicomputers in the 1970s by Warner-Eddison Associates of Cambridge, Massachusetts. In 1979, it was described in a *Library Journal* news item as a "software package tailored to the needs of the smaller and specialized collection." At that time it ran on a DEC PDP-11 minicomputer and cost \$5000. In March 1984, a version for the IBM PC was announced at a price of \$975 for BIBLIO, a collection of applications modules (Catlog, Orders, Serial, and Circ), is available for an additional \$145.

INMAGIC is not a true data base management system in the sense that there can be access to only one file of data at a time. In its current version, there is no mathematical capability, and neither full-screen nor global editing can be done within the system. (Data can be written to a file, however, edited with a word processing package, and loaded back into the system.) Despite these limitations, it has a number of features that make it useful for library applications.

One good feature is that it has variable length fields. When defining the structure of a file, there is no field length specification requirement. For those who have trouble predicting the length of the longest title, this is valuable. A second good feature is that there can be repeating occurrences of a field. This means that a publication can have any number of authors or any number of subject headings, and all can be searched or sorted on equally.

INMAGIC allows retrieval by words or word stems occurring within a field. It supports the Boolean operators, as well as the comparison operators. Searches can be stored and executed at a later date. Designated fields may be indexed. These fields can be searched rapidly and can be used to specify the order in which records are printed.

There is an elaborate sort code system which, among other things, allows for ignoring leading articles, and proper sorting by Library of Congress classification number. The report generator is quite complicated, but at the same time provides great flexibility in designing printed output. BIBLIO is virtually a requirement to guide the user through the complexity. BIBLIO consists of database design structures and report formats for library applications. It can be used as is, or it can serve as a model for developing more customized applications.

The manual, which is over 100 pages, is well-indexed. Online help screens are easily accessible from within the system. In addition, calling User Services (not an 800 number) usually provides a prompt answer or a same-day return telephone call.

At the Federal Reserve Bank of San Francisco, a database of working papers was designed using INMAGIC. The CATLOG module of BIBLIO was used as an example when setting up the structure of the file. Again using BIBLIO as an example, a report format was designed that produces a "new-titles-received" list very similar to one that had previously been prepared on a word processor. Because of the extensive indexing, adding single records to INMAGIC can be quite slow. It is usually more efficient to create records outside of INMAGIC and then add them in batch mode. With the working papers database, it takes about forty minutes to batch load 150 records into INMAGIC.

At present there are approximately 1600 working paper records in the database, with more being added regularly. The system is performing quite well. Staff members are pleased with the ease of querying. Even as more records are entered, normal search response time continues to be just a few seconds. As an example, we can search for all Federal Home Loan Bank Board working papers, get a result of 93 titles, format and save the result using INMAGIC, send the formatted result to our laser printer, and pick up a nine-page printed bibliography all within fifteen minutes. Prototypes for an acquisitions database and a database of Congressional materials have been developed and are currently being tested.

Diane Rosenberger
Federal Reserve Bank of San Francisco
San Francisco, California

Library Personnel Management, by Herbert S. White; Knowledge Industry Publications, Inc. 1985. 214 p., bibliography, index. \$36.50 hardcover, \$28.50 paperback. (Professional Librarian Series) ISBN 0-86729-136-2.

In writing a text on library management, an author must make a decision about the reader. The reader is either expected to have no knowledge of management literature, or to have a basic understanding of major writings and popular trends. White has chosen the latter as his audience here.

This book is not a stand-alone work. It assumes that primary management theories have been explored in-depth elsewhere. Brief refresher paragraphs on various personalities and theories are offered, but that is not the real value of White's text.

The most successful parts of this book are those infused with White's management philosophies, based on his wide-ranging experiences. His list of qualifications for any manager include fairness, consistency and flexibility, ability to grasp new ideas, open-mindedness, ambition, ability to communi-

cate, leadership, idealism tempered with pragmatism, ability to set priorities, ability to delegate, and courage. This list sets the tone for the following chapters that cover these issues. Each chapter is enhanced with numerous library-specific examples of management dilemmas.

