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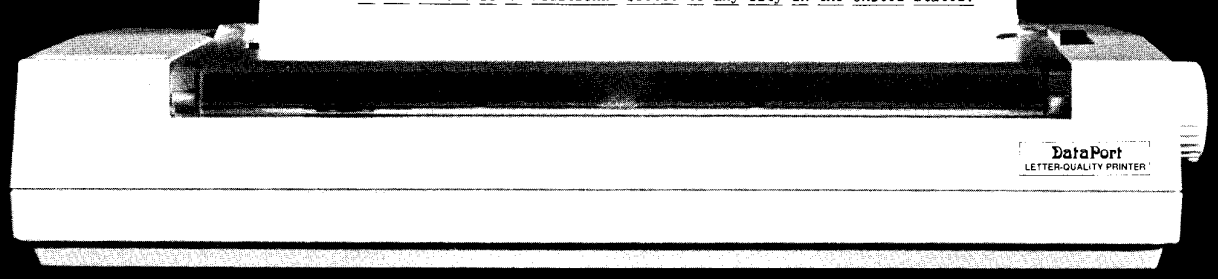

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PORTABLE 100
The magazine for Model 100 users

Editor
John P. Mello Jr.

Assistant to the Editor
Nancy L. Laite

Contributing Editors
Jake Commander, David Busch
Terry Kepner, Bill Louden
Bill Walters, Peter Stanwyck

Art Director
Paige Garland Parker

Advertising Production
Peter D. Koons

Production Consultant
Marjorie Strauss

Publisher
James S. Povec

Associate Publisher
Carl Cramer

Advertising Director
Peter K.J. Montross
(207) 236-4365
P.O. Box 250, 15 Elm Street
Camden, Maine 04843

Business Manager
James W. McBrian, Jr.

Office Manager
Nancy A. Wight

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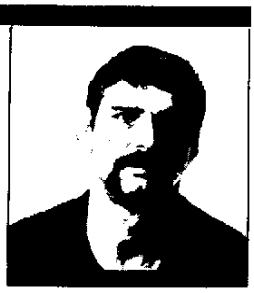
PREVIEW



JOHN P. MELLO JR.

FAREWELL TO A SISTER CROSSING THE BAR

Sunset and evening star,
And one clear call for me!
And may there be no moaning of the bar,
When I put out to sea,
—*Tennyson*, Crossing the Bar

Few things sadden an editor more than the passing of a magazine. This is doubly so when the magazine is as close a relative as *Color Computer* was to *Portable 100*.

Both magazines were born under the same roof at Computer Publishing Company before *Portable 100* became the mainstay of Computer Communications Inc. and *Color Computer* was sold to Ziff-Davis.

Kerry Leichtman, editor-in-chief of *Color Computer* and former editor of *Portable 100*, cut his teeth in computing, as did I, at *80 Micro*, a TRS-80 magazine formerly published by Wayne Green Inc. and currently published by CW Communications–Peterborough.

At the time, I was returning to "the world of work" after a stint of "freelancing" (a euphemism for unemployment), and Kerry was moving from a low-paying radio job to the high-tech arena. As writers, we had an interest in computers unmatched by our income.

Our exposure to computers at work, where a shortage of micros brought out the carnivore even among staff vegetarians, was never enough. We had to have one at home.

At the "shop," most editors sneered at the Color Computer. It had cassette storage, an awful keyboard, and a terrible display for word-processing. But almost every Friday, we'd maneuver to see who'd have the glorious good fortune to have custody of a Color Computer for the weekend. Most of the time, Kerry won those custody fights.

A first computer's like first love, there's an affinity there that's impossible to shake. Ask any Model I owner. Ask Kerry.

When *Color Computer* was at its height and neither one of us had to scramble for computers any more, Kerry had an ultra high-performance Model 2000 and sleek Model 4P in his office. But many times I'd visit him there and he'd be clicking away at a Color Computer.

When Kerry had the opportunity to start a magazine, he chose one aimed at the Color Computer market. The numbers were there to support his idea, but so was something else — heart.

Kerry shared his affinity for the Color Computer with the kind of magazine he gave Color Computer owners. *Color Computer* was one of the most attractive computer magazines published by anyone; its lineup of authors outstanding. If a Color Computer Hall of Fame is ever established, the first three inductees would probably be *Color Computer* mainstays Bill Barden, Jake Commander, and Dennis Kitsz.

Color Computer owners recognized a quality product when they saw it, and the magazine's subscription base and revenues swelled. But soon, too soon perhaps, the venture reflected the roller-coaster ride the computer industry in general seems to be on. While the magazine continued to attract subscribers, its advertising base began to whither.

The heart was there, but the numbers weren't. It's said the good die young. That certainly was the case with *Color Computer*.

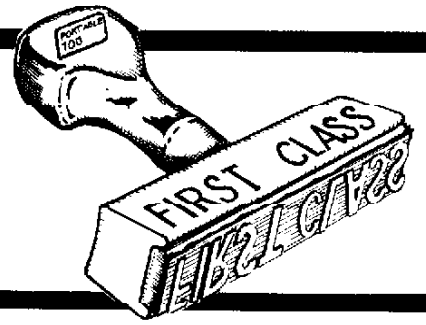
Just another casualty of the "shakeout." An interesting term, shakeout. It conveniently sidesteps sticky subjects like human misfortune and conjurs the image of a doleful shaggy dog ridding itself of some pesky fleas.

Tennyson wrote:

Twilight and evening bell,
And after that the dark!
And may there be no sadness of farewell,
When I embark;

If there are more *Color Computers* in store for the magazine industry, let's hope the only casualties are the magazines themselves and not the heart that goes into them. Only then can there be no sadness in farewells like this one. ◀

MAIL.100



Editor's Note. In addition to letters from our readers, we also include in Mail.100 letters from CompuServe and The Source. Those message writers are identified by their CompuServe (CIS ID) and Source (STC ID) identification numbers.

BULLET BUG

We've discovered a bug in the new Bullet software, and we're writing to let you know what to do to get rid of it.

If you save a file longer than 12K bytes, you won't be able to load it back into your computer. If your files are less than 12K bytes, the Bullet operates with no problems.

In order to eliminate this bug, we must replace the ROM inside your Bullet with a new version 2.1 ROM (a ROM is a Read Only Memory, which contains software for your Bullet). This is a simple procedure. The cover is removed from the Bullet, you unplug the old ROM and plug in the new ROM, then replace the cover. You may do the replacement yourself, or you may send your Bullet to us and we'll do it for you at no cost to you (except that you pay shipping to us).

Only version 2.0 of the software has this bug. To determine which version you have, go to BULLET.CO just as you normally do to use the Bullet, then type in TAPE and press enter. The version number of the software will be printed on your computer's display. If you have a version other than 2.0, you don't need to worry about this bug.

We regret the inconvenience this problem may have caused you. Please contact us and let us know whether you'd like us to send you a new version 2.1 ROM and installation instructions, or whether you wish to return your Bullet to us for installation.

Holmes Engineering Inc.
Murray, UT

STANWYCK STAMPEDE

I certainly enjoy your magazine and the format in which the material is presented. I'm a computer professional with 25 years in the business. I receive several *free* subscriptions to various industry publications, but yours is one of the few I'm willing to pay for. I even enjoy the typos and missing lines in the programs. I look on them as a challenge to my debugging skills.

Most of all, I want to congratulate you on Peter Stanwyck's End User column. It was a good opening. I hope he can continue to deliver the goods.

He seemed to take the scatter-gun approach and hit several sacred cows in a few column inches. I'll be most interested to see which of his prey will be allowed to die and which will have their wounds bound. I hope he doesn't turn out to be a sports hunter, shooting for shooting's sake. We have enough of them already.

William N. Carter, CSP
Managing Director
Congruent Software Inc.
San Francisco, CA

After reading two-thirds of the way through your June issue, I felt I'd reached the point of not having to purchase *Portable 100* again. This feeling was based on the theory that the magazine was so pedantic and self-centered that you wouldn't remain in the marketplace long enough to worry about.

But then you added a hooker: Peter Stanwyck. After reading his article, I realized I'd have to buy *Portable 100* just to continue reading him. You wouldn't consider a separate subscription just for him, would you?

Robert J. Rydeen
President
Unijoint International
Fremont, NH

GREAT TRAVEL COMPANION

I just wanted to add my voice to the resounding praise of the PG Design 32K memory expansion unit for the 100.

I recently traveled to Ireland with two of these units and found that between the resident 32K in the 100 and one of the extension units, I had enough memory to store all of my notes on daily activities and expenses plus the program I use while traveling. These include a calendar, calculator, and a conversion program.

In the second unit I had an itinerary program and an expense program. I was able to frequently change memory units without any ill effects. In effect, then, I had 96K of storage space at my disposal, thus eliminating the need to carry a cassette recorder.

The units weren't treated with any special care, with the possible exception of watching out not to expose them to any static electricity from my body. They were x-rayed in airports, bounced by baggage handles, and generally exposed to the usual adversities of travel. All came through with flying colors.

I'm satisfied with Peter Van Heusden's product. I can't wait to see what other things he's going to develop for Model 100 lovers.

C. Davey Utter
Venice, CA

TWO DEFEND CODEKEEPER

I'm responding to Roby Sherman's letter in the April issue (page 8) claiming the 100 has a flaw preventing proper implementation of IPLed password security programs. Actually, it's not a flaw in the machine but rather a property of the Basic interpreter that allows one to easily break out of a Basic IPL program. Machine-language programs, however, can't be defeated in this way.

Before executing each statement, Basic checks to see if break or control-c was pressed. Only after a Basic program starts running will the command POKE 63056,128 disable the interception of the break.

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On the other hand, machine-language programs aren't stopped by break or control-c on the 100. (The ASCII character 3 is simply read in.) Unless special programming techniques are used, reset will still cause a return to the menu from a machine-language program.

Any program can be stopped by performing a cold start on the 100. Although the cold start erases the RAM file directory, the information from the files remains stored in RAM and can be recovered by dumping RAM to cassette via a simple Basic program. Thus password lock protection in itself isn't sufficient to stop the determined and skilled from recovering files from the machine.

Richard J. Perry
Secure Systems Inc.
Blue Bell, PA

I was surprised to read the letter by R. Caley knocking Roby Sherman's Codekeeper. I'm a satisfied customer of this program and find it secure and worthwhile.

Mr. Caley showed us how to break through this code, but *only* if the machine is shut off while in Basic. The obvious answer is to simply shut off the 100 immediately after entering Codekeeper from the menu. Then there's absolutely no way of circumventing the code. Thus, Codekeeper does protect the 100 from being accessed.

As to the cost, to me it's worth the extra five dollars to have the additional benefits this program offers: sounding alarm, printing a warning along with your name and phone number on the panel each time an entry is tried, printing the date and time when somebody tries to enter your computer.

The only better program would be one that'd cause the 100 to shoot an anchor through the desk with a loud explosion when someone tries to steal it. Rather expensive, don't you think? Codekeeper will have to be the final answer.

Lee Ellis
Indio, CA

BONUS IN STEREO

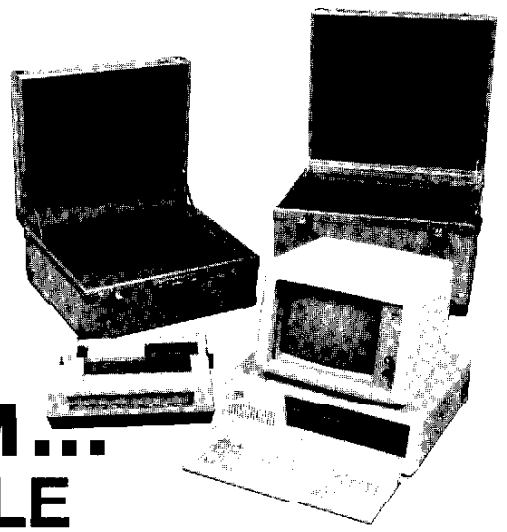
Your article in the June issue about using microcassette recorders with the 100 was certainly useful, but it didn't tell me anything new. I followed the directions provided by Paul Andreasen in the January 1984 issue (page 20), using an Olympus SW 77 stereo microcassette recorder. It works fine, and I have an extra benefit I hadn't bargained for.

Because I wasn't sure if I'd have problems with a stereo unit, I decided to solder resistors to both input channels and do input-output as if in mono. That, your readers should take note, does *not* work. The two channels interfere with one another when sending signals to the computer. After one output channel was disconnected, everything worked perfectly.

Now the extra benefit: Although I've had close to perfect performance storing and retrieving long files, there was one occasion when a file I had stored simply wouldn't load. I kept getting an abort. Then I realized I had an automatic backup. The other channel! I disconnected channel A and clipped the wire to Channel B and the file loaded successfully.

For this reason alone, I'd definitely recommend getting a stereo microcassette. The stereo model didn't cost significantly more than a good mono version.

Bob Ellis
address not given



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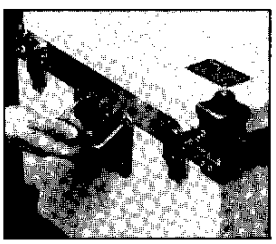

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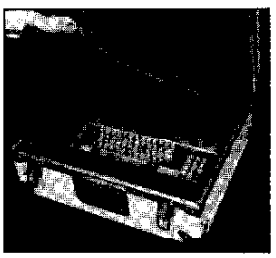

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GET TECHNICAL

Your April issue review of Portable Computer Support Group's DATA+ was good and quite correct. I've used DATA+, WRITE+, and SORT+ for some time and find them to be error-free and flexible.

In addition, the manuals provided are the best I've ever used for software. And when I did have a question, I called PCSG and was helped in a very courteous and efficient manner. They talked me through the problem and were very patient. It's rare today to find such friendly and willing people answering the phone.

On another matter, I must agree with some of your readers. I too find some of your articles of little technical use to users. I feel a computer magazine should be a primary source of both well-written technical articles on how to better use the computer and of advertising companies selling hardware and software to complement the computer.

Thank you for a good magazine. It gets better with each issue as you respond to readers' comments.

David DeWitt
Jaffrey, NH

NO VENEER HERE

Thank you for reviewing our handmade oak Model 100 carrying cases in the July feature spread (page 33). In correction, please note we make the cases from *solid* wood, not veneer, particle board, or plywood. Solid wood offers maximum protection and beauty.

Dean Reyburn
Reyburn Woodcraft
Sparta, MI

TIGHT FIT

I wasn't surprised to learn that one user couldn't fit his upgrade 8K RAM into the available socket of the 100 (May 1984). In order to get my PG Design chip seated properly, I had to gently bend back an adjacent capacitor. It's a tight fit.

There was no mention of this problem in the manufacturer's literature so perhaps it's a quirk with just some machines.

Raymond M. Pepi
New York, NY

EXPNS + CHANGE PROPOSED

I've discovered what I consider a significant bug in EXPNS+.

I own and use two other third-party software packages extensively. One is Scribe 3.0 by Chattanooga Systems and the other is The Time Machine by EVS Engineering. I've had a maddening, intermittent problem with both refusing to run for no apparent reason and giving bizarre error messages. On certain occasions, they'd run without incident, again for no apparent reason.

Investigation led to the fact these programs refused to run after EXPNS+ had been run, but would run after WRITE+ had run. I checked out the program listing for WRITE+ and EXPNS+ and learned that when exiting, WRITE+ sets MAXFILES=1, which is the Basic default in the 100 system. EXPNS+ sets MAXFILES=0 when exiting to Basic, a value that effectively blocks any program that needs to open a file from running.

I propose to change line 100 of EXPNS+ to read:
100 CLOSE:GOSUB57:MAXFILES=1:MENU

F.E. Rytell, Jr.
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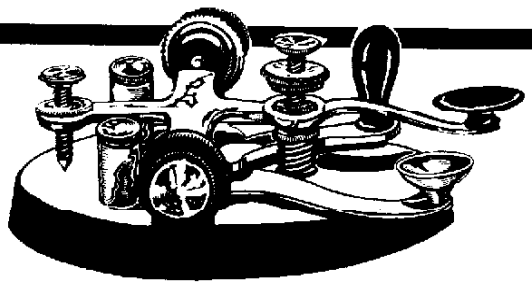
THE WIRE



MICROS SAFE IN THE AIR

"There hasn't been a single confirmed case of a portable electronic device in a passenger-carrying aircraft causing interference to [an] aircraft communications or navigation system in the past 20 years."

That's the view of Frank White, chairman of a panel studying the effects of portable computers on the electronic systems used by aircraft.

White's group, Special Committee 156, was created in September 1983 by the Radio Technical Commission for Aeronautics, an airlines industry advsory board, in the wake of the controversy over using portable computers on passenger aircraft (see *Portable 100*, January 1984, page 13).

In a July 24 memorandum suggesting "a way to solve the problem given to SC 156," White added:

"[O]ther than perhaps takeoff and landing, we do not have an identified safety problem. If we could nail down just one case where a passenger operated device caused interference, turning it off stopped the interference, and turning it back on caused the interference to resume...I would feel we had something to sink our teeth into. As it is, we are chasing a will-o-the-wisp."

"At the moment," White continued, "I am aware of no candidate device that I would suggest using as a possible one to cause enough interference to be even detectable, let alone deterioate aircraft communication or navigation performance."

White suggested his panel, composed of representatives of the aviation and computer industries, make three recommendations in its final report. He suggested:

- Airlines bar passengers from using portable electronic devices during takeoff and landing;

NEC Donates Portables to Five Universities. *NEC Home Electronics donated 100 of its 8201 notebook-sized computers to five universities in the United States. The schools receiving 20 8201s each were MIT, UCLA, The University of Illinois, The University of Utah, and The University of Maryland. Here Marion Black-Ruffin, NEC's manager for marketing services, presents an 8201 to staff members at MIT.*

EVERY DISK/VIDEO INTERFACE USER NEEDS THIS PROGRAM.

DISK-BUDDY manages your disk files with one keystroke!

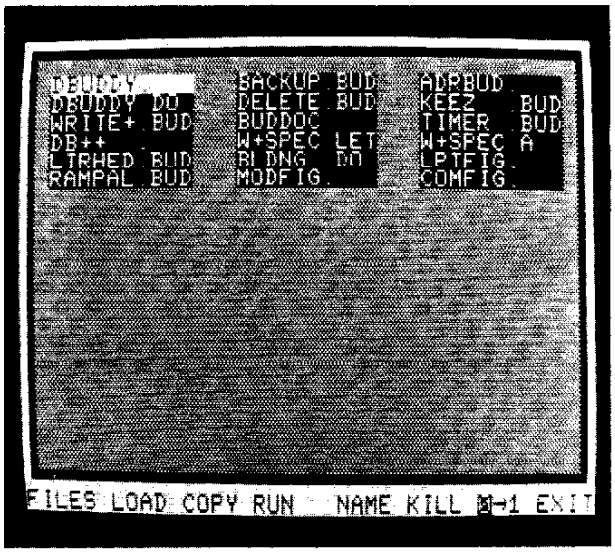
The DISK-BUDDY menu is like the M100 command menu except it works on disk files instead of RAM files.

Just position the cursor over the file of your choice and press the function key. It takes one keystroke to:

- **Display a disk directory of either drive**
- **Load a file or program from disk to RAM**
- **Run a program directly from disk**

With two keystrokes:

- **Delete a file from a disk (the second stroke is for safety)**
- **Send file of any length (up to the capacity of the disk) to serial port, printer, screen, cassette or another disk drive.**



A typical Disk-Buddy Menu. Note the function key labels on the command line.

DISK-BUDDY unlocks the power of the M100 operating system. Commands for computer and peripherals, stored on disk, can be sent at the touch of a button.

One touch can ready your printer for word processing, another sets it for BASIC listings.

Change function key configurations instantly. Keep a set of key functions for word processing, telecommunications, editing, programming, etc.

DISK-BUDDY IS A SOFTWARE BUNDLE!

Our package contains several programs, powerful utilities which could be sold separately.

RAM-Pal has many of the same powerful functions as DISK-BUDDY but manages RAM files.

Memory low? ADR.BUD dumps your current ADRS.DO and NOTE.DO files to disk, and optionally deletes them from RAM, with one key stroke, of course. Later, load and save them from the DISK-BUDDY menu; one key stroke each.

DISK-BUDDY works great with programs that use "spec" files and templates. Just keep your favorite models stored on disk. A key touch loads and saves it to RAM, another touch gets you into your application. Changing formats is just as simple: load the new template with a single keystroke.

DISK-BUDDY AND THE DISK-BUDDY BUNDLE, INCLUDING RAM-Pal, ADR.BUD, TIMER.BUD and other demonstration programs are shipped on disk with full instructions, plus information on interfacing your own programs with DISK-BUDDY. Turn your M100 into a powerful, friendly desk top system! Tips for driving your M100 are included.

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For TRS-80 Model 100, 24K RAM, DISK/VIDEO INTERFACE, WITH MONITOR, TV, OR LCD.

- SC 156 determine existing Federal Communications Commission radiation limits are safe in other than aviation bands; and
- SC 156 select a safe radiation limit for the primary bands used by aviation and ask the FCC to amend its present rules to add different radiation limits for those bands.

Those recommendations represent a better solution to the problem than revamping DO-119, the Radio Technical commission's existing guidelines on interference, White contended.

He said those guidelines were ignored by the airlines and manufacturers of portable devices. Any revamping of the guidelines, he argued, would meet a similar fate.

It is expected SC 156 will discuss White's recommendations at its next meeting scheduled for September 18-19.

MAGAZINE SHAKEOUT

Since early this year, analysts have predicted 1984 would be a shakeout year for computer magazines. Recent developments appear to be proving the doomsayers correct:

Softalk ceased publication of its *St. Game*; Atari canned its *Atari Connection*, and Radio Shack killed its *Microcomputer News*.

Hayden Publishing stopped printing *Personal Software*. Publisher Robert Lydon reportedly explained the magazine's circulation was fine but its advertising base was eroding. One figure cited by Lydon was the number of software companies operating when Hayden axed the magazine. In the spring of 1983, Lydon said, 4000 software companies were in business; a year later, 1000 were left.

Not dead, but limping is *List* magazine. Publisher Ted Leonsis has cut back that monthly's frequency to twice a year. There simply aren't enough software companies to make *List* viable, he reportedly said.

A PC jr. magazine, aptly named *jr.*, stopped publishing with its September issue. The magazine, published by CW Peterborough in Peterborough, NH, premiered in May on the heels of IBM's introduction of jr. The decision to kill the periodical came the day after IBM held a press conference in New York to announce enhancements aimed at pumping some life into sagging jr. sales.

Color Computer Magazine also became history, as publishing giant Ziff-Davis terminated the book because of shrinking advertising. The move occurred two weeks after one of the founders of Ziff's consumer and electronics magazine division, Larry Sporn, was given a leave of absence from the company and replaced by Ken Koppel as president of the division.

KYOCERA PLANT IN CANADA

Flushed with the success of the Model 100 and its sister machines, the Olivetti M10 and NEC 8201, Kyocera International Inc. announced plans to build a plant employing some 2000 people in Vancouver, British Columbia, Canada.

According to a report by United Press International, Kyocera, manufacturer of the Model 100, has bought a 42-acre site from the Vancouver School District and plans to build a "campus-like" plant that will produce a wide range of products.

Bill Everitt, Kyocera's vice president for corporate communications, told UPI the Vancouver plant will be used to expand production and augment the company's production line. "Our products in Vancouver may change on a month's notice, depending on market conditions," Everitt said.

Kyocera was founded in 1959. It had international sales of $1.1 billion in its most recent fiscal year. According to the company, it supplies 70 percent of the world's market for "fine" ceramic materials used in packaging electronic devices and integrated circuits.

