matics and Its Applications. Based on two meetings, Klosterneuburg, Austria, 1983, and Windsor, U.K., 1985.

Encyclopedia of Statistical Sciences. Vol. 7, Plackett Family of Distributions to Regression, Wrong. M. H. DeGroot *et al.*, Eds. Wiley-Interscience, New York, 1986. xii, 714 pp., illus. $95.

Energy and the Atmosphere. A Physical-Chemical Approach. I. M. Campbell. 2nd ed. Wiley, New York, 1986. x, 337 pp., illus. $57.

The Enigma of Loch Ness. Making Sense of a Mystery. Henry H. Bauer. University of Illinois Press, Urbana, 1986. xiv, 245 pp., illus. $22.95.

Environmental Law. Air and Water. William H. Rodgers, Jr. West, St. Paul, MN, 1986. 2 vols. Vol. 1, Sections 1.1 to 3.41. xxvi, 588 pp. Vol. 2, Sections 4.1 to End, Tables-Index. xviii, 805 pp. $170.

Environmental Planning. A Condensed Encyclopedia. Alan Gilpin. Noyes, Park Ridge, NJ, 1986. xxx, 348 pp., illus. $48.

Envoys of Mankind. A Declaration of First Principles for the Governance of Space Societies. George S. Robinson and Harold M. White, Jr. Smithsonian Institution Press, Washington, DC, 1986. xxiv, 292 pp. $19.95.

Geometry of CR-Submanifolds. Aurel Bejancu. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Norwell, MA). xii, 169 pp., illus. $49.50. Mathematics and Its Applications (East European Series).

The Great Whale Rescue. Tom Tiede with Jack Findleton. Pharos Books, New York, 1986 (distributor, Ballantine, New York). 151 pp. $14.95.

Hadronic Matter in Collision. P. Carruthers and D. Strottman, Eds. World Scientific, Philadelphia, 1986. xiv, 537 pp., illus. $56. From a workshop, Santa Fe, NM, April 1986.

Handbook of Biomaterials Evaluation. Scientific, Technical, and Clinical Testing of Implant Materials. Andreas F. von Recum, Ed. Macmillan, New York, 1986. xxiv, 611 pp., illus. $120.

Local Representation Theory. Modular Representations as an Introduction to the Local Representation Theory of Finite Groups. J. L. Alperin. Cambridge University Press, New York, 1986. x, 178 pp., illus. $29.95. Cambridge Studies in Advanced Mathematics, 11.

Making Cancer Policy. Mark E. Rushefsky. State University of New York Press, Albany, 1986. xiv, 257 pp., illus. $39.50; paper, $12.95. SUNY Series in Public Administration in the 1980s.

Manual of Acute Toxicity. Interpretation and Data Base for 410 Chemicals and 66 Species of Freshwater Animals. Foster L. Mayer, Jr., and Mark R. Ellersieck. U.S. Fish and Wildlife Service, Washington, DC, 1986 (available from the National Technical Information Service, Springfield, VA). iv, 506 pp. Paper, $40.95. Resource Publication 160.

New Vistas in Electro-Nuclear Physics. E. L. Tomusiak, H. S. Caplan, and E. T. Dressler, Eds. Plenum, New York, 1986. viii, 491 pp., illus. $79.50. NATO Advanced Science Institutes Series B, vol. 142. From an institute, Banff, Alberta, Canada, Aug. 1985.

Norbert Wiener: Collected Works with Commentaries. Vol. 4, Cybernetics, Science, and Society; Ethics, Aesthetics, and Literary Criticism; Book Reviews and Obituaries. P. Masani, Ed. MIT Press, Cambridge, MA, 1986. xx, 1083 pp., illus. $70. Mathematicians of Our Time.

Organic Solvents. Physical Properties and Methods of Purification. John A. Riddick, William B. Bunger, and Theodore K. Sakano, 4th ed. Wiley-Interscience, New York, 1986. xviii, 1325 pp., illus. $95. Techniques of Chemistry, Vol. 2.

The Particle Hunters. Yuval Ne'eman and Yoram Kirsh. Cambridge University Press, New York, 1986. xii, 272 pp., illus. $49.50; paper, $13.95. Translated from the Hebrew edition (Givatayim, Israel, 1983).

Past, Present, and Personal. The Family and the Life Course in American History. John Demos. Oxford University Press, New York, 1986. xiv, 215 pp. $17.95.