In developing his philosophies, White examines the role of the humanist in management. Most librarians, he states, come to management from this orientation. His examination of the strengths and weaknesses of this mindset makes a fascinating consideration.

Also interesting is the case made for consultative management over the popular participatory and the less popular autocratic styles.

As with most of the discourses in this book, White does indeed argue his own viewpoint, but simultaneously he states the pros and cons of the concepts he rejects. For the manager who had grown stale or is looking for new options and approaches, this is particularly helpful. Central to this management philosophy is the acknowledgement of situation-dependent decision making. That is, there is no one answer or key to management dilemmas. Clearly, his approach in presenting all sides of management concepts reflects this belief.

The final chapter examines present and future issues. The issues discussed will not be new to the reader. However, this is a valuable section as White attempts to apply management theory to developing issues before they become professional problems. There is less discussion here and more personal statement, but the chapter can be appreciated as a stimulant to the professional consciousness.

Finally, White includes twelve case studies ranging across various types of libraries. According to a note, they are based on actual experiences. No solutions are offered, which is not helpful to the professional using this

book outside of a classroom situation. However, the case studies do add a dimension to the text by attempting to focus on special and public libraries as well as academic libraries, overcoming a bias towards academic libraries noted elsewhere in the book.

White expresses the hope that this book can be used as a continuing resource for library managers. Its content and structure do favor this type of use. In a sense, reading this book is similar to having a stimulating conversation with a knowledgeable colleague. It offers the opportunity to think through complex management problems in a clear and challenging way.

Jocelyn Baade Toman
Library Director
Neumann College
Aston, Pennsylvania

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"ONLINE" ISSUE

Your special "Online" issue (Volume 76, Number 2) makes for interesting and stimulating reading. I would like to make some comments on the topic of "End user searching and its Implications for Librarians" (Marydee Ojala, pp. 93-99).

The envisaged scenario is that end users will do more and more online searches by themselves. The advice, guidance and instructions for the proper execution of these searches will come from the experienced librarian, who will also carry out the more difficult and sophisticated online searches. In addition, the librarian will provide the administrative support and link with the online databases and vendors, which are accessed by the end user, the professional, within the company.

It seems to me that this prognosis confuses the *present* with the *future*. True that today the experienced librarian-online searcher helps the relatively inexperienced new end user and is better able, to carry out a sophisticated and complex online search. But this *will change* as soon as most of the searches in specialized subject areas are carried out by the end user himself. Thus the practical experience of the librarian, in turn, diminishes! This is even indirectly realized in the paper itself, page 98, column 2 ("... if I do not search on the I.P. Sharp files but do pay the invoice every month [for the end user] I know who to ask to run a search for me when I need it").

Of course, not every end user will want to do his own search and the librarian will still do online searches first, for these very same clients who do not search on their own, and second, to investigate new and developing databases and services, which need be tested and brought to the users' attention. This will be part of the guidance and directions which the librarian will have to handle. In addition, he or she will be concerned with and involved in the organization of the collected search material (printed or downloaded, according to license agreements) with the subsequent creation and upkeep of combined internal files for the use of the establishment.

Thus it seems to me that the librarian's main areas of work and expertise, namely, locating and identifying new relevant sources of information and processing of the collected information, are still within his domain and I see no lack of challenging, intellectual work in the future.

Eliahu Hoffmann, Ph.D.
National Center of Scientific and
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Tel-Aviv, Israel

I was somewhat distressed by Marydee Ojala's article, "End User Searching . . ." I will not argue with Ms. Ojala's conclusion that librarians and end

users should co-exist. My problem is that much of what is discussed as the librarian's role relegates the position to clerical support. I fail to see, for example, how controlling passwords or vendor contracts raises the visibility of a library as a meaningful information resource. In fact, there is potential for a negative perception of the librarian's role. The problem facing many special libraries in a period of budgetary shrinkage is the perception by management that "professional" information specialists are not needed. Management personnel doing zero-based budgeting can ask (and rightly so), "if we can do our own searching, go to data base classes offered by vendors for free, and have clerical staffs control the paperwork, why do we need professional support?"