TANDY NET SALES INCREASE

Tandy Corporation showed a 1 percent increase in net sales in its 1984 fiscal year ending June 30. Tandy's net sales for fiscal 1984 were $281.8 million, while net sales for fiscal 1983 were $278.5 million.

Net income per share of Tandy stock also increased from $2.67 to $2.75.

During the same period, Tandy's net sales increased 11 percent, from $2.7 billion to $2.4 billion.

SOURCE CUTS PRICES

The Source, an information network for personal computer users and a subsidiary of The Reader's Digest Association, has reduced its registration fee from $100 to $49.95. "The expanding market of personal computer owners has made it possible for us to lower the price of The Source," Vice President for Sales and Marketing Anne Filippone said in a statement. "Research indicates that the demand for online services is about to explode. We believe The Source is ideally positioned, both through pricing and product content, to take advantage of that explosion."

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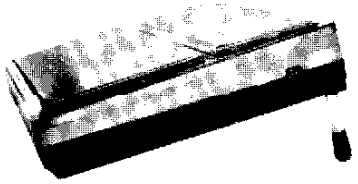

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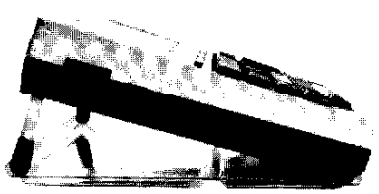

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HOLMES ACQUSITION SNUFFED

Acquisition negotiations between Holmes Engineering Inc., makers of wafer-tape drives for the Model 100, and Com Tel Inc. have been "delayed," but an insider at Holmes said the deal "is history."

In a report released by Com Tel, B. L. Frost, vice president, said the planned acquisition of Holmes had been delayed pending further negotiations between the companies. "We are delighted, however," Frost added, "that as a result of Com Tel's relationship as Holmes Engineering's sole supplier of circuit board assemblies, we continue to profit from Holmes' growing sales."

But an insider at Holmes said privately the deal with Com Tel was off and Holmes was negotiating with another company "with whom a merger would be far more advantageous to both organizations."

Com Tel, located in Salt Lake City, UT, is a 15-year-old company specializing in the design and manufacture of precision wound microscopic coils for the computer industry.

SHOOTING MICROS

In late summer, an artificial intelligence conference was held at Rensselaerville Institute near Albany, NY. The event inspired Doug Miller, in a humorous column distributed by United Press International, to question if the theme of the gathering, "Artificial Intelligence: Are We Being Outmarted?," addressed the "real" issue needing treatment by AI experts.

Along with the innovations in computer technology, Miller noted, come reports of a dark human reaction, a homicidal response to machines dubbed "computer kill syndrome."

Miller wrote:

"*Science Digest* magazine says five computer shootings have been recorded, along with a couple of arsons and screwdriver stabbings....

"One man shot his computer because it refused time and again to run his software. Another opened fire on his machine because he thought he saw rats pouring out of it.

"And the syndrome knows no sex barriers. One woman bashed her uncooperative Apple with the heel of her shoe.

"Considering those examples of the impact of intelligent machines on humans, it begins to look like the questions set to be pursued at Rensselaerville may already have been answered.

"Instead of discussing how computers may be outsmarting us, maybe we ought to be finding out where to aim at the buggers to take them out with a single shot." ◀

WHAT'S A NERD?

If the popularity of microcomputers has done one thing, it is legitimize the nerd's role in popular culture.

What exactly is a nerd?

In a question and answer session with Hollywood reporter Vernon Scott, Robert Carradine and Anthony Edwards, the stars of the 20th Century Fox film *Revenge of the Nerds* gave their views on this burning cultural issue.

Q. What are a nerd's most common physical traits?
A. A large Adam's apple, big feet, zits, and spectacles.
Q. Other distinguishing features?
A. Heavy metal orthodontia.
Q. What is a nerd's favorite pasttime?
A. Working with a home computer.
Q. In what vehicle are nerds most often seen?
A. Public transportation.
Q. Nerd's dress code?
A. J.C. Penney white T-shirt and jeans three inches short.
Q. Favorite accessory?
A. Plastic pen pocket-protector.
Q. Shoes
A. Hush Puppies and always white socks.
Q. Favorite Groups?
A. Devo and Elvis Costello.
Q. Food?
A. Twinkies, peanut butter and jelly on potato chips
Q. Favorite pin-up for dorm room?
A. Poster of new TRS-80 Radio Shack computer.
Q. Spectator sport?
A. Floppy disk retrieval.
Q. Jewelry?
A. Computerized wrist watch.
Q. Social involvment?
A. Running the record player at the school prom.
Q. Closest pals?
A. School faculty.
Q. Greatest tragedy?
A. B-minus grade on report card

"Nerds have always been with us, " Carradine told Scott. "Clark Kent. Albert Einstein. Gilligan of 'Gilligan's Island' and Lyndon Baines Johnson." ◀

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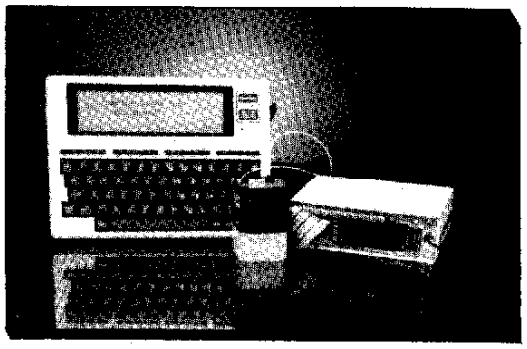

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NEW PRODUCTS

TWO 100 AIDS THAT ENHANCE AND ASSEMBLE

Telpro, from Micro Demon Inc., adds features to the Model 100's Telcom program.

When using Telpro, you can kill files, access the time, set-reset an alarm, read text files, list Basic programs, upload Basic programs, and append data to the end of a text file.

If combined with Pro Aid, you have Telpro's features with Pro Aid's function keys capability. And when you exit from Telcom, Telpro turns both itself and Pro Aid off so no cold starts occur by accident.

Telpro sells for $49.95 plus $1.50 shipping and handling.

ASM is a powerful 8085 assembler, also from Micro Demon. It only requires 3.2K of memory and can assemble a thousand lines of source code in a few seconds.

ASM is written in machine language, but comes with a one-line Basic interface making it easy to load and run. Producing an object file (.CO extension) from the source file, it doesn't place the code directly into memory.

Some features include: multiple statements on a line, source files with any mixture of upper- and lowercase characters, and customization of mnemonics. It's completely documented. It sells for $69.95.

Both Telpro and ASM are available from Micro Demon Inc., P.O. Box 50162, Columbia, SC 29250. Interested persons can also call 803-733-0980 24 hours a day.

SMALL AND FRIENDLY PORTABLE DISK DRIVE

A furry animal has lent its name to a new disk drive for the 100. Chipmunk, from Holmes Engineering, comes ready to plug into the computer. No software installation is required. Disk Basic and a powerful menu-driven operating system are included.

Power is provided by built-in rechargeable batteries or an AC adapter. Because of its small size, Chipmunk fits easily into a briefcase, along with the 100. Additional drives may be plugged into the Chipmunk to increase storage capacity.

The Chipmunk with connecting cables, manuals, and disk, retails for less than $550. Contact Holmes Engineering, 5175 Greenpine Drive, Murray, UT 84123, 801-261-5652, for more information.

BOXED MEMORY ULTIMATE UPGRADE FOR EXPANSION

Add on boxes of RAM for the Model 100 are being offered by D. Collier, EE/CS Consultant, P.O. Box 437, Tonopah, AZ 85354. Each outboard box can hold up to 384K (12 32K-chips). Software provided with the boxes allows switching between 64K banks of memory, ROM enable and disable routines, and input from disk or cassette.

KEYBOARD SPEED HELP FOR SLUGGISH FINGERS

QuickType is a boon for those who don't type fast. . . ." boasts Arnie Kanush, President of PocketInfo Corp.

The program lets users define abbreviations one to three characters long for commonly used words, phrases, sentences, and paragraphs, thus providing a personal shorthand. The computer stores as many abbreviations as needed, reducing the number of keystrokes necessary to type a document.

QuickType comes on cassette tape with a written user manual and sells for $29.95. Inquiries should be sent to PocketInfo Corp., P.O. Box 152, Beaverton, OR 97075, 503-649-8145.

DOWN TO EARTH STAR GAZING WITH NAVIGATION PAC

Computer navigation for the 100 has never been easier. Celestial Software's new Navigation Pac Plus has built-in almanac data for the sun and 57 stars from 1983 until the year 2000.

Some of the eight programs included are: sun and star reduction (with almanac), sight reduction (all bodies), and star identification. Complete with instruction manual, Navigation Pac Plus costs $39.95. Include $2 for shipping and mail to Celestial Software, 3010 Warrington Ave., Lakeland, FL 33803, 813-686-3311.

CAR-TO-OFFICE COMMUNICATIONS VIA PORTABLES

An interface has been developed to enable users of cellular radios to send and receive data in their cars by using a portable computer. Known as The Bridge, manufacturer Spectrum Cellular promises the interface's availability by the fourth quarter of 1984.

"It's the same concept as using a telephone modem, but instead of phone lines, you use cellular air waves to send or receive data," states Spectrum President Dana Verrill. "Anyone with a cellular radio and portable computer with an RS-232 port can install The Bridge in their cars and be in constant. . .communications with their office."

Spectrum Cellular is located in Dallas, TX. For more information contact 214-733-4512.

Not only a spreadsheet, but a program generator as well.
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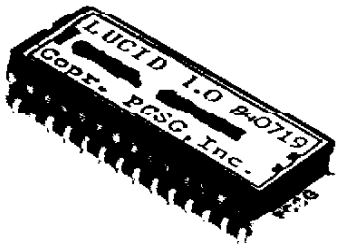

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BUSCH LEAGUE

DAVID BUSCH

CREATE AND SAVE YOUR FAVORITE SCREENS WITH SCREEN DESIGNER

Program generators are complex pieces of software. So far in this series we've tried to introduce the concepts behind building a program from scratch with Basic.

You've seen how to load ASCII program files, manipulate them, modify them, and write them out as new programs.

You've also learned how to create new program lines from scratch, using your own specifications.

MORE POWER. Now we're ready for a more powerful program-generating tool: Screen Designer, a program allowing you to "draw" instructional screens on your Model 100, press a key, and have the computer write a program to reproduce that screen.

The result can be merged with programs of your own, saving you quite a bit of coding time. In fact, Screen Designer wrote its own introductory screen.

To use Screen Designer, move the cursor (a plus sign) around the screen, using the arrow keys.

Pressing shift and an arrow will move the cursor to the edge of the screen. Shift-left arrow will move the cursor to the far left of the screen. Shift-down arrow will keep the cursor in the same column, but move it to the bottom of the Model 100 screen.

Pressing enter will move you down to the start of the next line.

Alphanumeric or graphics characters are typed in normally.

When you finish designing the screen, press escape. The Model 100 will PEEK screen memory to see your display and write a program to reproduce that screen.

Sounds simple, right? I wish it had been that easy to program!

TWO MODULES. Screen Designer consists of two modules. Starting at line 270, you may draw on the screen. The Model 100 waits for you to press a key, and stores the key value in variable A$.

If A$ was escape, the program branches to the screen reading routine to be explained later. If A$ was one of the unshifted arrow keys, CHR$(27) through CHR$(31), the program branches to one of four subroutines which update the position of the cursor.

We use PRINT@ to print the cursor at a location determined by the variable PLACE. Whenever the right arrow key is pressed, then PLACE becomes PLACE + 1. If the left arrow key is pressed, then PLACE is PLACE − 1.

Hitting the down arrow will update PLACE to PLACE plus 40 (in order to move the cursor down a row).

The up arrow key will make PLACE equal to (you guessed it) PLACE minus 40.

At no time is PLACE allowed to become more than 319 or less than zero, which would place the cursor outside the screen.

When the shifted arrow keys are pressed, we have to do a bit of calculating to figure where PLACE must be. For example, if shift-left arrow is pressed (line 330), we calculate which row the cursor is in, and make PLACE equal to the first position in that row.

Anytime the cursor moves we print a space, SP$, in its old location, thereby "erasing" the cursor. When other characters are printed to the screen, the old character is not erased. Otherwise, it would be rather difficult to build a screen design.

PEEK AND WRITE. Don't be lulled into complacency if you have followed the program so far. It gets better. Once escape is pressed, the program branches to line 670, where we PEEK the screen and write program lines.

All the lines we write will be stored in a string array, PROGRAM$(n). A variable, COUNTER, tracks which element in PROGRAM$(n) is being used. Generally, the first line of our finished program will be in PROGRAM$(1), the second line in PROGRAM$(2), and so forth.

Each program line will consist of a line number, NUMBER. This variable is upped each time we start a new line, by adding INCRMENT to it. INCRMENT is defined as 10, but you may change this if you wish.

When we have each new NUMBER, it is changed to a string representation, in line 1000, and a space added to separate the line number from the program statement.

NESTED LOOPS. Reading the screen starts in line 710, with the first of some impossibly nested For-Next loops.

The outer loop counts off N from zero to 319, in steps of 40, so N will equal each position starting a row. That is, the first time through the outer loop, N will equal zero. The second time, it will equal 39, and so forth.

An inner loop counts off N1 from N to N plus 39, so N1 will equal each of the screen positions in a single row. We nest the loops in this manner, so we can treat each screen line as an individual entity.

The program PEEKs screen memory for each location in line 780. It also

looks for where the first non-space character on a screen line is and where the last non-space character is printed.

These locations are stored in BFLAG and EFLAG. Thus the program knows how far to TAB to print the first non-space character and where to put the closing quotation mark after the last one. That means you get a line like 10 below, rather than 20:

```
10 PRINT TAB(8)"HELLO!"
20 PRINT"    HELLO"
```

Nifty, eh? The TAB part is assembled in line 880. We take the middle portion of a string representation of BFLAG, starting at position 2, in order to cut off the leading space. The characters on the line are added and a quote placed at the position pointed to by EFLAG.

NEW PROGRAM. Our new program starts off with a line that clears the screen (assembled in line 680) and finishes with an INKEY$ loop that keeps the image on the screen until we press a key. The finished program is written to a RAM file starting in line 1020. Before writing the file, the program makes a check to see that there are no lines with PRINT TAB(0). While TAB(0) won't hurt anything, it really isn't needed. If any are found, they are deleted in line 1060.

You may load the finished .DO file, merge it with your programs, or save it as a .BA file. ◀

```
 10 '      ***************************
 20 '      *                         *
 30 '      *    Screen Designer      *
 40 '      *                         *
 50 '      ***************************
 60 '
 70 CLEAR 1000
 80 DEFINTA-Y
 90 DIM PROGRAM$(40)
100 CLS
110 PRINT TAB(10)"Screen Designer "
120 PRINT
130 PRINT TAB(3)"Draw on screen using
     arrow keys to "
140 PRINT TAB(3)"move cursor.
     Letters, numbers, & "
150 PRINT TAB(3)"graphics can be
     written.  Shift "
160 PRINT TAB(3)"plus arrow moves to
     edge. "
170 PRINT TAB(8)"== HIT ANY KEY ==";
180 A$=INKEY$
     : IF A$=""GOTO 180
190 INCRMENT=10
200 B=0
     : E=320
210 COUNTER=1
     : PLACE=0
220 C=43
     : SP$=CHR$(32)
230 LINE INPUT "ENTER FILE NAME:  ";F$
240 CLS
```


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```
250 IF F$="" THEN F$="TEST.DO"
260 PLACE=B
270 A$=INKEY$
     : IF A$=""GOTO 270
280 IF A$=CHR$(27) THEN PRINT @PLACE,
    SP$;
     : GOTO 670
290 IF A$=CHR$(30) THEN 420
300 IF A$=CHR$(31) THEN 490
310 IF A$=CHR$(28) THEN 550
320 IF A$=CHR$(29) THEN 610
330 IF A$=CHR$(1) THEN PRINT @PLACE,
    SP$;
     : PLACE=(INT(PLACE/40)*40)
     : GOTO 450
340 IF A$=CHR$(6) THEN PRINT @PLACE,
    SP$;
     : PLACE=INT(PLACE/40)*40+39
     : GOTO 450
350 IF A$=CHR$(20) THEN PRINT @PLACE,
    SP$;
     : PLACE=PLACE MOD 40
     : GOTO 450
360 IF A$=CHR$(2) THEN PRINT @PLACE,
    SP$;
     : PLACE=PLACE MOD 40+280
     : GOTO 450
370 IF A$=CHR$(13) THEN PRINT @PLACE,
    SP$;
     : P=(INT(PLACE/40)*40)+40
     : IF P<R THEN PLACE=P
     : GOTO 450
    ELSE GOTO 450
380 A=ASC(A$)
390 PRINT @PLACE,CHR$(A);
400 IF PLACE+1<E THEN PLACE=PLACE+1
     : PRINT @PLACE,CHR$(C);
410 GOTO 270
420 IF PLACE-40<B THEN 270
430 PRINT @PLACE,SP$;
440 PLACE=PLACE-40
450 IF PLACE=319 THEN PLACE=318
460 PRINT @PLACE,CHR$(C);
470 C=43
480 GOTO 270
490 IF PLACE+40>E THEN 270
500 PRINT @PLACE,SP$;
510 PLACE=PLACE+40
520 PRINT @PLACE,CHR$(C)
530 C=43
540 GOTO 270
550 IF PLACE+1>E THEN 270
560 PRINT @PLACE,SP$;
570 PLACE=PLACE+1
580 PRINT @PLACE,CHR$(C);
590 C=43
600 GOTO 270
610 IF PLACE-1<0 THEN 270
620 PRINT @PLACE,SP$:
630 PLACE=PLACE-1
640 PRINT @PLACE,CHR$(C);
```


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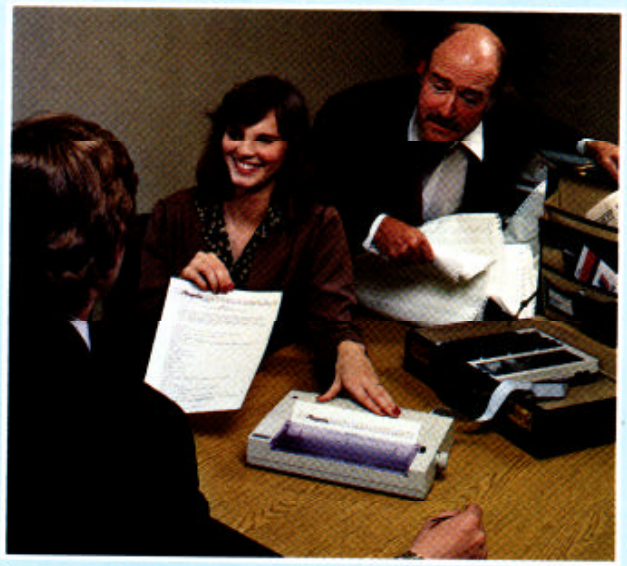

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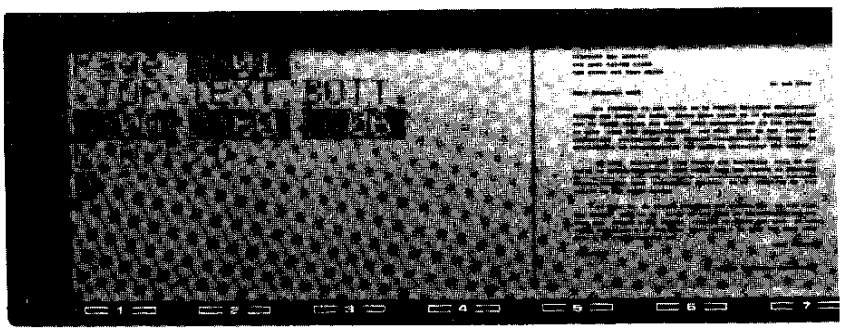

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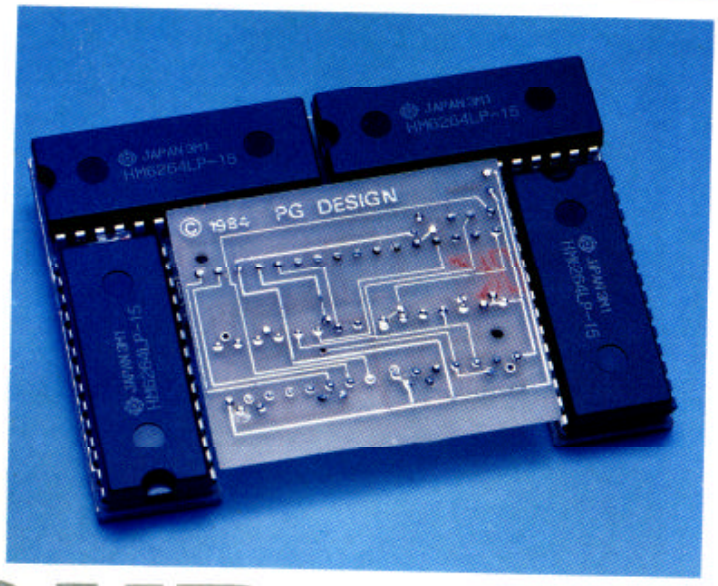
Circle No. 15 on Reader Service Card

32K RAM CHIPS FOR YOUR MODEL 100



- **Expand your (8K, 16K, 24K, or 32K) Model 100** to an additional 32K.
- **Store two 32K programs** without having to reload.
- **Each 32K is bank selectable** with a single line **BASIC** program (programs may not transfer information between banks).
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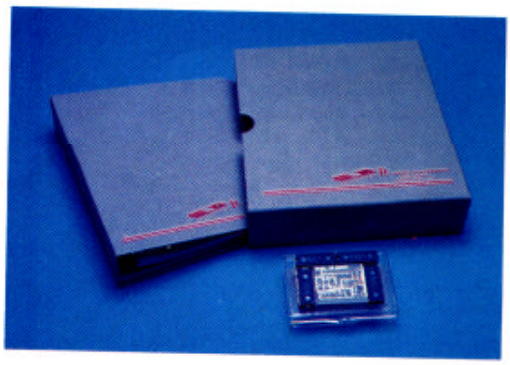

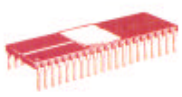

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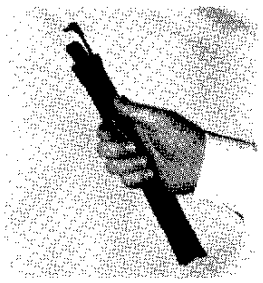
Circle No. 16 on Reader Service Card

