COMPUTERIZED REFERENCE SERVICES

AT THE

INDIANA UNIVERSITY LIBRARIES
During the last several years the Indiana University library system has successfully expanded the use of computerized techniques in retrieving bibliographic citations and statistical data for faculty, students, and staff. With the recent proliferation of on-line data bases, library patrons can now more efficiently search and obtain a greater number of relevant citations and statistics within a subject discipline. This issue of the InULA Quarterly describes some of these computerized services including CARS, LEXIS, ERIC Probe, Chemistry CARS, and INDIRS.

TABLE OF CONTENTS

LEXIS, by Byron Cooper ......................... 2
ERIC PROBE, by Arlan L. Gerhardt .......... 3
CARS, by Patricia Riesenman ................. 4
On-line Searching at the Chemistry Library,
    by Miriam Bonham ......................... 6
INDIRS, by Lou Malcomb ...................... 8
BOOK REVIEW, by Debora Shaw ............... 10

InULA Quarterly is a publication of the Indiana University Librarians Association. Articles, book reviews, and news of interest to members should be submitted to Amy Novick, Undergraduate Library, Library W131, Indiana University, Bloomington, IN 47405. Publications Committee: Leota Boesen, Mark Day, Nels Gunderson, Frances Weinstein, Amy Novick, editor.
Two on-line legal research systems are currently available to American law schools, law firms, and courts. Mead Data Corporation's LEXIS and West Publishing Company's WESTLAW contain similar data bases and use similar searching techniques. Because the Indiana University Law Library at Bloomington has LEXIS, this brief description will be limited to that system.

Through a dedicated CRT with keyboard and printer, LEXIS enables the user to search the full texts of legal documents, not merely abstracts or indexes of those documents. This characteristic defines both the strengths and limitations of LEXIS. Full text searching greatly facilitates searches for specific factual content or citations (e.g., copyright suits involving Gone With the Wind), while creating some difficulties for searches involving concepts or analogies (e.g., due process for employees or "slip-and-fall" cases). LEXIS uses Boolean logic modified somewhat to overcome the difficulties of full-text searching.

The LEXIS data base currently includes the United States Code, current decisions of all federal and state courts, and numerous administrative publications, such as the Federal Trade Commission Decisions and the Private Rulings released to the public by the Internal Revenue Service. The length of the backfiles of these documents that have so far been put into the data base varies for each court or agency.

LEXIS is indeed simple to use. After entering identification, the user is given a choice of several "libraries," such as General Federal or the name of a state. Then the user is given a choice of "files" for each library, such as the decisions of a particular court or the publications of a particular agency. Finally, the user is asked for a search request.

A search request may consist of a single search word or phrase, or a combination of words joined by connectors. Some common words—mostly pronouns, articles, conjunctions, and prepositions—are not searchable. A search word in the singular will retrieve the same work in the plural or possessive form: LIBRARY will retrieve "libraries," "library's," and "libraries'," but not "librarian" or "librarianship." The asterisk and the exclamation mark are universal characters which may be substituted for, respectively, one or more than one unknown characters. LIBRAR! will retrieve "library" as well as "librarian" and "librarianship."

Commonly used connectors are AND, OR, and NOT, and W/n, where n is replaced by the number of searchable words within which both search words must occur. For example, PUBLIC W/2 LIBRARY will retrieve "library with public support," but not "library supported completely by the public." Special terms may be used to limit a search to decisions of a particular court or judge or to cases decided before, on or after a given date. For example, a search of the U.S. Supreme Court cases with OPINIONBY (BURGER) AND DATE = MAY 7, 1980 will retrieve all decisions written by Chief Justice Burger and handed down by May 7, 1980.

For the most part, the search terms must agree with the retrieved text, space for space and character for character. Spelling and spacing are usually critical, and predicting what terms might be used in a decision or some other document can be difficult. It is
amazing how often a judge can write a decision involving a specific concept or fact situation without ever using the words commonly used in such cases; how frequently a judge can decide a case involving, say, a tenant's fall down dark stairs in an apartment building without once using the words "tenant," "stairs," "steps," "stairway," "dark," "lighted," "unlighted," "unlit," or "dim." This aspect of full-text searching undoubtedly causes the most difficulty for LEXIS users, but it can usually be handled with carefully formulated searches or through the acquisition of more background knowledge of the subject.