The point is that librarians have to position themselves better than Ms. Ojala suggests. In the coming years, there will be almost exponential growth in information. Whether or not there are end users, an active information center is needed to manage this growth. The emphasis should be on balancing the flood of information with its selective dissemination, creating an information payload from the information overload. More importantly, librarians should start interpreting information—analyzing what it means for the company and the specific business units making the requests. If librarians can utilize their skills to disentangle information, show patterns, and reflect change, they will be in a much more valuable position in the organization. Without this process, information not used to enhance an organization's competitive advantage, is, by default, a company liability. With this process, information specialists can make information an asset.

For end user searching to be positive, librarians have to stop looking at the future through the rear-view mirror.

Robert P. Fallon
Manager, Issues and Information Services
Prudential Insurance Company
Newark, NJ

I was most happy to receive my Spring 1985 issue of *Special Libraries*. I found it so interesting and indeed refreshing, that I have read it cover to cover. I can't say how much I've retained, but I just couldn't stop reading. I suppose one reason was that the idea of a theme encouraged me along.

My active career as a special librarian was getting closer to its end before the great upsurge in computer operations in libraries came about. Thus, while I am somewhat conversant with many aspects, I cannot "go on" the way the guest contributors to this addition can (and have). More power to them, of course.

But for librarians like myself, many words run off the ends of these authors' tongues as if anyone

should be totally familiar with the terminology. I'm thinking that for special theme issues (or perhaps even for individual pieces), there ought to be a glossary of terms. It is, of course, true that glossaries and dictionaries (as separates) are readily available through a library (but not generally loanable) or for personal purchase. But it would be very useful and profitable to have a glossary of relatively uncommon terms immediately at hand with the article or the set.

Terms I have in mind, as they appeared in this issue, include: search interface package, logon protocol, baud rate, linkage to post-retrieval processing software, spreadsheet, dirty data dilemma, and the like. Of course, I have some feelings for the meanings involved, mainly because of their context where they are used.

I mention all this not in any sense of criticism, but rather as an encouragement to talk to and up to those being addressed by authors . . . certainly not to talk down to anyone.

Keep up the good work.

Bob Krupp
Maplewood, NJ

The news that SLA has finally found its new home in Washington, DC in the town house formerly occupied by the American Psychiatric Association is of special interest to me. I feel as though I've come full circle! For it was *because* I was an SLA member that I became a psychiatric librarian almost twenty-five years ago. Specifically, it occurred on March 6, 1961, the week of the dedication of the Neuropsychiatric Institute (NPI) as a facility of the California State Department of Mental Hygiene.

The start of my employment as NPI's librarian was the culmination of a series of events which involved SLA throughout. The requirements for the position included rigid written and oral examinations in which one's professional qualifications were tested by the California State Library for the first, and by a top psychiatrist/administrator with the State system together with professional librarians for the second. My panel of experts included the Assistant California State Librarian, Mrs. Phyllis Dalton. The orals took place on December 16, 1960. (Incidentally, Mrs. Dalton paid us several site visits throughout the years and evaluated my efforts as a special psychiatric librarian.)

The assignment at the NPI was to organize two different types of libraries—one for the professional staff and the other exclusively for the patients. They were to be organized simultaneously and at once. Quite an assignment! But my expe-

riences in managing two different types of special libraries in industry, plus my committee work for SLA nationally and locally put me in good stead as I warded off the challenges presented to me by my orals board members.

For from the outset, I have been a practicing special librarian, that is to say, ever since my graduation from the Graduate School of Library Service of Columbia University. I soon joined SLA and conferred with the gracious and competent SLA Executive Secretary, Mrs. Kathleen B. Stebbins. After a brief stint as an academic librarian, I switched to special librarianship. Mrs. Stebbins always welcomed me warmly to SLA's headquarters in the old Stechert Building at 31 East 10th Street in Manhattan.

