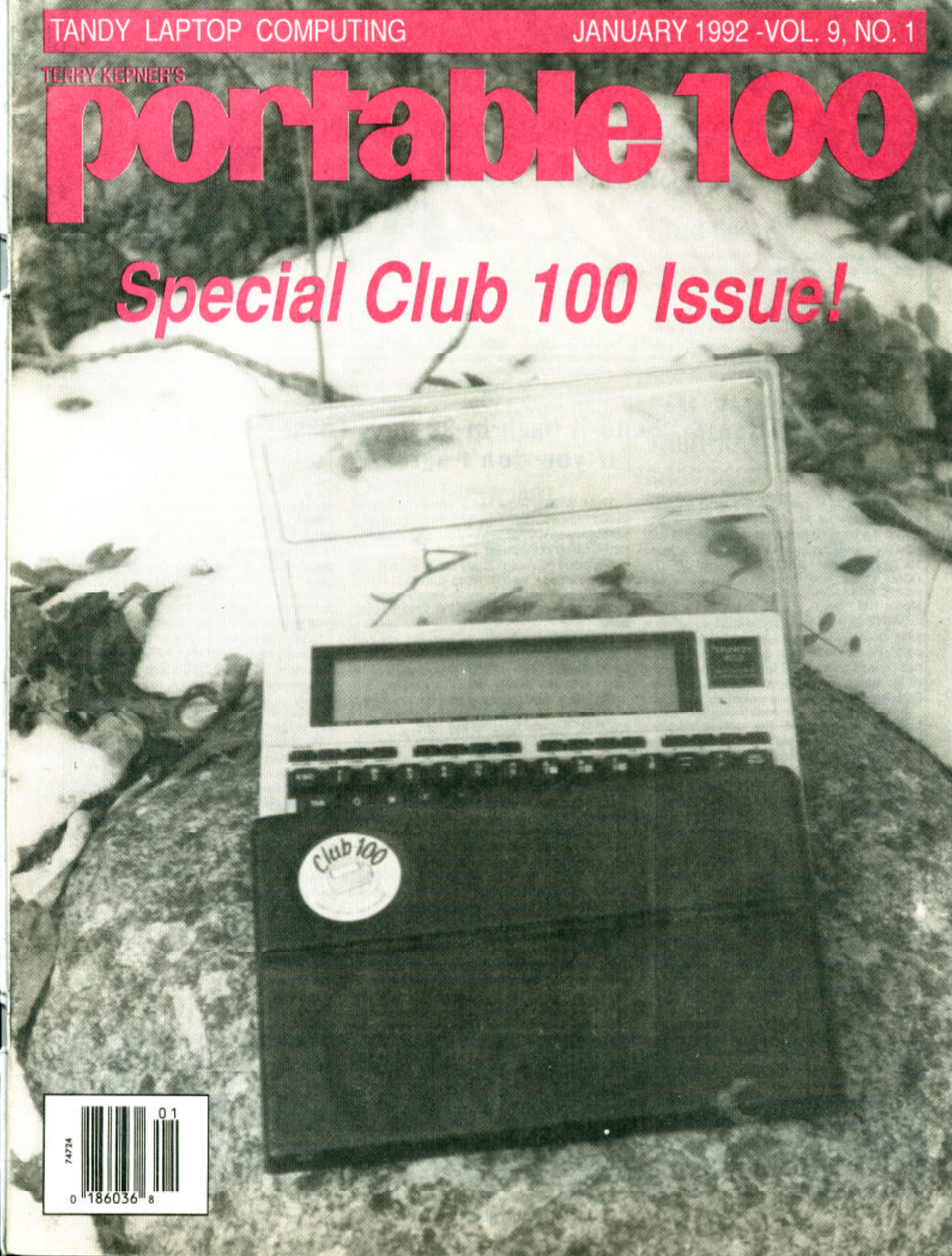
TANDY LAPTOP COMPUTING JANUARY 1992 -VOL. 9, NO. 1

TERRY KEPNER'S

portable100

Special Club 100 Issue!



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WRITE ROM is the definitive word processing extension for the Model 100. PCSG produced the first text formatter for the Model 100, now sold by Radio Shack as Scripsit 100. Now, 18 months later, PSCG introduced WRITE ROM. Those who have experienced it say WRITE ROM literally doubles the power of the Model 100.

WRITE ROM — as its name implies — is on a snap-in ROM. You simply open the little compartment on the back of the Model 100 with a quarter and press WRITE ROM in. It's as easy as an Atari game cartridge. You can use other ROM programs like Lucid whenever you wish.

WRITE ROM lets you do every formatting function you'd expect, like setting margins, centering, right justifying and creating headers and footers. But it does them under function key control.

WRITE ROM remembers your favorite format settings so you can print a document without any setup, but you can change any formatting or printing parameter instantly with a function key.

WRITE ROM's "pixel mapping" feature shows you an instant picture on the screen of how your printout will look on paper.

In all there are 64 separate features and functions you can do with WRITE ROM, and some of these features are truly breakthroughs for the Model 100.

First, WRITE ROM lets you do search and replace. Any word or phrase in a document can be searched for and replaced with any other phrase where the search words appear.

Second, WRITE ROM lets you send any text (formatted or not) to any other computer over the phone with just a function key. What's more, it dials and handles sign-on and sign-off protocol automatically.

Third, WRITE ROM has a wonderful feature called Library that lets you record favorite phrases, words or commonly used expressions (often called boilerplate).

Any place you wish Library text to appear you just type a code. WRITE ROM automatically inserts the text just like a Xerox Memory Writer. Picture what you can do with that kind of capability.

WRITE ROM is blindingly fast. No one can claim faster operation. Because it is on ROM it uses virtually none of your precious RAM. It works with any printer, serial or parallel. You can make a duplicate copy of a document file under a new filename. Rename or delete (kill) any RAM file with function key ease.

This description only scratches the surface of this amazingly powerful piece of software. Dot commands allow control of such things as margins, centering, line spacing and other changes in the middle of a document. Most are WordStar™ compatible.

A mailmerge feature allows you to send the same document to every name on your mailing list, personalized for each recipient.

WRITE ROM enables you to do underlining, boldface and correspondence mode as well as any other font feature like superscripts that your printer supports, in a way that many users say "is worth the price of the program."

To underline you don't have to remember a complicated printer code. You just type CODE u, and to stop underline, CODE u again. The CODE key is to the right of your spacebar. Boldface? CODE b to start and stop. Easy to remember and do. Five different printer features of your choice.

We couldn't list all the features here. For example, you can select not just double space but triple or any other. You can use your TAB key in a document. WRITE ROM allows you to undent. This means you can have paragraphs with a first line projecting to the left of the rest of the paragraph. WRITE ROM has a feature unique for any word processor on any computer. It's called FORM. FORM is an interactive mechanism that lets you create screen prompts so that you or someone else can answer them to fill out forms or questionnaires.

With FORM, any place that you had previously typed a GRAPH T and a prompt in a document, WRITE ROM will stop and show you that prompt on the screen. You can type in directly on the screen and when you press F8 you see the next prompt. It goes to a printer or a RAM file.

Think how you can use FORM. A doctor or nurse could use it for a patient's history with each question appearing on the screen. An insurance salesman could use it for his entire questionnaire. You could construct a series of prompts to answer correspondence, typing the answers, even using Library codes. This feature lets you answer letters in rapid-fire fashion, each with personalized or standard responses.

Before WRITE ROM you had to be a programmer to create a series of prompts. Now it's as simple as GRAPH T.

PSCG makes the claim that WRITE ROM is the easiest, fastest and most feature-rich formatter for the Model 100. We're happy to offer WRITE ROM because it expands the 100 to a dimension of text processing you cannot equal on even larger computers.

We brashly state that WRITE ROM is the best you can buy. But put that to the test. If you aren't as excited as we are, return it for a full refund. Priced at $99.95 on snap-in ROM. Mastercard, Visa, American Express and COD. Please add $5.00 shipping and handling charge.

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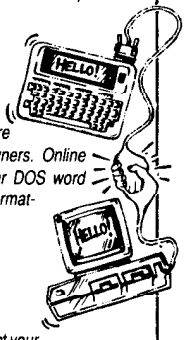

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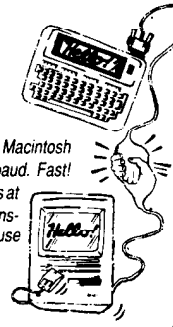
100duet



Turn your Model 100/102 into a Mac-partner. Connect your laptop computer or Tandy Portable Disk Drive directly to Macintosh computer for file transfers at 19200 baud. Fast! Easy to use. Single or batch file transfers at the press of a button. Automatic file translations allow your Mac programs to use your laptop files, directly!

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The Ultimate ROM II

*Four programs in one make this more than just a "super" ROM. **T-WORD:** overwrite/insert mode while editing, imbed print controls, control print output (margins, line spacing, page feeds, headers, footers, auto page numbering, bold face, underline, italics, mail merge, labels, and more), pixel-plot view of document before printing. **T-BASE:** true relational base operations, key field sorts, math, report generation, etc. **IDEA!:** outliner program for concept development. **VIEW 80:** see up to 60 characters per line while in TEXT, TELCOM and BASIC, fast processing, easy to read. **TS-DOS & SARDINE LINK:** automatically loads and runs TS-DOS and SARDINE from disk. (TS-DOS and SARDINE sold separately).*

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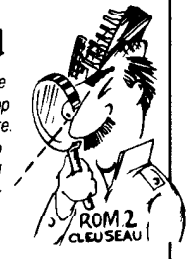
SARDINE (ROM or Disk)

Spell check your words. Fast, 33,000 word electronic spell check and dictionary. Corrections automatically inserted into text. ROM version includes T-word. Disk version works with the Ultimate ROM II or independently.

ROM2/Cleuseau



The very best programming tools available for Model 100/102/200 and NEC8201 laptop programmers. Two ROMs in one, and more. ROM2 is a full functioned 8085 macro assembler. Cleuseau adds much needed features to BASIC and TEXT. Call for full details.

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Protect the top of your 100/102/NEC8201 with a made-to-fit hard, black plastic cover. Looks good. Works great. WP2 protection cover available, too.

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Just the right size dental rubber bands necessary to almost eliminate Model 100/102/200 keyboard noise. Great for library and meeting use. Easy to install. Instructions included.

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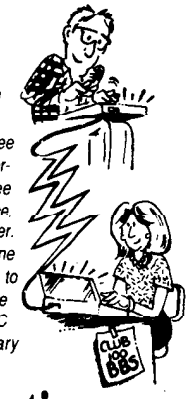

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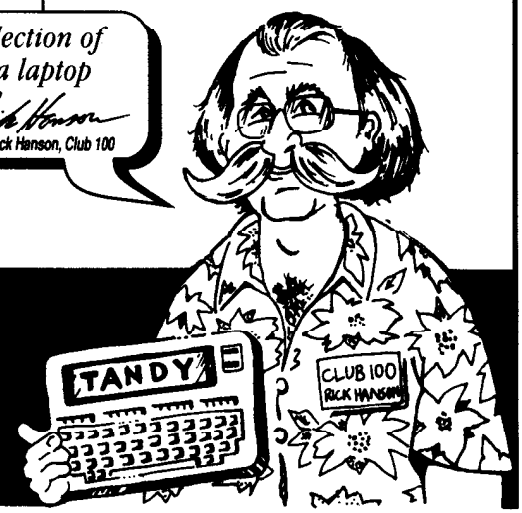

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VOL. 9, NO. 1
January 1992

ON THE COVER:
Dyna-Shield vs TurtleShell: Model 100 and hard covers out in the cold.
Photography by Bob Liddil

7 **GETTING HITCHED: MY ADVENTURES WITH PC LINK**
✔ MS-DOS M-102 WP-2
by Linda M Tiernan
The PC-Link demo is an exotic little tease

12 ***MINEFIELD***
MS-DOS ✔ M-102 WP-2
by Kent Patterson
A well-oiled game that can "blow" your mind!