Despite this problem, LEXIS is so easy to use that in most organizations the researcher (whether student, attorney, judge or law clerk) uses it directly without the assistance of a specially trained person. All that is required is for each user to go through a brief training program supplied by Mead Data.

Anyone is welcome to learn to use the LEXIS terminal at the Law Library and to conduct any search, as long as the purpose is educational. There is no charge to anyone for using the Law Library's terminal. If you are interested in learning how to use LEXIS, contact any librarian at the Law Library.

ERIC PROBE

Arlan I. Gerhardt is PROBE Librarian, Education Library

ERIC 'PROBE' is a combination of services which provides a guide to current educational information. Teachers obtain the latest information on preservice and inservice training, learn about new classroom techniques and materials, and discover 'how-to-do-it' projects for personal and professional development. School administrators identify new and significant educational developments and management tools and practices. Educational researchers keep up-to-date on research in their field of interest, avoid duplication of research efforts and obtain full-text documents on relevant research. All interested in education may benefit from the results of the massive education research and development and program development research undertaken in the United States. This introduction to ERIC 'PROBE' is intended to acquaint interested educators and librarians with the wealth of information resources in education available to them.

ERIC (Educational Resource Information Center) began in the 60's as a government sponsored effort aimed at organizing and providing access to the large amount of unpublished material in the field of education. Educational research materials were (and continue to be) collected and incorporated into the bibliographic data base Resources in Education (RIE). Materials made accessible include research reports, speeches, television and radio program scripts, position papers, program descriptions, annual reports and other fugitive sources. In the 70's an effort was made to provide even greater access to educational materials by providing indexing to over 750 education related journals. This expanded effort resulted in a second data base, Current Index to Journals in Education (CIJE). This information is disseminated in a variety of formats—magnetic tape or monthly hardcopy installments cumulated semi-annually.

Each document to be included in a data base is analyzed by a professional indexer in one of ERIC's 19 clearing houses. The indexer assigns relevant key-words called 'de-
scriptors' to each document. The Thesaurus of ERIC Descriptors is the authoritative collection of these key-words.

‘PROBE’ (not an acronym) is a service developed at Indiana University-Bloomington, that allows a computer to aid in the searching of both the RIE and CIJE data bases. The main objective of ‘PROBE’ has been to support the curricula and research needs of the students and faculty in the Indiana University system. When possible, the same aid has been provided to the scholarly community outside of I.U.

A ‘PROBE’ search of either or both data bases is initiated at the Education Library at the School of Education, I.U.-Bloomington. An appropriate set of descriptors is selected and the relationship among them, the selection criteria, is defined. Great care should be taken in defining the selection criteria. Time spent in precise definition is well rewarded with relevant citations.

The computers at I.U.'s Wrubel Computing Center then complete the search by running the ‘PROBE’ software which checks each record in the data base to locate citations which satisfy the selection criteria. The software then produces a list of 100 citations with abstracts and as many as 400 additional citations.

At this point one of ERIC’s innovative concepts takes on significance: provision of documents. Most data base vendors or index publishers provide only citations. ERIC’s document reproduction service (EDRS) makes available copies of ERIC documents as individual copies or entire collections on paper or on microfiche. (Some documents indexed by ERIC are not available from EDRS, primarily for copyright reasons.) One can quickly obtain copies of almost any document desired regardless of where it originated. The Education Library has purchased all of the documents available from EDRS, and houses them in Room 37.

As mentioned earlier, ‘PROBE’ is available to patrons from both I.U. and outside. ‘PROBE’ personnel welcomes utilization by Indiana residents and encourages them to contact the Education Library if it can be of any service.

References


CARS

Patricia Riesenman is Assistant Reference Librarian and Data Bases Librarian, Reference Department

CARS (Computer Assisted Reference Service) is growing rapidly as it enters its third year of operations. During the first quarter of the current fiscal year there have been a total of 53 searches at the Main Library, compared with 28 last year and 38 the first year. Overall statistics for the first two years showed a slight decline, from 138 to 126 searches. Service to the Bloomington campus remained steady, while there was a reduction in the
number of searches performed for IUPUI and regional campuses. The Fort Wayne campus has had its own computer assisted reference service for the past year, and the library at New Albany will soon initiate a similar program. We therefore expect a continued decline in searches for non-Bloomington patrons.

