

Current Comments®

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The Integrated *Sci-Mate* Software System. Part 1. Combining File Management, Online Access, and Searching with Manuscript Editing

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More than seven years ago, I first wrote about ISI®'s development of a microcomputer retrieval program called *PRIMATE*™ (Personal Retrieval of Information by Microcomputer And Terminal Ensemble).¹ Five years later, *Current Contents*® (CC®) readers first heard about the *Sci-Mate*® Software System, which evolved from *PRIMATE*.² Subsequently, I gave you a progress report on the first revised version of *Sci-Mate*.³ At that time, I described *Sci-Mate* as a "database management system designed specifically to accommodate textual material"—especially (but not limited to) bibliographic material. But since 1983, when *Sci-Mate* was first marketed, the microcomputer business has evolved enormously, and our *Sci-Mate* software has evolved along with it. With a little hindsight, I can see that we underestimated its novelty—not only as an integrated file-management system but also as a system of software packages that can be used alone or in combination.

This year we are introducing not only a new, more comprehensive edition of *Sci-Mate* but also a range of services to deal with microcomputer-related problems that, unfortunately, are part of the daily chores of scientific and scholarly life. This essay will focus on the benefits and improvements provided by the new features of the *Sci-Mate* Software System.

A brief review of *Sci-Mate*'s basic features may be appropriate for those unfamiliar with the software. The *Sci-Mate* Software System consists of three com-

ponents: the *Personal Data (Text) Manager*, now simply called the *Sci-Mate Manager*; the *Universal Online Searcher*, now known as the *Sci-Mate Searcher*; and the new *Sci-Mate Editor*.

The *Manager* is designed to help you keep up with reprints, correspondence, lab notes, patient records, and so on. The *Searcher* enables inexperienced users who lack knowledge of host-system languages to nevertheless search hundreds of commercially offered databases. The *Editor* is a program for automatically renumbering and reformatting bibliographic references in both the text and the bibliography of a manuscript to the required specifications of any journal.

Those thousands of individuals who depend on WordStar, MultiMate, or IBM EZ Writer may be pleasantly surprised to find that we have created a word-processor "supplement" like the *Sci-Mate Editor*. Recall how long it takes a typist to reformat references and renumber them within the text; now imagine accomplishing this with just a few keystrokes. If your magnum opus was turned down by the *New England Journal of Medicine*—as close to 90 percent are, according to Marcia Angell, deputy editor for the *Journal*⁴—getting it ready for resubmission to another journal was a daunting task indeed. But the *Editor* allows you to convert that manuscript in a jiffy. I will discuss the *Sci-Mate Editor* more fully in part two of this essay.

Although the three components of the *Sci-Mate* Software System are available

as independent products, they offer the most power when used as an integrated system. Files, or collections of records, are moved among the three *Sci-Mate* components with a minimum of editing so that a record need not be entered more than once. An individual can "download" items retrieved through the *Searcher* from those databases that permit downloading, permanently store them in the *Manager*, and later use the *Editor* to generate formatted citations and revise records into a textual bibliography.

Sci-Mate is designed to be "user-friendly" by providing a menu-driven (or multiple-choice) command system with a tutorial (or user-assistance) subsystem. At each step, *Sci-Mate* asks you how you want to proceed and displays on-screen options from which you may choose. If you need clarification of any of your choices, you can ask *Sci-Mate* for help by entering a question mark.