```
650 C=43
660 GOTO 270
670 GOSUB 980
680 PROGRAM$(COUNTER)=PROGRA
    M$(COUNTER)+"CLS"
690 NUMBER=NUMBER+INCRMENT
700 COUNTER=COUNTER+1
710 FOR N=0 TO 319 STEP 40
720 BFLAG=0
730 EFLAG=0
740 N3=0
750 PR$=""
760 FOR N1=N TO N+39
770 N3=N3+1
780 T=PEEK(N1+65024)
790 PRINT @N1,CHR$(239);
800 IF BFLAG>0 THEN 820
810 IF T<>32 THEN BFLAG=N3
    : EFLAG=N3
    ELSE 840
820 PR$=PR$+CHR$(T)
830 IF T<>32 THEN EFLAG=N3
840 NEXT N1
850 IF RIGHT$(PR$,1)=SP$ THEN PR$=
    LEFT$(PR$,LEN(PR$)-1)
860 IF EFLAG=40 THEN L$=":"
    ELSE L$=""
870 IF BFLAG=0 THEN 900
880 PROGRAM$(COUNTER)=STR$(NUMBER)+"
    PRINT TAB("+MID$(STR$(BFLAG-1),
    2)+")"+CHR$(34)+MID$(PR$,1,
    EFLAG-(BFLAG-2))+CHR$(34)+L$
890 GOTO 910
900 PROGRAM$(COUNTER)=STR$(NUMBER)+"
    PRINT"
910 COUNTER=COUNTER+1
920 NUMBER=NUMBER+INCRMENT
930 NEXT N
940 PROGRAM$(COUNTER-1)=PROG
    RAM$(COUNTER-1)+";"
950 GOSUB 980
960 PROGRAM$(COUNTER)=PROGRA
    M$(COUNTER)+" "+"A$=INKEY$:IF A$=
    "+CHR$(34)+CHR$(34)+" G
    OTO"+STR$(NUMBER)
970 GOTO 1020
980 NUMBER=NUMBER+INCRMENT
990 COUNTER=COUNTER+1
1000 PROGRAM$(COUNTER)=STR$(NUMBER)+"
     "
1010 RETURN
1020 OPEN F$ FOR OUTPUT AS 1
1030 FOR N=1 TO COUNTER
1040 I=INSTR(PROGRAM$(N),"TAB(0)")
1050 IF I=0GOTO 1070
1060 PROGRAM$(N)=LEFT$(PROGRAM$(N),
     I-1)+MID$(PROGRAM$(N),I+6)
1070 PRINT #1,PROGRAM$(N)
1080 PRINT PROGRAM$(N)
1090 NEXT N
1100 CLOSE 1
1110 CLS
1120 PRINT TAB(10)"Do it once more?"
1130 PRINT TAB(15)"(Y/N)"
1140 A$=INKEY$
     : IF A$=""GOTO 1140
1150 IF A$="Y" OR A$="y" THEN RUN
     ELSE CLS
```


BE MORE PORTABLE

"The **New** WORKSTATION-100 now adds POWER—100"

POWERFUL



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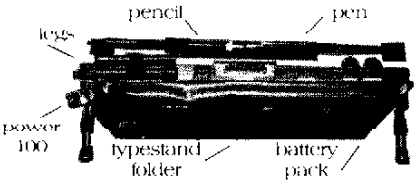

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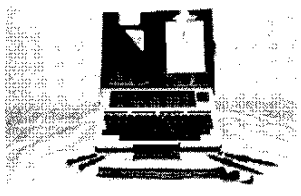

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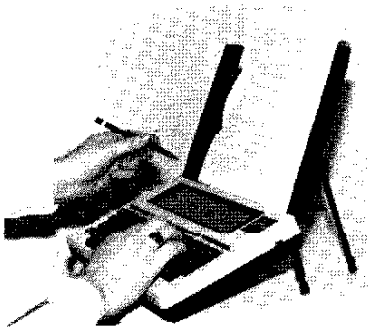

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PORTABLE COMMANDER

JAKE COMMANDER

IF YOU ENJOY YOUR JOB, YOU NEVER WORK A DAY IN YOUR LIFE

One of the most notable and enjoyable benefits the Model 100 gives me is working at home. As someone that's endured the rigors of nine to five existence in both factory and office, I appreciate this freedom more than any other.

But it's not all clover. For those of you thinking of taking your Model 100 and earning a living with it from your abode, I offer these observations.

First, let me assure you that it's possible. Just as a typewriter provides bread and butter for a writer, the Model 100 can do the same for either a writer or a programer.

Even if the target machine's Basic dialect differs from the 100's, most algorithms can be written, tested, and debugged on the 100 and transferred. Using CompuServe, it's even possible to write in languages other than Basic (although your overhead is likely to increase).

CREATIVE FREEDOM. The freedom of creativity is one of the luxuries I relish most. I suffer no distractions. No pressures from colleagues to alter my schedule or hop from one project to another. No management politics or pandering to the boss. My boss is me and if I'm lackadaisical, my conscience will badger me till I knuckle down.

Your hours can be determined by personal requirements rather than deferring to Mr. Average's schedule of nine till five.

Obviously, for survival's sake, there has to be some overlap with normal working hours. There's no use delivering a manuscript to the post office at 11 o' clock at night. Neither is it useful sending material via modem if nobody is there to receive it.

This freedom can create problems, though. Sometimes a project (especially a typical programming one) can go on until three or four in the morning for weeks at a time. This plays havoc with any kind of discipline you're adhering to.

Thus the problem of time management rears its ugly head. You err on the side of work and suddenly you're a workaholic. I'm no fan of work for work's sake, but I've found this happening to me simply because working from home has become such an enjoyable pastime.

SELF-DISCIPLINE. Considerable self-discipline has to be applied. Otherwise, the fridge empties, the garbage builds up, you forget friends' names, and you realize you've become a single-track automaton with one aim in life — to finish that last project.

More times than I care to admit, I've had to abandon a project within 80 or 90 percent of its completion merely to regain my sanity and return some balance to my existence.

To be fair, this rarely happens in writing for magazines, but it happens often when programing; it devours time and leaves you wondering what happened to the daylight.

Another thing to be aware of (as in any business) is administration. This includes researching markets, acquiring work, and chasing payments. Someone has to do all this and if it's you, then your productivity is compromised — especially if you have to keep answering the telephone.

GNAWING CURIOSITY. Ignore it and you may be throwing away work. Ignore it and you're leaving yourself with an insatiable curiosity. (Later, when you give in to the ringing beast, a pricked conscience will prompt you to cover up your trail with white lies.)

The phone has an incredible knack of ringing just as you get up to speed. I can almost guarantee the scenario: I open a text file, write a paragraph, feel another three or four ready to pour into the keyboard, start the second... and of course the phone leaps out of its cradle.

Naturally it's important; naturally the conversation continues for half an hour; and naturally my three or four paragraphs disappear back to where they came from. Amusingly enough, while writing this piece, I had the curious experience of explaining to a caller that they'd interrupted me writing a paragraph about being interrupted by phone calls.

SOLUTION. My only successful solution to this problem has been to have someone else deal with the phone, the bills, and the correspondence; in short, the administration. In conjunction with enforced breaks, my own work schedule has become entirely reasonable.

On the positive side of the coin, when you finish a project and have no anxieties about what the next one is, you may be free to take a four-day weekend. (Although the temptation may still be there to spend the time curled up with a book researching the next project — in other words, working).

Well, despite the niggles, it beats working for a living. As a truck driving philosopher once explained to me, "If you enjoy your job, you never do a day's work in your life." ◀

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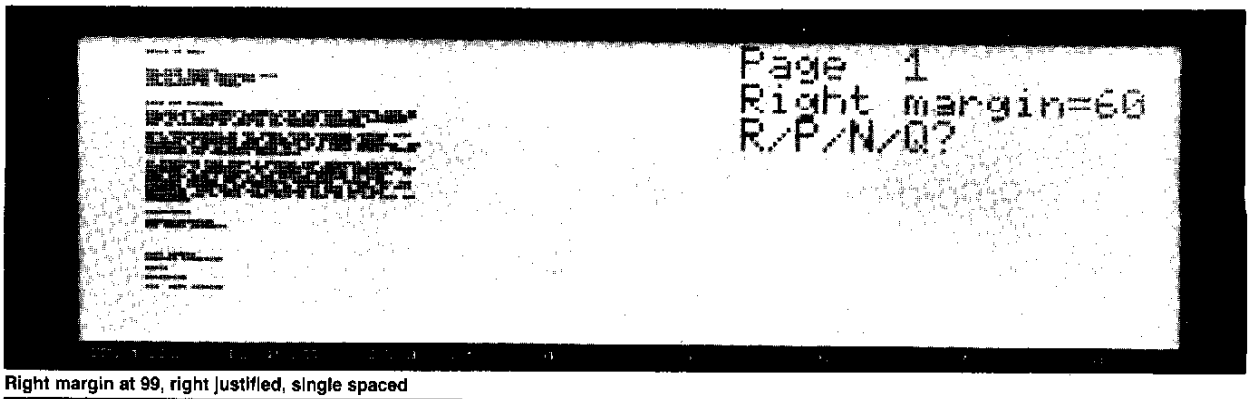
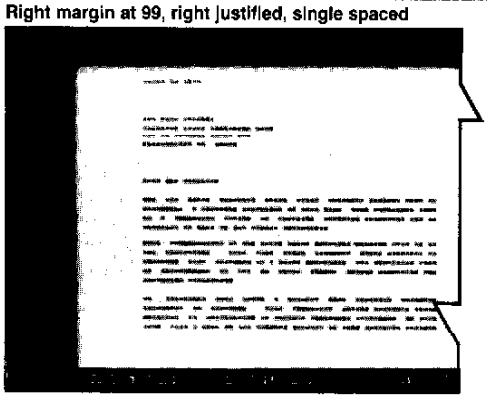
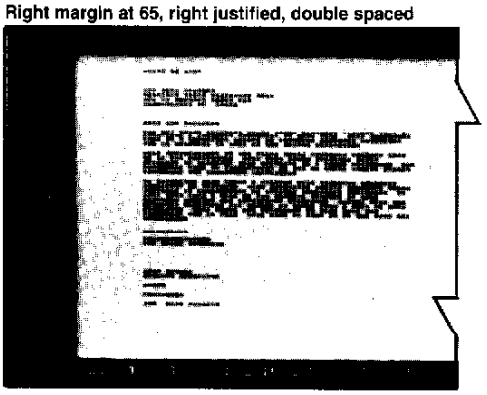


Right margin at 99, right justified, single spaced



Right margin at 65, right justified, double spaced



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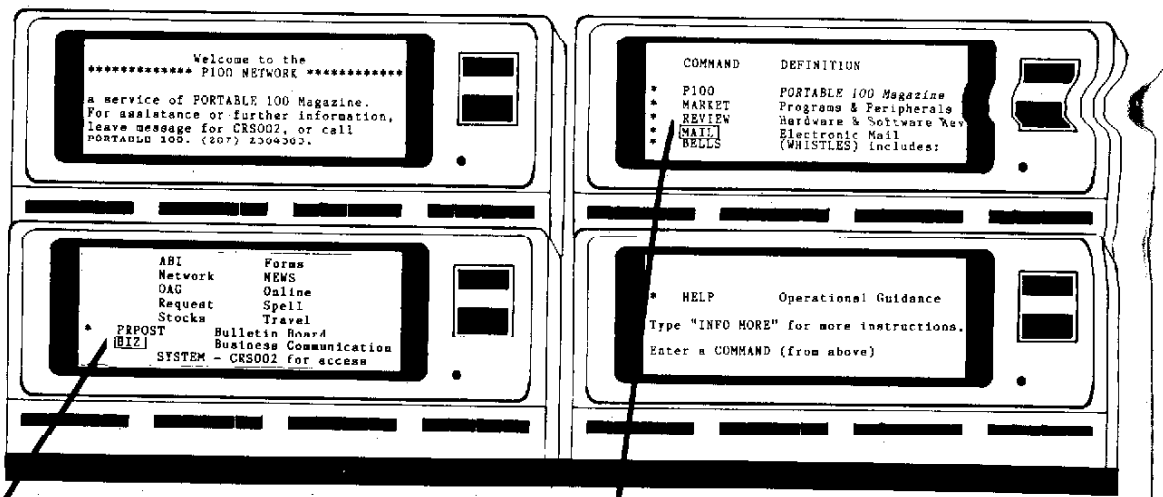

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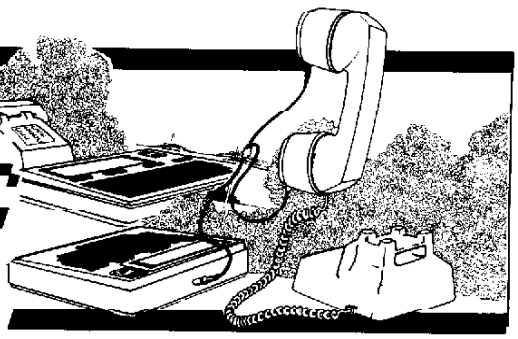


BILL LOUDEN

DELPHI SYSTEM FALLS SHORT OF BETTERING COMPETITORS

I recently had the opportunity to view a new videotex service called Delphi. Based in Boston, Delphi is attempting to offer the same array of services as CompuServe or The Source but falls far short of the mark.

Delphi is a prompt-driven service. While CompuServe and The Source are considered "menu" services, Delphi displays prompts (MAIN>,MAIL>, GAMES>, and so forth) to let you know what you are using.

PROMPT-DRIVEN. A prompt-driven service is actually a good design idea; it is less tedious than repetitive menus and more useable than a strict command-mode service.

In addition, if you forget how to respond to a prompt on Delphi, you may type "?" for a list of valid responses.

When you use Delphi, the first prompt you see is "MAIN>." By entering "?" you would see the options in exhibit 1.

From the main menu the offerings are standard for a videotex service: games, electronic mail, bulletin boards, news, and travel. But many of the choices suffer from being too "cutesy." What in the world is "Informania" or "Writers-Corner" anyway? Before I dared explore those areas, I decided to examine more familiar ground.

I decided to look at The Official Airline Guide. I accidently typed TTRAVEL. After correcting my mistake and pressing enter, Delphi responded, "I don't understand the term TTRAVEL in this context."

My screen still showed TRAVEL. I knew it was going to be a long day.

MAIN MENU:
BULLETIN-BOARDS
LIBRARY CONFERENCE
MAIL
DELPHI-ORACLE
NEWS
EXIT
ONLINE-MARKETS
FINANCIAL-SERVICES
PROFILE
GAMES
SCHEDULER
HELP
TRAVEL
INFOMANIA
WRITERS-CORNER

Exhibit 1. Main Menu.

NO BACKSPACE. Delphi does not recognize a backspace to correct input errors. If you use Delphi, you had better be a perfect typist. Fortunately, most Delphi commands can be abbrevieated to three letters. I tried again, entering TRA carefully and pressing enter.

TRAVEL MENU:
TRAVEL-LIBRARY
BULLETIN-BOARDS
ITINERARY-PLANNING
INTERACTIVE-SERVICES
GROUPS
OFFICE-SERVICES
AGENCY-MENUS
HELP
EXIT
TRAVEL>

Exhibit 2. Travel Menu.

The prompt TRAVEL> appeared and I entered "?". The list in exhibit 2 appeared.

No OAG appeared so I entered INT for the interactive services. I again entered "?" and received the list in exhibit 3.

"Please respond?" I never got the chance! This was the beginning of a nightmare. Time after time, Delphi randomly gave me a message as if I had pressed enter without a response. I tried hanging up and reconnecting for a better modem line — all to no avail. As near as I can tell, the mystery carriage returns resulted from the best random-number generator I've ever seen.

RETURN TO OAG. But back to my search for the Official Airline Guide. At the TRAVEL> prompt I chose ITI for ITINERARY and viewed the list in exhibit 4.

I entered OAG and was connected to the Official Airline Guide's computers. While on OAG, everything worked consistently with the OAG commands (*Portable 100*, October 1983, page 24).

Back on Delphi, I decided to explore further. At the MAIN> prompt, I entered ONL for the Online-Markets. Again at the prompt, I entered "?" for a list of valid commands and received the list in exhibit 5.

I entered SP for the speciality services; under speciality, I found the list in exhibit 6.

Entering SO, I decided to see what software items were listed. The prompt EMPORIUM> was displayed.

EMPORIUM. In the software emporium I entered FIN to locate a specific piece of software. I tried "Wordstar" at the PRODUCT> prompt. Delphi responded, "Entries found: 0." So I tried "VisiCalc." This time Delphi responded, "Entries found: 6."

```
TRAVEL INTERACTIVE-SERVICES MENU:
VISA-APPLICATIONS
LIMOSINE-TRANSFERS
INSURANCE
TRAVELERS CHECKS
HELP
EXIT
INTER>-Which Interactive Service? Please respond.
```

Exhibit 3. Interactive Services Menu.

```
AUTONET
BAZAAR
CATALOG
SPECIALITY SERVICES
HELP
EXIT
MARKETS>(AUTO, BAZAAR, CAT, SPECIALITY)?
```

Exhibit 5. On-line Markets Menu.

```
ITIN>?
ITINERARY PLANNING MENU:
EXIT
HELP
OAG
PREFERENCE
FORMS
INFORMATION
RESERVATIONS
ITIN>
```

Exhibit 4. Itinerary Menu.

After pressing enter at the company and category prompts, Delphi displayed the listing in exhibit 7.

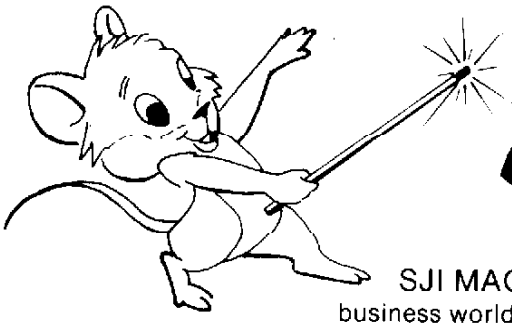
Without going into detail, the remaining five were identical. Not only that, but I had to press enter at each NEXT> prompt to get the next five-line record. After the sixth NEXT> I discovered the only way back to MAIN> was to enter EXIT. But what followed was the sequence in exhibit 8.

Delphi has no simple command to return to MAIN>. I found the easiest way to get back to the MAIN> prompt on Delphi was to hang up and call back in again. If you try to "type ahead" exit commands, make sure you do not enter too many; an "exit" at the MAIN> prompt will log you off the system.

SHOWPIECE. A showpiece for Delphi is supposed to be the Kussmaul encyclopedia, named for the founder of Delphi, Wes Kussmaul. At the MAIN> prompt, I entered LIB for Library. The library options are in exhibit 9.

I entered KUSS for the encyclopedia. I expected this area to shine. I was prompted, "Search for:." I entered "tele" for telephone. Delphi responded, "Could not find "TELE" - scanning...TELF."

I thought this was very easy to use. If it didn't find an exact match, it was ap-



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```
ONLINE-MARKETS SPECIALITY-SERVICES MENU:
EXIT
HELP
FILM LIBRARY
RECORD-RELEASE INDEX
SOFTWARE EMPORIUM
SERVICES>
```

Exhibit 6. Specialty Services.

```
NEXT> #1
PRODUCT : VISICALC
COMPANY : VISICORP
CATEGORY : FINANCIAL APPLICATION
Apple 2 retail Price: $250.00
Software Emporium price $194.97
NEXT>
```

Exhibit 7. Emporium Listing.

parently searching for a term close to my request. Very nice.

In a few seconds, Delphi prompted, "Do you want TELEGRAPHY?" I entered "no." And I was off to the sequence of prompts and responses in exhibit 10.

Sigh. At last, Delphi proceded to display the excerpt below:

"TELEPHONE, THE, an opera in one act by Gian Carlo MENOTTI, with libretto in English by the composer; ..."

Err. Excuse me? Did the AT&T breakup have some effect here? After some off-line research in a "real" encyclopedia, I discovered "TELEPHONE, THE" was indeed an opera; but what ever happened to the "thing" my Model 100 was hooked up to?

I could go on and on and on. In many areas of Delphi, I found some good ideas and many nice tries, but overall I found Delphi to be a poor substitute — at any price — for the other available information services.

Save your money for a 1200 baud modem and stick with the repetitive menus of The Source or CompuServe. Delphi should stick to selling their encyclopedia door-to-door.

For the stout of heart wishing more information, you can contact Delphi at: General Videotex Corporation 617-491-3393. ◀

```
NEXT> exit
EMPORIUM> exit
SERVICES> exit
MARKETS> exit
MAIN>
```

Exhibit 8. Return to MAIN> Sequence.

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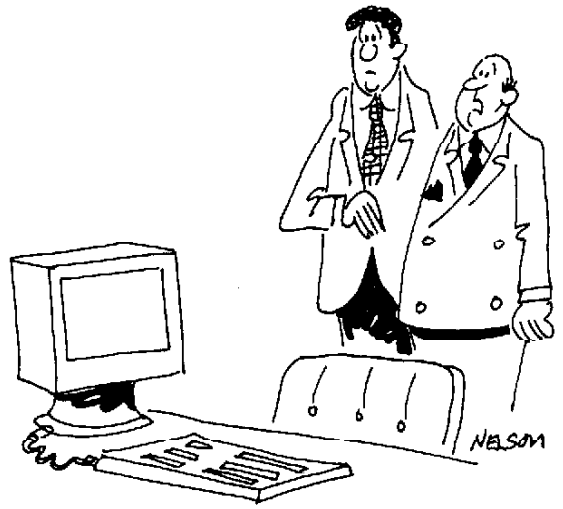
```
LIBRARY MENU:
DELPHI-INFO
DIALCOM
EXIT
HELP
KUSSMAUL-ENCYCLOPEDIA
LIBRARIAN
RESEARCH-LIBRARY
XREFLIBRARY>
```

Exhibit 9. Library Options.

```
Do you want TELEMACHUS? no
Do you want TELEMANN, GEORG PHILLIP? no
Do you want TELEOLGY? n
Do you want TELEPATHY? n
Do you want TELEPASSA? no
Do you want TELEPHONE, THE? yes
```

Exhibit 10. "Tele" Search.



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FULL-DUPLEX

TERRY KEPNER

Editor's Note: Full-Duplex is dedicated to solving reader's Model 100 problems. Readers needing assistance should address their letters to Terry Kepner, P.O. Box 481, Peterborough, NH 03548. Readers are reminded to include a return address with all Full-Duplex correspondence.

EMBEDDED PRINTER CODES

After writing you on May 2 about embedded printer codes, the answer came to me on May 30 via a letter from John Hudelson. I had called him about his right justification program on page 8 in the March issue of *Portable 100*, which I had been unable to get to run. He sent me a copy, along with a letter containing boldface, underlining, elongated, and condensed characters.

Since he had also sent a copy of the letter using text, I could see what codes he had used and could use the same techniques for my printer.

The key to using these special codes is control-escape is the same as CHR$(27), which is documented in the ASCII character code table on page 211 of my owner's manual.

By sending a control-escape, you notify the printer that a special sequence is on its way. Thus, for my DMP-100 printer, the code sequence to start elongated print is CHR$(27), CHR$(14). The embedded sequence would be: control-P control-escape control-P control-N.

To turn off elongated print the sequence is: (CHR$(27),CHR$(15), and the embedded codes: control-P control-escape control-O.

Starting boldface is more complex. CHR$(27), CHR$(31) translates to: control-P control-escape control-P control-N control-P control-escape control-P control-T. Turning it off is control-P control-escape control-P control-S control-P control-escape control-P control-O.

The DMP-100 supports italics using CHR$(27), CHR$(66). Since decimal 66 is the equivalent of an uppercase B, the embedded sequence is: control-P control-escape control-P B.

Similarly, condensed print is started by CHR$(27), CHR$(20), which is: control P control escape control P control-T.

From these examples other embedded sequences for different printers and fonts should come easily.

Rick Mendosa
Santa Barbara, CA

▶ Sorry I misunderstood your first letter. I didn't realize you didn't know you could use the escape key to send CHR$(27) as an embedded control code.

As for the rest, thanks a lot for explaining the codes on the DMP-100. I'm sure many readers will find the information useful.

TESTING PRINTER PORT

Concerning the hint by Don Griffith about testing port 187, via the INP(187) statement, for the printer status (*Portable 100*, April 1984, page 11), I use an older LP VII with my 8K Model 100 at 600 baud parallel and can get only a "printer disconnected" signal with the cable unplugged or a "printer ready" signal with the cable connected and the power switch either on or off.