IUB graduate students have been the largest group of patrons thus far, with 70 searches during the last fiscal year. In that same period 15 searches were done for IUB faculty members and 7 for IUB staff members. The two most heavily-used data bases have been *Psychological Abstracts* and *ERIC*.

Considerable growth in use by IUB faculty members is anticipated this year as a result of a subsidy program funded by the Office of Research and Graduate Development (R&GD). A total of $3,000 has been allocated by R&GD to cover part of the costs of searches for approximately 100 IUB faculty members during the current fiscal year. The subsidies are available to those faculty members who do not have other external means of support for the research project at hand. R&GD will pay up to $35 in search costs; faculty members may elect to pay additional costs themselves or may apply to a Faculty Advisory Committee for approval of a higher subsidy. In no case will a subsidy of more than $100 be approved.

The program was announced in early September. By the end of that month a total of 9 faculty members had used the subsidies and another 5 were awaiting decisions from the Faculty Advisory Committee.

R&GD also purchased a portable terminal for CARS so that searches can be done at the Biology and Swain Hall Libraries. Additional searchers have been trained; from a group of three two years ago, the searcher "corps" has grown to seven, with several more being trained this semester.

Another factor which will increase CARS use is the recent fusion of the computer searches at the Main Library with those at the Chemistry Library. Searches for IUB patrons formerly done by the Chemical Information Center have become part of CARS as of July 1, 1980. This arrangement has permitted more specialization among searchers. CARS-Chemistry is now the location for searches in chemistry, geology, environment and physical education, while CARS-Main concentrates on social sciences, humanities, and business.

During our early months of operation CARS benefited from the advice of experienced searchers at IU and elsewhere. Our chief resource people were Miriam Bonham, then associated with the Chemical Information Center and now head searcher at CARS-Chemistry; Ann Van Camp, head searcher at the I.U. Medical School Library in Indianapolis; Mary Pensyl, one of the original team of searchers at Massachusetts Institute of Technology; and Sharon Hogan, who had helped to establish computer search services at the University of Michigan.

It is especially gratifying to report that we have begun to repay our "debts" to our former consultants by acting in our turn as consultants to task forces from two sister Indiana institutions which are establishing computer assisted reference operations. We look forward to continued expansion of search services throughout the state and hope that there will soon be an active state-wide on-line user group where we can share experiences with our searcher colleagues from other institutions.
ON-LINE SEARCHING AT THE CHEMISTRY LIBRARY

Miriam Bonham is Associate Librarian, Chemistry Library and Information Specialist, Chemical Information Center, IU-B

It has been said that in the future, libraries and information centers will be judged less by what they hold than what they can reach. Mindful of this, the Chemistry Library and Chemical Information Center have through the years attempted to reach and utilize as many new information sources as possible.

The history of on-line searching is short. The first public demonstration of on-line bibliographic searching took place in 1960, but it was not until 1967 that an effort was made to provide regular search service to a restricted user population, and it was 1971–72 before on-line services began to extend access to a wider audience.

In 1972 the Chemical Information Center began searching the CA Condensates database through the Battelle Memorial Institute on-line service. Later, Battelle transferred its activity to System Development Corporation (SDC), and the Center signed a contract with SDC in July, 1973. This was followed by a contract with Lockheed Information Systems in 1975. The Chemical Information Center thus became the first location in Indiana to provide public access to the SDC and Lockheed search services, and was the only site on the Indiana University–Bloomington campus for these services until the inauguration of CARS (computer assisted reference service) in July, 1978. This past July 1, most of the Chemical Information Center (CIC) bibliographic search activities for academic patrons was merged with the CARS Operation and is now designated CARS—Chemistry. The CIC continues to maintain separate contracts with SDC and Lockheed primarily for the purpose of serving non-academic patrons. Originally, as the only access point for a large user population, the CIC staff often performed searches on data bases in subject areas in which it had no special expertise and for which the Chemistry Library had no thesauri or other user aids. With the wider availability of on-line services, and especially with the establishment of CARS, it has been possible for the staff to specialize in chemical and allied science and technology bibliographic data bases, and to give attention to non-bibliographic and other data bases requiring greater familiarity with chemistry.