The applications for *Sci-Mate* are almost limitless. Half of our customers work in academic and nonprofit institutions; the other half in corporate settings. One pharmaceutical firm uses *Sci-Mate* files for quick access to drug information requested by sales representatives in the field. Hundreds of researchers use *Sci-Mate* to maintain reprint collections; for instance, Laura C. Larsson, a health services research librarian at the University of Washington, Seattle, wrote to tell us that she uses *Sci-Mate* "as an online Kardex for my serials and to keep track of tables of contents from...journals scattered around campus.... One of my major uses is...[to] keep track of the research and teaching interests of the faculty in Health Sciences."⁵

Many others use it to download from online databases directly into their files. In fact, some professors and librarians—including Larsson—use *Sci-Mate* as a tool for teaching online searching and database management. As Maurine Hobbs, National Foundation for Nutritional Research, Boulder, Colorado, wrote to tell us, "[*Sci-Mate* is] an excel-

lent system to teach people to use [and for] maintaining their own databases and creating relevant libraries for reference as they do research or writing."⁶ My staff and I use *Sci-Mate* daily to find and verify addresses and to search my essays and files of *Citation Classics*[®].

Sci-Mate is now used regularly by more than 1,500 customers, the majority of whom also use *CC*. The files that users have developed serve the needs of thousands of students, librarians, and others. As *Sci-Mate*'s user base expands and the users get to know the software's capabilities, *Sci-Mate* is becoming an increasingly vital member of the family of complementary products and services we provide. In this essay, I will speak frankly about some of the pros and cons of the *Sci-Mate* components.

The *Sci-Mate* Searcher

The *Sci-Mate Searcher* is a menu-driven translator—a "front-end" or "gateway" program with multiple-choice screens—that lets you use your microcomputer to communicate with hundreds of databases—without learning the different command languages of the database hosts. For example, this software has been used successfully for almost three years to access diverse databases on Bibliographic Retrieval Services (BRS), DIALOG, the National Library of Medicine (NLM), System Development Corporation's (SDC) Orbit, and Telesystemes Questel. This does not mean that *Sci-Mate* teaches you all the intricacies of the hundreds of databases you can access on these hosts.

With Version 2.0, databases on the Telesystemes-Questel system in France have been added. This means that *Sci-Mate* users can now connect to ISI's *Index Chemicus Online*[™] without learning the Telesystemes-Questel log-on procedures and command language. It should be noted, however, that *Sci-Mate* will enable them to search only the bibliographic portion of the *Index Chemicus* database—not the chemical-structure portion. The DARC software on

Telesystemes-Questel includes a graphics program for the display of chemical-structure diagrams, provided you have the right kind of terminal.

Until now, the *Sci-Mate Searcher* has been available only in the US and Canada, due to telecommunications complexities involved in programming automatic dial-up procedures in other countries. With the advent of Version 2.0, the *Sci-Mate Searcher* is also now available in the UK. Plans are under way to enable researchers throughout the world to use the online *Searcher* as well as the other parts of *Sci-Mate*. The procedures for defining international access are explained in detail in the user's installation manual, so I will not discuss them here. You can store the procedures required to connect your micro to any host mainframe computer permitting asynchronous communications by following the instructions in the new *Sci-Mate* manual.

Sci-Mate also dials up the various telephone numbers required to connect with such packet-switching networks as TELENET, TYMNET, DIALNET, UNINET, DATAPAC, PSS, and TRANSPAC. These allow the user to connect by phone to far-off database vendors without incurring exorbitant long-distance costs. To support this program in Europe and elsewhere, the multilingual ISI staff in Uxbridge, UK, has received extensive *Sci-Mate* training. The speed of automatic dial-up, which requires a modem, is affected by the type of modem used; if automatic dial-up is the *only* way you use *Sci-Mate*, there are cheaper options in the US.

Increasingly, researchers and information specialists throughout the world are using microcomputers to search commercial online databases. An important reason for using a micro before going online is to prepare your search strategy in advance in an offline mode. Preformulated searches save substantial portions of the telecommunications and search charges. This is sometimes called "uploading" in the US (in contrast to

downloading, which has been a primary feature of *Sci-Mate* from the beginning). My use of the term "uploading," however, should not be confused with that term's meaning in the UK and throughout most of Europe, where it refers to the use of a microcomputer to create a series of records that are transferred via a telecommunications network to an existing database on a mainframe computer. In any event, once you have executed a search, you can download the retrieved records into your personal file. There you can manipulate them, offline, with the *Sci-Mate Manager*.