Path Integrals from meV to MeV. M. C. Gutzwiler *et al.*, Eds. World Scientific, Philadelphia, 1986. xii, 453 pp., illus. $49. Bielefeld Encounters in Physics and Mathematics, 7. Based on a symposium, Bielefeld, F.R.G., Aug. 1985.

Pattern Recognition by Humans and Machines. Eileen C. Schwab and Howard C. Nusbaum, Eds. Academic Press, Orlando, FL, 1986. 2 vols. Vol. 1, Speech Perception. xiv, 321 pp., illus. $59.50; paper, $29.95. Vol. 2, Visual Perception. xiv, 245 pp., illus. $46.50; paper, $23.95. Series in Cognition and Perception.

Relativistic Astrophysics. Marek Demiański. Pergamon, New York, and PWN-Polish Scientific Publishers, Warsaw, 1985. x, 341 pp., illus. $50. International Series in Natural Philosophy, vol. 110. Translated from the Polish edition (Warsaw, 1978) by Antoni Pol.

Remote Sensing. Principles and Interpretation. Floyd F. Sabins, Jr. 2nd ed. Freeman, New York, 1986. xii, 449 pp., illus., $47.95 + plates.

Renal Physiology. Principles, Structure, and Function. E. Koushanpour and W. Kriz. 2nd ed. Springer-Verlag, New York, 1986. xii, 390 pp., illus. $49.

Reservior Characterization. Larry W. Lake and Herbert B. Carroll, Jr. Academic Press, Orlando, FL, 1986. xii, 659 pp., illus. $60. From a conference, Dallas, April 1985.

Science and Technology in the USA. Albert H. Teich and Jill H. Pace *et al.* Longman, Essex, U.K., 1986 (U.S. distributor, Gale Research Company, Detroit). xx, 408 pp., illus. $95. Longman Guide to World Science and Technology, vol. 5.

The Science of Allelopathy. Alan R. Putnam and Chung-Shih Tang, Eds. Wiley-Interscience, New York, 1986. xiv, 317 pp., illus. $52.50. Based on a symposium, Hawaii, Dec. 1984.

Software Reviews

Personal Bibliographic Databases

RUTH E. WACHTEL

Numerous database management systems are available for use on personal computers to help organize reference and reprint information. These packages allow a personal database to be created with references that are pertinent to the user's area of interest. They can rapidly retrieve reference information based on user-defined keywords and can also be used to prepare a bibliography for a manuscript.

A computer database used for references contains information about journal articles, book chapters, and other manuscripts, such as might be stored on index cards; the data on a particular card would be stored as a record within the database. Each item of information on the card would be in a field within that record. Examples of fields might be first author, second author, title, journal, year of publication, or any other information such as keywords or annotative comments that the user might want to append to the record.

To enter a reference into the database, the user must insert reference information into its corresponding field. Information may be typed from the keyboard or read directly into the database from existing files, such as those obtained from a national database or from a colleague. When each record has been entered into the database, a computer-assigned number is added to the record to identify it.

One advantage of storing information in a database is that references can be easily located. The user may want to find a particular paper but may remember the name of only one of the authors. The complete reference can be retrieved by searching the author fields to produce a list of all papers written by that author. If keywords that describe subject areas have been included in the reference entries, a search of keyword fields can produce a list of all papers related to a given subject. Copies of papers can be located rapidly if they have been filed in numerical order based on their computer-assigned numbers.

Another useful feature of personal bibliographic software is in aiding the preparation of manuscripts for publication. To create a manuscript, a word processor is used to generate a textfile in which references are cited according to their computer-assigned numbers. The textfile can be read by the software, which uses computer-assigned numbers to produce a list of the cited references to be appended to the manuscript. The bibliography can be in any format specified by the user (usually the format specified by the journal to which the manuscript will be submitted). In addition, some packages are capable of rewriting the textfile to substitute authors' names in place of computer numbers or to renumber references sequentially within a paper.