14 ***AUTOMAP*: COMPUTERIZED INTELLIGENT ROAD ATLAS**
✔ MS-DOS M-102 WP-2
by Bob Liddil
Travel coast to coast without leaving your computer keyboard!

17 **HOME-BREW MODEL 200 RAM CARTRIDGES**
MS-DOS ✔ M-102 WP-2
by Harvey Chrisley
Build your own battery-powered removable RAM modules!

20 ***AUTOMATED CASH REGISTER***
MS-DOS ✔ M-102 WP-2
by Tom Bohon
Ring up profits and sales on your Model T.

25 **MS-DOS V5.0 AND THE TANDY 1400LT**
✔ MS-DOS M-102 WP-2
by Robert Causey
Using DOS 5: tripping the LT fantastic

28 **THE MOUSE AND THE ICON**
✔ MS-DOS M-102 WP-2
by Terry Kepner
Two powerful little mice that roar with features!

29 **MODEL T KEYBOARD COVER SHOOTOUT**
MS-DOS ✔ M-102 WP-2
by Bob Liddil
What every Modet T owner needs between his computer and 200 pounds of fish.

33 **GO WITH THE *.IN* CROWD**
MS-DOS ✔ M-102 WP-2
by Mike Nugent
Save time and RAM with WriteROM's .in command

36 **HAIL AND FAREWELL**
✔ MS-DOS M-102 WP-2
by George Sherman
George says "so long" in his last article.

38 ***ULTIMATE ROM II*, PART ONE**
MS-DOS ✔ M-102 WP-2
by Gene Wilburn
Unique features available on this multifunction ROM!

41 **TELCOM ROM BUGS: THE FIX IS IN**
MS-DOS M-102 ✔ WP-2
by Denny Thomas
You can risk sending Tandy your WP-2 but don't let them fix your cat.

DEPARTMENTS

ROM WITH A VIEW — *Another year, and the Model 102 marches on!*	3
I/O — *Boondocks, The Long And Short Of It, Suggestions,and Telcom Woes.*	4
FORUM — *The visible paste buffer and children's programs*	10
NEW PRODUCTS — *Bar Code Wand, Printers, Modem, and tape*	30
PORTABLE 100 CLASSIFIEDS — *Software, hardware, wanted.*	43
ADVERTISERS' INDEX	44

ROM WITH A VIEW

Here we are at the beginning of our fifth year of publishing *Portable 100*, and we're still here! I hope the last year hasn't been too severe for you. Lots of my friends, even my parents, have had a tough time making it through the year. With any luck, the coming year will a vast improvement.

Many former subscribers are moving back into the fold with comments like "Gee, I thought you guys were out of business," and "I didn't know you were still publishing." Plus, many new people are coming saying that they bought their machines second-hand and the previous owner told them about us or gave them some old issues. Even Tandy Stores are starting to refer people to us — we are finally getting them to realize we exist!

Our efforts to support the Tandy MS-DOS computers are finally gathering fruit, as you can tell by looking at our advertisers. Never fear, we will continue to support the Model T family in the style to which you, the readers, have become accustomed. As we bring in these advertisers, we'll start adding pages to the magazine to carry the additional MS-DOS articles without reducing the number of Model T articles.

Also in this issue is a special insert from Club 100 — their entire catalog! For Model T owners, this is a bonanza of support. And Rick Hanson is a veritable fountain of information and help. Don't forget to tell him where you saw his advertising when you call or write in your order.

To continue growing, and providing the information you want, we need your help. Tell us what you want us to cover in the way software and hardware peripherals. Tell us what kind of application articles you would like to see us publish. Do you like our current columns? Do you want more articles involving construction? More articles on programming? More articles showing you how other people are using their computers in business and at home? Do you want us to start reviewing games (for the MS-DOS machines)? What about graphic-intensive stuff like *Draw*, *Paint*, and *Windows*-related software? Is anyone interested in *Windows* at all?

In the meantime, you can help us by telling your friends about *Portable 100*, and telling them how much it has helped you use your computer. Be sure to remind the Tandy store managers that we are still here, and still supporting *their* computers. These two simple steps will ensure that we get the support we need to give you the support you want. Definitely a win-win situation.

This month we have a fantastic article describing how you can make your own removable RAM modules for the Tandy 200. These babies will let you expand your memory storage as much as you want, and still not take up a lot of space. Plus, we have a preliminary report on using MS-DOS on a 1400 LT. Rounding out the issue are reviews of Automap, the Microsoft Ballpoint Mouse and the ICONtroller, and a game to break the monotony of the winter ahead.

This issue isn't even completed and we're already starting on the next. And I can tell you that you'll like it as much as, if not more than, the last two.

Well, space is running out and I have to finish the last few pages before taking this issue to the printer, so bye for now and I'll see you next month.

Terry

Toolbox

Manuscripts were typed into Microsoft Word 4.0 on a Tandy 1500 HD, where they were edited, spell-checked, and had basic format instructions inserted. From there they were loaded into a Tandy 4000 (80386 CPU, Tandy EGA Monitor, Tandy LP-1000 LaserPrinter) desktop computer and placed into Aldus' IBM PageMaker 3.01 Once there, design decisions on photo, figure, and listing sizes and placements were made. Here, pull quotes are placed, headlines, intros, and bylines are sized and positioned, and advertisements positioned.

Normally, the Tandy LP-1000 is capable of emulating only a Hewlett Packard Laser Printer Plus, but with the addition of the Destiny Technology Corporation (300 Montague Expressway, Suite 150, Milpitas, CA 95035. (408) 262-9400) PageStyler 4.5MB kit, the LP-1000 is turned into a fully-compatible PostScript printer, with all 35 native fonts that are found in the Apple LaserWriter Plus printer. The Destiny PageStyler is available through the Tandy Express Order Hardware system.

Page previews were output from the Laserprinter. When everyone was satisfied with the appearance, final pages were output and artwork and line art ads were positioned. The finished magazine was then delivered to the printer, who printed it, labeled it, and mailed it to you.

TERRY KEPNER'S **portable 100**

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The Portable 100 Bulletin Board
603 924 9770
(300/1200/2400—8,None,1)

Portable 100 (ISSN 0888-0131) is published by Portable Computing International Corporation, 145 Grove Street Ext., P.O. Box 428, Peterborough, NH 03458-0428. *Portable 100* is an independent journal not connected with any hardware, software, or peripheral equipment manufacturer. *Portable 100* is published monthly, except for a combined July/August issue in the summer. Entire contents

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POSTMASTER: Send address changes to: Portable100, Portable Computing International Corporation, 145 Grove Street Ext., PO Box 428, Peterborough, NH 03458-0428.

OCTOBER AMUSEMENT

After months (it seemed) of having no issues of *Portable 100*, I received two issues within ten days of each other. I had just written to you before receiving the second issue containing my earlier letter with some very useful answers. Thanks!

Your October issue is one of the best I have read and not because my letter was answered in it. It was received a day before I left on a trip down to the Casamance in southern Senegal, sandwiched between the Gambia and Guinea-Bissau. The trip started with a sixteen-hour ferry ride, so I had plenty of time to read the new issue and begin this reply. Linda Tiernan's article was perfection, perhaps because she has a setup very much like I would like mine to be, except I am not using a Starlet.

I was amused by David Newcorn's letter following mine. I recently had occasion to write my first document in French on my Model 100 only to discover the printer completely mangled all the special keys. So I did a print test of my keyboard in *SHIFT, GRPH, CTRL,* and *CODE* to find out where the special letters I needed were. I put them on a little sheet, which also contains the *IS/ROM* dot commands, and I keep it with my Model 100.

Ray Glaser
Cleveland, OH

PARALLEL PORT HARD DRIVE DOES WORK ON 1400 LT'S

I'm writing in regard to two recent articles in *Portable 100* which seem to be in conflict with each other: "The Welport Parallel Port Host Adapter & Hard Disk Drive," by Terry Kepner, Nov. '91; and "DOS 3.2, the External Hard Drive, and the 1400 LT," by Bob Robertson, Dec. '91.

I own a 1400 LT and have for quite a while wanted to add a hard drive to it. I was put off by both the sticker price for most internal units and the engineering and apparent difficulties involved with most external units. Then I read Terry's article about the Weltec Welport Adapter for SCSI devices and its use of the parallel printer port for access, and I became very excited. Since the article appeared, I have been trying to convince my frugal wife that the addition of a hard drive to my computer system was a necessity, not a luxury. I have read and re-read the article many times to the point where I could almost quote it verbatim. Then, just as her resistance was wearing down I received my December issue with the article by Bob.

Terry, in his article states, referring to the adapter and the 40MB hard drive, "And both will work on all the Tandy MS-DOS portable computers. Simply. Easily. Flawlessly." Then Bob says in his article, "To my great surprise, I discovered that the new technology using the parallel port as the access port does not work with the Tandy 1400 LT! The reason is that pin 18 on the computer's parallel port was changed by Tandy during the design, and is not compatible with the SCSI units." In other words, Terry states the Welport will work on *all* portables; Bob says it will *not* work on the 1400 LT.

He dug out his 1400 LT, hooked up the adapter and hard drive, and went through the setup procedure while I was on the phone.

I placed a frantic call to Weltec in California and caught the technician out to lunch. Several hours later Skip Landis, Weltec technician, called me back. We were on the phone for quite a while as he assured me the Weltec setup *would* work on my 1400 LT. Then to assure me, he dug out his 1400 LT, hooked up the adapter and hard drive, and went through the setup procedure while I was still on the phone, describing to me each step and what was happening at the time. He did not want to terminate the conversation until I was fully assured that the product *would* work with my machine.

I have not yet received either my adapter or hard drive. But if the support I have already received from Weltec is any indication of the type of company that produces this product I will be more than satisfied with it.

Incidentally, tell Bob Robertson that the new technology using the parallel port as the access port *does* work with the 1400 LT if the Welport Adapter is used.

George Sherman
CompuServe Mail message

WELTEC SPEAKS UP

In response to an article in your December 1991 issue, "DOS 3.2, the External Hard Drive, and the 1400 LT" by Bob Robertson, I would like to inform you that the information given in the article regarding the parallel port hard drive access is incorrect. Weltec's parallel port adapter, the Welport, does in fact work on the Tandy 1400 LT with an SCSI hard drive. We have tested our Welport and SCSI hard drives (the Maximate HDD series) on the Tandy 1400 LT. Just to confirm our original tests, I reconnected a Welport and 40MB Maximate SCSI Hard Drive to the 1400 LT here in our offices. The hard drive came from another computer and was already formatted and loaded with data.