Since *Sci-Mate* was launched, a number of competitive systems have been developed. One of them, In-Search, enables users of IBM personal computers to access DIALOG. Although In-Search does not permit you to search the other four hosts mentioned earlier, a revised version, PRO/SEARCH, which has been designed for the professional searcher, accesses BRS as well as DIALOG.

However, the creators of such software packages have since learned the high cost of educating so-called "end-users." They are rechanneling their marketing efforts toward the professional searcher. But it is quite often the expert DIALOG searcher who needs *Sci-Mate* to do searches on BRS or NLM, or the user experienced with BRS who needs help with DIALOG, and so on. I once knew how to use the DIALOG and BRS command languages, but I have lost that skill, having learned to depend on the *Sci-Mate* menus. If you need to do complex Boolean searches quite regularly, then you can and should use the *Sci-Mate* native-language option.

Though used by professional searchers in a variety of ways, the primary users of *Sci-Mate* continue to be the scientists, researchers, librarians, and other scholars who wish to access several retrieval systems without being trained in the different command languages of each. Keep in mind that there may be several people in a given setting—a department

at a university, say, or a corporate laboratory—who use the same micro at different times; each may have different needs and training.

The *Sci-Mate Manager*

Like the *Searcher*, the *Manager* has also been improved. Of course, the *Sci-Mate Software System* still retains the capability of searching for phrases, words, and fragments of words in every field of every record. Records can be entered in a variety of forms, and you can search text for a phrase or logical combinations of words and phrases. Or, if you want records to have similar structures, you can create “templates” that define fields for the data. For instance, you might designate one field of a record to hold names and another field to hold addresses. If your records are templated, you can limit searches to items found in one field only. This way, when you are looking for articles by a Dr. Stanford, you will not find irrelevant items from Stanford University. This is called field-directed searching.

In addition to improving the efficiency of offline searching, we have also improved the speed with which the search is conducted. In earlier versions of *Sci-Mate*, searching would pause after 300 records were retrieved. In the new version, searching will continue until the entire file is searched.

Sorting also has been improved. Now an entire collection of records—up to 32,767—can be sorted. Records can be sorted using six sorting keys for as many fields at one time. However, do not expect *Sci-Mate*—or any other micro software, for that matter—to sort files so large that they would take hours to complete on a mainframe. Eventually, “supermicros” will speed sorts up, but don’t hold your breath in the meantime.

Expanded sorting and searching capabilities also have been added to accommodate hard-disk systems like the IBM PC XT and the IBM PC AT, which have become increasingly popular as they have become more affordable. Hard

disks, of course, increase storage capacity. Instead of a file limited to the amount of space available on a floppy disk, a file on a hard disk can grow to include many thousands of records. Also, many programs can be stored at once in a hard-disk system, without the inconvenience of inserting fragile floppy disks each time a program is used. Indeed, floppy-disk systems without the expanded storage capacity of hard disks may become obsolete.

As more of our customers have built files on these larger systems, they have requested faster searching. With the *Manager*, users have the option of creating “inverted files” simply by specifying which fields should have this sort of index created. Inverted files are useful in increasing search speed in large files of 5,000 or more records.

The Label Generator

Moreover, a new label-generating routine included in the *Manager* makes it easy to print out addresses on mailing labels—a boon to the many CC subscribers who include author addresses in their *Sci-Mate* files. Those who use *Sci-Mate* to manage reprint collections also will find this a useful feature. When requesting reprints, information that has already been stored will not have to be re-typed. When you download records from *SCISEARCH*[®], for example, you can include the author’s address. Remember that *SCISEARCH* includes all the journals covered in *CC*.