Always generous with her time in counselling and guidance, Mrs. Stebbins steered me to SLA in Southern California soon after World War II. While working in industry, I became active in the Chapter and participated in developing various pioneering programs. Both served as valuable learning experiences and backgrounders for my work at the NPI over the years.

Once again, it was SLA which inspired me to organize a first: a Behavioral Sciences Committee that was completely interdisciplinary. Both the NPI and I celebrated our first anniversaries with an all-day chapter meeting of this Committee on NPI premises. Invitations were extended to other groups in the area—well over one hundred professionals and guests attended.

That year, 1962, I went to Washington, DC for the SLA Convention, visited the American Psychiatric Association headquarters and met with APA's knowledgeable librarian, Jeremiah O'Mara. Our session as SLA members led to long-range collaboration in psychiatric librarianship. It also steered both of us to work at the very grassroots in unravelling problems of bibliographic control in the behavioral sciences.

What has impressed me most, in all of my SLA activities, is that despite differences in personal and professional points of view, we all feel honor-bound to give credit where credit is due in any project we undertake. And so, I am pleased to acknowledge my indebtedness to SLA on both coasts as well as historically in all of my work as a psychiatric librarian. This is important to me as I salute SLA on its new home which has had a direct tie-in to my work at the Neuropsychiatric Institute since its inception a quarter of a century ago.

