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# **Microcomputer-Based Library Catalog Software**

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## **ABSTRACT**

There are now numerous commercially available microcomputer software packages for library catalog creation. The features and capabilities of these packages vary, as do the costs. This article discusses factors that should be considered when comparing microcomputer software for library catalogs and discusses eight specific packages. The packages discussed are: BRS/Search Micros/Mini Version, Card Datalog, Golden Retriever, INMAGIC, TEQLIB, FINDER, SCIMATE, and STAR.

## **INTRODUCTION**

Until recently small libraries wishing to implement a microcomputer-based catalog had few choices of prewritten commercially available software. They often had to develop their own software using generic database management packages or program from scratch in a higher level language or assembler. Both approaches are time consuming and require programming expertise. The situation is now changing, and small libraries can now choose from several library-oriented software packages. This article compares several of these microcomputer software packages for the small to medium sized library collection.

The focus of this article is on software for libraries with collections of approximately 10,000 items or fewer and with fairly limited requirements in terms of record size and format, although some of the packages discussed are capable of handling much larger and more complex collections. A single-user microcomputer was assumed to be adequate.

## **CRITERIA FOR LIBRARY CATALOG SOFTWARE**

Although each situation is unique and specific requirements will vary from one library to another, there are some generally desirable features in catalog software for nearly all small libraries. The features discussed below should be considered when comparing the software packages.

### *Database Size*

The size of the collection that can be handled will be determined in most cases by the disk capacity of the microcomputer system. Some of the software packages, however, have an upper limit to the number of records they can handle that is lower than that commonly supported by current disk drives for microcomputers. Disk drives for microcomputers have greater capacities each year, and capacities of 100 MB (100,000,000 characters) are now available with 5- $\frac{1}{4}$ -inch hard disk drives. Assuming an average record length of 500 characters, this is enough storage for 200,000 records. More realistically, one must allow for an index and work file overhead factor of 2 or 3 times the main file size, so this 100 MB hard disk drive might hold only about 70,000 to 100,000 bibliographic records. When selecting a package, the size parameters to be considered include the total size of the collection, the overhead requirements of the software, and any size limitations imposed by the software.

### *Record Size*

In addition to the number of items in the collection, another factor that will affect storage requirements is the size of the records (if fixed length) or average size of records (if variable length). As mentioned above, the amount of overhead storage required for associated indexes and work files is calculated by multiplying the number of records times the record size times the overhead factor of the software. Overhead varies from a factor of 1.2 to about 3 or more for the software surveyed.

Some packages support only fixed length records, which means all records must have a record length long enough for the longest record to be included. Since a majority of records are likely to be shorter than the longest record, some storage space will be wasted with fixed length records. Several packages have upper limits on how long a record can be. To be useful for most library applications, a length of about 500 to 600 characters per record is often considered a minimum acceptable upper limit; 1000 characters or more is often desirable.

For library applications the ability to repeat fields or have multiple field values (for multiple authors, descriptors, etc.) is necessary. Many generic database packages do not allow multiple values in a field.

### *File maintenance*

*Installation.* Software packages must be configured for specific hardware and for a specific record structure. The ease of doing this varies. Most of the packages discussed here require that the user configure the system for the particular application by specifying the record structure (size and names of fields in records, type of information to be stored in each field, what fields are to be indexed and how), hardware characteristics, and other details. The more flexible packages require more of this than do those with few options. The quality of the documentation is important in this process. Clear instructions with examples can make the

process relatively easy; unclear and incomplete documentation can cause frustration.

*Input/editing.* Interactive input and editing of records at the keyboard is a primary mode of file-building in small library application. Other modes of file-building include downloading from online databases and copying from MARC or other records on floppy disks or tape.

Ease of input and editing are important if much of the database is to be keyed-in locally. Screen-oriented input and editing is generally preferred to line-oriented editing. The screen-oriented editing approach displays a blank form on the screen with each field labeled and with space for inputting for each field. The terminal operator can go from field to field entering, modifying, inserting, deleting, etc., as with most word processing packages.