Critical Response to *Sci-Mate*

Earlier versions of *Sci-Mate* generated a lot of attention in the popular press as well as the scholarly literature. A review of Version 1.1 by Robert S. Wigton, University of Nebraska Medical Center, Omaha, published in the *Annals of Internal Medicine*, noted that “the performance of [*Sci-Mate’s Universal Online Searcher*] was excellent and intentional errors of all sorts produced no problems.”⁷ Medical students and residents

on Wigton's hospital-ward team who tested the system by doing searches related to the cases of their patients found *Sci-Mate* easy to use, although they felt the display of records was a bit slow. In the same review, the *Personal Data Manager* was praised for its quick, trouble-free performance of formatting, searching, and sorting tasks.

In a comparison of *Sci-Mate* Version 1.2 with In-Search and Search-Helper, Henry Pisciotta, fine arts librarian, Carnegie-Mellon University, stated that "neither... offers anything comparable to the *Personal Data Manager* part of *Sci-Mate*."⁸ And although Pisciotta remarks that "...the menu-driven mode [of *Sci-Mate's Universal Online Searcher*] will prove cumbersome for experienced database searchers," he notes that one can get around this problem by simply choosing to search in the native search language of the vendor.

Pisciotta also notes that *Sci-Mate* has been put to a number of uses at the Carnegie-Mellon University Libraries. The *Personal Data Manager* was used by the archivist to index campus publications and to maintain a "friends-of-the-library" file; the *Universal Online Searcher* was widely used to access BRS; and the two packages together were used to compile and maintain bibliographies that were shared among members of various library committees. At the time the article was written, Pisciotta said the library also planned to experiment with downloading search topics for specific information-science classes and with allowing students to select citations via microcomputer.

In *Beyond Word Processing*,⁹ Bernard Conrad Cole devotes an entire chapter to the features and some of the uses of *Sci-Mate*. "...[I]t is a powerful text and document storage and retrieval system in the hands of writing professionals who make extensive use of online databases for their research," Cole writes. "Compared to other general-purpose, free-form knowledge-processing programs..., *Sci-Mate* offers the widest range of alternatives for generating,

manipulating, and accessing both your own text files and files generated by online databases."⁹

A review by staff writer Diana Sandul that appeared in the October 6, 1984, edition of *The Times*, San Mateo, California, cautions readers that "to benefit from [*Sci-Mate*], you'd better be a serious user—that is, one with a definite need of a personal text manager that emphasizes scientific information and an online search program that interfaces with scientific information services."¹⁰ However, Sandul praises both the helpfulness of the user manuals and the complete, easy-to-follow directions given in the menus. "The program does not assume that you are an experienced computer-user," she writes, "so directions are simple and thorough."¹⁰

In a review entitled "Bibliographies without tears: bibliography-managers round-up,"¹¹ published in Arizona State University's (Tempe) *Science Software Quarterly*, James H. Beach, Organization for Tropical Studies, Inc., Durham, North Carolina, amusingly describes the problems encountered by many authors of scholarly papers as they try to develop their bibliographies:

In the course of writing a scientific article or research proposal, I suspect most scientists develop the literature citation list...something like this: first, most can probably recall the authors and years of many of the publications to be cited.... [T]he second step—bringing the citations together—usually consists of riffling through recent publications and proposals. If some references are still missing, then there is little choice but to go to the primary documents themselves. If a reprint can't be found, few can resist the temptation to borrow the nitty-gritty details from a colleague's paper. Subsequently, as the manuscript starts to take on the appearance of final copy, remaining gaps in the text become harder to ignore. As the deadline approaches, the reference hunt is on!... Once the citations are in hand, the researcher can look forward to spending a fair amount of time putting them into the style required by a particular journal.... [By the time this task is completed], most people have for-

gotten why they wrote the article in the first place and are determined never to write another.

Beach touts the software he reviews—*Sci-Mate*, Reference Manager, and BIBLIOFILE—as making it “simply a breeze” to search a personalized database. Such a database could include all the books and articles published in your field, and as Beach puts it, the *Sci-Mate* “program provides so much searching power and flexibility that it’s hard to imagine not being able to find what you want in the database.”¹¹

Support for *Sci-Mate* Users

ISI has a dedication to customer service that is hard to match. Indeed, the commitment to quality and customer service that distinguishes all of ISI’s services has been evident from the beginning to *Sci-Mate* customers. They continue to let us know what we are doing well and what we can improve. A recent survey by an independent market-research firm indicated that our customer service is valued highly.

