printer in question has different commands to specify carriage roll up and carriage roll down.

A curious problem involves the graphics lines available in the Alt function keys for drawing boxes around text or lines in tables. They show nicely on the monitor of an IBM PC, but, so far, we have not been able to print them or even do a screen dump on a printer supporting the same characters, such as an Epson RX-80. A patch routine provided by MicroPro International also did not work, although it apparently does work on other Epson printers. Figure 1 illustrates this difficulty. On the other hand, small superscripts and subscripts can be defined with WSCHANGE as the user-defined print (^P) functions ^Q, ^W, ^E, and ^R. Consequently, chemical formulas ($C_{26}H_{21}N_2OBr$) and technical terms ($^4J_{H,F}$) are neatly printed with single-line spacing.

All in all, for those who do not mind losing the soft hyphenation wizardry of earlier versions, the Professional is much more versatile and a significant improvement, bringing WordStar to the level of its upstart competitor, WordPerfect. For those of us who are accustomed to WordStar and its awkward instruction designations, there is now no more reason to switch and learn a new set of codes. For the novice, learning WordStar has also been made easier in version 4 with extra "Help" explanations in the menus. We trust that the documentation problems will be corrected in later versions. And for those who liked the more realistic hyphenation, we suggest that they stick with their older version, until WordStar puts that considerable goody back in a subsequent update as well. For those who would like to try WS4, Figure 2 provides a brief summary of the WordStar commands for beginners.

SciMate Software System. Version 2.1†

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The SciMate Software System from ISI (Institute for Scientific Information) is a multipurpose package for searching online text databases and managing the retrieved information. The system comes in three modules that can be purchased separately: the Searcher ($150.00), the Manager ($295.00), and the Editor ($195.00). ISI also offers a 40% academic discount. The programs run on an IBM PC/XT/AT and compatibles with 256K minimum RAM and DOS version 2.0 or later. The Searcher module supports the following modems: manual, Ventel MD212-Plus, Cermetik 212A, and Hayes Smartmodem (300, 1200). The programs are not copy protected.

A primary function of the SciMate software is a "gateway" for searching online databases. Gateway software facilitates searching, downloading, and managing downloaded information. SciMate easily accomplishes this task. The documentation for learning how to use it is professionally produced, easy to read, logically organized, and accurate. It has a comprehensive index, table of contents, and tutorial lessons to introduce the user to the software's many capabilities. SciMate has a lot of features and, in this regard, may be difficult to learn because of this complexity. The documentation copes with this problem in three comprehensive volumes of information, one for each module, and the software itself addresses this issue with on-screen and in-context help messages. Also, the software is menu driven, which helps to refresh the user's memory if the program has not been used for some time.

A potential problem with gateway software in general is that it can age rapidly because vendors are continually adding new capabilities to their systems, a factor that makes the gateway software obsolete. For $30.00, ISI will upgrade registered copies of Searcher with the current release.

SciMate Searcher. The Searcher module is a gateway program for accessing and searching online databases. Though the program is specifically tailored for searching BRS, Dialog, NLM, Orbit, and DARC Questel, it can access and download information from any online resource. It is designed to facilitate searching the ISI files such as SciSearch, Social SciSearch, Arts & Humanities Search, Computer and Math Search, and other specific files such as the Biosis, Chemical Abstracts, Medline, NTIS, Psycinfo, and World Patent Index files that are provided by the above vendors. One file not supported specifically by the software is ISI's Current Contents.

SciMate offers four search modes to choose from when searching an online database. All of these modes allow the user to download selected portions of the search results for later processing by the SciMate Manager module. Three of the modes require the database and database vendor to be one of those supported by the software. The SciMate Search mode prompts the user to enter a search query and automatically translates it into the appropriate search syntax specific for the database and vendor. The user interface in this mode is a series of menu options, a feature that is especially useful for novice users who may not know the different command language conventions of each file and vendor. The Native Search mode is designed for the more accomplished or expert searcher. In this mode, the user employs the specific search language of the vendor. This feature is a benefit to those searchers who are very familiar with the command syntax and who want to bypass the front-end search menus. Both of these modes, Search and Native Search, require that the user be online to conduct the search—the program conveniently displays "$$" to indicate that online connect charges are in effect. A third search mode is an especially powerful facility of the SciMate Searcher software. In this mode the user can submit up to 99 search queries as a single profile.

If the target vendor is not one of those supported by the SciMate software, then the user must employ the Passive Search mode and enter all of the appropriate commands for searching the system. By necessity, the user must be knowledgeable of the logon/logoff procedures and search and display conventions for the vendor and database in order to use this mode.

SciMate Searcher has very few shortcomings. One problem with the software is its favoritism to vendors that support the ISI databases. The software should allow the user to set up access procedures for any number of online database sources.

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This is a common capability provided by telecommunication programs such as Smartcom, Crosstalk, and PCtalk. A related concern is that even though the user can create search profiles offline and submit them automatically through SciMate, the user is limited to the specific vendors supported by SciMate.