Reading the value at the port shows that if the printer is unplugged, the value returned alternates between 198 and 199 decimal. If the cable is plugged in again, the value alternates between 194 and 195.

I have tried every combination of printer on-off, plugged-unplugged, parallel-7-bit-8-bit, COM ON-OFF, MDM ON-OFF, and CHR$() I can think of.

Is this particular to the LPVII or is there another way to determine if the printer is ready?

I use the printer a lot and being able to check its status would be helpful.

Steve Harmon
Greenfield, IN

▶ When you examine port 187 via the INP command, you're checking one pin of your Model 100 centronics parallel port for a valid signal. With the LPVII disconnected, there's no signal, hence the "printer disconnected" signal (after all it is disconneted). When the printer is connected, the corresponding pin of the LPVII is internally grounded. When the printer is off, there's some electrical leakage from your Model 100 through the LPVII and back through this pin, so the INP command returns a valid signal of "printer ready."

On my Model 100, which I use with a Centronics 739, I get 198 and 199 for no printer or for printer turned off; 194 and 195 for printer turned on and ready; and 192 and 193 for printer on but off-line. When I have a hardware printer spooler in-line, I get 198 and 199 for spooler unplugged; 196 and 197 for spooler connected but turned off; and 194 and 195 for spooler ready.

It all depends on the electronics in your printer. In your case, I don't think there's any way to detect anything more complex than whether or not the printer is attached.

Does anyone have any advice to offer on this subject?

TEXT FILE SIZE

Is there any way to determine the size of a text file? This assumes that — as I invariably do — one has not noted the free space before starting and after finishing the document.

The only way I can think of is to paste a complete copy into the empty paste buffer and note the difference — but that assumes a small text file and

lots of spare RAM, an infrequent combination.

Richard Lewis
New York, NY

▶ I know the problem. The only solution is a short program (see listing 1) that reports the information you request.

This program counts both word length (important for writers) and character length of your files. It's about about 700 characters in length. If you eliminate the word counting logic, you can easily cut that figure in half. In either case, it requires about 600 bytes of free RAM to execute.

Hope that'll take care of your problem.

NULL MODEM FOR DEC

I built the null modem described in the September 1983 Portable 100 (page 38). I tried it between two Model 100's and between a Model 100 and a DEC Rainbow. It wouldn't work.

I then borrowed a commercial null modem and I was able to communicate between these computers. By testing the commercial unit I discovered it was connected significantly different (see figure 1).

Pin 1 to Pin 1
Pin 2 to Pin 3
Pin 3 to Pin 2
Pin 7 to Pin 7
Pin 6 to Pin 20
Pin 20 to Pin 6

Figure 1. DEC Null Modem

I built a null modem in this arrangement and it is working perfectly. Since the cable hoods prevent the cable from connecting to the Model 100, I built extensions onto the end of the cable and the Model 100. The extensions were made by bolting a male and female RS232 connector back-to-back and directly soldering the pins across.

Daniel Moniot
Glenshaw, PA

▶ I don't know why you had difficulty. I've used the null modem described in Portable 100 for over a year on a variety of computers (Radio Shack Models I, II, III, 4, 100, and Color Computer, and Apple IIe, Apple III, and Osborne computers) without any problems.

One thing to watch for, however, is some computers require pins 4 and 5 to be cross-connected, like pins 2 and 3, or they won't work. Anyway, thanks for writing and telling us of your solution.

TAPE CONDITIONERS

I'm in the unenviable position of wanting a disk for my MEWS, but being unable to afford one. I'm a college student and money is tight. Therefore I'm resigned to using audio cassette tape as my mass storage system, specifically the Radio Shack CCR-81.

I am aware this is not an ideal medium for digital storage, both from an electronic point of view and from programming convenience. I can live with the lack of convenience, but is there any advice you have that can minimize the occasional failings of reloading tape-stored data?

I use TRS-80 "Deluxe certified computer tapes," clean and demagnitize the cassette head regularly, and store the tapes in their plastic cases away from any magnetic sources (as far as I know).

In spite of these precautions I get an occasional "I/O Error" when trying to reload BASIC programs and occasional "Aborted" messages when loading ASCII files. I verify the BASIC saves with "CLOAD?," yet when I try to load programs a week or two later, BAM!

I'm not aware of any method of verifying ASCII files short of leaving the original in memory and reloading the saved version under a new name. This is impractical since there usually isn't enough RAM for both copies.

I have seen a device for audio cassettes used as computer data storage called a "signal conditioner" (popular when Sinclairs were sold), but I don't know what it does other than work between the computer and cassette and supposedly provide the proper signal strength for up and down loading data. Have you seen any of these and do they really work?

Larry Webber
Columbus, IN

▶ One thing you haven't checked is your cassette recorder's head alignment. You may not realize it, but the cassette head is mounted on a pivot, with a small screw to align the head vertically. If the head has shifted slightly up or down, the misalignment will make it impossible to reload a tape. This is an insidious problem as the alignment drift is gradual, but most noticeable in that the older a tape is, the less likely it will load.

What you need to do is to get an industry standard test tape (your local hi-fi shop should be able to get you one) and adjust the tape head to give the best possible sound. To do this you'll need to take apart your recorder and locate the alignment screw (directly beside the cassette head, usually to its left, towards the tape supply reel).

With the tape in play position and the recorder all set for use (sans case, of course), push the play button and slowly turn the alignment screw until the test tape gives you a clear, solid tone. Now put a small drop of paint over the edge of the screw to help lock it into position. If you use your recorder a lot, you may have to do this as often as every other month (the vibration of the head moving when you press play or stop causes the screw to come loose).

Another possible problem, as someone recently pointed out to me, is that the neoprene belts used to drive the cassette tapes can stretch with age or develop smooth or slick spots, making the tape player speed unreliable.

The Model 100 uses a strange method of storing data on tape: while the Commodore and Apple computers use tones to differentiate between a binary one and a binary zero stored on tape (a total of eight are used for each character stored on tape), the Model 100 uses the presence or absence of a blip between two timing marks to convey the same information. This is best seen with an oscilloscope, but I'll try to explain it here.

The Model 100 sends out a series of square waves at 1500 blips per second. These are timing marks. Between each square wave is a measured gap. To store a binary one on tape, the Model 100 puts a square wave blip in the gap. No blip means a binary zero, so no information in the gap is actually information on the order of a binary zero.

The Model 100 comes very close to sending out a true square wave, given the limitations of CMOS chip design, but the tape recorder is an analog device (music is primarily a series of sine waves, like ocean swells, not square waves, which are more like a series of boxes on a table). As an analog device, it deforms the square wave during recording, blurring the leading and trail-

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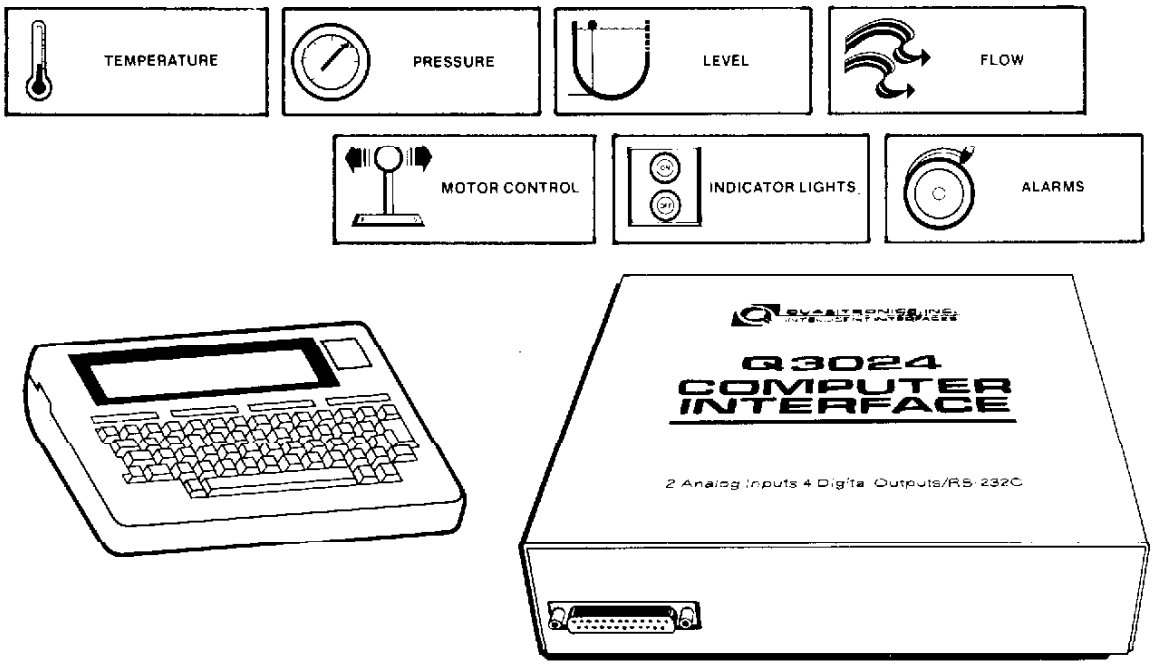

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ing edges of the square wave. Playback degrades the wave even further. Fortunately, the Model 100 has a certain amount of play in its definition of a sqaure wave, so the wave it receives from the cassette player usually passes inspection and is accepted as valid data.

However, a misaligned tape head, motor speed variation, perhaps even daily temperature changes affecting the size of the tape, will degrade the wave shape just enough to make the computer reject the signal and abort the load.

And that's where signal conditioners come in, they take the signal from the tape player and generate a new square wave for each incoming square or sine wave. In effect, the conditioner touches up each blip to an acceptable shape by the computer. They do work, but they can't overcome poor quality tape, poor quality tape recorders, or motor fluctuations due to problems with the motor or power supply.

If you're interested in buying one, Lemons Tech Services, 325 N. Highway 65, P.O. Box 0429, Buffalo, MO, 65622, 417-345-7643, sells one, called The Plum, for $39.95. ◀

```
10 CLEAR 533
     : CLS
     : PRINT TAB(15)"WORDCOUNTER"
     : MAX FILES =1
     : FILES
     : INPUT "Filename";A$
     : INPUT "Word count or Character
     Count (W/C)";C$
     : IF ASC(C$)>96 THEN C$=
     CHR$(ASC(C$)-32)

20 IF C$<>"W" AND C$<>"C" THEN 10
     ELSE OPEN A$ FOR INPUT  AS 1
     : A=0

70 IF EOF(1) THEN CLOSE
     : PRINT @280,"Total number of
     words is"A"."
     : GOSUB 190
     : RUN

80 LINE INPUT #1,A$
     : IF C$="W" THEN 110
90 A=A+LEN(A$)
     : IF LEN(A$)=0 THEN A=A+1
100 PRINT @280,USING "Character Count
     = ##,###";A;
     : IF EOF(1) THEN PRINT @280,
     "File Length is"A"characters."
     : GOSUB 190
     : RUN
     :
     ELSE 80

110 B=0
     : IF D=1 THEN D=0
     : IF LEFT$(A$,1)<>"  " THEN A=A-1

130 IF B=255 THEN D=1
     : GOTO 70

140 C=INSTR(B+1,A$," ")
     : IF B=0 AND C=0 THEN A=A+1
     : GOTO 70

150 IF NOT C THEN D=1

160 A=A+1
     : B=C
     : PRINT @280,USING "Word Count =
     #,###";A;

170 IF B<255 THEN IF MID$(A$,B+1,1)="
     " THEN B=B+1
     : GOTO 170

180 IF C THEN 130
     ELSE 70

190 PRINT @281,"Press <ENTER> to
     continue, M for MENU";

200 A$=INKEY$
     : IF A$="M" OR A$="m" THEN MAX
     FILES =0
     : MENU
     ELSE IF A$<>CHR$(13) THEN 200
     ELSE RETURN
```


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BOTTOM LINE

BILL WALTERS

WHO REALLY NEEDS A 16-BIT COMPUTER TO TAKE ON THE ROAD?

Are 16-bit portable computers *really* necessary?

Here's my candidate for the most often asked question award:

"Hey Bill, you're familiar with all this computer stuff, right?"

My head nods up and down as I brace for the second part of the question. It doesn't take a clairvoyant to know what's going to be said next.

"Great! Well then, what computer should I buy?"

With a deep sigh I ask, tenuously, "What are you going to *do* with it?"

The look I get makes me feel like I'd asked this Texan his checking account balance, the size of his poke, and his family income, all at the same time.

"Whut! (remember, this is Texas) Whazzit matter?"

BUSINESS OR PLEASURE. "Will it be used for business or pleasure?"

"At home and for a small business," is the usual answer and this time was no exception. I will spare you the details of the exchanges which followed; you probably can guess.

Of course this particular conversation was fueled by a participant who immediately chimed in: "You *must* get a Whizz-Bang 101. It's got a 16-bit chip with 256K bytes of memory; dual, half-height, five-and-a-quarter-inch disk drives; a nine-inch amber CRT; and sports a blue racing stripe. Man, 16 bits is where it's at!"

The first fellow agreed: 16 bits was definitely the way to go.

I asked if he had considered a less expensive machine, then asked him some questions. Based on his answers, I indicated a less expensive machine could serve his needs now and in the future.

AND SOFTWARE?. I added, "Software for the inexpensive machine is readily available and is inexpensive. Do you realize what a spreadsheet program costs for your 16-bit Whizz-Bang 101?"

"Nope."

"Try $495 on for size."

The gags and sputters that followed told me all I needed to know.

The object of this story is unless you have a legitimate business reason, the 16-bit world is a bit pricey — especially in the world of portable computers. If you have a real need for it, by all means go to 16 bits. But, what *are* real needs?

As a businessman, I'm forever constrained by one priceless commodity: time. If I waste it, I can never recoup the expense.

THE IDEAL. Ideally, my portable should be all I need for everything I do. But we don't live in an ideal world. So, I'm forced to use a portable computer when I'm out and a desktop system when I'm not.

I don't want to think of the time I've wasted shuffling data between the two.

Then there's the issue of different software.

And with my two computers, even the keyboard layouts are different — and the two computers are from the same manufacturer!

Few businesspersons are willing to tolerate such time wasters. Those that do, do so because want to be on the leading edge of technology.

SIXTEEN BITS. Several companies have announced 16-bit portable computers; some are delivering. But I wouldn't hold my breath that they will run existing 16-bit MS-DOS software.

Sixteen-line-by-80-character liquid crystal displays have a different dot resolution than the graphics in standard MS-DOS programs.

Next on the list is the keyboard. It's tough to squeeze 96 keys on a portable and keep it portable!

Memory is easy to solve — if you're willing to spend the money! Just before I left Radio Shack, I was quoted prices resulting in a retail price of $500 for 64K bytes of CMOS memory. That's $2000 for 256K before you tack anything else on.

But money isn't a prime consideration when you're talking about a tool to improve your performance in business. Remember, if you're using your computer for mostly pleasure and perhaps a little business, then the question takes on an entirely different tone.

FALSE REASONING. However, even for business, until a portable *really* matches the MS-DOS environment, the "I want it because it runs all the same software" argument is a false one.

And don't get your hopes up for 64K anytime soon. Remember, manufacturers are constantly pricing and playing "what-if" to be able to provide new products

All in all, my Model 100 8-bit system will do quite nicely for quite a while, thank you. ◀

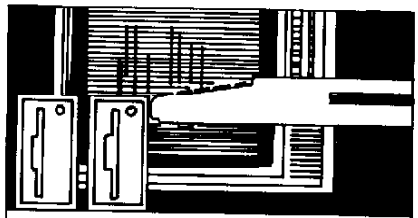
RUBBER BAND PLAYS SILENTLY ON MODEL 100

The clickity-clack of computer keys has often been cited as annoying others. Armed with something as simple as rubber bands, you can make your 100 more acceptable to polite society.

By T. ALLAN TRICK

If you've ever been in a classroom or meeting taking notes on your Model 100, perhaps you've experienced unfriendly glances cast your way. To many, the noise of keytapping is bothersome. Let me show you an easy way to silence your computer's keyboard.

The process described here won't affect the warranty on your computer, since the back cover isn't removed. All you'll be doing is removing the key caps. And with just a little care, it's virtually impossible to damage your machine.



HARDWARE

UNLIKELY SOURCE. The main ingredient, although unusual, shouldn't be too hard to find. Remember those tiny rubber bands you or your kids used while wearing orthodontic braces? Well, a new use for them has been found, one the dental supply industry probably never dreamed of.

If you ask your local dentist or orthodontist for a few "seal" bags, he'll most likely be glad to let you have them. (His cost is about 34 cents per bag of 50.) Hopefully he'll be amused and pleased to help you once he finds out why you want them.

You'll need about 130 of these seal rubber bands, so named because the bag has a drawing of a seal to designate a particular size (size 3, medium, ¼-inch by 3-ounces). The product is referred to as zoo bags since each size features a different animal. A bag consists of 50 rubber bands, so you'll need three of them.

BUY BULK. Seal bags also can be bought directly from a supplier. The only hitch is you have to buy them in large quantities. Still, it'll cost under $20 to buy in bulk and if a few other people in your local user group would like to get some, it might make sense to contact the company listed below to do so.

If rubber bands aren't available from an orthodontist, they can be ordered in quantities of 5000 (a master pouch contains 100 bags of 50 each). Order catalog number 630-0021, Surgical Latex Intraoral Elastics, Seal Zoo Bag, 3C ¼-inch medium. The cost is $16.80, plus $2 postage and handling. The supplier is Ormco, 1332 South Lone Hill Ave., Glendora, CA 91740, 800-854-1741. California residents call 213-331-3335.

There's also at least one company offering a similar solution to quiet your keys. Micro Computer Services, P.O. Box 17586, Portland, OR 97217, 503-285-7424 has a product, Quiet Key, that sells for $4.95.

STRIPPED. The accompanying photos show a stainless steel tool being used to take off the key caps. You can use a dull dinner knife instead. A small pair of tweezers also is shown in the photos for putting the rubber bands on the key posts, but bare hands work almost as well

Photo 1.

Photo 2.

First step is to turn the power off and remove each key cap one at a time (photo 1). I tried removing all of them at once, then placing on the rubber bands. However, this isn't a recommended method. One tends to forget the position of the keys when all the caps are off. When looking at all those naked posts, it's hard to remember if the plus key is above or below the brackets key!

Starting at whatever side of the keyboard you wish, remove the first key cap in the row by grasping the cap with either a tool, as mentioned above, or by pulling it off with a kitchen knife. (In the photos, we started with the S key.) It's important to pull straight up. The cap will come off easily as long as you aren't pulling at an angle (photo 2).

BAND AID. Pick up a rubber band either with a pair of tweezers or with both hands. Stretch the rubber band slightly, so it fits over the key post and place it onto the post (photo 3).

Pick up another rubber band and place it on the same post, above the first one. You can put either one or two bands on each post, although each one should have two for best results. The larger keys (enter and space bar, for example) should have three rubber bands placed on them.

The key post with two rubber bands on it looks like photo 4.

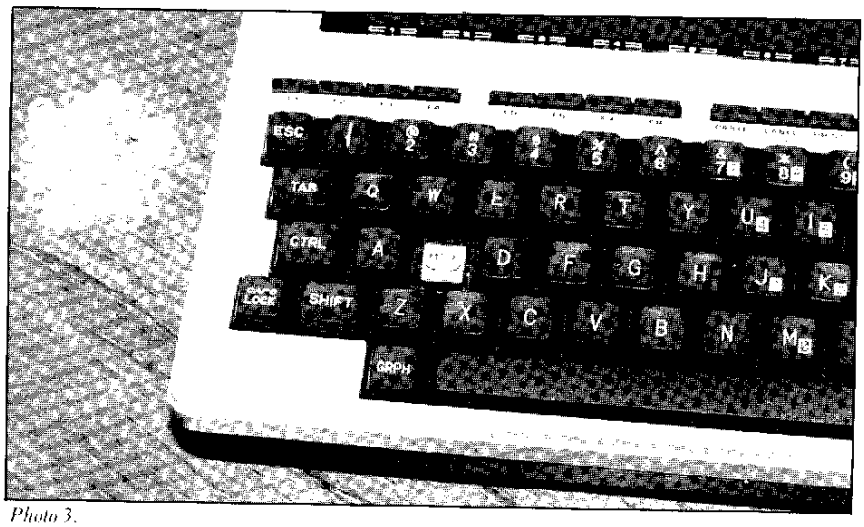


Photo 3.

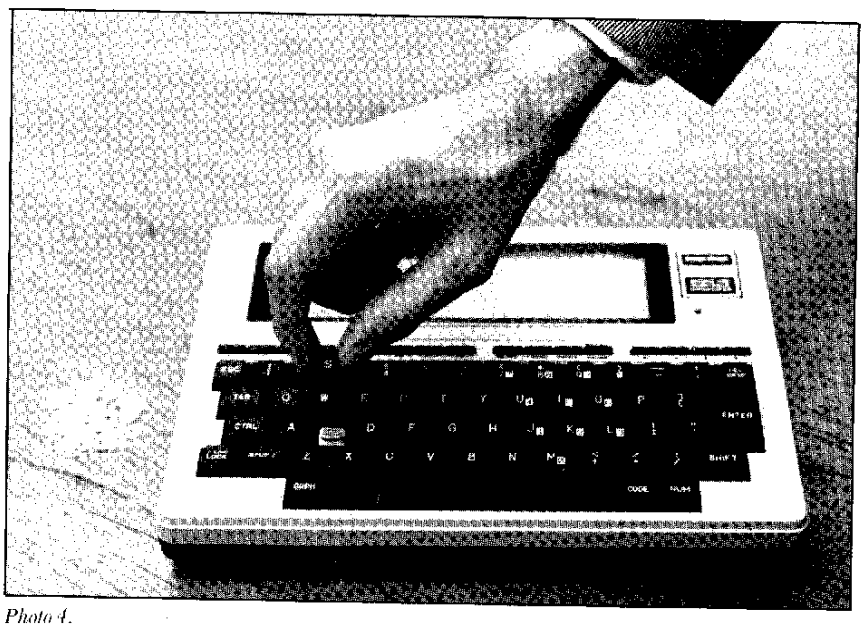


Photo 4.

SNUG FIT. Pick up the key cap with your fingers and place it back onto the post (photo 5).

Press straight down on the key cap to insure it's positioned snugly back onto the post (photo 6).

Repeat the above process on the next key and continue until all keys have been done.

SILENCE. It'll take 30 to 45 minutes to complete this process for the whole keyboard. When finished, you'll be in for a nice surprise. Your fingers will feel the difference and no longer will you get those stony stares at meetings.◀

T. Allan Trick is a member of the Model 100 SIG on CompuServe, CIS ID 71256,757, and Office Systems Coordinator at the Christian Science Center in Boston, MA.

T-BASE: A POWERFUL RELATIONAL DB

Traveling Software's most powerful offering to date blends sophistication with ease of use.

By JOHN P. MELLO JR.

In his audio-introduction to T-Base, Traveling Software's Traveling Professor proclaims the relational data-base manager to be the "most important software ever developed for your portable, lap-sized computer." Even discounting the professor's obvious bias, he isn't far from the mark in his praise for this product.

There are several data-base managers currently marketed for the Model 100, but at this writing, T-Base is the only one with relational capabilities.

What does that mean?

Data bases are usually broken into three categories: data managers, data bases, and relational data bases.

Data managers are information storage programs. You set up "records" made up of "fields" (LAST NAME, may be one field, FIRST NAME another) and can sort and print reports based on the information in the fields.