Five software packages were evaluated in detail to compare their ease of use and to determine differences in their capabilities. A summary of their operating specifications and features is given in Tables 1 and 2. The programs were tested on an IBM PC-AT; most of the programs are also available for CP/M systems. Demonstration disks are available for $20 to $59 to allow users to preview the software before purchasing. The use of a hard disk is strongly recommended, since only 500 to 1000 references can be stored on a standard 360-kilobyte floppy disk. When the number of entries approaches this limit, the addition of new references

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Table 1. Specifications of the software packages reviewed. The programs were tested on an IBM PC-AT that operated PC/MS-DOS and WordStar and that was equipped with a 20-megabyte hard disk, 640 kilobytes of random-access memory (RAM), and an Epson FX-80 printer. IBM PC and compatible computers require at least 128 to 256 kilobytes of RAM. Only PC/MS-DOS systems were tested. All packages except Scholar's Bibliofile and Pro-Cite are also available for CP/M operating systems. Ref-11 can also operate on RT-11, RSX-11, and VAX/VMS systems.

	Reference Manager	Scholar's Bibliofile	Ref-11	Pro-Cite	Sci-Mate
Version tested	3.2	3.4/4	2.3	1.2	2.0
Language*	CBASIC	C	Pascal	Turbo Pascal	Pascal, Assembler
Cost†	$195, $440‡	$250	$195	$395	$678§

*Language is not apparent to user since all versions are compiled. Source codes are usually not available. †For IBM PC and compatibles. Price does not include optional modules or shipping costs. ‡A maximum of 800 references in less expensive version; 32,000 in the more expensive version. §Price excluding the Searcher option. A 40 percent discount is available if the program is purchased through a centralized facility (such as a library or a computer center) that will provide local support.

will necessitate the creation of a second database and cause duplication of the computer-assigned numbers.

The packages tested are all capable of accepting journal articles and books as reference entries and can also include user-defined keywords. Two packages, Pro-Cite and Sci-Mate, can accommodate other types of references, such as conference proceedings or government documents. All packages have provisions for editing or correcting previously entered references. All five packages allow the user to search specific fields of the database to locate references. Pro-Cite and Sci-Mate allow the use of complex expressions that involve logical commands such as OR, AND, or NOT and also allow the user to specify fields to be indexed to increase the search speed. All packages except Reference Manager can sort the results of a search alphabetically by authors' names.

All of these packages can produce bibliographies by rearranging the information contained in different fields and inserting punctuation between fields. All have sufficient flexibility to create formats suitable for most journals.

All of these programs have the capability to add records by reading external files, although this feature may require the purchase of optional modules. Reference Manager, Pro-Cite, and Sci-Mate can read files that have been created during literature searches of national databases with BRS or Dialog. Pro-Cite and Sci-Mate can also be purchased as packages designed to access these national databases. Scholar's Bibliofile and Ref-11 can only read records that are precisely formatted according to their specifications. Thus, most reference files (for example, those of a colleague) would have to be edited before they could be read into the database.

A

```
PLEASE SELECT THE FUNCTION YOU WOULD LIKE TO PERFORM:

    1) To find (retrieve) references
    2) To enter references
    3) To access MEDLINE/BRS
    4) To create a bibliography
    5) To edit references
    6) To perform file maintenance
    7) To access another data base
    8) To EXIT from the program
```

B

```
ENTER NAME OF AUTHOR #    3    OR ⟨CR⟩ IF NO MORE          Smith, A.B.
? Johnson, E.F.                                            Jones, C.D.

ENTER TITLE OF ARTICLE . PRECEDE EACH KEYWORD WITH  @
⟨CR⟩ TO TERMINATE ENTRY
? Effects of @general_anesthetic agents on ion channels activated
  by @acetylcholine

ENTER KEYWORD #    3    OR ⟨CR⟩ IF NO MORE     GENERAL ANESTHETIC
? ion channel                                  ACETYLCHOLINE
```

C

```
THIS IS YOUR REFERENCE :          * INDICATES NEW ENTRY
Smith, A.B., Jones, C.D., *Johnson, E.F.
Effects of general anesthetic agents on ion channels activated by
acetylcholine
Science 245:1232–1235, 1992
KEYWORDS: GENERAL ANESTHETIC, ACETYLCHOLINE,
ION CHANNEL, KINETICS, ANTAGONIST
```

Fig. 1. (**A**) Screen display from Reference Manager that shows the main menu options. (**B**) If option 2 is selected, a series of screen displays prompt the user to enter information. (Information entered by the user is shown in boldface type.) Not all entries are shown. Two words within the title of the article have been automatically entered as keywords by preceding them with an "@" symbol. (**C**) After all information has been entered, the full reference will be displayed and any errors can be corrected. A flashing "*" symbol appears next to any author, keyword, or journal name that has not been previously entered into the database. [Reproduced with permission (*1*)]

Program Specifications

Reference Manager (*1*) is easy to use and requires virtually no training or computer experience. Upon entering the program, the user is presented with a menu of possible options (shown in Fig. 1A). The use of option 2 ("to enter references") is illustrated in Fig. 1, B and C.