SciMate Manager. The Manager module organizes and stores the information retrieved by the Searcher or any other online retrieval package that can write out an ASCII file. If the Searcher was used to download the information from one of the SciMate-supported databases, the files are automatically formated for further processing by the Manager. If not, then the user must label each retrieved hit with a short header. Unfortunately, SciMate provides no facilities for generating the header within the context of the program, so the user must use an external editor that can read and write the ASCII files that are compatible with the SciMate input format. Depending on the user's editor, this could be an easy or difficult process. Once organized for processing, the Manager handily ports the input stream of data into a database set up by the user. Manager's ability to do this is impressive. The software forms a very powerful database that can be subsequently searched for information. All the user needs to do is use Manager to create a template that defines the fields, corresponding to those in the downloaded file, intended for the SciMate database. The user has the option of capturing all or any selected portions of the retrieved file. Once the template is completed, it is a simple matter of punching a few menu keys and the SciMate database is formed and indexed. Manager provides the capability of retemplating the database at any time.

The SciMate database limits are very generous for a PC program. The maximum number of records is 32 767, and a single file cannot exceed 8 MB total, more than enough to fill several high-density floppy diskettes with information. Though each record is limited to 1894 characters, the software automatically partitions long input streams into sequential records and logically links them. This procedure is a clever way of balancing file maintenance restrictions with program performance.

The record-retrieving capabilities of the Manager are very good. One can search the SciMate database by using free-text terms, by field code, and/or by using Boolean logic (AND, OR, and ANDNOT). One can also search by left, right, and internal truncation. SciMate has an inversion utility that inverts a large database. This feature, called Quicksearch, allows users to use more complex nested logic in their search strategies. These features and others (e.g., display, editing, and sorting capabilities) make the software very useful for those who need to download, organize, and manage a large quantity of online information. The Manager even has a report-generating feature that formats and prints a summary of the database records.

SciMate Manager also has very few faults. One design limitation of the software is to limit the user to a single working file at a time. This presents a problem for record management, because it forces the user to keep saving records from the DOS operating system rather than within the program itself. Though it is a minor inconvenience, it opens up the possibility of inadvertently deleting files that were downloaded, sometimes at significant expense. The program should have allowed more flexibility here.

SciMate Editor. The Editor module is used to maintain a database of bibliographic citations and allows the user to print them out in user-specified formats or according to standard styles. SciMate contains the *ACS Style Guide* and *The Chicago Manual of Style*. Thus, a reference citation can be printed out in alphabetical order by author and unnumbered or in number order by citation in the article. These capabilities are especially useful to those individuals who need to create a large reference database for a journal or thesis publication.

In summary, the SciMate Software System is a very good gateway package for searching, downloading, and managing information from online information sources, especially those databases and vendors supported by the SciMate software. Because of its many features, it should be useful to novice and experienced searchers who need to postprocess downloaded information. It should also be useful to individuals who need to create and maintain a moderately sized information database generated in-house.

BOOK REVIEWS

Experimental Design: A Chemometric Approach. By Stanley N. Deming and Stephen L. Morgan. Elsevier Science Publishers, New York. 1987. xiii + 285 pp. $100.00.

Professors Deming and Morgan have written a textbook on experimental design that is based on their popular short course and on courses they have taught for both undergraduates and graduate students. The book begins by introducing the systems theory approach that they employ in developing all subsequent material. The concept of a response surface and methods of basic statistics are also introduced early in the text. The bulk of the book uses matrix least-squares based on linear models. This topic is explained in a clear and coherent fashion and should be understood, even by those with a relatively weak mathematical background. A brief appendix on matrix algebra is given for those readers not familiar with those concepts. A variety of simple models are discussed, including straight-line models, straight-line models constrained to go through the origin, models with interactions between the factors, and models including quadratic terms. The last few chapters include information about analysis of variance, factorial design, star designs, central composite designs, randomization of experiments, hypothesis testing, and confidence intervals.

Each of the 12 chapters includes clearly worked examples, and a series of exercises is given at the end of every chapter. Many of the problems are more suited for class discussions than for assigned homework problems, although some more typical calculation type problems are given as well.

The book is relatively free of mistakes and typographical errors, although there is at least one instance where inconsistent or confusing notation is used. For example, both $\surd$ and SQR are used to denote a square root; the term SQR is used in some programming languages to indicate a squared quantity rather than the square root.

The strongest features of this volume are that the explanations are clear and the material is easy to follow. Very general examples are used, e.g., the design of experiments to study the effect of fermentation temperature on the resulting percent alcohol content of wines. This should make this book valuable for scientists other than chemists. It appears to be a suitable text for advanced undergraduate and graduate courses in experimental design; however, the limited scope of the text relative to the entire field of chemometrics and the relatively high price may preclude this book from being used as a course text at many institutions. It is, however, an excellent reference text for experimentalists and contains an excellent discussion of the use of linear least-squares under a variety of conditions. It should be a valuable addition to many experimenter's bookshelves.

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