A desirable feature which is not included in many of the packages is the ability to restrict access to file maintenance modules of the software. Password protection would prevent unauthorized persons from modifying the database.

*Dynamic file updating versus batch updating.* Some systems automatically update the file as changes or additions are made to the database; others require separate programs to be run to update indexes and merge new records with the file. In some cases one can operate in either mode. Libraries that want to use a catalog system to handle rudimentary circulation functions will find that a system with dynamic file updating may serve this purpose.

*Searching capabilities.* The power and flexibility of Boolean logic query formulation varies considerably among software packages. Some do not allow for parenthetical grouping of terms in the formulation of logical queries, some require terms to be entered individually before combining later, and some allow only the AND or OR operators. In some packages only certain indexed fields are searchable; in others all parts of the record can be searched, or the system can be configured to allow searching of any fields specified during the record definition process.

Another useful search capability offered by most packages is comparison searching—specifying that values be equal to, greater than, less than, less than or equal to, greater than or equal to, or not equal to a search argument. This capability can be used in combination with the logical operators. The way in which the comparison searching is done varies considerably among packages. In some cases one specifies the relationship by using comparison operators GT for greater than, etc.; in other systems one specifies ranges, as for example DATE FROM 1975 TO 1984.

Truncation and "wild card" character capabilities are other useful features. All packages discussed in this article allow right truncation of search terms. A few allow left truncation and/or "wild card" characters (that is, a character which will match on any character in the corresponding position: wom\*n to receive women or woman).

For complex searching the package should allow creation of numbered or labeled sets for each query to allow these queries to be used in subsequent queries. Some software packages allow only one query at a time, so when a new query is begun the previous one is lost.

### *System output*

The degree of control a searcher has over the display of search results may determine the usefulness of a package. Some will display only a fixed format, some will display any of several formats set up during file creation, others allow the display format to be specified at the time the display is requested.

Another option for output from most systems is to write records satisfying a search to another file which can then be further processed (sorted, edited) for subsequent printing with a report writer module. This allows for convenient printing of bibliographies, as well as other specialized forms of output (overdue notices, acquisitions orders, accession lists, etc.). This file-writing capability also provides an easy way to create specialized databases that are subsets of the main database.

### *Hardware requirements*

As mentioned above, even small libraries will usually exceed the convenient capabilities of floppy disk systems. Therefore, most library catalog software is designed to work with hard disk storage. Not only do floppy disks severely limit the number of records that can be accessed at one time, but access is considerably slower than with a hard disk. Much of the new library software is being written for 16-bit microprocessors, notably the IBM PC. If possible it is best to choose the software that meets your needs first and then purchase compatible hardware.

### *System documentation*

Of course, no library catalog software package can just be "plugged in" and used. The configuration, definition, and specification processes required to create, search, and maintain a database are complex. Good system documentation is thus essential. The amount of information and the readability of documentation varies considerably. Some of the manuals are written for people who are knowledgeable about computers; most are aimed at the non-expert user. Specific comments about the quality of the documentation will be included in the discussion of each package. Online tutorials, help screens, and telephone consulting services all serve to support system documentation and should also be considered when comparing packages.

## **THE SOFTWARE**

The following software packages were selected for comparison: BRS/SEARCH Micros/Mini Version, Card Datalog, Golden Retriever, INMAGIC, TEQLIB, FINDER, SCIMATE, and STAR.

Demonstration packages were obtained for Card Datalog, Golden Retriever, TEQLIB, and INMAGIC, and the authors had access to the full version of SCIMATE. Evaluation of STAR, FINDER, and BRS/SEARCH was based on vendors' literature, system documentation, and hands-on experience at conference exhibits.