This software can produce an alphabetical list of previously entered keywords or journal names to help locate specific citations and to maintain consistency in entering keywords or journal abbreviations. Reference information can be entered at the same time reprints are ordered; a list of requests still pending can be generated. With an optional module, references located by BRS/Colleague or Medline literature searches can be incorporated directly into the appropriate fields of the database.

The creation of a bibliography is not difficult, although several steps are involved. The desired format for each journal is specified by answering a long series of questions or by purchasing an optional module that contains formats for approximately 100 biomedical journals. Reference Manager can then read the original manuscript textfile and produce a separate file that contains the bibliography in suitable format, and can also create a new version of the manuscript textfile in which the computer numbers are replaced by authors' names or sequential numbers. In both cases such files must be reformatted with a word processor to correct spacing and margins.

Reference Manager performs most of the simple tasks required of bibliographic software, but it does lack flexibility. Because the program is menu-driven, the capabilities of the software have been fixed by the author of the program so that the user is unable to manipulate commands or define new se-

quences. For references other than journals or books, the user could enter appropriate information freeform into the title field, but the citation could not be reformatted during creation of a bibliography. Search commands for locating specific entries cannot be connected with a logical OR command to avoid separate searches. To an experienced user, the continual display of menus, prompts, and questions can become annoying and time-consuming.

Scholar's Bibliofile (formerly Martz Bibliofile) (*2*) provides a set of ten commands to allow the user to create and manipulate data files. An external word processor is first used to generate a textfile of the reference information. The user must remember the proper format in which to enter information into the file, because Scholar's Bibliofile cannot read files that do not have the expected punctuation and delimiter characters. A command called REAP is then used to read the textfile and add the references to the database. To edit a preexisting reference, the REVIEW command is used to write the reference to a file called TOEDIT. A word processor is needed to make changes or correct errors in the file. The modified file is then reread into the database with the REAP command. Other commands are used for searching, sorting, or displaying records or for producing a bibliography.

To those who use this software frequently or can remember the correct keystrokes, Scholar's Bibliofile is not complex. Large numbers of references can be added to the database in an efficient manner. Bibliographic formats for several different journals can be entered simultaneously, although creation of a bibliography requires six different commands. Scholar's Bibliofile is the only package that allows the database to be segmented between floppy disks, although a hard disk would be much more convenient.

The capabilities of Scholar's Bibliofile are not really sufficient to justify its complexity. The database does not have enough fields to distinguish between books and book chapters during formatting of bibliographies and it does not have a separate field for user's comments or annotations. Scholar's Bibliofile requires a thorough understanding of its command options and of the significance of various intermediate files that are created. Since commands are accessed through the operating system of the computer, familiarity with PC/MS-DOS is a necessity. In addition, an external word processor and knowledge of its operation are also required just to enter data. Scholar's Bibliofile is fully compatible with WordStar. Other word processors can be used only if the files are stored in ASCII format.

```
Author 1  > [A. B. Smith      ]      Author 5  > [                ]
Author 2  > [C. D. Jones      ]      Author 6  > [                ]
Author 3  > [E. F. Johnson    ]      Author 7  > [                ]
Author 4  > [                 ]      Author 8  > [                ]

          Reference Type > [J]   J = journal   B = book   C = chapter of book

Article   > [ Effects of general anesthetic agents on ion channels activated by acetylcholine ]
            [                                                                                 ]
            [                                                                                 ]
            [                                                                                 ]
Year      > [1992 ]      Volume > [245 ]      Pages >  [1232-1235                           ]
Journal   > [Science                                                                          ]
            [                                                                                 ]

Topic 1   > [general anesthetic ]      Topic 5  > [antagonist       ]
Topic 2   > [acetylcholine      ]      Topic 6  > [                 ]
Topic 3   > [ion channel        ]      Topic 7  > [                 ]
Topic 4   > [kinetics           ]      Topic 8  > [                 ]
```

Fig. 2. Specially formatted screen display produced by Ref-11 for entry of reference data. (Information entered by user is shown in boldface type.) [Reproduced with permission (*3*)]

Ref-11 (*3*) is partially menu-driven. Upon entering the program, the user is presented with a menu of options for entering or displaying references. If new references are to be added to the database, a specially formatted screen will be displayed (Fig. 2). Ref-11 uses the term "topics" to refer to keywords. To perform a search of the database, the formatted screen is again displayed and search terms are entered next to their field names. The creation of a journal format for a bibliography requires the use of an external editor or word processor to create a textfile that contains a sequence of special formatting abbreviations explained in the Ref-11 manual.