Almost all of the data bases available through the well known vendors (i.e., SDC, Lockheed, and BRS) are bibliographic data bases, and most of these files correspond to printed abstract and index products. Nonetheless, it has been estimated that of the over 400 data bases on-line more than 2/3 are non-bibliographic. The vast majority of these are in the fields of business and economics. Libraries and information centers tend not to be as aware of these data bases because they are typically marketed to and designed for use by end users. The computer software is user cordial, but often a high degree of subject sophistication is required for effective searching.

For the field of chemistry, there is a primarily non-bibliographic data base system that has been developed under the sponsorship of the U.S. National Institutes of Health and the Environmental Protection Agency. This system is available on-line through the Interactive Sciences Corporation and is called the NIH/EPA Chemical Information System. The I.U. Chemical Information Cen-
ter has been a subscriber since 1978. The central component of the CIS is a file called SANSS (Structure and Nomenclature Search System). This is a master chemical substance file with accompanying registry numbers, that has been compiled from 41 separate smaller lists. A unique feature of this data base lies in the possibility of searching it by structure keys or by substructure rings and fragments using commands that “draw” a picture at the terminal. Once the registry numbers of the desired components are retrieved, they can be entered as search terms in the CA Search data base on another system. They also can be entered directly to Lockheed without disconnecting if a memory terminal is used. Another component of the CIS system is CRYST (x-ray Crystallographic Search System). It consists of the Cambridge Crystallographic Data File produced by the Cambridge Crystallographic Data Centre in Cambridge, England. In addition to making this file available through the NIH/EPA CIS, copies are available on tape. The Indiana University Chemistry Department’s Molecular Structure Center has acquired this data base and has made it searchable on-line through TELEX and the Wrubel Research Computing Center on the Bloomington campus. The data base contains nearly 25,000 published organic crystal structures, and it can be searched by author, compound name, molecular formula, or substructure to retrieve both bibliographic information and molecular coordinates. Once the coordinates have been retrieved, the structure can be displayed at a graphics terminal either as a single two-dimensional representation or as stereoscopic pairs which can be viewed with special glasses to produce a three-dimensional effect. The structure can be rotated about all three axes, and when the desired orientation has been achieved, either the stereopairs or a stereoscopic space-filling model can be plotted and printed at the WRCC.

With the advent of denser and cheaper data storage devices, it has become feasible to consider full-text storage of primary journals on-line. This past spring, the American Chemical Society in cooperation with BRS (Bibliographic Retrieval Service) created a full-text test file of the approximately 1000 articles from the Journal of Medicinal Chemistry (1976-1978). The Chemical Information Center was one of 12 organizations that participated in the evaluation of this test file. At the present time, the file’s usefulness is limited by the absence of graphic material and references. Nevertheless, the potential is great and the response time excellent. The BRS software utilizes a new feature called “in-context” searching that not only indicates the number of articles containing the search terms but also gives the exact location (paragraph, sentence, word number) of the terms within each article. Given this information, the searcher can easily browse through the articles looking at as much or as little as desired.

Recently, the Chemistry Library has been looking into possibilities for creating its own small specialized data bases, storing them as permanent files at the Wrubel Research Computing Center, and searching them over TELEX using whatever already available software packages exist. To date, there has been created a file of chemistry department and faculty publications from mid-1979 to the present. The file now contains 217 citations and should grow at a rate of approximately 200 citations per year. The file is searched using the FAMULUS Data Retrieval System. This system of programs was written by the U.S. Forest Service in 1968 for use in batch mode, but it has been implemented for use interactively over TELEX on the CDC 6600 computer. It is possible to perform one or a series of complex Boolean searches on a properly formatted data base. The response time is quite slow, but this is tolerable since there is no charge for searching. The Chemis-
try Library has recently been given responsibility for producing a departmental publication entitled "Scientific Publications of the Department of Chemistry," and it is expected that the on-line file will help in maintaining bibliographic control and eventually in producing camera-ready copy. The file should also prove useful in providing bibliographies on demand for individuals. Another data file being designed will contain personal vita, grants information, and other factual data about the faculty members of the Chemistry Department.