When selecting software it is highly recommended that system documentation and, if possible, a demonstration package be purchased for each system being seriously considered. A visit to a site where the system is installed is helpful, especially if a demonstration package is not available. Telephone calls to some current users can be very helpful also.

Each package is described briefly below. The tables summarize and compare the essential features of the packages, with Table 1 on software specifications and Table 2 on software features.

### ***BRS/SEARCH Micros/Mini Version***

BRS/SEARCH Micros/Mini Version is a derivative product of the BRS/SEARCH system developed and used on mainframe computers. It is a very powerful system offering extensive searching capabilities and is well suited for applications that involve processing of lengthy textual information. Very efficient storage allows for the indexing of every word with a low overhead ratio. Positional information is stored in the index to make possible word proximity searching.

*Searching features.* BRS/SEARCH has the most powerful searching features of the packages examined here. It provides 25 logical and numeric operators to allow searching for terms (words or numbers) in the text and to limit a search to specific paragraphs, sentences, or word positions.

Right, left, and internal truncation are possible. Range searching of numeric or textual information is possible by the use of comparison operators. Parenthetical nesting of logical expressions is allowed with no limit to levels of nesting. Search statements are numbered by the system, and previous statements can be utilized in later strategy. Searches can be limited to specified fields, or specified fields can be excluded from a search.

BRS/SEARCH provides very powerful index browsing capabilities. In addition to seeing segments of the index, one can display words that contain a specified stem, prefix, or root.

Numeric operations include summation, averaging, minimums, and maximums. Numeric data must be flagged during database design for this option.

The system provides a SAVESEARCH capability. Saved searches can be executed on any database—not only the ones on which they were originally executed.

*System Output.* BRS/SEARCH provides flexible display and print commands. Sections of the documents (called paragraphs) may be displayed in a user-defined sequence. On a CRT, the display pauses each time the screen is full. Alternatively, an automatic browse feature may be invoked to display a user-specified number of lines from each document, with delays occurring between each display.

Search results can be sorted online based on up to three sort keys.

*System Maintenance.* BRS/SEARCH runs on relatively high-level micros and on minicomputers. The UNIX operating system is basically a multi-user multi-tasking operating system, though single-user versions are available.

The database administrator can perform a number of functions not available to the users, including: adding or deleting user IDs, adding or deleting databases,

Table 1. Software Specifications

	BRS	CARD DATALOG	FINDER	GOLDEN RETRIEVER	INMAGIC	SCIMATE	STAR	TEQLIB
Hardware/ Operating System	UNIX	CP/M, MP/M, MS DOS	MS DOS; RS II, 12	CP/M, MS DOS	MS DOS, DEC PRO 350	Z-80 CP/M, MS DOS, Apple	Alpha Micro	Apple II+,e; RS-TRS DOS; MS DOS
Minimum Memory	512 KB	64 KB	64 KB	64 KB	256 KB	64 KB	512 KB	64 KB
Language	C	dBASE II	Assembler	MS BASIC	FORTRAN	Assembler	?	UCSD PASCAL
Maximum Record Length	65,000 Paragraphs	Fixed Fields, some repeatable	1550 bytes	1460 bytes	No limit	1900 bytes	1.9 million bytes	65,000 bytes
Maximum Field Length	255 sentences/ paragraph 255 words/ sentence	Abstract, 280 bytes	256 bytes	256 bytes	No limit	1900 bytes	1.9 million bytes	65,000 bytes
Maximum No. of Fields	65,000	15 (fixed)	50	20	75	20	500	7 (fixed)
Maximum No. of Records	1 million	Depends on operating system	No limit	4500/database	No limit	Depends on operating system	268 million	20 million
Price	\$2000+	\$2450	\$1495	\$1800	\$995	\$540	\$18,450*	\$1500

\* Includes hardware and software.