After creating the shuttle (driver file) to match the 1400's parallel port, I had no problems communicating between the hard drive and the Tandy 1400 LT, or running any of the programs stored on the drive. The installation process is easily run, in a matter of minutes, from one program—*SCSI.EXE*. The program provides a menu to create the driver (communications) file and maintains the hard disk unit (i.e., partition, format, and so forth).

The hard drive will take the next logical drive letter, so there is no conflict with any other drives the 1400 may already be accessing. *And no plug-in card is needed!* More information is provided in the November 1991 issue of *Portable 100*, in an article on page 12 by Terry Kepner, "The Welport Parallel Port Host Adapter and Hard Disk Drive."

I hope this clears up any misinformation about parallel port SCSI devices not working on the 1400 LT.

Skip Landis
Technical Support
Weltec Digital, Inc.

USE YOUR DESKTOP COMPUTER AS A DISK DRIVE FOR YOUR M-100.

Now— IBM, MS-DOS version works over the phone!

Disk+

on Snap-In™ ROM

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Try *Disk*+ for 30 days. If you aren't as excited as we are, return it for a full refund.

When we designed *Disk*+ we did it out of necessity. We wanted a way that we could just connect a Model 100 to our desktop computer with a cable and save files onto the desktop's disk drive. We wanted it to be so simple to use it would be self-explanatory.

Picture this. *Disk*+ comes to you on a Snap-in ROM and a diskette for your desktop. You take a quarter and open the little compartment on the back of your Model 100. Then you just press the ROM into the socket. *Disk*+ appears on your main menu just like a built-in.

You connect your Model 100 to your other computer using an RS232 cable (available from TMNE for only $20).

You just place the *Disk*+ diskette into the desktop's drive and turn on the computer. It powers up automatically and says "awaiting command" on your desktop's screen. Then you just put the widebar cursor on the Model 100 main menu on *Disk*+ and press ENTER. You are shown your RAM files arranged just like the main menu.

To save a file to your other system's disk drive, you just move the widebar cursor to the file you want to save and press ENTER. It is saved instantly with no further action.

To look at the disk directory, you just press a function key on your Model 100. You see immediately the disk directory on your Model 100 screen, and it is arranged just like your Model 100's main menu.

To load a file from the diskette to your Model 100, you just move the widebar cursor to the file and press ENTER. The file is transferred to your Model 100's RAM instantly. You can press F8 and go back to the main menu, and the file you loaded from diskette is there, ready to use.

It is so nice to be able to keep your documents, programs (both BASIC and machine code) and *Lucid* spreadsheet files on the diskette, and bring them back when you need them. All files are ready to run or use with no changes or protocol by you.

If you have access to a desktop computer and don't have *Disk*+, then evidently we have done a poor job telling you about it.

All files and programs that you load or save, go over and come back exactly as they are supposed to be because of full error checking. This guaranteed integrity is really a comfort. *Disk*+ is wonderful in so many other ways. For example, you can do a "save all" of all your RAM files with just a touch of a function key. That group of files is saved on the diskette under a single filename with a .SD (for subdirectory) extension. Any time you want, you can bring back all those files at once, or just one or two if you like, again with one-button ease.

Disk+ takes up no RAM. That's zero bytes either for storing the program or for operating overhead.

What really excites most *Disk*+ users is text file cross compatibility. Your Model 100's text files are usable on your desktop computer, and your desktop's text files become Model 100 text files.

This means you can write something on your Model 100, and with *Disk*+ transfer it instantly to your desktop and start using it right away on your bigger computer. Or the way we like to work is to type in a document on the desktop computer and then transfer it to our Model 100 with *Disk*+. Then we print out the document, beautifully formatted, using WRITE ROM.

Disk+ works with just about every micro sold, from IBM PC and its clones, to all Radio Shack computers (yes, all), to Apple II, Kaypro, Epson and most CPM. Just ask us. More than likely, your computer is supported.

Incidentally, hundreds of Model 100 owners have gone to their Radio Shack stores and bought a color computer because it is so low priced, and with *Disk*+ they have an inexpensive disk drive.

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ANOTHER STARLET FAN

Dear Linda Tiernan, I really enjoyed your article in the October 1991 *Portable 100*. Not so much for the fact that you are going to MS-DOS, but that someone besides me likes the Starlet! I like the *FILER* and *CALC* and have some of the equipment you have. I use the Node 256 Datapac, a PDD-2 and a DMP-105.

Tell me, how do you use the DMP-105 with *WordStar* in the document mode? I mean dot commands, page formatting and the like?

This is being written on a Model 600 with a Citizen 120-D in the Epson FX80 mode. Although the M600 is slow as hell and the Starlet and CP/M are over the hill, I like the Zen approach. I'm in no hurry to get where I'm going. (I have also had a Model T for the last seven years.)

If you have any tips, goodies, etc. I would sure like to hear them. Thanks for your article and keep up the good work.

Tom Boyd
West Palm Beach, FL

Sorry it's taken me so long to respond, but I've never gotten a fan letter before. I've been stunned.

With considerable outside help (better known as Terry Kepner), I created a non-document file to deal with the carriage return/line feed problem between the Starlet and the DMP-105. I'm trying to remember what it was, it's been so long since we created it and I just copy it over to every memory pak, most diskettes, and keep it on the Starlet itself. I think we hunted up the codes in the DMP-105 manual. It may (I stress may) have been Escape Control Left Bracket-Control-U, saved as a non-document file. (When I call it up in non-document WordStar *to take a look at it, it looks like ^[^U and I don't remember if there were any tricks attached.) Anyway, it allows me to use most dot commands and to format pages properly. Nothing will ever allow you to use superscripts, subscripts, or anything that requires a special line-adjusting effort, so to speak, on the DMP-105's part. But other than that, the DMP-105 slogs along nicely. Most of my draft work is done on this.*

I still think that the Starlet's FILER *and* CALC *have no equal in the MS-DOS world.*

A friend of mine, the mother of an eighteen-year-old "learning disabled" fellow, used a good portion of her income tax refund this year to buy her son a second-hand Model 600. If you could see this kid whipping out his homework now, with his own special "copyright statement" on every page, coming to the library to work and look things up, I think you would agree that in the computer world, less is truly more. Mike Daigle has the right idea.

-lmt

Affordable my tush — Radio Shack is selling the Model 102 for the same price as the 1100 FD!

RAVING DAIGLE

So, Rant, already you're at least partly right! I told you last year why Tandy wouldn't build the Model 300— they'd lose their shirt on it! The return on a limited risk investment in MS-DOS laptops sells more boxes than a really well thought out (by definition non-standard or far out) Model 300 ever would. Today everyone seems to want MS-DOS, VGA screens, bigger hard drives, and multi-megabyte memories in a laptop. And mice, don't forget a mouse for your *Windows* laptop! Battery life, fragile construction, and actually using the thing are unimportant, it's just a status symbol anyway. The Model 102 affordable? Affordable my tush — my Radio Shack store is selling the Model 102 for $599 in the same display as the 1100 FD for the same price! Michael, be serious for a minute — the 1100 FD is smaller and lighter and simpler and less fragile and a whole lot more capable than the Model 100/102 with its awful display and separate disk drive. I suspect that the battery life isn't a lot different when you also consider the PDD. Not only that, but I'll bet that even you think MS-DOS is better than the DOS in the Model 100. But, as you say, it's a DOS box that's a bit bigger and heavier and more expensive than it needs to be. And being a DOS box, it suffers from memory that's too small (needs a one or two megabyte RAM drive) and it really ought to have a 1.44 MB disk and auto-resume. At least the color is right; black computers are...

The future will bring what can be sold. I'm afraid that we Model 100 hackers will have to have to get used to conformity to that norm or be content with small, dim displays and incapable processors.

David O. Rowell
CompuServe Mail Message

Well, David, there still isn't an MS-DOS box made that can offer 40 hours of battery life, a display that is equally readable on an airplane at night and in the bright desert sun, that comes complete with BASIC, telecommunications, *and a text processor. And the PDD gives me over a month's worth of battery life. The DOS isn't great, true, but then neither is MS-DOS* (Abort, Retry, Ignore *is such an informative error message—even the old TRS-DOS for the Model I in 1980 had more features).*

As for the display color, that's strictly a personal view. Many people (about 10%) are blue-green blind, and those lovely yellow-GREEN characters on the display on the 1100 FD are almost impossible for them to see.

But you are right about Tandy not pursuing such a small (by comparison) market. Tandy looks for the best market possible, and the Model T family isn't it.

And, still, it's a matter of supplying people what they ask for instead of what they really need (like Detroit building big cars instead of little ones, because people wouldn't buy the gas sippers).

For most people, the Model T family is simple enough to learn in ten minutes (MS-DOS takes weeks of hard work to learn), doesn't frighten them with too many features they do not understand, and can be turned on and off without damaging your data or your computer. *-tk*

COMPATIBILITY: All MS-DOS computers.

Getting Hitched: My adventures with PC-Link

by Linda M. Tiernan

Since I started using a computer with *DeskMate* included, I have had any number of adventures; fortunately, most of them have been pleasant. I have to say that one of my few misadventures has been PC-Link. Now that I have finally gotten connected, I feel almost too exhausted to try it out.

PC-Link is a national online service for owners of Tandy and compatible *MS-DOS* computers. Among PC-Link's highlights are national news services, a comprehensive online encyclopedia, online special interest groups, Tandy industry news, and electronic mail. When you receive *DeskMate*, you also receive a demo program for PC-Link, and the *PC-Link* program itself. The PC-Link demo is an exotic little tease; it makes you want to try the program. In fact, it segueues into a "Register Now" section where, if you have your modem hooked up to your telephone and ready to go, you can register that instant to be a member of the PC-Link family.

That is the theory.

I bought my computer in May. I also obtained a 1200-baud modem. Throughout May I learned to use my computer for "local" functions, so to speak; my only communications via modem were to the *Portable 100 BBS* and to the New Hampshire State Library, my two lifelines to the world (or to my bread and butter, same difference). I had never used any other online service. In June I decided to take the plunge. I went through the PC-Link demo program, and decided to register. Little did I know I was starting what would be an epic journey to try to use a computer service which, until nearly mid-November, I couldn't prove even existed.

GETTING STARTED

The first thing PC-Link does is call an 800 number to find the Tymnet/Telenet node nearest your home. I knew there was a Tymnet node in Peterborough and I knew the number, but I didn't know if I should circumvent this part of the program—I didn't want to mess up the first general-commercial online information system I ever tried. In addition, Peterborough (unless you pay extra) is a rotary-dial town, which adds spice to any computer communications. I adjusted my *DeskMate* software to acknowledge this fact. Then I watched all the pretty little graphics as PC-Link told me, *"Dialing... Connecting... Dialing... Connecting... Dialing... Connecting..."* and eventually gave up with no carrier signal being received. This was silly. I knew my modem worked, and I knew that a conventional communications program, *ProComm*, worked on my computer. Was the phone busy? Could there possibly be something wrong with the *PC-Link* program... or was it me?

The PC-Link demo is an exotic little tease.

I don't care how long you've worked with computers; watching *"Dialing... Connecting... Dialing... Connecting..."* for most of an evening can still work you into a blind red rage. At last I gave up. Something was not right, and it wasn't me.

When I called the PC-Link company, which eventually turned out to be Quantum Communications, I learned that it is physically possible to age while being left On Hold. The telephone number in the PC-Link brochure which I received with *DeskMate* was no good; it referred you to a new number. When I got the new number, a recording informed me that the old number was no good and I needed the new number (which I had of course dialed by now, thank you very much), and then went into an EXTREMELY lengthy spiel about which touch-tone button I could punch to do this, that and the other. As I mentioned, I have a rotary-dial phone. Even if I could have punched touch-tones, Customer Service was the last choice on the list, so I had to listen to the entire spiel anyway.