Sherry Terzian, M.S.
Director, Mental Health
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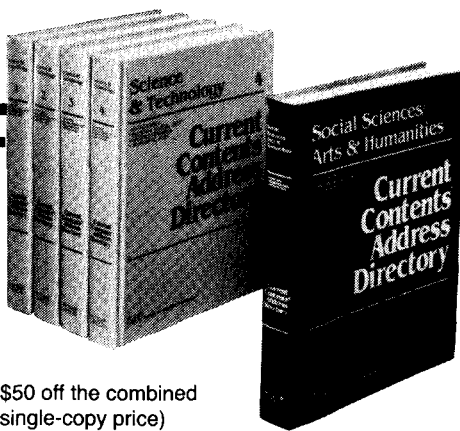
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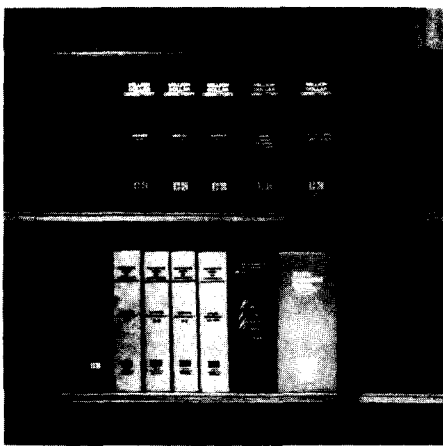
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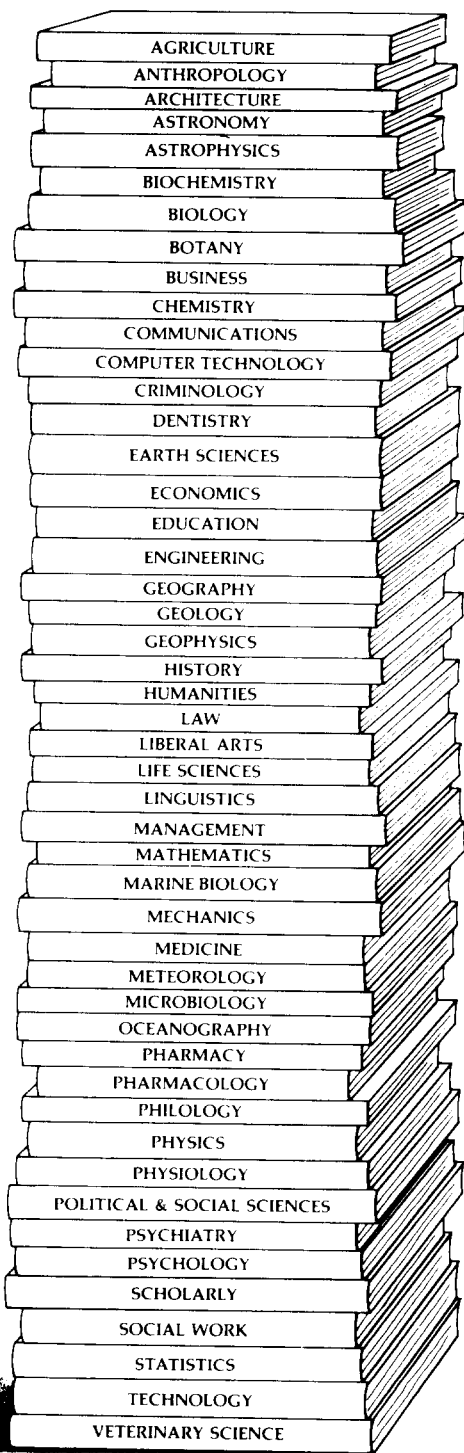
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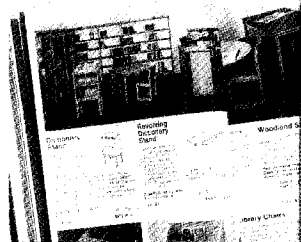
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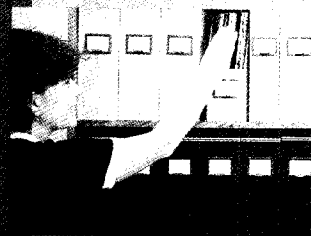
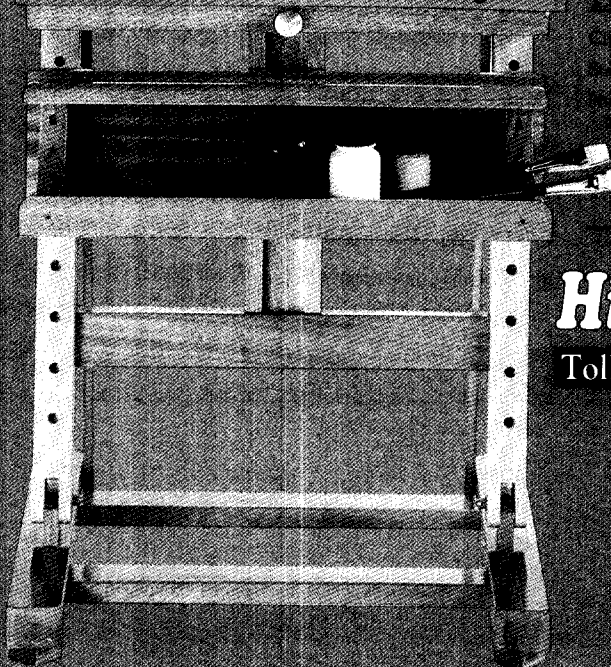
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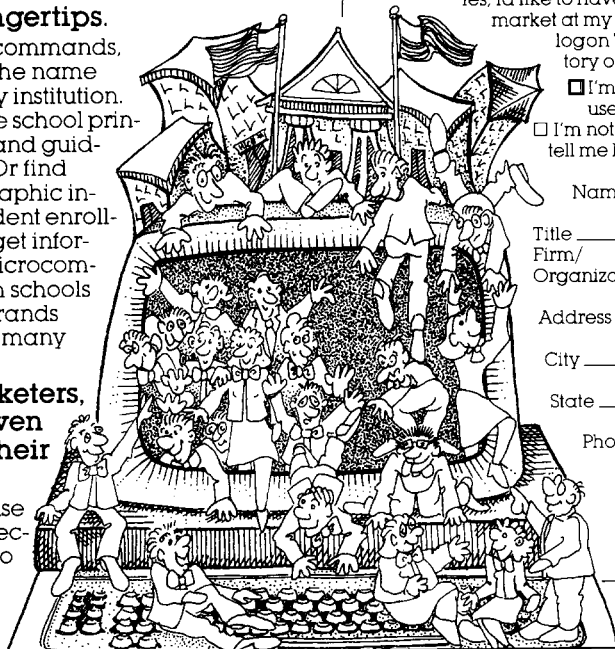