The experience of the Chemistry Library and Chemical Information Center has led to the conclusion that there is virtually no aspect of library or information service which cannot be aided and supplemented by on-line searching. Access to on-line bibliographic and non-bibliographic data bases has greatly strengthened the reference services offered. Use of these on-line data bases has made a profound contribution to students' education, and demonstrations and hands-on experiences have contributed to C401, Chemical Information Storage and Retrieval Methods and Techniques. The potential for improving library operations and providing new services through data bases con-

References


INDIRS

Lou Malcomb is State and Local Documents Librarian, Government Publications Department

The Government Publications Department has long held the reputation of being one of the best sources of statistics at I.U.'s Main Library. These statistics cover a vast variety of subjects and originate from every part of the world. One major problem, however, has been the absence of a regularly published statistical reference work for the state of Indiana. (The Indiana Fact Book, issued in 1976 and 1979 has been published, but not with any regularity.) In August, 1978 the problem was solved. INDIRS, The Indiana Information Retrieval System, became part of the Department's statistical resource. INDIRS was conceived and developed by the Division of Research of the I.U. School of Business in cooperation with the Indiana Department of Commerce in 1969. Its primary purpose is to provide up-to-date statistical information on Indiana social and economic developments. It is available throughout the state in many public and academic libraries.
and at the Indiana State Library as well as the I.U. School of Business.

INDIRS is a computerized data base containing socio-economic statistics for the State of Indiana, its 92 counties, many county aggregates, SMSA's, and numerous cities. Statistics are presented in tables and represent a variety of subjects including population, housing, employment, law enforcement, health and agriculture. INDIRS is a self-instructional program. The INDIRS Manual, issued by the Division of Research and available at INDIRS' locations around the state, describes the system and provides detailed instructions with examples of all tables in the system. Below is an example of an INDIRS table:

GACALL, LIBR, MONROE
PUBLIC LIBRARIES
LIBR MONROE
AVAILABLE YEARS ARE: 70 73 75 76 77

<table>
<thead>
<tr>
<th>Data description</th>
<th>Item #</th>
<th>Year 1976</th>
<th>Year 1977</th>
<th>Pct chg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population served</td>
<td>001</td>
<td>85,221</td>
<td>85,221</td>
<td>0.00</td>
</tr>
<tr>
<td>Library income</td>
<td>003</td>
<td>803,489</td>
<td>890,703</td>
<td>10.85</td>
</tr>
<tr>
<td>Income per capita</td>
<td>004</td>
<td>9.43</td>
<td>10.45</td>
<td>10.85</td>
</tr>
<tr>
<td>Assessed valuation*</td>
<td>005</td>
<td>199.6</td>
<td>203.1</td>
<td>1.75</td>
</tr>
<tr>
<td>Volumes in library</td>
<td>006</td>
<td>123,473</td>
<td>126,297</td>
<td>2.29</td>
</tr>
</tbody>
</table>

Perhaps the most important quality of the system is its capacity to allow the user to manipulate the data. Although the tables may be requested as they appear in the system, the user can, through various commands, create unique geographic areas, arrange data into new distinctive tables, rank data by county or other geographic area, and perform mathematical calculations. It is possible to add, subtract, multiply, and divide, permitting the user to calculate measurements such as percentages or indexes.

Although the INDIRS system includes brief notes on the source of the information, it is not a bibliographic data base. Data is from a variety of sources including the computer tapes of the 1970 Census and many printed sources found in the Department, notably publications of the U.S. Census Bureau and from various agencies of the Indiana State government. INDIRS often presents the data sooner than the printed source is received by the Department, but the printed source, once received, frequently provides more detailed statistics. The Department's collection and the INDIRS system, in this manner, complement each other.

The INDIRS program is constantly undergoing development, not only in the number of tables included or the span of time covered but also in its recent addition of a new subsystem. MCDC, the Marion County Data Component, operates basically like INDIRS, but presents data on population and housing for Marion County, its townships, and its census tracts. Data originates from the 1970 Census of Population and Housing. MCDC will be particularly useful with the addition of the data from the 1980 Census.