Table 2. Software Features

	BRS	CARD DATALOG	FINDER	GOLDEN RETRIEVER	INMAGIC	SCIMATE	STAR	TEQLIB
Boolean Logic	AND, OR, NOT, XOR	AND, OR	AND, OR, NOT	AND, OR, NOT	AND, OR, NOT	AND, OR, NOT	AND, OR, NOT	AND, OR, NOT
Parentheses	Yes	No	No	No	Yes	No	Yes	No
Truncation	Left, Right, Internal	Right	Left, Right	Right	Right	Left, Right	Right	Right
Searchable Fields	All	Almost All	All	All	All	All	All	Authors, Keys
Browse Index(es)	Yes, Flexible	No	Yes	No	Yes	No Index	Yes, Flexible	No
Comparison, Range Searching	Yes	No	Yes	No	Yes	No	Yes	Dates
Arithmetic Operations	Yes	No	No	No	No	No	No	No
Output Flexibility	Very Flexible	Some	Very Flexible	Some	Very Flexible	Some	Very Flexible	Limited



setting passwords and security levels for each user and database, displaying usage statistics, and controlling additions and changes to existing databases.

Database creation involves entering database design specifications into a standard text file called the Database Form. This defines how each field is to be loaded. Examples of load options are: stopword suppression, double posting of hyphenated words, imbedded values for numeric processing, and display only fields. Records can be updated online even while the database is in use.

More powerful and sophisticated software and hardware means more complex maintenance procedures. It is not an easy package for beginners to maintain. As the system documentation says, the system administrator should be "intricately familiar with the UNIX system and have a reasonable knowledge of BRS/SEARCH Micro/Mini Version."

*Documentation.* There are two volumes of documentation: a User's Guide which explains the retrieval functions of the system, and a System Administrator Guide. Both are extensive, detailed, and give many examples. Detailed tables of contents are included but no indexes. A separate package, BRSMANT, allows most of the maintenance functions to be performed through interaction with a system on menus, reducing the system administrator's dependence on the guide.

### *Card Datalog*

The Card Datalog library automation system consists of five integrated modules: Acquisitions, Catalog, Circulation, Serials, and Lab Notebooks. Only the Catalog module is discussed here.

The fixed, pre-defined record structure makes this package less flexible than any of the others. The modules are all written in the dBASE II language, so the performance and limitations of the modules are determined in large part by those of dBASE II.

*Searching Features.* The catalog module supports only the AND and OR operators, not the NOT operator, and nested search logic is also not supported. Comparison operators are provided and can be used together with the Boolean AND and OR.

Searching with Boolean operators brings up a search menu with a list of search options on the bottom half of the screen and a search worksheet on the top half. The search worksheet has room for four queries, each of which can consist of up to 70 characters. Truncation is allowed on the right only.

Author, title, and subject searches are faster than are searches on other fields, though even here the response time is slower than the other systems tested.

*System Output.* From the Boolean search menu one has the option of viewing the records of a search on the screen or printing them in short or long form. The long form displays or prints complete records; the short form displays or prints everything except multiple subjects, authors, and notes. Other menus provide more print/display options, such as the printing of new acquisitions lists, a shelf list, or cards and labels.

*System Maintenance.* Since the record format is set, the maintenance functions are reduced to database initiation. System utilities provide for the neces-

sary maintenance functions of adding new records, updating existing records, deleting, backing up the catalog, processing a new batch, cataloging from acquisitions, and verifying and correcting new additions (listing for review or edit of the last batch before processing).

The user manual contains a short note regarding program failures:

If an error serious enough to cause a program failure occurs, an error message and the words `.DO CANCELLED` will be displayed. You will know that the system has gone down at this point because nothing further will be displayed on the screen and you will automatically be returned to the operating system.

The user is told to call DTI when this occurs. In trying out the demonstration package this kind of program failure occurred several times due to simple errors in the interaction process (such as entering a search as `SU=COMPUTERS AND LIBRARIES` rather than the correct `SU=COMPUTERS AND SU=LIBRARIES`).