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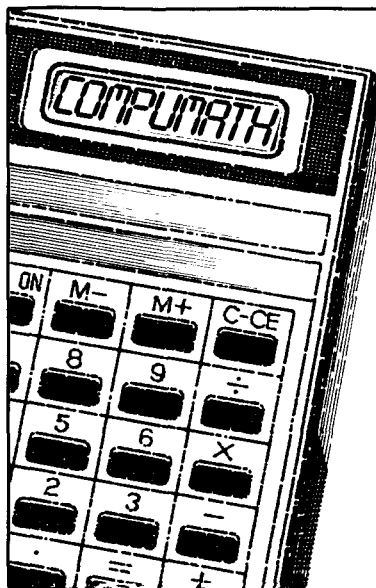
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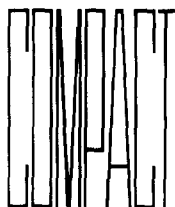
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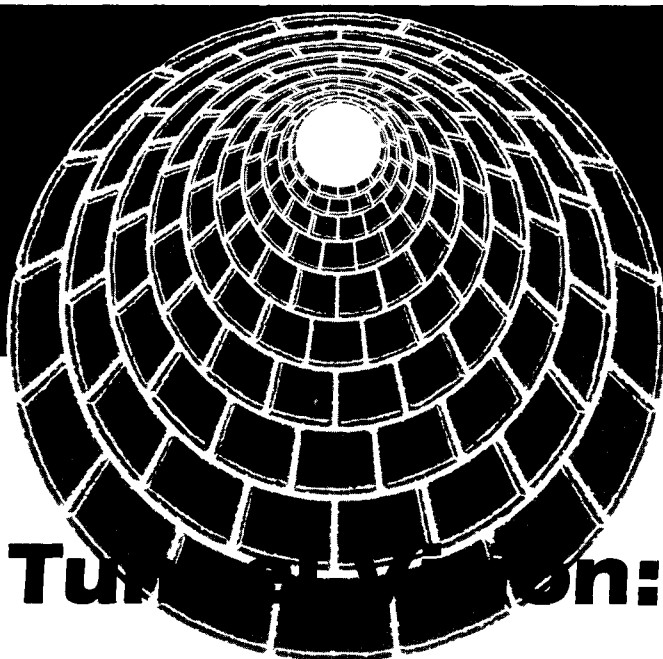
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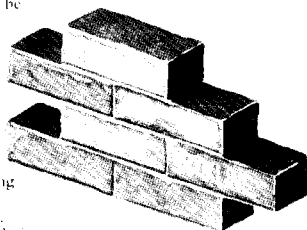
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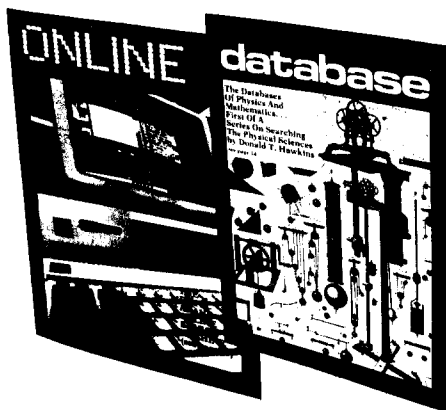
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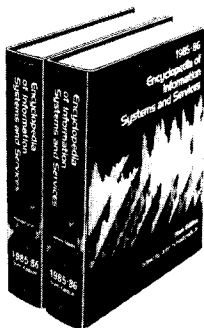
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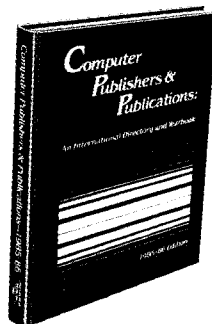
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