The last time I wrote about *Sci-Mate*, I focused on what we were learning from our customers and how that strengthened our commitment to provide service to them.³ We are accessible to our customers. They reach us via a toll-free hotline that is available from 8 a.m. to 5 p.m. Monday through Friday; we reach them through our newsletter, *Sci-Mate Matters*, by attendance at professional meetings in the US, Canada, and Europe, through user surveys, and by correspondence.

It is not unusual for a researcher to order *Sci-Mate* and a new microcomputer at the same time. Some new users need assistance in figuring out how to deal with the operating system, such as MS-DOS, which may mean as little to most scientists today as CP/M—or, for that matter, UNIX—did in the early days. In addition to these computer-related problems, the concept of online searching is still very new to most scientists. And the basic principles of file organiza-

tion must be thoroughly understood if individuals wish to implement a file-management system for their own needs.

Despite the range of capabilities *Sci-Mate* has always possessed, modifications have been and will continue to be needed to keep pace with the ever-changing world of microcomputers. Those in use today bear little resemblance to machines we relied on even as recently as 1978, primarily due to changes in storage capacity and operating systems. These changes are reflected in some of the adaptations made to the new *Sci-Mate* software.

During the first months *Sci-Mate* was available, sales were evenly divided between versions for IBM and IBM-compatible machines—such as the COMPAQ, Wang, Columbia, and others—and machines using the CP/M operating system (mainly Apples with CP/M coprocessors). During the last year, by contrast, more than 80 percent of our sales have been for machines using IBM’s operating system, PC-DOS, or for IBM-compatible machines and others using the MS-DOS operating system. Thus, partly because of market demands and partly because of programming considerations, Version 2.0 has been designed for optimal use with PC-DOS and MS-DOS operating systems.

If you own a machine that uses the CP/M operating system, don’t panic: a generic CP/M format—one that does not differ from machine to machine—will be available that can be customized for the Apple, Kaypro, or DEC Rainbow computers. DEC Rainbow users may purchase the eight-inch CP/M or the MS-DOS format for the new *Manager*, *Searcher*, and *Editor* and have it reformatted for their machines. We recommend that all reformatting be done by a professional vendor who specializes in such services, although programming packages designed for reformatting are available. ISI will supply a list of vendors who can reformat the generic CP/M version to run on each of the above machines.

Similarly, Kaypro 4 and Kaypro 10 users may also purchase the generic CP/M format and have it reformatted to run all three components of the *Sci-Mate Software System*. Since the *Searcher*, *Manager*, and *Editor* all exceed the disk-drive capacity of the Kaypro 2, however, the new CP/M version of *Sci-Mate* cannot be reformatted for this machine unless a hard disk has been added.

Apple users may purchase the generic CP/M format of the *Manager* if they have a hard disk; the previous requirement for a CP/M co-processor board still applies. Apple users may also purchase a generic CP/M version of the *Searcher* if they have a hard disk, but they must have a CP/M co-processor that can access a serial port. The generic CP/M version of the *Editor* cannot be modified for use with the Apple because the size of the *Editor* program and the limited internal memory of the Apple preclude this.

If you purchased *Sci-Mate* for an Apple, Kaypro, other CP/M machine, or a DEC Rainbow, and you have replaced your CP/M micro with an IBM or IBM-compatible machine, you may request a format change to MS-DOS at the time you exchange your *Sci-Mate* software for Version 2.0. However, if you prefer to continue with your Apple, Kaypro, or DEC Rainbow version, be assured that we will continue to support you on Version 1.2. All users who own these machines, including those who use *Sci-Mate* on Vector, will be formally notified of their upgrade options upon the official release of Version 2.0.