Ref-11 has several potentially useful features. References can be printed out in certain predefined formats, such as a short one-line summary that contains only the name of the first author, a truncated title, the journal title, and the year. A journal "lookup table" permits the use of short abbreviations for entering journal names. For example, JBC will be converted to *J. Biol. Chem.* for *Journal of Biological Chemistry*.

Ref-11 is reasonably easy to use but it does require some training and careful reading of the manual, especially when bibliographic formats are defined. The Ref-11 manual is unbound and does not appear to have been professionally printed. At times the screen-oriented display appears unnecessarily cluttered; some of the choices for displaying references can be confusing. For example, search terms to locate keywords are not connected with a logical AND or OR command, but are connected by specifying "every" or "any" in the data field called "search must match for which topics."

Pro-Cite (*4*) is a more generalized bibliographic database. It can be purchased as part of a package that contains Pro-Search, which is a module for searching national databases, and Biblio-Link, which transfers citations from national databases to Pro-Cite. Unlike the packages above, Pro-Cite can accommodate references from sources other than journal articles and book chapters. Twenty different types of documents

Table 2. Features of software packages reviewed.

	Reference Manager	Scholar's Bibliofile	Ref-11	Pro-Cite	Sci-Mate
Data entry independent of external word processor	Yes	No	Yes	Yes	Yes
Final bibliography independent of external word processor	No	No	No	Yes	Yes
Reordering of author's surname and initials in bibliography	Yes	Yes	Yes	No*	Yes
Provision for nonstandard references	No	No	No	Yes	Yes
Alphabetical list of keywords used	Yes	No	No	Yes	No
Underlining, sub- and superscripting, and boldface type within title	Yes	Yes	No	Underlining only	No
Rewriting manuscript textfile to insert citations	Yes	No	Yes	No	Yes
Importing national database files without editing	Some†	No	No	Some‡	Yes§

*Will be revised in a future update. †BRS and Medline, with the purchase of optional module for $59. ‡With the purchase of the Biblio-Link module for $195. §With the purchase of the Searcher module for $339.

can be entered as references, such as dissertations, computer programs, and music scores. An example of a workform for entry of conference proceedings is shown in Fig. 3. Any fields that do not seem appropriate to a particular reference can be ignored.

Although it may initially appear complex, Pro-Cite is largely menu-driven and is not difficult to learn. The program uses the concept of "selected records" in which a subset of records in the database is selected by performing a search, by specifying computer numbers, or by selecting specific records on an individual basis. Once records have been selected they are available for researching, sorting, formatting, printing, or writing to a separate disk file.

If the user is willing to venture beyond menus, this package has many features that make it especially versatile. Unusual reference sources can be handled by creation of up to two new workforms to define input formats. Search strategies can use complex expressions that involve logic statements. For example, the command "jrnl = science and (auth = williams or auth = johnson) and date > 1980" would locate all articles published in *Science* that were written by either Williams or Johnson and published in or after 1980. An extended character set permits inclusion of special symbols and foreign alphabets for compatible printers.

Creation of a bibliography does not require a separate word processor because Pro-Cite controls page formatting and margins. Although punctuation will default to standards defined by the American National Standards Institute (ANSI), the user can define new styles. However, the software cannot distinguish between the surname and initials of an author and cannot manipulate the order in which they appear in the bibliography. In addition, citations can only be extracted from a manuscript written as a standard ASCII file, and authors' names rather than computer-assigned numbers must be present in the text. Thus Pro-Cite has more limited usefulness for manuscript preparation.