Right now, I would like to state that, whatever the failings of PC-Link, it has a four-star Customer Service department. The person on the other end of the phone, polite and mellow and obviously capable of dealing with frustrated customers, told me how to plug in my Tymnet number, etc. for Peterborough (using F10 of the regular *DeskMate* options), and I thanked her. There. 800-number problem circumvented. Let's try again. *"Dialing... Connecting... Dialing... Connecting... Dialing... Connecting..."* Now what? A display showing a hexadecimal code. I had been kicked out of the program. I had, in fact, been kicked clear to the Twilight Zone. I had to restart my computer to escape the peculiar black-and-white two-line hex message on my display.

Another call to Quantum Communications. I only thought I had been on hold a long time before. I discovered that there is indeed something more annoying than listening to that entire blessed recorded telephone spiel. And that is, listening to the entire blessed recorded telephone spiel, getting at last to the department you wanted, and then getting a recorded message saying they've all gone home.

IT'S THE HARDWARE . . .

A week or two later, when I had calmed down, I tried again. I got Customer Service. I survived the messages. They were home. They felt it couldn't possibly be PC-Link. They suggested I had a modem problem. My modem had a Phone slot, so I plugged a receiver into it and listened to it dial, and by golly. This

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modem, which I had used for two other online services, dialed the local Tymnet number, received its carrier signal, and then, for no apparent reason that either of us could figure, hung up.

I got a different modem. It was July by now...

August was just like it. I must have *Dialed* and *Connected* at least twenty times a week before I gave up in fury and frustration, and I had plenty more interesting things to do with my summer than run the Quantum Communications telephone gauntlet. So I let it lay...

By late September I decided to Connect or die trying. I ran the gauntlet one more time. I got another wonderful Customer Service person. I could hear her clicking keys while I was clicking keys, which meant that she was actually doing what I was doing, and seeing what I was seeing. We went through step by step, and she told me what ought to be happening in each and every change of scene. We put the local Tymnet number in both positions (you are given two options for phone numbers to dial), and I tried once again to connect to PC-Link. I punched the choice "Register Now" and held my breath.

"Dialing... Connecting... Dialing... Connecting..." At long, long last, the screen said, *"Dialing... Connecting... Dialing... Connecting..."* and that magic word, "Password." Already I had my next problem. It was sending a password. How could it be sending a password when I hadn't put a password in the computer yet? I was holding it on a piece of paper in my hand, taken from the publicity folder that had accompanied PC-Link. Now we played a new game. I spent the entire evening watching the cute little graphics say, *"Dialing... Connecting... Dialing... Connecting... Password"* before it gave up with a Timeout signal or flashed me the little two-line hexadecimal code that irrevocably locked up my computer. I won't tell you what I thought. There is some kind of law about obscenity through the mail. Suffice it to say that I didn't try PC-Link again until October.

IT'S THE SOFTWARE!

I telephoned Customer Service again. Once again, I got a human being. I told her everything I had done, recapitulated my talks with Customer Service in the past, told about my hardware and the problems I'd had, told about all the times I'd tried hooking up, on and on and on. Her response was immediate: "There's something wrong with that copy of PC-Link. I'm sending you another copy of the program. Three-and-a-half inch or five-and-a-quarter?"

When the new copy of PC-Link arrived, I ran it through its Install program. It understood immediately that there was a copy of PC-Link already on the drive, and should it replace it? Yes. Well, there was the snag; it got an Out of Memory error. Nothing I could do would make it overwrite that old PC-Link! At last, a problem I could handle. I created a new subdirectory and installed it on that. Then I looked for the corresponding files on my old subdirectory, and eliminated all (or at least enough) of them to give myself a little extra elbow room in the hard-disk department.

I had to type in the Tymnet phone number in the "new" PC-Link, and indicate that I had a Pulse connection. Then, it Dialed... Connected... and I saw something I will never see again: the Welcoming opening screen of PC-Link registration. I gave the name I intended to use on line, my workname *LTK*, and put in my password. I filled out the survey which comes up automatically when you register—a few too many questions for a little too long, but what the heck, they only get one shot at you. Then I actually browsed PC-Link. I could prove it existed.

Despite PC-Link's best claims, it is not intuitive. Some screens are toggles; instead of getting out of wherever you are,

you just switch back and forth between two menus. Their claim to context-sensitive help is a little overblown; if you don't know what it is you're looking for, you can't ask the right questions, and the Help screens (like all Help screens) are only good as refreshers once you know what it is you're looking for. I eventually ended up in a cocktail party, I think, with no idea how to get out, and I may have spilled someone's drink. I wanted to get out of the room and I ejected myself completely out of the online service.

Before that incident, however, I had great fun poking around the Academic American Encyclopedia, and reading the News and Weather sections. It is not PC-Link's fault that the Academic American is not the world's greatest encyclopedia, and that it has never heard of meerkats or the veldt. I was amused to see typos all through the news and weather items—hasn't anyone down there got a spell-checker? I was also very surprised to have Email waiting for me right after I signed on, which forced me to slog through all kinds of stuff to try to discover where E-mail was, which I didn't want to use anyway. And then it only turned out to be a message from the president of the company welcoming me to PC-Link. I don't think that was a fun way to get acquainted with the service.

I do appreciate the fact that the PC-Link Plus services, the ones you pay extra money for, are marked with a cents-sign in every menu. You can't claim you got into them accidentally. Another plus is the free hour of time they give you to experiment with PC-Link. You'll need it to even begin to figure out what the heck you're doing. As I have said, despite their best claims, PC-Link is not intuitive. The little manual which they sent me with the second disk set (v.23, 00000470) is better than the *DeskMate* manual. I hope that is included with other people's registration packets. It is truly designed for amateurs in the *DeskMate* and telecommunications areas.

AND IN CONCLUSION . . .

If you like *DeskMate* and Tandy, you will like PC-Link. The price is reasonable and the service is OK if you live long enough to get to it. Their Customer Service section is excellent. But bear in mind that it is a very general-interest bulletin board—a little shopping, a little news, a little weather, a little encyclopedia, a little conversation. It is for dabblers. There are encyclopedias on diskette that are better than PC-Link, there are better weather services, better news services, better shopping services. There is no place else for better information on Tandy Corporation, and that is one point in its favor.

The monthly membership fee for "regular" PC-Link is $9.95. This fee includes unlimited evening or weekend (non-prime-time) use of the services of PC-Link, including stock quotes, the encyclopedia, and the news services; one hour of evening or weekend time on PC-Link Plus; and the online Customer Service areas. Charging it to VISA or MasterCard while you're registering is strongly encouraged; there are extra processing charges if you wish to pay by check. PC-Link supports 300, 1200, and 2400-baud modems, with no charge for faster baud rates (possibly another plus!). PC-Link Plus services, like interactive chat and software downloading, are ten cents per minute after your first free monthly hour. Prime-time rates (6 a.m. to 6 p.m., your own time zone) are higher for all services.

For more information, contact PC-Link, Quantum Communications, 8619 Westwood Center Drive, Suite 200, Vienna, Virginia 22182, (703)448-9660.

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THE VISIBLE PASTE BUFFER

Here's a routine I found in a program on the GEnie on-line computer service. Unfortunately, the program, *CBKUP.BA*, failed to list the author.

To create a file *PASTE.DO*, type in and run:

```
10 FORL=1TO9:POKE-1626+L,A
SC(MID$("PASTE DO"+CHR$(0),L
)):NEXT
```

Substituting *HAYAS HI* for *PASTE DO* will restore it to normal. Note that the space between HAYAS and HI, and PASTE and DO are very important. Do not leave them out.

Eugene Miller
Wolf Summit. WV

DISK LABEL PROGRAM

Here is a short *Disk Label* program wrtten using routines created in Richard Haw's public domain *Disk Cataloging* program.

Ron Leslie
Dickson, Australia

TEACHING LETTERS, AND ADDITION/SUBTRACTION

Here are two simple programs I wrote for my children. The first (Listing 2) asks the child to recognize the letter shown on the screen, and match it to the corresponding (capital letter) key on the keyboard. If the child is successful, a little race car crosses the finish line at the checkered flag. If the child makes a mistake, the computer beeps and the child gets to try again. The program generates

If the child is successful, a little race car crosses the finish line at the checkered flag.

```
0    'LABELR.BA by Ron Leslie
     'Derived from Richard Haw's
     'PDD Catalog Programme
1    CLEAR 512:MAXFILES=2
2    DEFSTR A-H:DEFINT I-Z:DIM B(40)
3    F=CHR$(17)+CHR$(28):G="COM:98N1DNN"
4    ON ERROR GOTO 1000
10   CLS:INPUT "Disk Name";D:IF D="Menu" THEN MAXFILES=1:MENU
11   PRINT@135,"Reading...";:GOSUB 300
12   PRINT#2,CHR$(7)CHR$(0)"ZZ"CHR$(7)CHR$(0)CHR$(24)CHR$(13);
13   K=0:R=0:L=1:M=6:GOSUB 100:GOSUB 200:IF K THEN 16
14   L=2:M=5:FOR I=1 TO 39:IF K THEN 16
15   GOSUB 100:GOSUB 200:NEXTI
16   CLOSE
20   LPRINT CHR$(20)
21   LPRINT CHR$(27)CHR$(18)
22   LPRINT D;" - ";DATE$
23   LPRINT CHR$(27)CHR$(77)
24   FOR I=1 TO R:LPRINT B(I)" ";:IF I=INT(I/4)*4 THEN LPRINT
25   NEXT I
26   FOR I=INT(R/4)+1 TO 12:LPRINT:NEXT I
27   GOTO 10
100  FOR J=1 TO 9:NEXT J
110  PRINT#2,CHR$(5)"ZZ"CHR$(0)CHR$(26)CHR$(1);
120  PRINT#2,";DIS SP/CONT"CHR$(13)CHR$(10)"ERRL1"CHR$(9);
130  PRINT#2,"CALF"CHR$(L)CHR$(M);
140  RETURN
200  A=INPUT$(31,1)
210  IF LEFT$(A,2)<>F THEN 2000
220  IF ASC(MID$(A,3,1))=0 THEN K=1:RETURN
230  R=R+1
240  B(R)=MID$(A,3,9)
250  RETURN
300  OPEN G FOR INPUT AS 1:OPEN G FOR OUTPUT AS 2:RETURN
1000 IF ERR=54 THEN CLOSE:GOSUB 300:RESUME 250
1010 PRINT:BEEP:PRINT"Error"ERR"line"ERL:END
2000 CLS:BEEP:PRINT"Disk Error":END
```

Listing 1. Ron Leslie's Disk Label *program for the Tandy Portable Disk Drive.*

```
10 REM LETTERS
25 CLS
30 PRINT:PRINT:PRINT"              L E T T E R S"
50 FOR X=327 TO 333:PRINT@X," ":NEXT
60 PRINT@334, CHR$(234):PRINT@294,CHR$(234):PRINT@295," ":PRINT@296," "
100 PRINT @ 610, CHR$(132):FORX=1 TO 20:NEXT
101 PRINT@610," "
110 PRINT @ 570, CHR$(132):FORX=1 TO 20:NEXT
112 PRINT@570," "
113 PRINT @ 530, CHR$(132):FORX=1 TO 20:NEXT
114 PRINT@530," "
115 PRINT @ 490, CHR$(132):FORX=1 TO 20:NEXT
116 PRINT@490," "
120 PRINT @ 450, CHR$(132):FORX=1 TO 20:NEXT
121 PRINT@450," "
122 PRINT @ 410, CHR$(132):FORX=1 TO 20:NEXT
123 PRINT@410," "
125 PRINT @ 370, CHR$(132):FORX=1 TO 20:NEXT
126 PRINT@370," "
128 PRINT @ 330, CHR$(132):FORX=1 TO 20:NEXT
129 PRINT@330," "
130 PRINT @ 290, CHR$(132):FORX=1 TO 20:NEXT
131 PRINT@290," "
```

Continued.