Data bases let you do everything you can do with a data manager, but also allow you to do operations on a field. For example, a Model III data base I

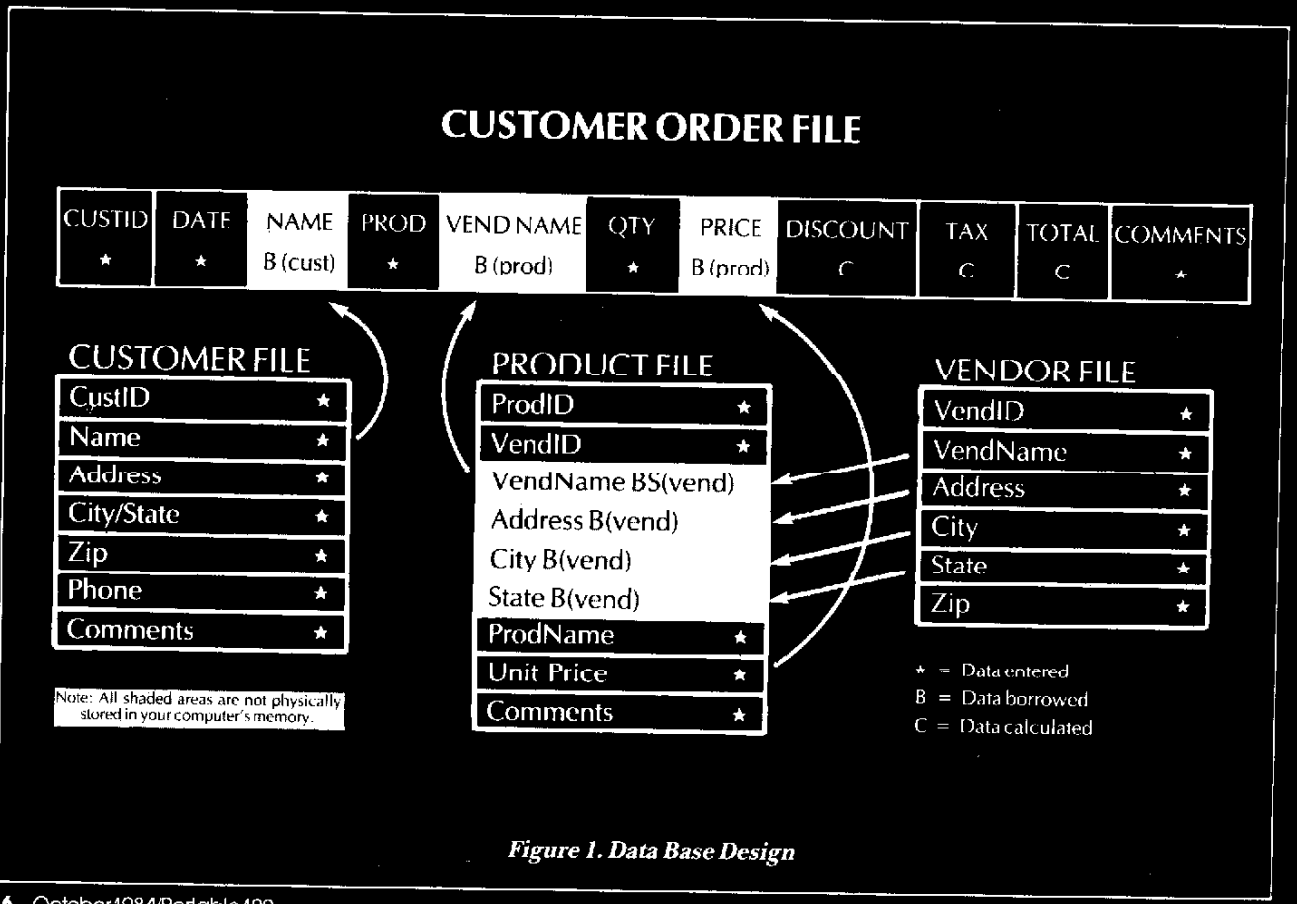
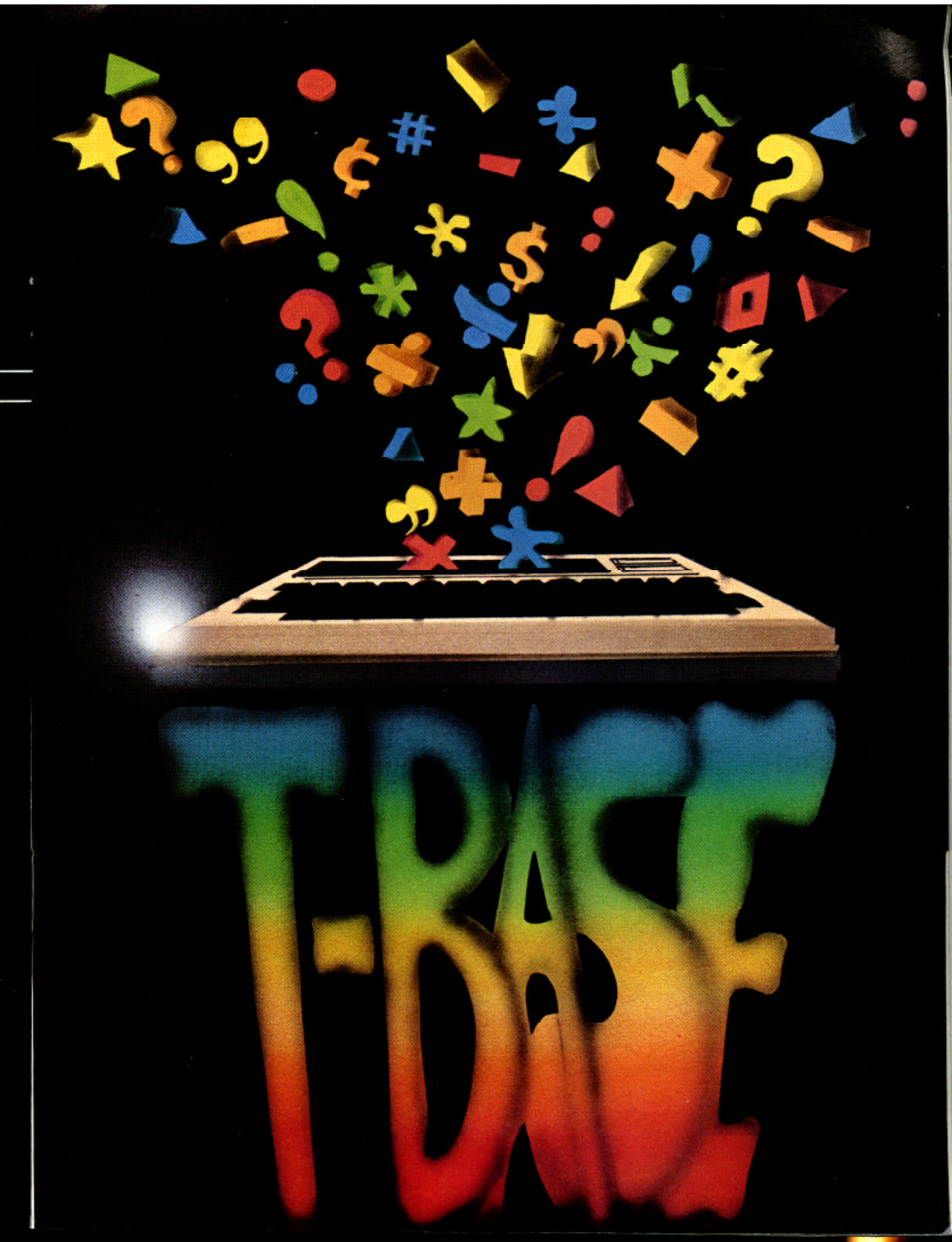


Figure 1. Data Base Design


T-BASE

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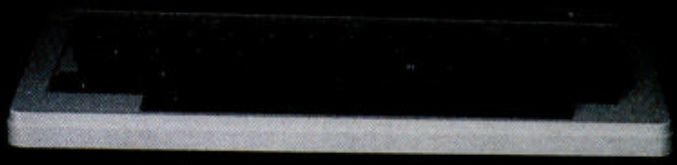

Uses the main menu concept. You see the disk directory instantly, arranged on your M-100 screen like your main menu. Just move the widebar cursor and transfer files with a function key.

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A relational data base goes a step further. It lets you borrow information from fields in other data bases and perform complex operations on that information in yet another data base.

WHAT YOU GET. The T-Base package comes with three programs (TBASE, TB RPT, and MEMMGR), four sample data bases, a 200-plus page manual, and an audio overview of the program by the Traveling Professor.

TBASE and TB-RPT are Basic programs with machine-language subroutines. This approach, according to Traveling Software, allows the programs to have the advantages of machine-language software without its perils.

MEMMGR is a valuable utility program. It displays the files in your 100 and their lengths. It lets you rename or kill them. And it lets you make them visible or invisible.

I used MEMMGR to gauge the file lengths of the T-Base package after loading it into a 32K Model 100. The results are in table 1.

TBASE. You start using T-Base by designing your data bases. There's always the temptation to dive into a new piece of sofware. If you use that approach with T-Base, you'll be over your head before you know it. Designing a chart (see figure 1) will be a tremendous aid to you when using this program.

When you've sketched out what you want in your data base, enter TEXT and create a "screen" file.

There are three kinds of files used by T-Base. When naming the files, you choose four letters and the last two designate the file type, *S for screen file, *R for report file, and *D for data file. A typical screen file name would be CUST*S.DO.

Because you can use only four letters, your file names can appear cryptic at times. Traveling Software recommends printing your screen files when you're done with them. I concur. A printer is almost a necessary adjunct to this program.

Once in TEXT, a screen file is simple to create. However, all capitalization, punctuation, and syntax in the file must be perfect, or the screen won't work.

BASEBALL DATA. To test T-Base, I created three screen files containing data on the top 25 hitters in the American and National Leagues. The first screen file I created was PLAY*S (see exhibit 1).

The first line of the file defines the number of fields in each record (5), then names the fields. This line can't be longer than five LCD lines. The field names must be in capital letters.

The succeeding lines in the screen file describe the fields. In PLAY*S, field one is "Name:" and is 20 characters long. This first field is very important because it individualizes the records in the data base for later manipulation.

I chose to make this "key" field ballplayers' names. As records are created with this screen, they're stored in alphabetical order. If this key field were a number, the records would be stored in numerical order.

Field lengths plus field labels may

continued on page 48

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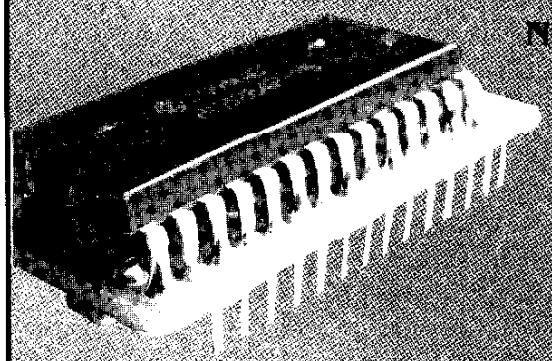

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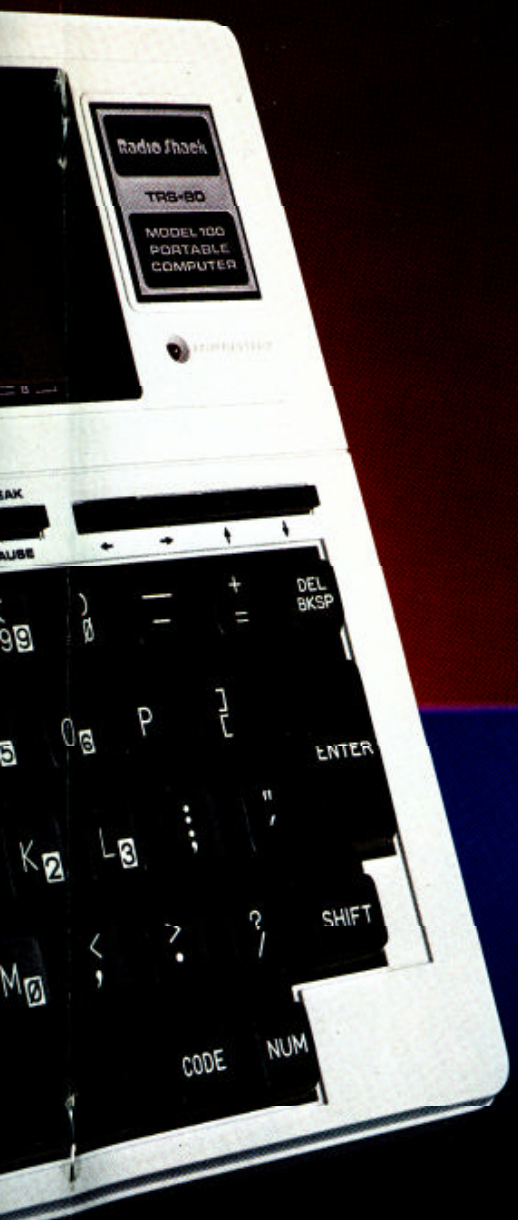

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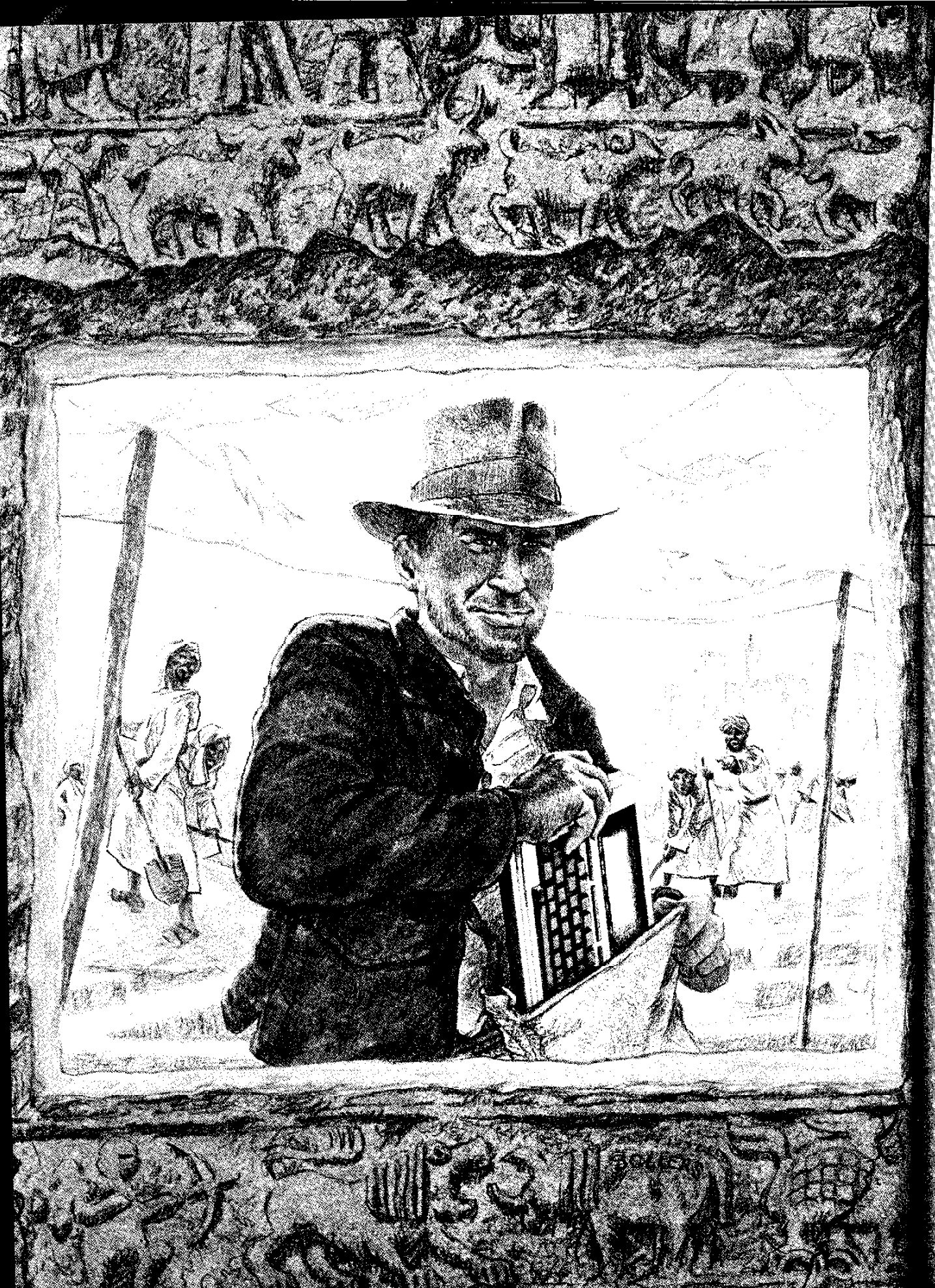


ARCHAEOLOGISTS TRADE FEDORA AND LEATHER FOR 100

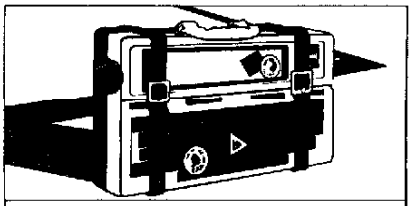
The romantic days of searching for an ancient city with a shovel and bullwhip are gone. Now the searching's done with a shovel and microcomputer.

by DANIELA BUIA QUINN

Going on an archaeological dig is an exciting prospect — all the more so when the investigative site is thousands of miles from home in a totally different part of the world. One thing you certainly don't expect to find in the middle of the Syrian desert are lap-sized computers.

The Joint American Expedition to Terqa was to dig for eight weeks at a 5000-year-old site on the banks of the Euphrates River in eastern Syria. Headed by Professor Giorgio Buccellati of the University of California at Los Angeles and Professor Marilyn Kelly-Buccellati of California State University at Los Angeles, the team consisted of professional staff archaeologists and included a number of graduate students, like myself, from the history and archaeology departments specializing in the Ancient Near East.

Excavating in the Syrian desert on an archaeological dig isn't exactly like digging up weeds in your backyard on a Sunday afternoon. And despite the jokes among friends about "Indiana" Louise or "Indiana" Mark, 99 percent of archaeological work today requires painstaking digging and concentration and most important of all, detailed documentary recording of information. The romantic days of searching for an ancient city with just a shovel and a bullwhip are long gone. All of us recognized that!



TRAVEL

TANDY IN DAMASCUS. We knew the 100 was going to be an important component in our daily schedule. We'd spent the better part of three months learning a coding system devised for the types of elements and artifacts an excavation might produce. Ranging from the largest architectural complex to the smallest bead, Dr. Buccellati and his associates had worked up a series of recording forms to make sure all pertinent information on each item was properly collected.

Landing in Damascus after a long flight with what seemed like 700 pounds of luggage should have been exhausting, but our adrenaline was booming. We got to our hotel in the old quarter of the city and were greeted by the sounds of midnight prayers being chanted from the city's oldest Islamic mosque.

In the morning, after a sleepless few hours, we had time for a little sightseeing before taking the cross-country bus ride to Terqa. On the way to the National Museum, with its priceless collection of artifacts we'd spent years studying in books, we came right up against a Radio Shack store! No wonder the 100 had been selected. Not only was it small, compact, and portable, but if anything went wrong, we always could get help from the Tandy store in Damascus.

MODEL 100 IN THE TELL. We had our first look at Terqa on a wonderful sunny May morning. The river meandered right past the bottom of the site (called a tell). A quick tour of the housing compound gave us a clear indication of priorities. Our rooms were in mud-brick houses, clean but definitely spartan in amenities. The "computer" room, however, had *two* fans and strict instructions about keeping it as clean and orderly as possible. Instructions, which I might add, weren't too easy to keep.

The 100 (with 32K), the flatbed multi-color plotter (Model FP 215) and the standard cassette recorder were all set up in this room, along with two hanging light bulbs, electrical transformers, and a power stabilizer.

Our home was in Ashara, a town situated on about half of the ancient city. The city receives its electricity from the Tabqa Dam project upriver. But in periods of peak use, the national system cuts off and the trusty local gen-

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erator takes over, sometimes reluctantly. At least twice a day this changeover happened, so we learned to be careful when on the computer and became *very* definite about making backup copies of everything.

The city of Terqa dates back to 3000 B.C., but this year we'd be digging on a level of the city belonging to the Old Babylonian period, about 1700 B.C. Unlike Egypt, the citizens of our city didn't have stone to build with, and used sun-dried mud bricks to construct their homes, temples, and administrative buildings. Pavements were of beaten earth, sometimes coated with a thin layer of plaster. It was like learning to find mud in mud . . . and backwards to boot!

EXHILARATING EXHAUSTION. The daily routine of our excavation ran something like this:

Up at 5 a.m., brush teeth in the sink in the courtyard, and get to breakfast before it was all gone. Breakfast consisted of hot cerial, Syrian bread, fresh yogurt, hardboiled eggs, and hot tea.

Onward to the site and ready to dig at 6 a.m. Dig until 10 a.m.

Twenty-minute "faidos" break when we stretched our aching backs and broken knees and wolfed down a second breakfast of more eggs, bread, fruit, and tea.

Back to work under the Syrian sun (120 degrees in the shade was the norm) until 2 p.m.

Dinner, the main meal of the day was not until 2:30 p.m.; just enough time to take a cold shower or at least get some of the dirt off.

After dinner, clean and sharpen tools, begin writing up the daily journal and rewrite notes. Lectures from the staff and visiting archaeologists scheduled about 5 p.m. (when it starts to cool off) on methodology, technique, or analysis.

A light supper of soup, fruit, desserts, and tea about 7 p.m., and then back to record-keeping and finally sleep.

Fifteen- to 16-hour days, six days a week, with Fridays off for sightseeing, catching up, or resting.

But don't be fooled by either the pace, hours, dirt, or heat — we loved every minute of it! We first-time mudpuppies were finally doing what we'd trained to do: We were on our first excavation. The pace made us feel productive as well as exhausted. By the time the season was over, some of us didn't want to leave!

Nevertheless, we got the picture early. For every hour of excavating on the tell, there'd be from one to two hours of documentation upkeep. There was no doubt as to the usefulness of having computers in the field. The gross amount of data about a site we uncover is quite a lot, and its recording takes on two distinct forms.

STRATIGRAPHY. The first and primary concern is Stratigraphy. That means the order (deposition) and way (emplacement) things came to be buried in the ground, viewed in layers.

But people never lived in horizontal layers like a cake, and walls are vertical and so are drains, not to mention the lovely rodent holes that run through every layer of a site and stir the dirt up.

As you dig, too, you remove what's above to see what's below, so double-checking a sequence becomes impossible. The moment of noticing the differ-

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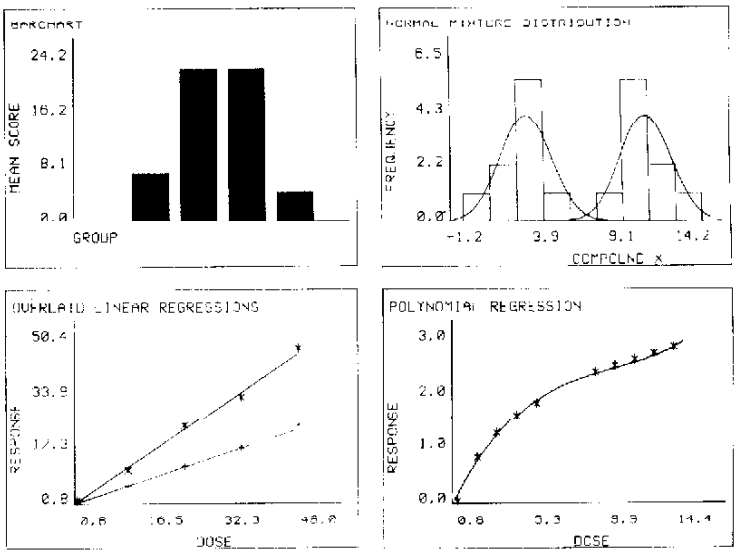

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ences in soil texture, compaction, or color signaling the appearance of two "somethings" is the key stratigraphic moment, and that's the moment that has to be carefully documented.