Conference Proceedings

Field Abb.	*Field Name*	*Field Number*
Auth	Author (Analytic)	1
AuRo	Author Role (Analytic)	2
Affl	Author Affiliation (Analytic)	3
Papr	Paper/Section Title	4
Medm	Medium Designator	5
CoPh	Connective Phrase	6
Edtr	Editor/Compiler	7
EdRo	Editor/Compiler Role	8
Titl	Proceedings Title	9
DtMt	Date of Meeting	12
PlMt	Place of Meeting	13
PlPu	Place of Publication	18
Publ	Publisher Name	19
Date	Date of Publication	20
Copy	Date of Copyright	21
VolD	Volume Identification	22
Loc	Location in Work	25
Extn	Extent of Work	26
PaMe	Packaging Method	27
SrEd	Series Editor	30
SrRo	Series Editor Role	31
SrTi	Series Title	32
SrVo	Series Volume Identification	33
ISBN	ISBN	41
Note	Notes	42
Abst	Abstract	43
Call	Call Numbers	44
Indx	Index Terms	45

Fig. 3. Pro-Cite workform for entry of reference information on conference proceedings. [Reproduced with permission (*4*)]

Sci-Mate (*5*) is also a general bibliographic database. The software consists of three complementary modules: Manager, for data entry and searching; Editor, for data entry and sorting and for formatting of bibliographies; and Searcher, for accessing national databases. The Manager and Editor pass information to each other by means of a work file, which is a temporary storage area for records in transit. Thus the results of a search command can be used as the basis for performing another search or can be sorted or formatted for printing or for writing to disk.

Before running Sci-Mate the user should have a reasonable understanding of its database structure and of how Sci-Mate searches, sorts, and indexes its fields. It is possible for the uninitiated to commit serious errors. For example, records can easily be sorted into alphabetical order by authors' names but the sort can cause permanent reordering of previously assigned computer numbers.

For the user to enter references an input format or template (analogous to a Pro-Cite workform) must be defined by specifying the type of information to be entered into each field. Sci-Mate has two predefined templates called "document" and "reprint" that could be used for journals and books; the user must create templates to accommodate any other type of reference.

A formatted bibliography is generated by specifying the order in which fields are to be printed and the punctuation that is to appear between fields. Sci-Mate can rearrange authors' names and initials and can control page formatting. It can also rewrite a manuscript textfile to insert authors' names or numerical citations in place of computer numbers. Sci-Mate can insert footnotes in a manuscript, flag specific entries, such as pending requests for reprints, or generate a columnar report of records.

Sci-Mate is a powerful and versatile bibliographic package, but of all the packages tested it is the most difficult to learn. This software is best suited for those who spend much time preparing manuscripts or maintaining reprint files. For such users, the time spent learning the software would be a worthwhile investment.

Discussion

The five software packages all performed satisfactorily; no single package was "the best." The selection of a particular package depends on careful examination of the specific needs and requirements of the user. Potential users of any of these software packages are urged to consult with the distributors for information on specific applications; program specifications will probably change as updates are issued. An important example is the transfer of existing reference files into a format that can be read by the database program.

For some, ease of use may be the most important consideration. If the program is to be used on an intermittent basis or by those who have limited computer experience, then the software should be easy to learn. A menu-driven package such as Reference Manager would then be a reasonable choice; the user does not have to remember any external commands or syntax requirements.

References that are not journal articles or book chapters may be necessary for some users. Only Pro-Cite and Sci-Mate had provisions for the entry of unusual references. Pro-Cite comes with 20 different standard workforms and allows creation of two additional ones. Sci-Mate can store 41 templates whose fields have been defined by the user.

Pro-Cite and Sci-Mate both have companion modules for accessing national databases over phone lines. Those users who perform frequent literature searches and who wish to save the results as part of their personal databases might want to purchase one of these packages in order to enter citations without editing.

A publishing scientist who maintains a personal database to prepare bibliographies would have some additional requirements. Pro-Cite is presently unable to distinguish between the surname and initials of an author; it would be unable to generate a bibliography in the formats dictated by some journals. Reference Manager and Scholar's Bibliofile require an external word processor to perform such tasks as adjusting word spacing; this may not be a major limitation if a word processor is already in use for preparing the manuscript.

REFERENCES

1. Reference Manager, Research Information Systems, 1991 Village Park Way, Suite 206, Encinitas, CA 92024.
2. Scholar's Bibliofile, The Library Corporation, P.O. Box 40601, Washington, DC 20016.
3. Ref-11, DG Systems, 322 Prospect Avenue, Hartford, CT 06106.
4. Pro-Cite, Personal Bibliographic Software, P.O. Box 4250, Ann Arbor, MI 48106.
5. Sci-Mate, Institute for Scientific Information, 3501 Market Street, Philadelphia, PA 19104.