*Documentation.* The documentation for the Catalog module consists of a 16-page general overview of the Card Datalog system and a 62-page user manual for the Cataloging module itself. The user manual is clearly written and logically arranged and assumes no knowledge of computers.

### *Golden Retriever*

Golden Retriever is a file management system written for library applications. The system allows the user to define record structures to suit a variety of applications, not limited to library applications. The various modules which perform database creation, indexing, searching, and other functions are all menu-driven. This menu approach makes the system easy to use for the first time user. As with other strictly menu-driven packages, the requirement to go through two or more menus gets to be a source of frustration once the system is learned.

*Searching Features.* Golden Retriever allows sequential browsing of the main file beginning at a user-specified record number, retrieval of specific records by ID number, and keyword searching. Keyword searching requires that the file be indexed and can employ the Boolean operators AND, OR, NOT. Logical operators may be mixed within a query, but parentheses are not allowed. The sequence of logical operations is from left to right within the logical expression. All indexed fields are indexed to one index file. Keywords are truncated to eight characters in the index file. It is not possible to limit a search to specified fields, and there is a maximum of 200 records retrieved per search.

Batch searching allows a retrieved set to exceed the 200 record limit imposed on interactive searching. The batch searching uses a sequential scan of all records, starting with a user-specified record. This linear scan of the entire file is much slower than searching the index for keywords.

*System Output.* Search results are displayed in the form of a list of terms and their corresponding hits together with the number of hits in the result. The user may then elect to view the titles in the resulting set or print the "result records." Result records can be written to a disk file in ASCII format. This file can then be

modified with a word processor. After viewing titles, a selected record may be printed. By cycling back through the Search menu, one can print more than one record from the result set.

Another option on the Search menu allows the searcher to change the printing options to determine which fields are printed, whether field tags will be printed, and whether record ID numbers will be printed.

The database may be printed in ID number order beginning with a specified record, or the entire database may be sorted on a specified field and printed in alphabetical order. Print options may be specified for this sorted listing, and a page heading may be specified.

*System Maintenance.* The hard disk version of Golden Retriever allows up to 20 databases to be created on each hard disk used. Each of the 20 databases can contain up to 4500 records. Each database can consist of up to 10 data files and an index. The reason for dividing a database into several files is to facilitate backing up the database on floppy disks.

Database creation, like other activities with Golden Retriever, is a matter of interacting with a series of menus and prompts. Record definition consists of specifying: for each field a three-letter tag, whether it is to be keyword-indexed, whether a value is required for each entry, whether the field is multi-valued, the column in which the field should start printing, and tag group number(s) to which the field is assigned (tag groups allow the printing of selected groups of fields). One of the fields must be designated as the "main entry." This field serves as the primary search key and is displayed when browsing titles. After a record is entered it may be edited in a line-oriented mode.

*Documentation.* The documentation for Golden Retriever consists of an 84-page manual plus 33 pages of updates for versions 4.06 and 4.07. The manual is clearly written and includes samples of menu displays and examples for each operation.

## **INMAGIC**

INMAGIC is a file management system which has been available for use on mini-computers since 1980. Versions are now available for use on several microcomputers. The package is powerful, flexible, and relatively easy to use. It was developed by Warner-Eddison Associates, a consulting firm with experience in library applications. INMAGIC can be used for a variety of library applications as well as non-library applications. The range of applications is due to the flexibility of defining data structures, a flexible report generator, and a range of indexing options.

The system accepts commands or will offer menus and help screens if needed.

*Searching Features.* INMAGIC supports the Boolean operators AND, OR, NOT and can restrict a search to records satisfying relational criteria (e.g., greater than, less than, equals). It also allows retrieval by words or word roots occurring within a field. Logical expressions may be grouped by parentheses to determine order of execution. In addition to the Boolean and comparison operators, INMAGIC provides CW (contains word), CS (contains stem), and ST (starts with stem).