Our stratigraphic recording approach is the converse of an architect's. We both deal with the needs of an individual or a society and the solutions to the organization of space; we just approach the problem differently. The architect knows the needs of a living client and designs a solution to fit those needs. An archeologist can see only the results and has to discover the original needs of an ancient civilization.

TYPOLOGY. The second type of information we record is Typological, those characteristics of an object making it similar or different from another object of the same general class. That information tells the quantity and distribution of a specific type of object over a geographical area and through a period of time. The differences or similarities traced sometimes give indications of what the object was used for (function) and whether or not that class or type of object had some special significance in a given cultural context, either for an individual or society.

All of this information has to be accurately recorded in a file — on the spot — especially the stratigraphic information. In many instances, it's the only thing brought back for further analysis, since the architecture stays in the ground or is destroyed when excavated and the objects belong to the country's heritage so cannot be exported.

Along with this mass of data, graphics also are essential. Photographs are taken from every conceivable angle to document each step of the excavation. Daily floorplans and sketches are even more important since they're based directly on the digital information.

SYSTEMATIC UNITS. An archaeological site is divided into systematic and workable size units. In our case, the units were 10 meters square. As an item was uncovered, its location had to be measured from three control points, two horizontal and one vertical. From these the item's absolute position in space was calculated by using standard surveying techniques. For each item, then, we had at least three measurements or ties and each set of three was a relay point.

For complex elements like walls we had more than three ties. This was because walls are hardly ever straight and have been often reused, patched, reinforced, and rebuilt through the centuries. Each modification to the core structure had to be identified separately. All the relays were maintained in our volumetric logs and added to the stratigraphic and typological information gathered.

Daily drawings were done of the elements we had found, and each drawing became more complex than the one done the day before. But each person draws differently, so errors crept in, and with errors, major distortions from the numerical data. It became imperative the drawings be consistent and precise for each unit. The features of one excavation unit had to link properly with the features of the adjacent unit. And as more information was obtained, a clearer picture of the layout of the building or city was possible by plotting all the units together.

PLOT PARTNER. Since each unit was dug at a different place, depending on the complexity of the items found in any one square, an area floorplan couldn't be plotted each day. Only a unit floorplan could be constructed from the digitized relays. A simple but precise way of translating the long sets of volumetric log relays (the digital data) into graphic representations reflecting the true volumetric and three-dimensional character of each stratigraphic level was needed.

So, each one of us became attached to the 100 as an essential partner in the recording system. Each day, (after scrambling to see who'd get the 100 first) we entered our journals, indices, and records, creating standard text files per excavation unit.

In these we'd write our step-by-step records of where and what was uncovered that day, why we decided to focus on some area of the unit and what our theories were regarding the elements found. In a separate text file, the coordinates derived from the ties and relays taken for each structure or artifact were entered.

AFPP.● An Archaeological Field Plotting Program (AFPP) was developed in Basic. (The program, "Architectural Floor Plans, Digital Plotting", was published and copyrighted by Giorgio Buc-

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cellati and Oliver Rouault in their article *Terqa Preliminary Reports No. 12: Digital Plotting of Archaelogical Floor Plans*, Undena Publications, P.O. Box 97, Malibu, CA 90265.)

By adding move and draw commands to the sets of coordinates, the AFPP drives the plotter and graphically draws a representation of each unit each day. Errors show up quickly, so math can be easily doublechecked or measurements retaken the same day.

The text files change, of course, as the complexity of the combinations of walls, floors, burials, pits, and objects in the units become more numerous. But with the AFPP, it's easier to determine which of those elements and combinations belongs together functionally or for a given period of time.

The features from the previous day are drawn in one color and the finds of the current day in another. The floorplans are never static; elements change, enlarge, and are recombined as more information is added to the files. The use of the 100 and the plotter takes on the dimensions of an adventure itself, as the pictures produced clarify what's being found in the dirt.

INVALUABLE TOOL. Eventually, enough information and data is gathered to sort the elements by strata, linking up units and the items in them to the same chronological periods. So far, 10 such separate strata have been defined, and the plotting within each has become very specific.

By manipulating the text files, we can draw, in any given unit, the features we want and know the result is an accurate representation of spatial realities. For instance, we can plot all the Medieval burials and see exactly how they interface with the Old Babylonian walls beneath. Or, we can plot the distribution of artifacts on the floors to notice functional centers of use or production in a given period.

The ability to do this type of plotting in the field is inestimable. It not only documents, but the results of the data sorts become part of the informational base from which the excavators make their decisions for the work plan of the following day.

As graduate students, the entire experience at Terqa was exciting, but the application of microcomputer workstations in the field was extraordinary. What had seemed like impossible masses of data needing to be noticed and recorded became manageable.

UNDAUNTED. Our attentions were focused and became increasingly precise. Our observation of details during the excavation process improved and could be verified and corrected easily. With just a little practice, we learned to manipulate the data so the analysis of the material became clearer and the stratigraphic relationships understandable. We could spot where we needed more information, where the sequences were still unclear, and work on those areas the next day.

The season at Terqa had been an experiment using the 100 in the field. Despite the dust, high heat, spiders and scorpions, and grimy hands of inexperienced graduate students who used it for hours upon end, the equipment worked beautifully.

Work on the data base continues now that we're back at the Univeristy. The AFPP is serving as the starting point for a whole realm of new approaches to computer processing in Near Eastern archaeology.

A brand-new journal has been inaugurated, appropriately called, *Computer Aided Research in Near Eastern Studies* (CARNES), published by Undena Publications, Malibu, CA, which featured the AFPP program in its premiere issue.

Further, the program is undergoing some refinements and we're reworking the encoding manual to make all of the data collection formats consistant within the overall computerized system.

FUTURE HISTORY TOOL. All of us are becoming more comfortable with the equipment. Most have begun to think of microcomputers as essential parts of our field kits, along with our digging trowels and brushes. A fair number have purchased their own home computers and have begun exploring additional applications in archaeological research, including dissertation projects.

Microcomputers and ancient Terqa are aspects of two civilizations spanning 5000 years. Today's technology is helping to discover the secrets of yesterday and both combine to enhance tomorrow. Bringing the two worlds together may no longer seem so unusual in the face of today's high-powered research setting, but their combined impact in the field of archaeology is definitely going to be spectacular! ◀

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continued from page 39

not exceed 29 characters, and the field lengths and labels in a record are limited to 255 characters.

In PLAY*S, TM is a "field descriptor" meaning the field is text and must be filled in before proceeding to the next field.

T-Base has a primary and secondary set of descriptors (see table 2).

If the information in a field won't be used for calculations, it should be made a text (T) field. This isn't limited to alpha characters. Zip codes, order numbers, and customer ids consist of numbers, but would still be designated text fields.

In PLAY*S, I made my text fields mandatory (M), because I knew I'd be borrowing (B) them later, and I wanted to make sure there'd be something there to borrow.

When creating my screen files, one drawback I found was T-Bases's inability to make calculations beyond two decimal places. Batting averages and slugging percentages in baseball have three decimal places.

This drawback also reduced the authenticity of the data base because T-Base was unable to round off a batting average. For example, a player's average would be published as .265, but in T-Base, it would be 264.

DATA ENTRY. Once I created the screen files for my data bases, I entered T-Base. The program asked me to load a screen file and presented me with the display in exhibit 2.

I entered play*s and received a nasty beep. The program wanted the file name in uppercase letters. This proved vexing whenever I used T-Base and seemed to be an unnecessary "feature" — especially since other Traveling Software programs I've used have wisely omitted it.

When T-Base displayed my screen, the field label appeared in normal video (black on green) and the field length in blocks of reverse video (green on black). A facsimile of the screen appears in exhibit 3.

I began entering data. On some occasions, I found the 100's screen couldn't keep up with my keystrokes. This can be distracting. Editing records is very easy, however, since all of TEXT's editing functions work while you're in T-Base.

When I filled in the last field in the record, T-Base displayed a new set of function key options for me (see exhibit 4).

Sav lets you save the current record to a data file;
Del lets you delete the current record from its data file;
Pre lets you look at the previous record in the data file;
Nex lets you look at the next record in the file;
Cal lets you recalculate any data filed in the record displayed on your screen; and
End lets you end the session and return to the initial T-Base menu.

UPDATING DATA. If you have several records you want to update, you can type in a key field, press F3 (Fin), and T-Base will find the record for you. However, updating an entire data base can be clumsy.

With PLAY*S, I wanted to update my information every Sunday when new stats were available for the Major League's top hitters. This meant going through my data file from top to bottom changing the data in each record.

When the initial player screen was displayed, I pressed F1 and T-Base found the first record in PLAY*D. I modified the record, then pressed F1 (Sav). This returned me to the initial data entry/update screen.

Pressing F1 called up the first record again. To get the second record, I had to press F5 (Nex). Updating and saving this record sent me back to the initial screen, where I had to go through the entire process again. Obviously, using this method would get more and more tedious as you went through the data file.

There are quicker ways to update an entire file, but Traveling Software could have made this process easier and provide a safeguard against incorrect data entry by maintaining the second data entry/update screen after a save rather than returning to the first screen.

T-BASE REPORTER. Once I'd entered my data, I returned to the main menu. It looked similar to exhibit 5. Note a data file was created for each screen file. PLAY*S created PLAY*D and so forth.

The information appears in the data files as in exhibit 6. If a field's data is

borrowed from another data base, it appears in the data file as two consecutive commas. In the portion of PLAY*D appearing in exhibit 6, the two commas after the player's position indicates the borrowed field batting average (AVG).

I used T-Base Reporter's definition commands (see table 3) to set up the report I wanted. To create the report, I entered TEXT and set up the file RUNS*R (see exhibit 7).

Taking RUNS*R line by line:

- Line 1 tells T-Base Reporter to use the RUNS data base for its information;
- Line 2 sorts the data base by a player's team and after the report is printed, it will return the data base to its original form;
- Line 3 sets the page width to 40;
- Lines 4 and 5 establish two header lines;
- Line 6 starts column 1 at column 1 on the paper, column 2 at column 15, and column 3 at 28;
- Line 7 sets the labels for the three columns;
- Line 8 tells T-Base Reporter which fields the information is coming from for the columns in the report;
- Line 9 sets subtoals for each team; and
- Line 10 calculates a grand total for the entire report.

While this may sound easy, it wasn't, primarily because T-Base won't sort a data base on a borrowed or calculated field. To sidestep this problem, I made RUNS*S borrow TEAM from PLAY*S and store the information in RUNS*D. And when RP was calculated, I made sure it was also stored in the file.

When it was time to print the report, I changed TEAM from a borrowed field to a text field and RP from a calculated field to an integer field. The reports that resulted were similar to exhibit 8.

I found the time T-Base Reporter took to sort the 50 records in this file to average one minute and 30 seconds.

PROGRAM	BYTES
TBASE.BA	6798
TB-RPT.BA	7675
MEMMGR.BA	1757
BYTES FREE	13360

Table 1. File Lengths.

PRIMARY DESCRIPTORS	FIELD TYPE
T	Text
I	Integer
$	Dollar & Decimal Fraction
D	Date
U	User-Defined
SECONDARY DESCRIPTORS	
B	Borrowed
BS	Borrowed and Stored
C	Calculated
CS	Calculated and Stored
M	Mandatory Entry

Table 2. File Descriptors.

REPORT COMMAND	WHAT IT DOES
DB	Identifies data base for report
SO	Sorts DB without returning fields to original order
SR	Sorts DB and returns it to original order
PL	Sets report's page length
PW	Sets report's page width
OUT	Directs report output to LCD, CRT, cassette, printer, RS232, modem, or RAM
HE	Sets header for report
CO	Sets beginning positions for columns in report
CL	Sets labels for columns
DE	Designates the fields where data will be taken for report
ST	Directs a subtotal be calculated
GT	Directs a grand total be calculated
FP	Forces a new page

Table 3. Report Definition Commands.

```
5,NAME,TEAM,POSITION,AVG,RBI
Name:,20,TM
Team,15,TM
Pos.:,15,TM
Avg.:,6,IB,AVGE,NAME,AVG
RBI:,7,I
```

*Exhibit 1. PLAY*S Screen*

If you don't wish to print all the records in a data base, T-Base Reporter lets you set a range of records to be used based on a field. For example, I could limit my report to hitters with only 70 or more runs produced.

MEMORY FACTORS. The screen files in my baseball data base ate up 449 bytes of memory, while the 50 records in each of my data files occupied 4146 bytes. Since my three data bases were interdependent, I calculated the most records I could get into any data file would be 250. However, if I had only one screen file and one data file, I calculated I could shoehorn around 700 records into the 100.

Traveling Software recommends only one program — either T-Base or T-Base Reporter — be loaded into the 100 at one time. This opens up a lot of memory for data files.

DOCUMENTATION. The manual for T-Base is the most ambitious Traveling Software's produced for any of its programs. It includes sections for neophyte owners of lap-sized computers (T-Base is also made for the NEC 8201A and Olivetti M-10); for tying T-Base to Traveling's word-processor, Traveling Writer; for managing memory; and for troubleshooting T-Base.

I found the troubleshooting section a mixed blessing, proving helpful about 50 percent of the time.

The examples for T-Base Reporter are excellent and very helpful. After botching my report file several times, I managed to debug it by using the manual's examples.

These examples and the sample data bases coming with T-Base show Traveling is anticipating its data base's primary use will be business. The sample files set up screens for tracking vendors, customers, products, and orders. The examples illustrate how to print mailing labels, create a customer ID list, print a customer order report, and print a product order report.

As with every Traveling product, T-Base comes with a 12-minute audio tutorial conducted by the Traveling Professor. The audio segment is basically an overview of T-Base and is more promotional than tutorial.

SUMMARY. T-Base may be initially difficult to work with, but once the basics are mastered, you'll be surprised at how fast you can design reports and data bases.

As I developed my data bases, I used the Portable Computer Support Group's Disk+ to save and load files to a TRS-80 Model 4. This kind of addition to T-Base really adds to the program's power.

And make no mistake about it. T-Base is one of the most powerful programs you can get for the 100 today. ◀

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```
PLAY*S.DO    RUNS*S.DO    AVGE*S.DO
TB-RPT.BA    TBASE .BA*
Enter T:base name:?
```

Exhibit 2. T-Base File Display.

```
PLAY*S.DO    RUNS*D.DO    PLAY*D.DO
RUNS*S.DO    RUNS*R.DO    AVGE*D.DO
AVGE*S.DO    TB-RPT.BA    TBASE .BA*
Enter T:base name:?

                                  Menu
```

Exhibit 5. Menu After Data Entered.

```
        PLAY*S DATA ENTRY/UPDATE
Name:
Team
Pos.:
Avg.:
RBI:

          Fin                 New  Cal  End
```

*Exhibit 3. Initial PLAY*S Screen*

```
Barrett,Boston,second base,, 43
Bell,Toronto,Third Base,, 41
Brenly,San Francisco,Catcher,, 31
Brooks,New York (NL),third base,, 30
Cabell,Houston,First Base,, 22
Carew,California,first base,, 25
Carter,Montreal,catcher,, 53
Clark,San Francisco,Outfield,, 44
```

*Exhibit 6. Portion of PLAY*D.*

```
        PLAY*S DATA ENTRY/UPDATE
Name:Barrett
TeamBoston
Pos.:second base
Avg.:   302
RBI:     43

 Sav  Del       Pre  Nex  New  Cal  End
```

*Exhibit 4. PLAY*S After Data Entry.*