INDIRS and MCDC are available in the Government Publications Department, Monday through Friday, 8:15 A.M. to 5:00 P.M. They are provided free; the library pays only for the cost of the paper. The Department's staff will acquaint users with the basic capabilities and can assist with most problems. However, the INDIRS staff at the Division of Research of the I.U. School of Business is relied upon for unusually difficult problems, especially technical ones.

INDIRS is the system of the future. With the ever-increasing demand for up-to-date statistical information and the high cost of printing, I believe more systems like INDIRS will be developed. I like to dream of the future when all Indiana statistics are available on INDIRS, and MCDC systems exist for all counties in Indiana. It may all be science fiction, but imagine the possibilities if U.S. and/or international data sources could be available on such an easy-to-use system!
BOOK REVIEW

Lancaster, F.W., Laura Dasgo and Ellen Marks

The Impact of the Paperless Society on the Research Library of the Future
Library Research Center, Graduate School of Library Science, University

Deborah Shaw is Visiting Associate Librarian, On-Line Union List of Serials Project

F.W. Lancaster has written on his view of the paperless information society in Toward Paperless Information Systems published in 1978. This report, drawing on ideas presented in his book, provides an intriguing and challenging view of the future of libraries and librarians in an age of electronic information transfer; an age only twenty years off, Lancaster predicts. For the report a scenario of the research library in the paperless society was developed by means of a Delphi study of librarians, publishers, and "technologists." The scenario was revised using interviews with and comments by ARL directors and deans and directors of library schools.

The paperless information society described in the scenario provides for communication among scientists with increasing use of on-line computer based systems. The report predicts decreasing costs of and increasing access to such technology, coupled with increasing costs of labor intensive procedures such as print on paper publication. This will lead to on-line creation of personal information files, and use of these files to create and edit reports for dissemination either for small groups of colleagues involved in electronic conferencing, or for publication (after electronically expedited refereeing) in electronic journals. Computer-based systems will also perform the functions of alerting researchers to new works in their fields, and of securing access to the reports or articles required. This portion of the forecast has implications for libraries and librarians, of course, and in Lancaster's view the information professionals will leave library buildings and be "deinstitutionalized," becoming specialists in various subjects and working more closely with clients than with documents. This change is coupled with a decreasing emphasis on format or collection, as access is provided easily to information stored in electronic form in a central location.

The view of the paperless information society is preceded by a review of previous forecasts of library and information technology. This section of the report reflects views of the library of the future ranging from H.G. Wells' World Brain of 1938 and Vannevar Bush's Memex of 1945, to macroscopic views, forecasts of specific aspects of libraries and of technological developments are also surveyed. On reading these reviews one is struck by the tendency of many early "futurists" to overestimate the changes that will occur; many predictions have been fulfilled in part, but further developments have
often superseded the technologies on which the predictions were based. With this background, and given the relatively poor track record for uncautious predictors, the authors of this report nevertheless found evidence on which to base predictions of dramatic change in libraries as described above. It is wise to note, however, that these predictions are for research libraries only. The recreational role of libraries is mentioned only infrequently and tangentially. Moreover, the research library has apparently been defined to include information for those doing current research in scientific fields. The functions of libraries and librarians in historical research is scarcely mentioned in the scenario of the paperless information society. This view presents a careful and relatively complete look at how developing technologies may be expected to influence libraries of the future and the roles we, as information professionals, will play. It is a thought-provoking presentation, and is well worth reading.

InULA NEWS NOTES

The following people have been chosen to chair InULA committees:

Constitution and Bylaws: Lou Malcomb, Government Publications Department
Government Publications Department

Continuing Education: Gary Charbonneau, Serials Department
Dianne Bever, Kokomo

National Library Week: Rick Sayre, Undergraduate Library

Publications: Amy Novick, Undergraduate Library

Social and Program: Karen Dudziak, Graduate Library School Library

Ad Hoc Committee on Hospitality Network: Barbara Henn, Acquisitions Department

Indiana University Library
Serials Department
Indiana University

InULA Quarterly is printed by Western Sun Printing Co., Bloomington, IN