Search terms may be words or word fragments, phrases, numbers, or dates. Searches may be entered in steps, each further modifying the results obtained by the previous step. Searches may be stored and later called back or modified. Un-indexed fields may be searched, but the system will warn the searcher that the search may take awhile and ask whether to proceed.

*System Output.* INMAGIC provides three ways of viewing search results: They can be sent to the system printer, displayed to the screen, or copied to a sequential ASCII file. With each of the output commands the user has the option of sorting the records by any field in ascending or descending order and/or formatting them according to a report format previously designed using the Report Format function.

The Report Generator module allows for a great deal of control over output formats. This can be taken advantage of in adapting INMAGIC to such functions as acquisitions or circulation where output can be configured in the form of a purchase order or an overdue notice.

*System Maintenance.* The DEFINE module provides for defining data structure, file parameters, and report formats. These definitions are performed through a prompting interactive process.

INMAGIC offers the options of indexing terms (the first 60 characters of each subfield), keywords (each word in any subfield), or both. Up to 50 fields may be indexed. For indexed fields INMAGIC offers seven sort sequences to handle leading articles, numbers, dates, letter by letter or word by word sorting, etc.

The MAINTAIN environment allows the user to enter, change, and delete records interactively or to add the contents of another file in batch mode. It also provides programs to build an index for a field not originally indexed or to remove indexes to conserve space. Changing records interactively is done by specifying the subfield to change, then typing in a new value when prompted.

*Documentation.* The INMAGIC user manual contains approximately 180 pages. It is clearly written, includes many examples, and is well indexed.

In addition to the user manual, the system provides an extensive online tutorial, and online help is available in the SELECT mode. In general INMAGIC will accept commands; if a null response (empty carriage return) is entered where a command is expected, the system responds with a menu of current options.

## **TEQLIB**

TEQLIB was known as Bibliographic Information System until recently. Its former name is indicative of its intended use. It is specifically designed to handle journal article records. Within the limitation of a fixed record structure the system offers powerful searching capabilities together with the ability to accommodate very long records.

*Searching Features.* The QUERY program searches indexes of authors and keys (descriptor words or phrases). Search terms are entered individually and later COMBINEd using Boolean operators.

Ambiguous queries can be entered by truncating an author name or key, by entering an author's last name only, or by using the soundex system. Author BROWN? will retrieve authors beginning with BROWN (BROWN, BROWNING,

BROWNRIG, etc.); author ?BROWN will retrieve authors whose names sound like BROWN (BARUM, BERMAN, BOURNE, BROWN, BYRNE, etc.). The index to search is specified in the query (Author BROWN, Key COMPUTERS).

TEQLIB accepts a variety of synonymous names for the Boolean operators: OR, JOIN, UNION, or + all refer to the same operation, as do MEET, INTERSECTION, AND, or \*, and OMIT, DIFFERENCE, BUTNOT, or -. The LIST command allows review of sets previously built using AUTHORS, KEYS, and COMBINE commands.

*System Output.* Sets can be displayed online or printed with two forms of output. The first form presents an abbreviated one-line citation that might be useful for retrieving full records stored offline (this might be done if the system is being run on a computer with floppy disk drives only); the second display option prints the full records on the screen. Output can be limited by date ranges, journal title, or number of citations.

Results can be written to another file. This file could then be modified with a text editor or could be used as the foundation of another database.

*System Maintenance.* The TEQLIB system consists of three basic elements: the article data, the dictionary, and the index. A database is managed by a set of programs that create and update these three elements.

Article data are created using the computer system's text editor. The system editor can create a file of approximately 20,000 characters. In order to create a file larger than that a COMBINE program must be used. The SPLIT program divides a large file into parts small enough to edit with the text editor if changes are needed.

Other programs create and merge dictionaries, build indexes, validate article data, and perform other maintenance procedures.