```
DB,RUNS
SR,TEAM,NAME,RP
PW,40
HE,RUNS PRODUCED
HE,American and National League
CO,1,15,28
CL,Team,Player,RP
DE,TEAM,NAME,RP
ST,TEAM,RP
GT,RP
```

*Exhibit 7. RUNS*R file*

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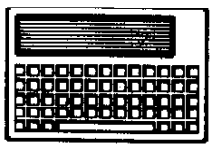

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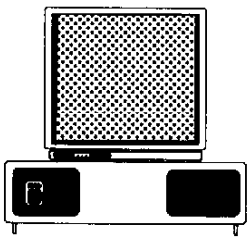

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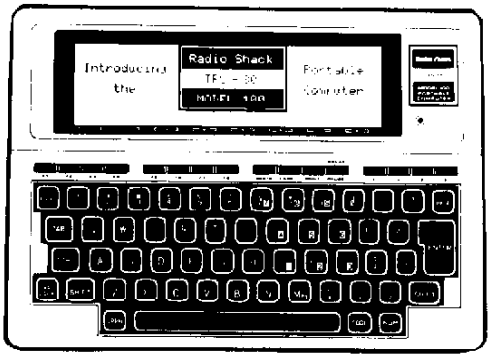

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T-BASE

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Team	Player	RP
Atlanta	Oberkfell	41
	Ramirez	53
	Washington	60
		154
Baltimore	Murray	88
		88
Boston	Barrett	56
	Easler	65
		121
California	Carew	47
		47
Chicago (NL)	Dernier	65
	Durham	83
	Sandberg	91
		239
Cleveland	Hargrove	51
		51
Detroit	Garbey	56
	Lemon	79
	Trammel	88
	Whitaker	65
		288
Houston	Cabell	44
	Mumphrey	68
		112
Kansas City	Motley	50
	Orta	36
	Sheridan	45
		131
		1231

Exhibit 8. Portion of RUNS Report

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By WOODY LISWOOD

Editor's Note: Since the Model 100 was introduced, there has been much lip-service to the prospect of ROM-based software for the machine. However, only one vendor (Polar Engineering and Consulting) and one major software house (Portable Computer Support Group) have marketed such software.

Over the past few months, there have been a number of programs and devices introduced allowing the Model 100 to communicate with a variety of popular computers. Disk+ is one of these.

It was originally released as a cassette for the 100 (see review in *Portable 100*, August 1984, page 71) and a floppy disk for the host desktop. For a list of desktops Disk+ is made for, see Disk+ Computer List. I tested ROM Disk+ on the Apple and IBM computers and found no problems with either version.

Many of the programs on the market allow transfer of only document files. Not so Disk+. You can save all files, including machine-language and Basic files. You can also save your entire memory as a subdirectory on the floppy.

It works great.

TURNING THE KEY. You start Disk+ ROM by inserting it in the bottom of your 100. The instructions are clear about which end goes which way. In addition, the label on the ROM was marked to show the same notches as are on the Model 100 ROM socket. It is almost impossible to put the Disk+ ROM in backwards.

According to the documentation, a cold boot doesn't result from installing the ROM. I put my Disk+ ROM in with the batteries in place and four files in memory and didn't lose a thing.

After insertion, make a couple of copies of the Disk+ floppy as backups and format some blank disks. Once the Disk+ floppy is booted, the program is loaded into the desktop's memory, so you can remove the program disk and use the blank disks as data disks.

I set Disk+ to work with both an IBM PC XT and a Compaq by creating an autoexec.bat file to set the time and date and boot Disk+. Disk+ sets its own mode so you don't need to fool with that.

LIMITED TO COM1. Also, Disk+ will work only with COM1. I normally use COM1 for a modem and COM2 for a printer. When I want to up- or download, I just unhook the cable from the modem and plug it into the RS232 port on the 100. Since it was already set up for a modem, I do not need to use the null-modem cable from Radio Shack. If you only have one serial port on your IBM, it may be set for a printer, and you would need a null-modem adapter in your serial cable line to get the 100 to talk to your computer. When you get Disk+, try to have both types of cables available and see what happens.

I also tested the Disk+ with a SmartCable from IQ Technologies and it works fine with both DTE and DCE serial configurations.

The first time you use Disk+ ROM, you must enter Basic and type CALL 63012. That puts Disk+ into the permanent memory menu and will always appear there for your use, taking up none of your precious RAM.

FUTURE ROMS. The documentation says this location will be used for future ROMs developed by the Portable Computer Support Group. If you changed ROMS, the next time you accessed the Disk+ menu, you would access the new ROM. When you exited that ROM, your main menu would show the ROM named correctly.

You start up Disk+ the way you would any of the programs shown on the 100's main menu: Place your cursor over the name and press enter.

You don't use your desktop's keyboard for anything. You use the micro's keyboard to translate text files from Disk+ format to DOS format or vice versa and to exit to DOS.

OPTIONS FOR 100. Disk+ ROM has seven menu items.

F1 (DISK) shows your desktop's Disk+ files. When you press F1, DISK changes to RAM. Press F1 again and you will be shown the files residing in your 100's RAM.

F2 (NAME) allows you to rename your files.

F3 (STAT) shows you four TELCOM STATs: one for most computers, another for most CP/M machines, a third for an APPLE II, and one you may determine.

F4 (SIZE) displays the size of any file in bytes. This is done by placing the cursor on a file name and pressing F4.

F5 (KILL) works like kill in Basic. You place the cursor over a file name, press F5, and verify the kill by pressing Y. Very convenient.

F6 (SVALL) dumps the 100's RAM to disk. When you invoke F6, the RAM files are placed in a subdirectory. You must assign a name to the subdirectory before you dump your RAM to disk.

F8 (MENU) returns you to the standard 100 menu.

OPTIONS ON FLOPPY. When you're on the floppy:

F1 (RAM) returns you to the RAM directory on the Model 100;

F3 (SIZE) tells you the size of a disk file in bytes;

F4 (KILL) works like kill on the Model 100;

F5 (LDALL) allows you to load a subdirectory from disk to RAM on the Model 100; and

F8 (MENU) returns you Model 100 menu.

Pressing shift-break will stop Disk+ and return you to the Model 100 menu.

NEVER RESET? The documentation never press reset to break out of Disk+. I hung up my 100 by trying to load a file to the disk without hooking up the cable. Then I hit reset. It worked, but I was returned to Basic rather than to the Model 100 menu.

I pressed reset a number of times and couldn't cause anything bad to happen, so I can't say why PCSG is so adamant about using reset.

The documentation is similar to other PCSG programs. It is printed rather than typeset and comes in a brown standard size three-ring binder. It reads well, is direct, and to the point.

Disk+ ROM is a great advance in programming for the 100. On board, without taking up any RAM, is an entire disk manager. Hooked up to the micro computer of your choice, you gain the capability of using a standard floppy disk as if it were part of your system. ◀

DISK + COMPUTER LIST

Radio Shack Models:
I, II, III, 4, 12, 16
2000, Color Computer
IBM PC
Apple
Epson QX-10
Kaypro
Osborne I
Compaq
Corona
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Olivetti M18 and M24
Columbia
TI Professional
AT&T

PROBLEMS ABOUND IN THIS DATA-BASE MANAGER PROGRAM

Data 1
Microbyte
11047 N. 19th Ave.
Phoenix, AZ 85029
602-943-9080
$39.95

By WOODY LISWOOD

Data 1 purports to be a data base. Maybe so, however, I tested two different versions and neither of them worked.

First things first. The data-entry routine worked and recalled data, that is until I sorted that data. After sorting I was unable to recall any records. Each recall attempt led to an error message with a bomb back to Basic.

Whatever the problem, it has compound effects. Doing the sort wipes out the program! After the records are sorted, you can't load the sorted file;

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Circle No. 2 on Reader Service Card

you're not even able to create a new file. You must reload from tape.

FIELDS AFIELD. Data 1 has an unusual methodology of defining fields. It comes configured for 14 nine-character fields. If you wish to go longer than that, you may combine two fields during data entry.

You cannot have 15 fields, though. Fourteen is it.

You cannot go more than two fields in length for any single field. That means Data 1 isn't acceptable for typical name and address lists.

Here's what happens. My office address is 900 Larkspur Landing Circle, Suite 155. That is 38-characters long including spaces. Since I can combine only two fields for up to 18 characters, I couldn't spell out that address.

Also, each field name takes up the same amount of space on the screen so you can't have a two-column state designation. You have the two columns plus the remaining seven characters taken up on the screen.

You design the screen by responding to a series of prompts for field name. If you make a mistake in spelling, you must do it over. The cursor control keys are counted as characters.

MORE PROBLEMS. Entering information is frustrating. You can't edit data as you enter it. If you make a typo, you must go through the entire record, return to the field, and then retype the field.

Not too bad, you say. Hold on a minute; you only want to change one field. If you press the carriage return through all those good fields, they now are erased when that record is stored. You have corrected the field with the error and erased all of your good fields. Swift, huh? You must use the down arrow to go past the fields; it works some of the time.

Another feature is if you use an = sign in the field name, the field will automatically total during printing.

Data 1 has a printing routine. The documentation shows you can select a field or fields to print as well as where on the paper you wish the printing to occur. Since I was never able to get a sorted data-base, I never tested the print routine. Hence, I'd not recommend this program in its present state. ◀

THIS SOFTWARE DOESN'T MEET THIS SALESMAN'S NEEDS

Traveling Sales Manager
Traveling Software Inc.
11050 Fifth Ave., N.E.
Seattle, WA 98125
206-367-8090
$59.95

By HUGH S. EVANS

Don't misinterpret this program's title. The Traveling Sales Manager was written for sales people, but not sales managers.

The heart of the program is the sales module intended for entry of customer contacts, biographies, and orders. Another module, reports, enables data to be printed in specific formats. Other modules enable the sales person to update product descriptions, prices, changes in tax rates, and to interface with other programs offered by this vendor.

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The entire concept seems to have been directed toward those who make single item sales a few times a week or month. The program doesn't lend itself to handling orders where listings of multiple items are needed, as in hardware sales. Entering a single item order with a single description is straightforward and easy.

SALES CALL. To review each module in the normal sequence encountered in sales, let's start with the customer log.

I was disappointed to find it's mandatory to enter the customer ID to originate or update an entry. It isn't possible to enter the company or contact name, then search and automatically display or enter the ID. This restraint forces the user to refer to a separate list to get the ID field.

In contrast, a find or search capability based on the ID has been provided. On entering the ID, the current data and customer name is automatically entered. A reminder field allows the next contact date to be entered and there's a flag which can be set to remind the user some action is required.

Two lines for comments are available, each having 28 characters. If more space is needed, the entered data will overflow to page two. If too much data is keyed in, it'll overflow to page one, destroying what was entered previously.

Next, we have the screen to add or update orders. Again, entering the customer ID will cause the customer's name to fill automatically. As noted earlier, single item orders easily are entered but no provision was made to handle multiple items without reentering the header data for each item.

SMALL SCREEN. The customer-biography screen defines appropriate historical data for each account. It's at this point in the documentation Traveling Software points out the user should generate a master list of customers and their ID numbers. I feel the screen should have had fields for names of several contacts, not just one, along with their phone extensions.

My personal preference is to use four letters for the state name, not two, and to add five more spaces for the new zip codes. The zip code is the last field on the screen and keying in the number causes the screen for page two to appear. It has fields for two phone numbers (but no way to enter for whom each is for) and three lines for notes. Again, overflowing page two causes data entered on page one to be overwritten.

The product-description screen seems adequate but it has no provision for showing different price/quantity breaks. I couldn't find a way (except to cut and paste) to recall description data and transfer it to the order module.

BYTE AND TIME WASTER. In performance, I found the program to be less than desirable. The sales module takes almost 11K. It also uses seven titles on the directory. Next, the report module requires nearly 7K. In actual use, entries in both the contact log and the biography log use 400 bytes each, while each order entry uses 200 bytes. Presuming the 100 has 24K, the useable memory is about 20K.

After loading the sales module, there'll be only 9K left for customer

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data. Twenty-five biographies could take up as much as 10K, or to use the system differently, there's space for about 20 customer contact records plus a few order entry records. In short, it's impractical to load more than the sales module at one itme. Some fields must be saved to tape in order to load the report module to print a weekly report.

While the documentation is well done, both Olivetti and NEC instructions are included in the text. They were intermingled with no font change so there was some confusion in following the sequence. I couldn't help but notice the binder didn't include Traveling Software's phone number. The only support offered is through written inquiries. While they may feel this is adequate, it isn't acceptable to me, a novice.

To terminate the program, it's necessary to repeatedly press a function key. There's no quick exit.

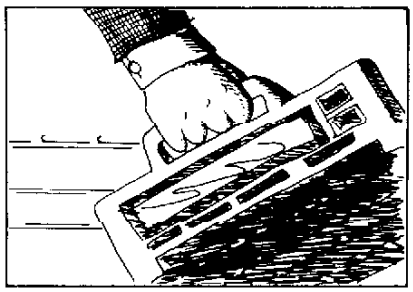
Data entered on the screens was very slow to save. All the modules were slow. I'm no speed typist, but I always outran the system display.

Finally, the screen and the printer format are cast in brass. Nothing can be changed.

LIMITED. In summary, I think the present program concept fits a rather limited group of users and the nice features built into it are overshadowed by the shortcomings and narrow operating limits.

I gave up after trying to use the program in the field. The software was wasteful, time consuming, and too inflexible for me to use. Functionally, I was frustrated.

I've sold everything from hardware to computer systems and I found this program unacceptable in its present format. ◀



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By WOODY LISWOOD

Some problems never seem to have an elegant solution. By elegant, I mean a solution that is simple, practical, easy to implement, and transparent in usage. TransDoc fits all of that definition.

The program is designed to take document files from a Model 100 and transfer them into a word-processing or DOS file on the IBM PC.

TransDoc is a combination of hardware and software. There are two programs for the Model 100 (they take up about 1500 bytes of space) and a plug and cable to hook up to the PC.

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CABLE CONNECTION. The cable plugs into the PC keyboard plug. The PC keyboard is inserted into a switch box connected to the cable. From the switch box a flat cable goes into the printer port of the Model 100.

The switch box has two settings, one for the IBM PC keyboard and the other for the Model 100.

When using TransDoc, plug in the cable, throw the switch to "LAP," and away you go. When not hooked up to the Model 100, leave the switch on "HOST" and use your IBM keyboard as normal.

To use TransDoc, have some text files for transfer to the IBM PC. Boot the PC and start up your word processor. Then go to the main menu on the Model 100 and run a program called DOCPC. It displays a new menu saying press F2 to SEND and F4 to END.

Pressing F2 displays all document files. F1 then says KEY and F4 still says END. Typing in the name of a file sends it to my IBM PC as if it were being typed in by hand.

SMART KEYBOARD. What's happening is the Model 100 has become an intelligent keyboard for the IBM PC. No serial ports and no problems. No mode problems. No STAT problems. Just all the text being transmitted as if I were typing it in myself.

If I press F1, the Model 100 acts as a normal IBM keyboard and everything typed on the 100 appears on the PC. Only one word of caution: Since the Model 100 does not have IBM compatible function keys, it can't run any word processor relying on function keys to get things done.

Pressing F4 returns you to the Model 100 main menu.

While the file is being sent, F3 becomes PAUS. Pressing F3 stops the action until it's pressed again.

During the file transfer operation, TransDoc keeps track of the number of characters it's sending and displays that count on the Model 100 screen.

DOCUMENTATION. The documentation is 11 pages of photocopied, daisywheel produced instructions. They described step by step: plugging in the cable, hooking up the keyboard and the Model 100, and loading the programs needed from cassette tape.

I had to crank up the volume two steps above normal to get the tape to load. Other than that, there were no problems.

I use the Model 100 mostly for text work while traveling. Prior to TransDoc, I used a small program from a computer magazine to make the files WordStar compatible and used a terminal program to capture the text file being transmitted through the serial port.

Then I booted WordStar and reformatted the file so I could work with it.

NO PROBLEMS. I could find no problems. However, this keyboard only works on a IBM PC or PC XT, since it replaces the keyboard plug. I have an XT at work, so things work fine there. I have a COMPAQ at home. No luck there, since the keyboard is hardwired into the computer.

I was not able to test TransDoc on any other of the compatibles, so if you have a removable keyboard on your PC compatible, I would check with TransDoc before purchasing.

Also, TransDoc only transfers document files. This is similar to other soft-

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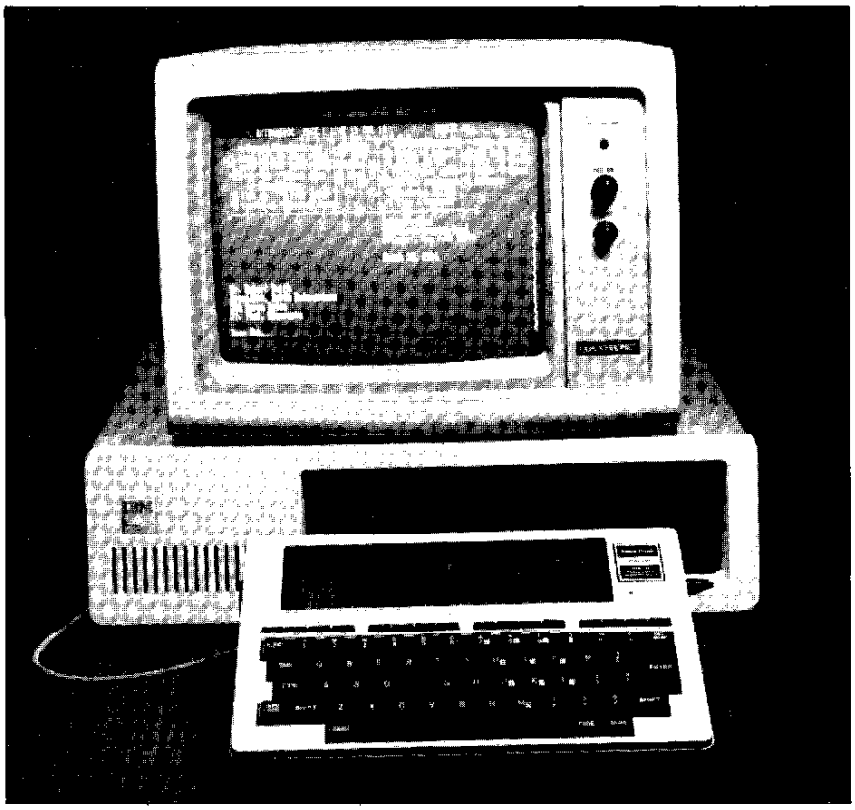

TransDoc running on an IBM PC operating WordStar

ware-based transfer programs. If you need to store and retrieve Basic and machine-language files, you will need something like Disk+ (see related review in this section).

This is an elegant solution to getting text from the 100 to a IBM PC. It works simply, easily, and is what all great gadgets should be: functional. ◀

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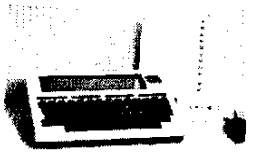

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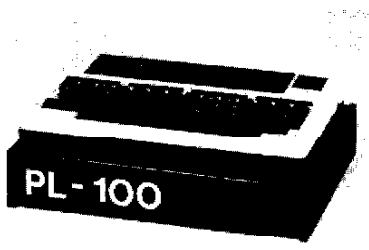

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Circle No. 51 on Reader Service Card

acoustic-cup connectors for the 100's modem so you can direct dial through phone systems without standard modular plug fittings.

It is a rubber donut with a circuit board in it.

When Black Jack is used, you unscrew your phone's mouthpiece and remove the microphone.

Press Black Jack on the fitting. Make certain the the arrow on Black Jack faces toward the cord entering the fitting on the phone handle.

BEIGE LEAD. Insert the beige lead from the 100's RJ11C direct-connect line cord into the female plug on Black Jack. The silver lead remains disconnected.

You now can use the modem as if it were directly connected the phone line — if you have a touchtone phone.

"So," you ask, "why is this such a great item?." Let me give you a personal example.

My Model 100's direct-connect cable expects to be plugged into the standard modular fitting. However, as a consultant, I travel a lot and use the 100 at work. There are major problems.

At work, I have a multi-line phone on the desk. It doesn't use the standard RJ11C fitting.

ON THE ROAD. On the road, most hotel phones I find have an extra line on their plug for the message system or are hard wired. That means no direct connect modem.

Prior to Black Jack, I carried Radio Shack's acoustic cups with me. When on the road, I just hooked them to both ends of a phone and normally everything worked okay. I say normally, because they tended to be bothered by excessive line noise, and sometimes didn't want to make connections. They also took up about a 3-inch-by-8-inch-by-3-inch section of my travel space.

Black Jack is smaller than the phone mouthpiece. It only takes up a few cubic inches of space in my travel case. That, in itself, is great. And the documentation says Black Jack gives me 20 decibels more sensitivity than my acoustic coupler, although I didn't have any way to test that claim.

FOUR SYSTEMS. Black Jack comes with a plastic fitting to protect the contacts. You pull off that fitting, unscrew the mouthpiece of your phone, and snap

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PortaCalc

All **Porta** series programs are supplied on cassette and require 24K RAM. Unless otherwise noted, all programs are available for TRS-80 Model 100, NEC 8201, and Olivetti M10. If ordering direct, add $2.00 shipping and handling per order. Dealer inquires invited.

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Black Jack on the mouthpiece. Then use your modem normally. I tested it with four different phone systems and had zero problems with anything.

If you do not have touchtone, then you would dial your phone number prior to going to terminal mode with your modem software. The documentation says if you go through a switchboard, make your call before you take off the mouthpiece and microphone.

There is no documentation to speak of. The instructions are printed on the box containing Black Jack. I started up with little difficulty.

ONE PROBLEM. I had one problems. When I first hooked up Black Jack, nothing happened. I thought it was defective. Then I realized I had to bend the electrical connectors in my phone to reach the connectors on Black Jack. After that, it worked perfectly with no problems.

Black Jack has become a permanent part of my life. It stays with the Model 100 permanently.

I also hook up my Hayes 1200 baud Smart Modem and IBM PC at work without putting a special tap into the multi-line phone connector.

If you have problems with standard fittings and need a good solution to a vexing problem, Black Jack is great. ◀

A VALUABLE TOOL FOR PROFESSIONALS MANAGING PROJECTS

Traveling Project Manager
Version 2.1
11050 Fifth Ave., NE
Seattle, WA 98125
24K required, 32K preferred
$59.95

By SCOTT L. NORMAN

The Traveling Project Manager is a welcome addition to Traveling Software's line of applications programs. I believe it's unique among Model 100 software: a package letting a manager track time and money charged to a project.

A spreadsheet or data-file manager with arithmetic capability could deal with these tasks, but Project Manager handle them more easily.

It's designed for recording charges against a project, and generating a variety of summary reports depicting the project's status at various levels of detail.

Before getting into the system, I should probably mention what Project Manager is not.

It's not a PERT (Program Review and Evaluation Technique) or CPM (Critical Path Method) program; it won't find those elements of a project which will delay the entire effort if they're allowed to slip.

It doesn't estimate the probability of task completion dates either.

In the same vein, it won't perform resource leveling. If you lay out a project schedule calling for 100, 25, and 72 workers to be on the job during three successive weeks, Project Manager will quietly go along with you.

These aren't damning criticisms, since I doubt anyone could actually stuff a PERT or CPM package into the 100.

Some of Project Manager's summary reports do help clarify the status of a project so the manager can make better decisions about critical elements of the work, but the program itself is really intended for time-and-cost tracking.

Project Manager is quite useful within its own sphere. But I think it's important to be explicit about what that sphere is.

NUTS-AND-BOLTS. Like the rest of the Traveling Software line, Project Manager is packaged in a compact three-ring binder that holds the program cassette. The tape has Project Manager's four programs on one side, a pep talk by the vendor's Traveling Professor character on the other.

I could do very nicely without the Professor, but I have to give the rest of the production pretty high marks. There's enough illustrated introductory material to help the first-timer load and run the program successfully — a common feature of Traveling Software products.

I do have one criticism, though. In the interest of commonality with the rest of the product line, the vendor has chosen too compact a package: that is, the binder rings are too small for the volumn of material in the Project Manager manual. As a result, it's almost impossible to turn pages without having the binder pop open. I found this so

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```
                THE TRAVELING PROJECT MANAGER          Page  1
                      PROJECT OUTLINE

      REPORT DATE:    08/22/85    15:06

                                          Activity/Task
      Project   Activity   Task             Definition
      =======   ========   ====   ========================
      NEWLAB      CON              LABORATORY CONSTRUCTION
                         CTR
                         FE       ENGINEERING & PROPOSALS
                         JPS
                         JVG
                         MTL      MATERIALS COSTS
                         RPH      MATERIALS COSTS

                  MBE              INSTALL & CHECK OUT MBE
                         JPS
                         JVG
```

Figure 1. Project Outline.

```
                          THE TRAVELING PROJECT MANAGER          Page  1
                             PROJECT SCHEDULE REPORT

REPORT PERIOD: 04/23/84 - 05/15/84
REPORT DATE:   08/22/84   11:25

UNIT OF MEASUREMENT: Day
ESTIMATED TIME: "e"
ACTUAL TIME: "a"

                    Est/  Est/ Apr      May
                    Act   Act  22222223         111111
Project Act Task Start  End  34567890123456789012345
======= === ==== ===== ===== ========================================
NEWLAB   CON       04/23 05/14
                   04/23 05/13

             CTR   04/23 05/14 eeeeeeeeeeeeeeeeeeeee
                   04/23 04/23 a

             FE    04/23 05/14 eeeeeeeeeeeeeeeeeeeee
                   04/23 04/23 a

             JPS   04/23 05/14 eeeeeeeeeeeeeeeeeeeee
                   04/23 04/23 a

             JVG   04/23 05/14 eeeeeeeeeeeeeeeeeeeee
                   04/23 04/23 a

             MTL   05/13 05/14                    ee
```

Figure 2. Graphic Presentation of Data.

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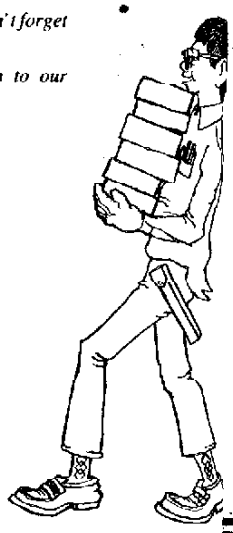

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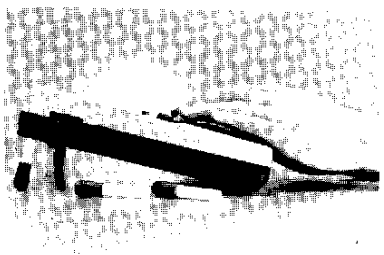

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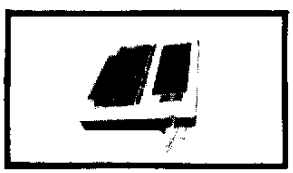

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annoying that I was eventually forced to switch everything to a larger cover, cribbed from another program.

The four programs on Project Manager are:

- PRJMGR.BA — the data gathering and organizing routine. This is used to set up the structure of your project and to record charges as time goes on;
- PM-RPT.BA — the report generator. Creates several types of tabular reports, plus a schedule report with limited graphics;
- MEMMGR.BA — the memory manager supplied with several other Traveling Software products; and
- DATMGR.BA — which works with Project Manager's data files, selecting and combining information to create new files for the user's own reports. This is also useful as a simple, general-purpose data-file manager file.

Only the first two, which I'll discuss in this review, are strictly necessary for Project Manager's operation.

You can have only one or the other in RAM simultaneously. PRJMGR and PM-RPT require more than 14K of storage each, and still more space must be reserved for the data files which the system creates in operation.

PRJMGR.BA. In Project Manager, a project consists of major divisions called activities which in turn are divided into tasks. Each activity and task is identified by a cryptic three-character code, but during the project definition phase you also may record remarks (up to 24 characters in length) to jog your memory.

Expenses and other units of value such as man-days are charged against specific tasks; the program keeps track of which task belongs to which activity, and performs the necessary summations when status summaries are called for.

Before you go anywhere near the 100's keyboard to use Project Manager, you'd be well-advised to spend some time planning your project on pencil and paper.

This is essentially a system for keeping score, and the manager must have the structure of the project firmly in mind before using it. You should sketch out the tasks belonging to each activity, as well as the estimated start and finish dates and budget for each task.

Project Manager doesn't solve problems of project organization, although it may reveal some of the pitfalls in a

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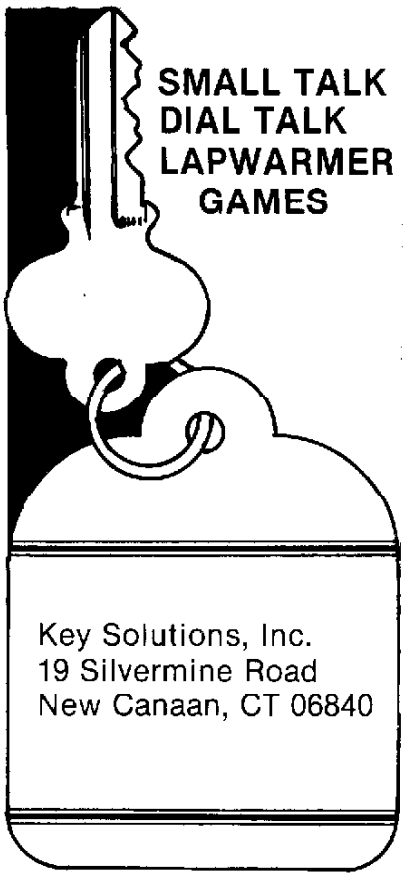

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specific plan after you begin working with it.

Project Manager uses several data-entry screens with predefined formats. Some fields aren't meant to be filled in by the user. They're often used for the sums of entries made on other screens and so the cursor skips over them.

That eliminates one possible source of error, but beware: cursor motion can be slow, and it's possible to lose track of where your next entry will be made. When in doubt, wait for the blinking block to show up at the beginning of a field.

DATA FILES. The program creates four data files:

- PMACT.DO — code names and descriptions of activities, along with the name of the project where each belongs;
- PMTSKD.DO — code names and descriptions of tasks;
- PMTASK.DO — scheduled start and finish dates and budgets for each task; and
- PMEXP.DO — dates and amounts of actual expenditures.

As I've suggested, the same files are used for all projects; sufficient information is stored to allow the system to keep track of the proper home for each entry. If you only have one project, you'd be wise to purge unwanted data from RAM to conserve memory and speed up sorting operations.

Project Manager's opening menu provides four options: define a new activity or view an existing one, define or view tasks, add or update expenditures, or view summary reports.

After you make your choice there's a delay of several seconds before the next-level display appears. For the first three options, this is a blank, formatted data-entry screen. The fourth is a subsidiary menu.

DEFINE ACTIVITIES. Let's start with the first option.

Whether you add a new activity or view an existing one depends on what you do when the blank form shows up. When you're setting up a new project, you have no choice but to type in certain activity-definition information. Once there's some information in the data files, the bottom of the display comes alive with labels for some of the function keys. Then you may choose to view an existing activity description, move to the next or previous one, and so on.