Listing 2. A simple program for teaching children letters.

capital letters based on the random number generating sequence starting in line 320.

The second program (Listing 3) asks the child to find the answer to a simple addition or subtraction equation, the terms being based on random number generation. Successful answers are counted in the lower right of the screen. If an addition problem's answer is greater than ten, then the child gets a bonus of two points for answering correctly.

Charles B. Tichenor
Springfield, VA

```
135 PRINT @ 250, CHR$(132)
137 PRINT @ 250, " "
140 PRINT @ 210, CHR$(132)
150 SOUND 9394,10:SOUND 9394,7:SOUND 9394,7:SOUND 4696,35
200 FOR X=1 TO 300:NEXT
300 FOR X=8368 TO 523 STEP -130
305 SOUND X,1
307 NEXT
310 CLS
320 X=RND(1)
330 Y=INT(100*X)
340 IF Y>64 AND Y<91 THEN PRINT@179, CHR$(Y) ELSE GOTO 320
350 Y$=CHR$(Y)
360 INPUT A$
370 IF A$=Y$ THEN GOTO 50
380 SOUND 12538,36:GOTO 360
```

End of listing.

```
10 REM ADD AND SUBTRACT
22 H=0
25 Y=800
30 CLS
40 PRINT:PRINT
50 PRINT"            ADD AND SUBTRACT"
51 PRINT@ 554,"SCORE"
52 PRINT @ 595, H
53 PRINT@161, CHR$(130)
59 PRINT@239, CHR$(239)
60 PRINT@159, CHR$(239)
61 PRINT@199, CHR$(234)
62 FOR X=163 TO 199 STEP 3
63 PRINT @X, CHR$(126)
64 FOR Z=1 TO 37:NEXT
65 PRINT @X, CHR$(32)
67 SOUND Y,10
70 NEXT
75 PRINT"What is the answer?"
80 PRINT
310 REM SET FIRST NUMBER AS S
320 A=RND(1)
330 B=INT(10*A)
340 IF B>0 AND B<10 THEN PRINT @ 375,B ELSE GOTO 320
410 S=B
415 REM SET SECOND NUMBER AS T
420 A=RND(1)
430 B=INT(10*A)
433 T=B
435 IF T=S THEN GOTO 420
440 IF B>0 AND B<10 THEN PRINT @ 379,B ELSE GOTO 420
454 REM CONSTRUCT EQUATION
460 IF S<T THEN PRINT @ 378, "+":W=S+T
470 IF S>T THEN PRINT @ 378, "-":W=S-T
480 IF S=T THEN PRINT @ 378, "-":W=0
485 PRINT @ 382, "="
499 IF W>10 THEN PRINT@ 536, "BONUS!!!"
500 INPUT M
520 IF W=M THEN GOTO 600 ELSE BEEP:H=0:GOTO 500
600 GOTO 700
605 SOUND 2800,10:SOUND 2800,5:SOUND 2800,5:SOUND 2800,20
610 GOTO 30
700 IF W>0 AND W<10 THEN H=H+1 ELSE H=H+2:FOR Q=1 TO 30 :NEXT:SOUND 1000,10:SOUN
D 1000,10:SOUND 1000,10:SOUND 1000,10:SOUND 1000,10:SOUND 1000,10:SOUND 1000,10:
SOUND 1000,10:SOUND 1000,10:SOUND 1000,10:SOUND 1000,10:FOR Q=1 TO 250: NEXT
710 PRINT@ 554,"SCORE"
720 PRINT @ 595, H
730 GOTO 605
```

Listing 3. A BASIC program for teaching children addition and subtraction.

COMPATIBILITY: Model 100/102, Tandy 200, and Model 100 clones (with changes).

Mine Field

Play this game and turn a mine field into an oil field—or get blown to "bits."

by Kent Peterson

Some days it just doesn't pay to answer the phone ... You were peacefully minding your own business when the phone rang and a familiar voice on the other end said, "Kid, I need your help."

Well, you'd been watching TV and wondering why you hadn't been called before now and you answered with an enthusiastic "Yes, sir!" and "Whatever you say, sir!" while the commander outlined your mission.

Basically, you have to do a little clean up work. It seems that while we were teaching our smart bombs new tricks and getting patriotic with our missiles, our not-so-elite opponents were busy filling the desert with land mines. Now, most of our fellows have gone home, but somebody has to map out a safe path through the mine fields. Someone especially gullib—... skillful. Yeah, skillful. That's why you're here.

Now you do have a mine detector, but it's not very good. (I guess they put all the smarts into the bombs!) Your mine detector tells you how many mines are in the area around you but not the direction in which the mines lie. It's up to you to be logical and figure a path through the mine field. Now the commander did guarantee that every mine field has a solution, but if he's so sure, why isn't he here?

One false move and poof . . . you're gone.

MINE.BA is a strategy game for the Tandy 100, 102, 200 and the Olivetti M-10 portable computers. It simulates the scenario outlined above, navigating through a mine field. When the game starts, it does some initialization and then asks you how many mines you would like. It's best to start with a few mines and work your way up to more complex mine fields as you get used to the game. One false move and poof . . . you're gone.

Once you've selected the number of mines you want, the game draws the board. Your goal is to get from the upper left to the lower right. You are represented by the single digit displayed on the board and it is the count of the number of mines around you. If it is zero, great—you can move anywhere. If it's a two, it means two of the surrounding squares have mines, and you have to watch your step. With luck and logic, though, you can get through.

```
10 ' MINE.BA by Kent Peterson
20 DEFINT A-Y
30 DIM B(24,16)
40 CLS:PRINT"Setting up..."
50 POKE63277,PEEK(61983)
60 MY=16:MX=24
70 X=1:Y=1:B(MX,MY)=2
80 B(X,Y)=2
90 R=RND(1)*120+1:K=1:IFR>20THENK=2
100 IFR>40THENK=3
110 IFR>60THENK=6
120 IFR>95THENK=9
130 GOSUB440
140 IFX<>MXTHEN80
150 IFY<>MYTHEN80
160 F=0:FORI=1TOMX:FORJ=1TOMY:IFB(I,J)=0
THENF=F+1
170 NEXT:NEXT
180 CLS:INPUT"How many mines would you l
ike";M
190 IFM<1ORM>FTHEN180ELSECLS:PRINT"Placi
ng mines..."
200 FORK=1TOM:
210 I=RND(1)*MX+1:J=RND(1)*MY+1:IFB(I,J)
=0THENB(I,J)=1ELSE210
220 NEXT
230 FORI=1TOMX:FORJ=1TOMY:IFB(I,J)=2THEN
B(I,J)=0
240 NEXT:NEXT
250 CLS:FORI=0TOMY-1:PRINT@I*40,STRING$(
MX,CHR$(255));:NEXT:GOSUB570
260 PRINT@27,"MINE FIELD":PRINT@189,"7 8
 9":PRINT@229,"4 + 6":PRINT@269,"1 2 3"
270 X=1:Y=1:GOSUB510
280 GOSUB580
290 K=ASC(Z$)-48:IFK<0ORK>9THEN280
300 GOSUB500:GOSUB440:GOSUB510
```

Continued.

Listing 1. MINE.BA. *A game that makes you, a hapless private, clear a path through a mine field, and will also make you wish you had some of that high-tech detecting equipment that got you there.*

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You move through the mine field by using the number pad. The numbers four and three move you left and right, while eight and two move you up and down. One, three, seven, and nine move you diagonally.

The program as shown in Listing 1 runs on a Tandy 200. If you have a Tandy 100 or 102, change the following lines:

```
30 DIM B(24,8)
50 POKE64634,PEEK(63791)
60 MY=8:MX=24
```

If you have an Olivetti M-10, change these lines:

```
30 DIM B(24,8)
50 Y=VAL(RIGHT$(TIME$,2)): FORX=1TOY: Z=
RND(1): NEXT
60 MY=8:MX=24
250 CLS: FORI=0TOMY-1: PRINT @I*40, STRI
NG$(MX, CHR$ (244));: NEXT: GOSUB570
490 PRINT@(Y-1)*40+X-1, CH R$(166);: RET
URN
```

You'll notice that, with the exception of the title credit, the program listing doesn't have comments or any extra spaces. I chose to do this to keep the program small. On my Tandy 200, the program takes up 1,376 bytes. The versions for the other machines are similarly small.

I do like to document my programs even when I don't put the comments in the code. The remainder of this write-up gets into the details of how the program works. If all you want is to play the game, just key it in and start playing.

THE DIRTY DETAILS

Still here? OK, here's a line by line play by play of the code.

On line 30, the array *B(X,Y)* is dimensioned. This is the game board. *X* and *Y* indicate what row and column you are at on the board. Line 50 seeds the random number generator that's used to place the mines. On line 60, *MY* and *MX* represent the maximum *X* and *Y* dimensions for the board.

Lines 70-150 lay down a path through the mine field. Lines 160-170 count the number of free spaces in the mine field. Line 180 asks how many mines you want, and lines 190-220 place the mines. Lines 230-240 clear the path.

Lines 250-270 draw the board. Lines 280-300 get a keypress and translate it into a move. Line 310 checks if you stepped on a mine. Lines 320-330 explode the mine. Lines 340-390 reveal the mines. Lines 400-420 ask if you'd like to play again. Line 430 displays the *YOU WIN!!* message.

The routine at 440-480 calculates your new location based on your keypress. The routines at 490 and 500 draw a mine or space at *X,Y*. The routine at 510-560 counts the mines in the squares around you. The routine at 570 draws the *EXIT*.