*Documentation.* The 127-page user manual contains a brief overview and a clearly written 18-page chapter on the QUERY program. The rest of the manual deals with system maintenance and technical aspects of the system. This latter part of the documentation would be heavy going for a computer novice. The system provides clear online help messages, however.

### *Other Systems*

Packages that were not examined in detail for this report, but which should be mentioned, are discussed below.

SCIMATE from the Institute for Scientific Information (ISI) is a two-part system, one part of which can be used as a catalog program for a small collection (Personal Data Manager). Boolean searching is supported with right and left truncation. Up to 20 user-defined fields per record and up to 1900 characters per record are supported. No indexes are created, so changes are immediately searchable. This absence of indexes means that searches are done by performing a sequential scan through the entire file, which limits the file size for practical response times to a few thousand records. The searching is surprisingly fast, however, considering its sequential nature. The literature describing the system gives a search speed of about 5000 records per minute with a hard disk.

STAR (Cuadra Associates, Inc.) is a powerful, flexible, and easy-to-use database and information retrieval system. STAR allows users to define over 1000 different databases, each of which can total over 250 million characters. Each record can contain up to 500 fields, and fields may repeat. Each record can contain up to 32,000 lines (about 1.9 million characters). The system can be used for a wide variety of applications.

STAR offers Boolean operators with nested parentheses; truncation, numeric, alphabetic, and date ranging; sorting; index browsing; saving search strategies; and flexible formatting for online display or offline printing.

Interaction with the various modules is by means of full-screen interfaces which allow fill-in-the-blank responses. Commands are displayed at the bottom of the screen and can be invoked with a single letter. The Data Entry module includes options for data validation. Codes and abbreviations can be expanded automatically.

STAR is sold as a turnkey hardware and software system. Prices range from \$18,450 to \$68,750 depending on the hardware configuration.

FINDER: The Retrieval System (Aaron/Smith Associates, Inc.) is a text-oriented database system first introduced in 1984. FINDER supports Boolean logic, comparison searching, index browsing, and sorting. Flexible display and print modules allow the user to define output formats. Output can also be sent to a file.

Each field can be indexed as a single entry, or as multiple terms, or not indexed at all. If the multiple terms option is chosen the user specifies a character as a term separator. Each field can have restrictions or data validation checks imposed to minimize typographical error.

As a relatively new system, it is continuing to be developed. Enhancements and additional features are promised.

## CONCLUSION

It is clear that there now are a wide range of software options for microcomputer-based library catalogs. Software packages are now available for very small collections all the way up to collections with many thousands of items. These packages have been designed specifically for library applications and provide choices for almost any type of library.

## VENDOR ADDRESSES

### **BRS/SEARCH**

BRS  
1200 Route 7  
Latham, NY 12110  
(800) 833-4707, (518) 783-7251

### **Card Datalog**

DTI Datatrek  
121 West E. St.  
Encinitas, CA 92024  
(619) 436-5055

**FINDER**

Aaron/Smith Associates, Inc.  
Suite 518, 1422 West Peachtree St.  
N.W.

Atlanta, GA 30309  
(404) 876-0085

**Golden Retriever**

Cooperative Library Agency for  
Systems and Services (CLASS)  
1415 Koll Circle, Suite 101  
San Jose, CA 95112-4698  
(408) 289-1756

**INMAGIC**

Warren-Edison Associates, Inc.  
238 Broadway  
Cambridge, MA 02139  
(617) 661-8124

**SCIMATE**

Institute for Scientific Information  
3501 Market St.  
University City Science Center  
Philadelphia, PA 19104  
(215) 386-0100

**STAR**

Cuadra Associates, Inc.  
2001 Wilshire Blvd., Suite 305  
Santa Monica, CA 90403  
(213) 829-9972

**TEQLIB**

Software Consulting Services  
Ben Franklin Technology Center 125,  
Suite 10  
Murray H. Goodman Campus  
Lehigh University  
Bethlehem, PA 18015  
(215) 861-7920