A word of explanation concerning these policies may be in order. As new *Sci-Mate* programs are developed, the software becomes increasingly complex and includes more and more features; therefore, in the case of, say, Apple II—which has a small-capacity disk format—it becomes increasingly difficult to run. So there eventually comes a point of diminishing return beyond which it does not make sense to go, either for us or for the user. Artificially intelligent

systems require voluminous storage capacity. Indeed, most people who use their Apples regularly do not need to be told about these problems. They become self-evident as you demand more of the micro as a daily-use tool.

Although IBM has become the undisputed leader in worldwide sales of microcomputers, many CP/M machines are still being used and purchased in Europe. By continuing to offer *Sci-Mate* in the eight-inch CP/M version as well as the MS-DOS version, we will maintain our ability to compete in the European market as well as to present an alternative to users elsewhere who do not choose to conform to the IBM format. This would include Japanese micros. Moreover, we are currently conducting tests in Europe to determine the compatibility of *Sci-Mate* with two models gaining in popularity, the Apricot and the Olivetti. Preliminary results are encouraging. Contact *Sci-Mate* Customer Service for more information about *Sci-Mate's* compatibility with other machines.

We have also decided to offer the individual *Sci-Mate* components at a lower base price. In addition, discounts are available for academic and nonprofit institutions. And present *Sci-Mate* customers will be happy to learn about the substantial discount available to them if they purchase the new *Sci-Mate Editor* when upgrading to Version 2.0.

We are frequently asked about the use of *Sci-Mate* in multi-user environments, or set-ups in which individuals use terminals or microcomputers to connect to larger computers and to each other. In fact, we are currently testing the performance of *Sci-Mate* on a VAX minicomputer that has been equipped with microprocessor boards; this allows many users to access the system. A revised, lower price schedule has been created for purchasers of multiple copies and for institutions purchasing site licenses to install *Sci-Mate* on a multi-user system.

As I remarked earlier, more and more *Sci-Mate* users are using hard-disk systems like the IBM PC XT and the IBM

PC AT. Hard disks enable users to create very large databases and to search them quickly without the inconvenience of individual floppy disks. Products that offer speed and versatility of storage, such as hard disks, laser disks, and the Bernoulli Box, will influence the form that *Sci-Mate* and other software take in the months and years ahead. We will also be affected by the burgeoning CD-ROM technology.

Under investigation by the software products division is a *Sci-Mate* version for Apple's Macintosh. The staff is also examining new possibilities for the delivery of ISI data on diskettes for use with *Sci-Mate* and cooperative marketing and development projects.

Sci-Mate comes with on-screen help messages and three new separate manuals—one for each component. Each manual includes a tutorial section to guide the beginner, as well as reference chapters. The manuals can be purchased separately, with the cost credited toward the purchase of the software. We look forward to receiving your comments.

The new *Searcher* and *Manager* were demonstrated at the American Chemical Society meeting in Chicago from September 8 to 13 and at the Information Space '85 exhibition in Bournemouth, UK, from September 16 to 19. The entire *Sci-Mate Software System*, includ-

ing the new *Editor*, will be demonstrated at the American Society for Information Science meeting in Las Vegas, from October 20 to 24; at the Online '85 meeting in New York, from November 4 to 6; and at the International Online meeting in London, from December 3 to 5. If you have not yet seen *Sci-Mate*, stop by and meet the staff and see how the system works; let us show you how a paper prepared for one journal can be automatically converted to the style of another. As I said in the beginning of this essay, I will describe this module in more detail in the near future.

Sci-Mate user-group meetings are being planned for the fall in Philadelphia, New York, London, and elsewhere. For more information about *Sci-Mate* and these meetings, call the hotline at 800-523-4092 or (215) 386-0100. After business hours or on weekends, you may leave a recorded message. Readers in Europe can contact our UK office at 132 High Street, Uxbridge, Middlesex UB8 1DP, UK; telephone: 44-895-30085; or telex: 933693 UKISI.

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