And speaking of exits, this explanation has gone on long enough. As Dennis Miller would say, "I'm outta here!"

```
310 IFB(X,Y)<>1THEN430
320 Z$="xX*":FORI=1TO3:PRINT@(Y-1)*40+X-
1,MID$(Z$,I,1);:FORJ=1TO3:SOUNDRND(1)*12
000,2:NEXT:NEXT
330 GOSUB490:PRINT@107,"TOO BAD!!!"
340 GOSUB580
350 GOSUB570
360 FORX=1TOMX:FORY=1TOMY
370 IFB(X,Y)=0THENGOSUB500
380 IFB(X,Y)=1THENGOSUB490
390 NEXT:NEXT:GOSUB570
400 GOSUB580
410 CLS:INPUT"Would you like to play aga
in";Z$
420 Z$=LEFT$(Z$,1):IFZ$="Y"ORZ$="y"THENR
UNELSEMENU
430 GOSUB510:IFX=MXANDY=MYTHENPRINT@107,
"YOU WIN!!!";:GOTO350ELSE280
440 X=X+((K-1)MOD3)-1:Y=Y+1-((K-1)\3):IF
X<1THENX=1
450 IFX>MXTHENX=MX
460 IFY<1THENY=1
470 IFY>MYTHENY=MY
480 RETURN
490 PRINT@(Y-1)*40+X-1,CHR$(169);:RETURN
500 PRINT@(Y-1)*40+X-1," ";:RETURN
510 C=0:FORI=-1TO1:FORJ=-1TO1:IFX+I<1THE
N560
520 IFX+I>MXTHEN560
530 IFY+J<1THEN560
540 IFY+J>MYTHEN560
550 IFB(X+I,Y+J)=1THENC=C+1
560 NEXT:NEXT:PRINT@(Y-1)*40+X-1,RIGHT$(
STR$(C),1);:RETURN
570 PRINT@(MY-1)*40+23,"EXIT";:RETURN
580 Z$=INKEY$:IFZ$=""THEN580ELSERETURN
```

COMPATIBILITY: All MS-DOS computers.

Automap: Computerized Portable Intelligent Road Atlas

All you need now is a computer that can drive your car . . .

by Bob Liddil

For me, road travel is usually a hassle. I always have trouble with road maps that never fold right. The print on my paper road atlas is too small for me to read. Over the years I've read countless magazine and newspaper articles promising the intelligent computerized car of the future, capable of always finding the right highway. I've had this vision of myself . . . never lost in the car again. Well, the future is now.

Automap 2.0 from Automap, Incorporated, in Arizona is a PC-compatible program that supports CGA, EGA, VGA and high contrast LCD video displays, as well as most printers and a large variety of mice. Installation is a breeze. I had no difficulty getting the program up and running in just a few moments. The package comes on both 3.5-inch and 5.25-inch floppy disks that are not copy protected. These two facts show consideration on the part of the manufacturer.

DOCUMENTATION

Although it is a little skimpy, a fairly literate manual is provided. The instructions range from adequate to sparse, though presented in a very bland format compared to the lavish attention paid to the outside packaging.

Once installation is out of the way, the learning process begins. This is one of the few programs I've ever reviewed that is fun to learn to use. It has such a high tolerance for exploration that it was more than an hour before I picked up the handbook to make a serious effort to get back to work. By then most of what I needed to know to operate *Automap* was in my head.

THE SCREEN

What first comes onto the screen after the program boots is a stock map of the USA, showing the interstate highway system, major cities of importance (Dallas, Phoenix, and so on), and state borders (also Canadian and Mexican borders). All of Canada and most of Mexico appear on this screen but without road detail.

The graphical user interface used by *Automap* is self-generated and not *Windows*-dependent. It is a pleasure to use with a mouse, and no particular hassle in the keyboard access mode.

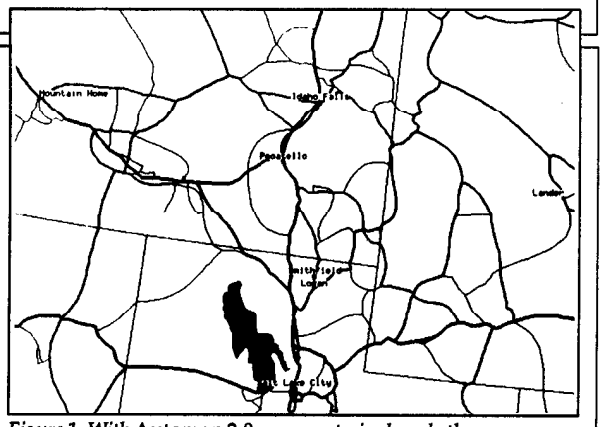

Figure 1. With Automap 2.0, *a computerized road atlas, you can see closeups of local areas, such as Salt Lake City, above.*

THE MENUS

On a pulldown menu bar above the map display appear seven different choices labeled *File, Display, Data, Route, Utility, Screen,* and *Help.* Additionally, a click-on icon group serves mouse users as shortcut choices.

I began to explore the program by grabbing pulldown menus. The File menu accesses the print, save position, and exit program commands.

The *Display* menu offers *Zoom* or point of view selections. Select *Zoom out, zoom in* to access larger or smaller areas, as in Corpus Christi local area (zoom in) versus Texas and parts of New Mexico and Louisiana (zoom out) or USA (maximum zoom). Select *More detail, Less detail* to add or subtract lesser roads, towns, and terrain features that may have been highlighted in another section. Selecting *Go to* tracks to a *Go to where* submenu, offering four choices: go to a place, go to a state, go to a region and go to a latitude/longitude. Choosing one of these triggers a *Find* that results in the display centering on that find.

I selected Smithfield, Utah, a delightful little place in a mountain canyon outside of Salt Lake City with which I am familiar. An option to search the database for smaller towns (submenu) popped up, offering eight Smithfields, including Utah, which I highlighted and entered. The word *Smithfield* appeared on the USA display as being north of Salt Lake City, which of course it is.

Using the mouse, I placed Smithfield in a box, followed by a mouse click on the *Power zoom* icon at the upper right of the display. This brought the point of view down to a close-up area map of the Salt Lake City area (see Figure 1), including the Great Salt Lake, a prominent local geographical feature, and Smithfield, snuggled away close to the Wyoming and Idaho borders.

MORE THAN JUST A ROAD MAP

The *Data* menu includes an *Overlays* submenu, which modifies the view with such selections as rivers, smaller lakes, mountains, forests, etc. Choosing *Forests* added vast areas of highlighted wilderness covering large parts of the entire display (Figure 2). Had I chosen *Mountains* or *Smaller rivers and lakes* I would have been rewarded with an overview of this part of Utah's most breathtaking features.

There are seven other highlight selections that would have allowed me to customize my map to almost any interest. *Automap* is nothing if not intri-

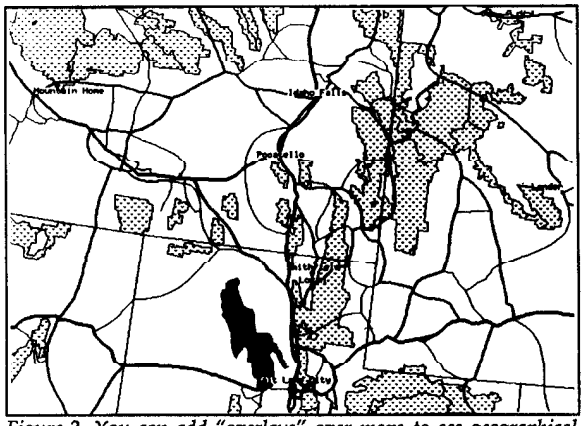

Figure 2. You can add "overlays" over maps to see geographical features other than roads as, for example, forests.

cate.

The *Route* menu deals with trip planning. *Set start, Set end, Add a via, Avoid road, Calculate (execute),* and *Select route* are all options within this menu. Pointing the mouse to Salt Lake City (to start) and Idaho Falls (to finish), followed by a click on *Calculate,* opens a window saying that the time/distance information on this trip is 213 miles/3 hours, 53 minutes, or roughly 53 miles per hour. Pressing the space bar to continue causes I-84 and I-15 between the two cities to flash, highlighting the route. This causes the two interstates to be identified with their shield icons (which they are not in Figure 1 or Figure 2).

Judging from the one time I traveled this highway, I suspect that elapsed time can be shaved a bit by doing more than 65 mph on the long interstate stretches, to make up for the congested traffic around some municipalities (which, of course, I don't recommend). Good ballpark estimate, though, and in reality, probably pretty accurate.

The *Utility* menu offers a *Distance line,* a neat point, click, stretch-between-two-points, and click again device that, for example, could tell me the gross distance between Smithfield and Cincinnati (line of sight) or could be more accurate still if I plotted the distance line between log points, as in Smithfield to Salt Lake to Denver to Kansas City to St Louis to Indianapolis to Cincinnati.

Other choices under this menu include *Options,* offering fourteen fine details for the map display (remember *More detail, Less detail*) that include ferries, show scale, road class, the interstate highway ID shields I mentioned before, and other neat stuff as well.

NO MORE COUNTING LICENSE PLATES

Worth mentioning in its own paragraph is the smurfy little geography quiz game to be found under the *Utility* menu. It asks good questions on the USA map, and when I highlighted the Seattle/Olympic peninsula area and power zoomed into it, it switched to regional questions. Any student will find himself well quizzed on American geography with this game, and I was seduced mightily after I scored a 96 percent on the first round.

The *Screen* menu toggles between the map display and the journey plot routines. Add Smithfield as a "via" between Salt Lake City and Idaho Falls, hit the *Calculate* toggle, and now we have a hefty six-hour, ten-minute, 253-mile journey, slowing the average speed to 42 mph (Figure 3). Selecting a return to the map reveals the new route, highlighted and flashing. Incidentally, Smithfield is surrounded by large acreages of U.S. Forest Service and Park Service patrolled timberland, thus accounting for the highway marked *unknown.* County roads register the same way.

This same menu also has a *Configuration* submenu that handles the choosing of printers, displays, mice, etc., to allow the program to set up perfectly for the user's particular hardware.

The *Help* menu offers detailed assistance in all phases of operations. I found it to be very useful when I (often) lost my way.

An icon set or *Quick menu* offers fast access to often used functions. Pan left, pan right, pan up or down, moves the point of view as indicated. A + or a - for more or less detail, and two magnifying glasses (large and small) for making the examination area larger or smaller (zoom in, zoom out).

I used this menu to follow I-15 north (pan up) past the I-40 junction to Helena, Montana, finally stopping at the Canadian border. I did not turn off the trees and wilderness overlay, but going back to the *Overlay* submenu I added *Recreation areas* (Figure 4). This added Glacier National Park, the large tinted area to the northeast of Kalispell, and also added Going-to-the-Sun Road, a breathtaking scenic drive through the heart of some of Montana's most rugged terrain. Ummmmph. I wish I were there now!

Moving from the computer to actual life, I used *Automap* on a recent round trip to Evansville, Indiana, and back. I quibbled with some of the computer's route choices, winning some and losing some. Although I-71 bypasses downtown Cincinnati, lazing up through the countryside on the Queen City's eastern side, *Automap* chose I-75 through the heart of town. A closer examination revealed that *Automap* was right. The I-71 route was longer. We went with the *Automap* choice (I-75) and stopped at a Skyline Chili parlor for Cincinnati chili spaghetti, Coney Island dogs, and all the

Quickest route from Salt Lake City to Idaho Falls
Via Smithfield

Time 6 hrs 10 min. Distance 253 miles.

Time	Road	For	Dir	Towards
00:00	DEPART Salt Lake City (Uta	I15	6 miles	N	Bountiful
00:08	At Bountiful stay on the	I15	13 miles	N	(Layton)
00:22	At Farmington stay on the	I15	4 miles	N	(Layton)
00:26	At Layton stay on the	I15	9 miles	N	(Roy)
00:36	At Roy turn off onto	I84	27 miles	E	Boise
01:05	Turn off onto	U91	3 miles	E	(Brigham City)
01:09	At Brigham City stay on th	U91	25 miles	SE	(Logan)
01:39	Take the	Unknown	8 miles		
02:29	ARRIVE Smithfield (Utah)				
02:29	DEPART Smithfield (Utah) o	Unknown	8 miles		
03:19	At Logan take the	U91	30 miles	N	(Preston)
03:56	At Preston stay on the	U91	36 miles	N	(Mccammon)
04:39	Turn right onto	I15	12 miles	N	Pocatello
04:51	At Mccammon stay on the	I15	72 miles	N	Pocatello
06:10	ARRIVE Idaho Falls (Idaho)				

Figure 3. Automap's choices for the quickest route from Salt Lake City to Idaho Falls, via Smithfield.