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This is typical of Project Manager operation. The options available at any time depend on the status of the information already entered, and inappropriate function keys simply don't receive labels.

A word about the concept of next and previous activities and tasks: Project Manager arranges its data files so these entries are stored in alphabetical, not chronological, order. The manual mentions this, but then sidesteps it by using a sample project with three phases with their names in alphabetical order.

This characteristic method of storage can be disconcerting when you're browsing through a file, and even more so when reports are printed. It tends to obscure the logical flow of a project and makes it more difficult to pick out the critical path by inspection.

It shouldn't be terribly hard to change the ordering criterion. The program already converts all dates from the MMDDYY format in which they're entered to YYMMDD style, ready for sorting. Perhaps a future version of Project Manager will have the ability to arrange activities and tasks in a time sequence.

DEFINE TASKS. Once all project activities have been set up, it's time to move on to task definition. This is similar to the previous phase, except estimated start and finish dates, and the budget, must be furnished. (The program will later take the earliest start date for any task within a given activity as the actual start date of the activity itself, and so on.) Task budgets may be expressed in dollars, units, or both.

Entering budget figures and subsequent expenditures can be confusing, and it pays to work with a sample task or two until you get the hang of things.

Two function keys play critical roles: F7 serves as the units/$ switch, determining whether the program interprets the entry as a dollar value or as the number of other units of measurement, and F1 saves the entire entry in a RAM file.

If both types of entries are to be made for a given task, the dollar figure should be entered first (the active selection is highlighted in reverse video on the label line). After it's keyed in and terminated by the enter key, F7 is used to switch to units mode. The second budget number is then keyed in and entered.

According to the manual, you're now ready to save the whole task by pressing F1; however, I've found it best to press F7 once again before doing so. Otherwise, the units figure may not be recorded. In fact, even if you're only budgeting in terms of dollars you should enter the number, press F7, and then press F1.

This takes some getting used to, and the process isn't helped by the fact it takes several seconds for the blinking cursor to return after each units/$ changeover.

Fortunately, the 100 lets you check your work by leaving PRJMGR and examining the data in the document files directly. You can make changes on the spot using TEXT, but that's not recommended because of the possibility of doing real damage through a minor slip up.

An appendix to the manual guides you through the structure of the document files, although you won't need it for long; the structure is pretty simple.

EXPENDITURES. Once all the tasks have been entered, Project Manager is ready to work.

The idea is the PRJMGR program should be kept in RAM and expenditures entered as they're incurred (at the end of each day or week, for example), using the third of the main menu's options.

The process is similar to that of budget entry, complete with F1 and F7 keys, although the manual's instructions seemed to work better for me than they did in the earlier process.

Suppose an expenditure has been recorded for a task. To make another entry for the same piece of work (for a subsequent working day, for example), you just fill in a fresh add/update expenditures screen. In other words, you actually create another record in the PMEXP file. All entries for a given task will be summed when you call for Project Manager's summary option.

All the task-budgets and expenditures you record are totaled for each activity whenever an expense summary is called for.

This probably accounts for some of the time required for the program to respond to such requests, but it also guarantees the results will be up to date without any further effort in the user's part. It economizes on storage, too, since the totals aren't saved with the data files.

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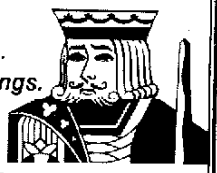

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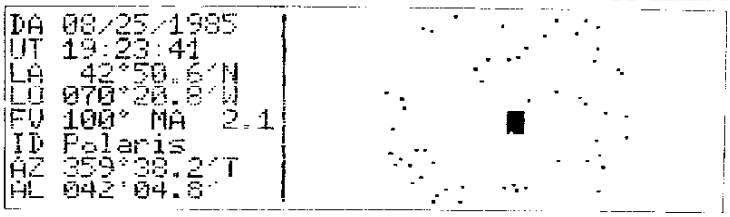

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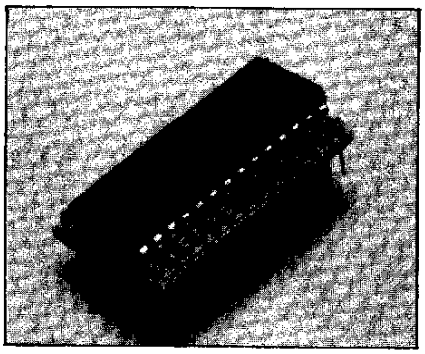

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There's a nice degree of interaction between Project Manager and the 100's operating system.

For example, the program uses the current date as the default for several purposes—including that of reporting the date for which an expenditure is being recorded.

Remember the date of the first expenditure for an activity and tasks will be used by the program as the actual start date for that piece of the project. Therefore, you should be careful when recording things after they've actually occurred.

There's no sense making your performance look worse than it actually is, so it may be necessary to skip the default and enter the actual date of an expenditure by hand.

FINAL POINT. I'd like to make a final point about Project Manager's task reporting system. As the manual points out, it's perfectly feasible to use the same task code under several activities.

I've used this to advantage in managing some of my small projects, in which an individuals's time may have to be divided among two or more phases of the work at once. The trick is to use my people's initials as the task codes; thus the projects are actually broken down into one level of technical detail, the activities.

Figure 1 shows how this worked for one of my projects: the setting up of a new semiconductor-research laboratory. The report, called a Project Outline, is one of the canned formats available from the PM-RPT program.

I show the first two activities, the actual lab construction work and the installation of a so-called MBE (molecular beam epitaxy) system for semiconductor growth. For the most part, the task codes I used are the initials of project scientists and technicians. Notice two of them, JPS and JVG, worked on both activities.

Although this report doesn't show it, the activities actually overlapped in time. This kind of split-effort situation frequently crops up in my projects, and it's very handy to be able to use Project Manager to cope with it.

I've used higher-priced programs on much larger personal computers that couldn't do as much. Of course, it's still up to the manager to set the schedules and task budgets so as to account for only 100 percent of a person's effort altogether!

VIEW SUMMARIES. The final item on PRJMGR's main menu is the view summaries option.

There are four summaries in all: you can elect to see expenditures totaled for each task, each activity, each project, or all projects together. Whichever you choose, there'll be one display column devoted to the budget and another for the actual expenditures. Dollars or units of work can be selected for the display scale.

As the name suggests, the summaries are handy for quick status reports. They do have a few drawbacks, though.

To begin with, they're only available on the 100's display. There's no print option. You have to use the PM-RPT program for hard copy.

In addition, Project Manager can't give you the summaries unless a certain amount of RAM is available. At one point in my own work, I was chag-

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rined to receive an out-of-memory error indication with over 3800 bytes still free. Nevertheless, the summaries can be nice to have.

PM-RPT.BA. In contrast to PRJMGR's summaries, the PM-RPT options are all hard copy reports. They can't be reviewed on the LCD screen.

I've already mentioned the Project Outline; other PM-RPT options are:

- Summary report — which compares your actual expenditures with the budget on a task-by-task basis. Expenditures are shown as dollars, units, or both, depending on how you entered your data. All figures are totaled for each activity and project as a whole, and deviations from budget are presented in both absolute terms and as percentages.

- Detail report — In case the summary isn't explicit enough for you, the detail report lists every single expenditure for every task. The date of each is reported, along with any comments you may have entered when keying in the information. Again, there are subtotals and totals at the task, activity, and project level.

- Schedule report — Those of us who aren't financial wizards often find a graphical presentation of project status most helpful. The schedule report provides a table of estimated and actual stand and end dates, along with a bar graph showing the duration of each task. This is similar to the Gantt chart familiar to all project managers. An example is shown in Figure 2; the "e" represents the original estimates of task duration, while the "a" shows things as they were actually reported.

- Close-out expenditures report — This closes out detailed expenditure records so only summaries remain. The primary purpose of the option is to release some RAM for further use; you can continue to add new expenditures, of course. Subsequent project detail reports will show a total of the closed-out expenditure for each task (with earliest and latest dates), along wih the whole story on any expenditures recorded since the close-out.

LAST WORDS. Traveling Project Manager can do a very competent job of tracking project costs. There are a few sticky points which I've tried to point out: the need for caution during the entry of dollar and unit expenditure information is certainly one. Operations can be rather slow due to the use of Basic and the need to compute many totals each time Project Manager is run.

I for one would also like to encourage the vendor to rework the sorting algorithms. It really should be possible to order tasks according to their starting dates, instead of their three-character codes. That'd make it easier to judge the critical path through a project.

Despite these criticisms, I enjoyed working with the Project Manager package. It does a particular job in a way that's helpful to me, and it makes intelligent use of the 100's features while doing so. This isn't trivial software, but neither is it intimidating; harried project managers should check it out. ◀

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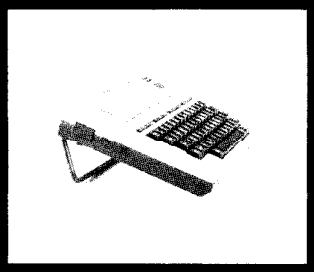

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BOOKS

PSYCHOLOGISTS SAY GAMES MORE THAN MEETS MIND

Mind at Play: The Psychology of Video Games
Geoffrey R. Loftus and
Elizabeth F. Loftus
Basic Books Inc.
10 Each 53rd St.
New York, NY 10022
212 207-7083
191 pages
$14.95, hardcover

By NANCY L. LAITE

When anthropologists look back on the computer-oriented 1980s, one lifestyle sure to be cited will be the arcade subculture. A new community, mostly made up of contemporary youth, is breeding this social phenomenon and causing quite a stir among parents, educators, and government officials. It's this offspring of the computer age who are analyzed in, *Mind at Play: The Psychology of Video Games.*

Authors Geoffrey R. Loftus and Elizabeth F. Loftus are well-qualified to write about the video craze. Both are cognitive psychologists and professors of psychology at the University of Washington. Their pioneering book is one of the first to study video games and their findings illustrate why the games are so fascinating, how they affect us as individuals and as a society, and what their place is in the future. Some of the Loftuses' studies go so far as being a rescue mission for the misunderstood Pac-Man and his friends.

PSY-TECH INTRO. *Mind at Play* is an easy-to-read introduction to psychology as well as computer technology. As a one-time psychology major, I found their application of psychology terms to the video craze a unique marriage. Linking the basic appeal of video games to the principle of reinforcement, the Loftuses maintain the games provide the right balance of feedback to keep players challenged, rewarded, and consequently, still playing.

If hooked video players wonder why they keep spending "just one more quarter" at the arcades, the authors explain that by the games' exploitation of our need for cognitive consonance: the player tells himself he enjoys playing the games, perhaps more than he really does, in order to justify the time and money spent on them. They contend there's subliminal conditioning going on each game played — getting addicted is easy.

One doesn't have to agree with the pair of pyschologists to appreciate their book. Out to shake down the myth that video games are corrupting the minds of today's younger generation, they argue that arcades serve the same socialization process the hamburger joints and boardwalks did in the past. Players have a place to meet, share a common interest, and compete. Although it's noted the community is rather lopsided: a lot more males than females play and players sometimes interact with their machines as much as with one another.

JUST FOR FUN? The crux of the book is the question: Are the games good for anything but entertainment? Although there's little empirical research on the subject, the Loftuses discuss the question at length. Much of their theorizing is based on studies done on the effects of television watching. The Loftuses draw many parallels between television and the games, quoting studies showing electronic games have an outstanding potential as tools in education, and psychological and physical therapy. There's an urgency, they say, for more experimenting in this area. As happened with television research, the significance of video game effects will be hard to ascertain in 10 years if no control group is established now.

Concerned parents can be comforted by the Loftuses' words. If their adolescent is spending all of his or her spare hours and spare change at the arcades, the Loftuses say he or she is actually prepping for the coming work force where a knowledge of computers will be essential. The authors support their opinion with examples where teen-aged-video maniacs grew up to be programming wizards. In fact, they note, the United States military is looking at the games. Due to the eye-hand coordination they teach, video games could be a means of training gunners and navigators.

However, moderation, like in anything else, is important. And in chapter 4, The Arcade Subculture, the authors borrow three criteria from their field to outline clues for game addiction detection:

- Is the behavior good for the person?
- Is the person in touch with reality?
- Is the person's behavior markedly different from the *norm*? The trick here, of course, is defining the norm!

SUBTLE POWER. In chapter 5, Learning from the Screen, the Loftuses continue their use of television as a model for investigating the influence of video games on our culture. Here they say, "Educators have been trying to harness the astonishing motivational power of video games by designing educational computer games that resemble their arcade counterparts.

"But a potentially more difficult problem will be to persuade game makers to insert educationally beneficial elements into the popular arcade games." It's the authors' hope those same groups trying to ban video games will instead subsidize game designers, encouraging them to develop ones with educational and therapeutic merit.

Chapter 6 concludes the book with a layman's guide to computer history and principles. A well-laid out index follows.

Mind at Play is fun, informational reading. It gave me insight into the mysterious activities at the neighborhood video hangout. Although, as a parent, I still am not convinced the hours and money spent by youngsters at video games is entirely healthy, the Lofluses have showed me it's not time completely wasted. The authors challenge each of us to make better use of the new electronics. ◀

TROUBLESHOOTING CAN KEEP DOWN REPAIR BILLS

How to Maintain and Service Your Small Computer
John Stephenson & Bob Cahill
Howard W. Sams & Co.
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206 pages
$17.95, softcover

By TERRY KEPNER

Are you worried about the high cost of computer equipment repairs or finding a competent technician? Or do you think you could do the repair work yourself, with a little help? Well, if any of these express your feelings, there's a book for you: *How to Maintain And Service Your Small Computer*, by Stephenson and Cahill, an 8-inch-by-11-inch manual.

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However, the rest of the equipment you use (printer, disk drives, and power supply) are all fairly easy to diagnose and repair when they fail. If you're using a second computer to store data, text, and/or programs, you'll certainly find this book useful in maintaining the second computer.

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SERVICE PROFILE. Stephenson and Cahill's book assumes you have some knowledge of electronics, for example, that you know the difference between a resistor and a capacitor, and have some working familiarity with a multi-meter. If you don't know much about electronics, the authors provide a short list of suggested readings on the subject.

The book is divided into 12 chapters, starting with a general introduction as to why you might want to service your own equipment. It then goes into a service profile for:

- Electronics equipment — how and when most of it will fail;
- Your servicing options — dealers, mail-order, service shops, manufacturers, third-party, and self-service;
- The computer operating environment and reducing potential problems;
- Self-servicing skills, tools, and documentation;
- Troubleshooting strategy and techniques;
- Specific device troubleshooting — flip-flops, ROMs, RAMs, etc.;
- Troubleshooting disk drives;
- Printer problems;
- Main computer and keyboard troubleshooting;
- Modems, monitors, cassette recorders, and game controller problems; and
- Fixing power supplies.

At the end of the book are five appendices and an index. The appendices cover:

- Resistor color codes;
- IC Manufacturer coding systems;
- Mail order parts dealers, a partial list;
- Common computer IC pin-outs and base diagrams; and
- A troubleshooting chart.

RUDIMENTARY HELP. *How To Maintain and Service Your Small Computer* details the various computer components and their operational theories, providing you with enough information so you can readily understand how the system works and how to track down and isolate problems. And it does this without overwhelming you with too much information.

Overall, the book provides a solid basis in teaching you how to identify the problem area in almost any malfunctioning piece of equipment. Stephenson and Cahill don't try to answer all possible questions or teach every method on troubleshooting equipment. They make suggestions on other books and manuals whenever they feel it's needed, such as in the section on servicing a monitor (which could take an entire book itself).

The main purpose of their book is to provide you with enough information to make an informed choice on either taking the equipment to a service technician for repair or doing it yourself. And if you should decide to have someone else fix the problem, you'll be able to at least give the technician an adequate description of the difficulty, and where the problem seems to be. This helps reduce the amount of time and money the technician spends looking for the fault. Too many people bring in a piece of equipment and say: "It's broken, fix it," leaving the technician to figure out what isn't working.

If you're at all interested in servicing your own equipment, get this book first. You'll find it well worth the purchase price. ◀

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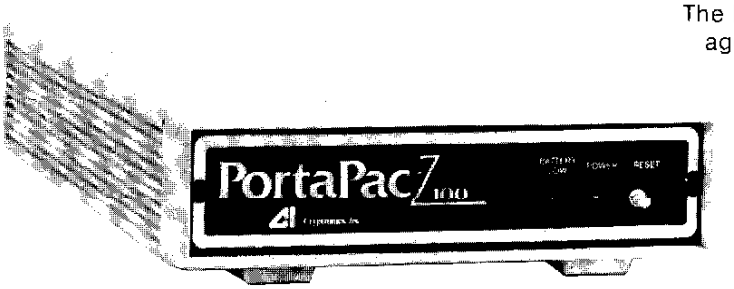

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DASM - A full featured disassembler. You can easily follow the logic of a program that contains many jumps and calls. During the disassembly process, you can inquire about such things as contents of memory, and the keyword for a given token. The latest version has a split-screen feature that allows you to review the previous 8 lines of disassembly.

Music - Using a modified SOUND routine, it becomes possible to hold a tone as long as a key is held down. This makes it possible to turn the model 100 into a musical instrument.

1 ASM - A Powerful 8085 assembler. ASM contains all the features you expect in an assembler as well as several features that are specific to the model 100. For instance, there is a built-in macro library that will simplify writing code. Among these macros are relative branch instructions for programs intended to be called from BASIC. ASM comes with extensive documentation, including lots of information on the ROM.
Example programs will help the novice get started with machine language programming. The perfect way to learn about machine language.

2 TEL PRO - A TELCOM enhancement. With TEL PRO you can remain connected to the phone line and still read the menu, kill files, read text files, upload BASIC programs (with .BA extension), download the screen, access the time, set an alarm, delete unwanted carriage returns from downloaded BASIC programs, and more. An excellent companion program for PRO AID.

3 Questn - Artificial intelligence with a sense of humor. Ask this program any question, and it will respond with a relevant, often humorous reply. Philosophical and personal questions are the best. A nice program to show off your computer. Requires at least 24K memory. Questn comes with a list of questions for those who have trouble thinking of something to ask.

4 Napoleon - It's you against the computer. In this card game from England, each player gets a bid and the high bidder tries to make his contract. The computer makes a worthy opponent. You can choose the computer's style of play.

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product necessitates balancing complex forces and there are no easy answers.

On one level you can look to successful products from established companies. Established companies are typically more reliable and the success of a product is at least one measure of its quality. Such products as Wordstar, Dbase II, or the IBM PC are safe products from this perspective.

Market superiority doesn't always or even often result from product superiority. It's plainly evident there are products as good or better than these safe products but aren't as successful yet.

It's my experience the safe products are just that: safer, not better. There's an entire industry of support mechanisms for Wordstar and the IBM, while there is virtually nothing for Victor and Spellbinder, which I regard as better and less expensive products. Products from lesser known vendors are often more sensitive to user needs, but often require greater user independence and confidence.

As far as the lap-portable marketplace is concerned, I don't believe the primary manufacturers — Tandy, Olivetti, and NEC — offer better or more reliable support of their products than the myriad of small vendors now offering competing products. They should all be embraced with equal skepticism.

TECHNIQUE 4. Get it in writing!

Before you sign the dotted line, write down every representation the dealer made that was significent to you in buying the item. Be mindful of training, support, and service.

Remember, most oral representations made by a dealer are not enforcable if they are excluded from a subsequent written agreement.

Also remember, when you finance or lease through your dealer, most agreements provide that the dealer's failure to live up to the agreement does not relieve you from having to pay the bill.

The rule of thumb here is simple: If a dealer said it, and it's important to you, insist that it be part of the written agreement.

TECHNIQUE 5. Learn simple programming!

Until you learn how to program you will always be at the mercy of the computer marketplace and a victim of the computer revolution.

Complex and sophisticated programming is not necessary; the rudiments are sufficient. Once you have them, the dynamic between you, your computer, and the rest of the world markedly changes. The main difference is, you are in charge. A Model 100 to someone totally reliant on commercial software has only a fraction of the power, versatility, and value it has to someone with programming knowledge.

A few weeks ago, I walked into the local video rental store as the owner started making 4000 slips of paper for a contest he was having. I happened to have my NEC with me and in 10 minutes, I had written him a program to randomly select the winners.

The software isn't in line for program of the year, but it quickly solved an everyday problem without resorting to commercial software.

Once you can program, the possible applications are endless. You're crazy not to learn!

◀

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PETER STANIWYCK

SURVIVAL TIPS WHEN ENTERING THE COMPUTER MARKETPLACE

Computers and running are two experiences I knew nothing about at age 27 and have improved my life at age 37. I feel no hostility toward computer stuff itself; my despair is with the people who design and sell it. For me the only difference between running a marathon and being a computer user is a marathon takes me 20 miles before I hit the wall, while the computer marketplace takes me 20 feet.

My attitude about the marketplace is not the result of a genetic defect, nor is it a consequence of the adversarial perspective of a lawyer run amuck.

It's hard to stay a liberal once you've been mugged; and the nerds have mugged me; not once, but repeatedly.

On the bright side, I have survived. In the course of that survival I've learned some techniques I'd like to share with you.

TECHNIQUE 1. Don't buy unneeded capability.

Typically, you don't need the fastest or the niftiest hardware or software. The dealer may need to sell it to you, but you don't need to buy it.

Don't worry about outgrowing your capability. Next year they are going to have something newer and cheaper to solve the problem you don't have now, and probably won't have next year anyway.

When working with a dealer, define your market interest by referring to the specific problems you want solved.

"I want my office to have word-processing capability and its accounting functions computerized." If the dealer immediately recommends an accounting software package without first asking you to define your accounting needs, then he's selling you software and not solving your problem.

After the dealer tells you what you need, ask him three questions.

First, if I buy, how far am I in time, capability, and expense from solving the problems this purchase is designed to solve?

Second, what capability is being sold to me that isn't necessary for solving the problems I've defined?

Third, what less expensive alternative would address my problem and what are its advantages and disadvantages?

It's okay to make the dealer earn his commission.

Processing speed, RAM and ROM size, graphic capability, 16- or 32-bit microprocessors may represent technological advance, but they don't necessarily mean that the advance delivers a functional benefit to the typical user whose needs are usually better served by the dull edge of technology. The cutting edge may be where the action is, but it is also were the problems and the expense are.

The point is both the user and dealer must recognize the user's sole purpose in entering the lion's den is to solve the user's problem.

I was sold a Victor 9000 with 128K of RAM and the Spellbinder word-processing program. Spelllbinder is unique because it comes with its own programming language allowing you to develop and execute programs inside the word-processing environment.

My programs were hindered by insufficient RAM. I called my dealer, who sold me another 128K of RAM for $300, with exactly the same results.

When I researched the problem, I learned the program created its own RAM memory buffer. My original 128K had exceeded the maximum that could be used by the program.

I run many complex programs on my Victor and have never used a single byte of the additional RAM. Moral of the story: Don't buy it if you're not going to use it.

TECHNIQUE 2. Forget about vendor loyalty.

I am unaware of any vendor in the computer industry entitled to the kind of consumer loyalty making them the first choice for subsequent purchases.

Unlike the automobile industry, where there is a predictible consistency in product values from a manufacturer, the product values of manufacturers in the computer marketplace are chaotic. The user can't afford to assume product values produced in one product are going to find their way into subsequent offerings.

Tandy's Model 100 product line is typical. The Model 100 was bold, innovative, first rate, and reasonably priced. The subsequent Disk-Video Interface was lackluster, flawed, third rate, and overpriced.

TECHNIQUE 3. Look at the vendor, the product, and yourself. Buying the right

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