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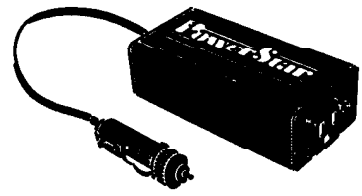

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SOFTWARE REVIEW

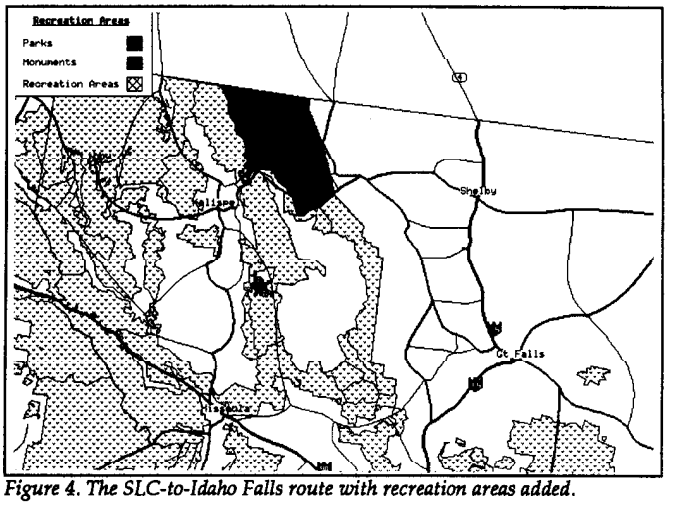

Figure 4. The SLC-to-Idaho Falls route with recreation areas added.

Pepsi we could drink. That meal would have been worth an all-night traffic jam.

SUMMARY

I have come to some conclusions as a result of my experience with *Automap*. First, it is a swell program just to mess with. I found myself highlighting places I've been and checking details against the *AM* database. That and the geography game are great fun.

Next, I am greatly pleased by the depth of the information. The program knows that Peterborough, NH, is proximate to Mount Monadnock (our local climbing peak), and frankly, this is reasonably obscure information for a program from Arizona. It also knows about the shortcut from Albuquerque to Phoenix, by way of Winslow and past the fabled Superstition mountains, a shortcut that Arizona native Terry Kepner, this magazine's publisher, refuses to accept as existing at all.

Also, I am impressed with *Automap*'s usefulness. In using it, I've discovered new routes to the places I go. When confronted with indeterminate delays on the Pennsylvania Turnpike during the Evansville trip, a close-up of the area we were in revealed a Highway 119 to Highway 17 in the "Upstate New York to home" scenario that stood to get us out of bumper-to-bumper traffic and (cursed) 55 mph speed limits enforced to the letter. Pennsylvania Turnpike, bah, humbug!

Lastly, I am impressed with the attitude of Automap, Incorporated. When I confronted them with what I believed to be shortcomings in the program, my concerns were pleasantly and swiftly addressed. (That the deficiencies were actually a combination of operator error and not reading the manual thoroughly, was beside the point.) I was deliberately a little irate, did not identify myself as a reviewer, and despite my less than sterling attitude, the technician was undaunted. She pressed on when she didn't have to.

I recommend *Automap* for travelers, casual or professional, for students, and for lovers of things geographical. My copy is permanently installed, and I'd never give it up.

MANUFACTURER'S SPECIFICATIONS

Automap—$89.95, requires 512K RAM, HDD with 4MB free, and MS-DOS 2.2 or higher.

Automap Inc.
9831 S. 51st St., Bldg C-113
Phoeniz, AZ 85044

Home-brew Tandy Model 200 RAM Cartridges:

Build your own battery-powered removable RAM modules!

by Harvey Chrisley

I wanted some type of permanent storage that wouldn't be affected by cold starts for my Tandy 200. I originally bought a cassette deck, but that was too slow and too undependable—after saving a file to cassette I sometimes couldn't get it back. So I bought a Tandy Disk Drive, but that also suffered from drawbacks. First, it was too big to fit in my briefcase. That meant I had to carry it separately, which was a bother. Second, it quit working about tenminutes after I first hooked it up. That didn't give me a real secure feeling about trusting it with my files.

I needed something different. Something quick. Something dependable. Something cheap.

After thinking about it for a while, I hit on the idea of making RAM packs that could be removed from the 200 and that also could be maintained with their own power source.

What follows are the details of how I did it. But a word of warning: You will need to cut some holes in your case and do some soldering inside the 200. If this worries you, perhaps you shouldn't do it yourself. Have a technician do it for you.

Read over this article and make sure you understand what's going to happen. If you have any questions write me and I'll do my best to help you out.

First, make sure you have all the parts and tools needed (see Listing 1).

INSTALLING THE SWITCH AND SOCKET

IMPORTANT: Turn the Tandy's memory power switch off before proceeding.

1. Disassemble the Tandy. If you don't know how to do this, I suggest you buy a copy of the Tandy 200 Service Manual from Radio Shack (cat. #26-3860). It gives a more detailed list of instructions than I can provide in this article.
2. Remove the display.
3. Remove the top cover.
4. Remove the keyboard.
5. Pop the cover off of the memory compartment.
6. Locate socket M306. Flip the Tandy over and look at the memory compartment. Identify socket M306. Now find pin 1 of M306. It's marked, next to the socket. Flip the Tandy upright and figure out which solder point on the backside of the board is pin 1 of M306. Mark this with a piece of tape. From now on, I will use M306-S to refer to the solder side of the board and M306-C to refer only to the chip that's plugged into the socket.

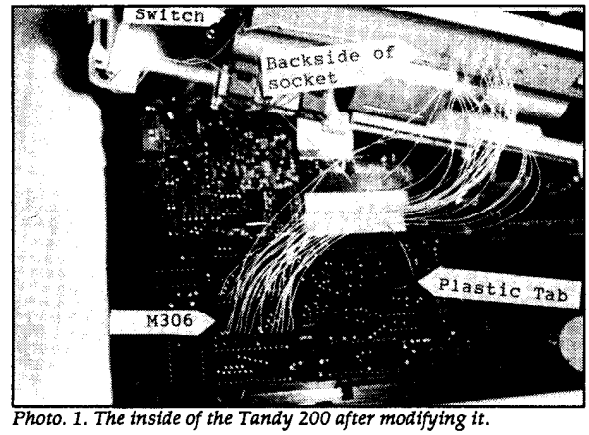

Photo. 1. The inside of the Tandy 200 after modifying it.

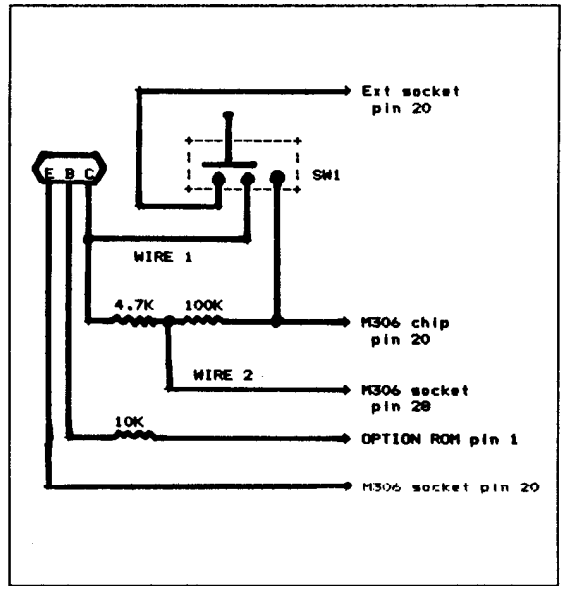

Figure 1. The wiring diagram for adding the external Tandy 200 RAM modules' socket to your Tandy 200.

7. Add the wires: Solder wires about eight inches long to all the pins on M306-S, *except* pin 22.
8. Add the transistor circuit. The circuit in Figure 1 should fit in the memory compartment. There's a small hole in the edge of the memory board where it's held in place by a plastic tab (see Photo 1). The wires that need to go to the solder side of the board will just fit through that. If you've added banks two and three using Paul Globman and James Yi's Budget Bank (May 1988, June 1988, and April 1989 *Portable 100* issues), modify your circuit to match the one in Figure 1.
9. Add the Switch.
   a) Refer to Photo 2. Locate where you're going to place the switch and cut the hole.

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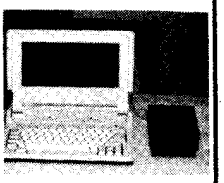

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Circle 37 on reader service card.

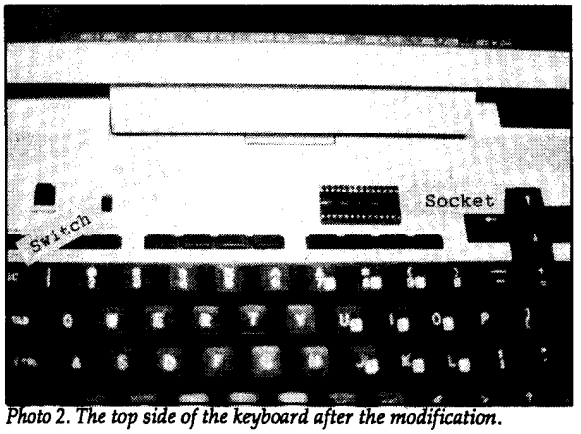

Photo 2. The top side of the keyboard after the modification.

The switch should be centered one inch to the right of the power switch and three-quarters of an inch from the print key. The hole is 3/16-inch by 3/8-inch in size.

b) Refer to Photo 3. Cut the notch in the keyboard for the switch. Be careful, because you have to cut close to a circuit line on the board. Keep checking the fit to make sure you don't overcut.

c) Solder two wires to the outside contacts of the switch. Solder the wire from the collector of the transistor to the common contact of the switch. Leave yourself a couple inches of excess wire.

d) Solder one of the other wires from the switch to pin 20 of M306-C. It doesn't matter which wire you use.

e) Using the wire wrap tag as a template, mark the location of the holes for the socket. The socket is centered about a quarter of an inch above the *F5, F6, F7* keys. Refer to Photo 2 again. The placement is not really critical. Drill the holes using a 1/8-inch drill. Try the socket to make sure it fits.

f) Look at the switch. Set it so you have continuity from the center contact to the one remaining wire. Install the switch in the cover so that when it's pushed *away* from the keyboard you have continuity to the one free wire, and to the wire going to M306-C when it's set *toward* the keyboard. In normal operation, to switch to the external RAM, you push the switch away from you. To switch to the internal RAM, you pull it towards you. Use hot glue to tack the switch in place. Use only a little in case you have to change something later.

g) Route all the wires from M306-S through the holes for the socket. *Except* for pins 1 and 27, all the wires go to the same pins on the external socket as they do on M306-S. Pins 1 and 27 are swapped. Route the wire from M306-S pin 1 to pin 27 of the external socket, and the wire from M306-S pin 27 to pin 1 of the external socket. Pin 22 of the external socket should have *no* wire going to it. Route the one remaining wire from the switch to pin 20 of the external socket.

h) Now replace the insulating cardboard cover over the memory board and replace the keyboard. You'll have to work with the wires to get them to lay flat. Fit the Tandy 200's cover in place to make sure everything fits. Check the clearance between the switch and the keyboard.

i) Pull the excess wire though the socket holes. Cut the wires about one to one-and-a-half inches above the cover. You need a little extra so you can solder the socket on.

j) Now solder the wires to the socket.

k) Fit the socket in place and hook up the display. Lay the 200 aside while you turn our attention to making some RAM banks.

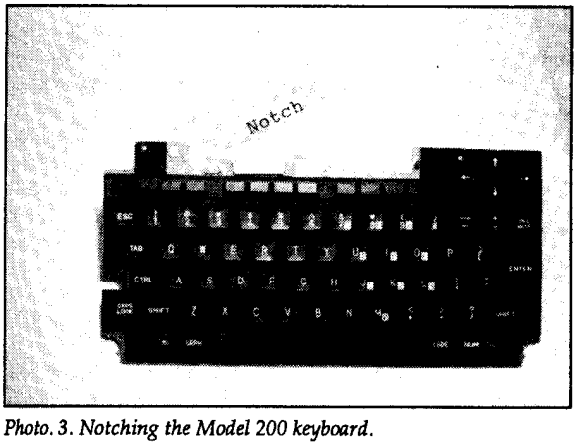

Photo. 3. Notching the Model 200 keyboard.

BUILDING THE RAM MODULES

These chips are CMOS, so you want to be very careful. Static electricity will destroy them. A grounding strap is advisable.

1. Preparing the chips. Carefully bend pins 28 and 22 up over the back of the chip (see Figure 2).

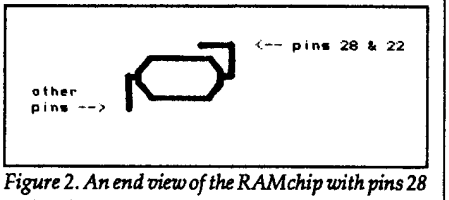

Figure 2. An end view of the RAM chip with pins 28 and 22 bent up and over the top of the chip.

Hold the chip on its side and, using a small screwdriver or something similar, gently bend the remaining pins in against the chip body (see Figure 3).

Figure 3. An end view of the RAM-chip, showing all the pins except 20 and 22 are bent in toward the body of the chip.

Bend the skinny portion of each pin out horizontal (see Figure 4).

2. Seating the chip. Now place the chip in the DIP header. If you bent the pins correctly, it should just sit right in. Pin 1 on the chip should mate with pin 6 of the header. If everything is okay,

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Circle 33 on reader service card.

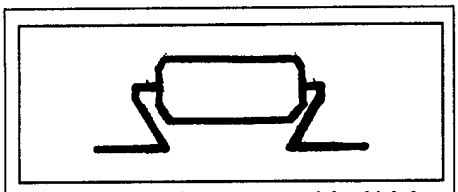


Figure 4. Bend the bottom parts of the chip's legs horizontal.

carefully solder the chip in place. Cut off the excess chip leads using flush cutting dikes. Also cut pins 1, 2, 3, 4, 5, 20, 21, 29, 35, 36, 37, 38, 39, 40 off the DIP header. There's nothing connected to them and you can use the missing pins as a guide to insure you always plug the module in correctly.

3. Adding resistor and wires. Solder a 100K resistor between pins 28 and 20. Solder wires about three inches long to pins 28 and 14. Solder a wire between pins 22 and 14 (see Photo 4).

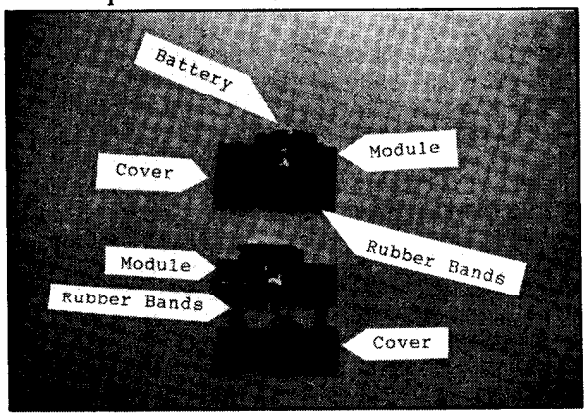


Photo 4. The completed RAM modules.

4. Preparing the DIP cover. Center the battery holder on top of the DIP cover. Mark where the holes need to be for the leads and drill these using a 1/8-inch drill.
5. Module assembly. Route the wires from the chip pins 28 and 14 though the holes in the cover. Place the cover onto the DIP header. Cut the leads on the battery holder to about half their length. Solder the wires to the battery holder, being careful to watch polarity. *Be sure* the wire from pin 14 goes to the *negative* terminal of the battery holder. Pop the battery into the holder and the module is now ready. Now to test things and see if they work.
6. Testing the module and socket. Plug the module into the socket. Be gentle with it (this is its first time). The socket is new and things aren't completely assembled yet. Also, there's no need to insert the module into the socket completely. Just enough so all the pins are making contact.

Turn your Tandy 200 on. Move the switch you just installed towards you. This should allow you to access the Tandy's internal bank three. Go to bank three and create a file call *INT.DO*. We'll use this file to identify the internal bank three. Now, go back to bank one and flip the switch away from you. (NOTE: *never* move the switch while you're in bank three. It locks the Tandy up). This selects the external RAM module. Go to bank three.

You should not see any files, because you're now looking at an entirely different bank. Create a file in this new bank three called *EXT.DO*. We'll use this file to identify the external bank three.

Again, move to bank one and pull the switch towards you. Go back to bank three and see if file *INT.DO* is still there. Go to bank one, flip the switch, go to bank three and see if file *EXT.DO* is there. If everything worked, congratulations! You've done it! All that's left is to reassemble the Tandy.

If you had problems with the above test, check your circuits. Make sure you have all the wires going where they're supposed to go. Also, check the RAM module for proper seating. I said it didn't have to be inserted all the way, but make sure it's in far enough for all the pins to make contact. Check the battery on the RAM module. I hooked mine up backwards the first time; maybe you did too. If you can't figure out what's wrong, drop me a line and I'll try to help.

7. Final Assembly. Using super-glue, secure the DIP cover to the DIP header. Do a good job or it'll pull off the first time you try to disconnect the module from the Tandy. Also, glue the battery holder to the DIP cover.

Use the second DIP cover as a cover for the pins on the RAM module. Hold it in place with a couple of small rubber bands. For the Tandy, make sure the switch is securely fastened down. I glued mine but you also could use a couple of small screws. Glue the socket down. If it's not firmly attached to the Tandy it'll pull up the first time you pull a module out of it.

Once you have everything back together, repeat Step 6 one more time before you put your tools away. If it checks good, then that's it, you're done! You now can make as many spare external 24K RAM modules as you want, each with its own battery to retain your data.

Please address questions and correspondence to the author:
Harvey Chrisley
7248-700 Ave. W., Apt. #2
Oak Harbor, WA 98277
Or you may reach him via his CompuServe User Id, #72446, 3465.

Internal Parts		Sources
1. Transistor	2N3904	A,B,C
2. SWITCH	275-407,SW104-ND	A,D
3. RESISTOR	4.7k	A,B,C
4. RESISTOR	10k	A,B,C
5. RESISTOR	100k	A,B,C
6. WIRE-WRAP WIRE	278-502,K149-ND	A,D
7. 40 PIN SOCKET (low profile)	40LP,A9340	A,C,D

List 1. These are the parts you will need to modify the inside of your Tandy 200 to accept your home-built RAM modules.

RAM MODULE PARTS (per RAM module)		
1. RESISTOR	100k	A,B,C
2. 32K CMOS RAM Chip	43256LP-15,62256LP-15	A,B,C
3. 40 PIN DIP Header	40HP	C
4. DIP Cover for above	40HC	C (2)
5. NiCd BATTERY	CR2032 or P186	A,D
6. BATTERY HOLDER	2S2032 or 106K-ND	C,D
7. WIRE WRAP TAGS	ID-40,K149-ND	B,D

List 2. You will need a full set of each of the parts listed here for each RAM module you build.

A. Radio Shack, any
B. All Electronic Corp., P.O. Box 567, Van Nuys, CA 91408, (800)826-5432
C. JameCo, 1355 Shoreway Road Belmont, CA 94002 (415)592-8097
D. Digi-Key, P.O. Box 677 Thief River Falls, MN 56701, (800)344-4539

List 3. List of suppliers that have the parts shown in Lists 1 and 2.

COMPATIBILITY: Tandy 100, 102, 200, NEC PC-8201A/8300, Kyocera KC-85, Olivetti M10 and MS-DOS computers with *GW-BASIC*.

Automated Cash Register

Record and track sales on a laptop, in BASIC, *for higher profits!*

by Tom Bohon

Recently, a friend, a part-time dealer in postage stamps for collectors, came to me with a problem. On the advice of another dealer, he had purchased a Radio Shack Model 102 for use during weekend "bourses" or shows. His problem was that he couldn't find software suitable to his particular business application and he was quickly becoming frustrated.

As we talked, I learned that he maintained his financial, inventory, and sales records on a PC clone located in his home office. Further, he wanted the output from his M102 program(s) to be in a form that he could transfer to his main system. This capability would allow him to keep his company's records accurate and complete. Finally, he wanted to automate, as much as possible, the production of his sales receipts. He felt that the sometimes laborious calculations of amount, taxes, credits, total due, and change cost him valuable time, time that could be spent more profitably in waiting on other customers.

The laborious calculations of taxes, credits, total due, and change cost valuable time, time that could be more profitably spent waiting on other customers.

After a bit more discussion, I reassured him that he had *not* wasted his money on the M102 and that we could design an easy-to-use receipt-printing program. While we were at it, I suggested that we also track his sales so that he would know exactly what he had sold, the price of each item, and how much tax he had collected on each sale. Thus was born *ACR.BA*, shown in Listing 1.

One of our first problems was the printer he would take with him to the weekend shows. His home system uses a large, bulky near letter quality printer, much too large and awkward to transport back and forth in his car. Also, since the typical show booth was extremely limited in space, some sort of a small printer was definitely needed.

```
5 'AUTOMATED CASH REGISTER (ACR.BA)
10 ' (c) 1988 by Tom Bohon
15 CLS:LINE(0,0)-(239,63),1,B
20 LINE(2,2)-(237,61),1,B:LINE(4,4)-(235
,59),1,B
25 PRINT@48,"AUTOMATED CASH REGISTER"
30 PRINT@89,"(C) 1988 BY TOM BOHON"
35 DIM ITM$(20,3)
40 F$="S"+LEFT$(DATE$,2)+MID$(DATE$,4,2)
+".DO"
45 OPEN F$ FOR OUTPUT AS 1
50 N=0:CUSTNR=0
55 M1$="### \           \ $#,###.## $###
,###.##"
60 M2$="$###,###.##":M3$="$  #,###.##"
65 LPRINT CHR$(18):LPRINT "S3":LPRINT "C
0":LPRINT CHR$(17)
70 LPRINT "    TOM'S STAMPS":LPRINT CHR$
(18):LPRINT "S1"
75 LPRINT "M0,50":LPRINT "A"
80 LPRINT "P.O. Box 517          Spanaway
, WA 98387":LPRINT
85 CUSTNR=CUSTNR+1:TSALE=0:N=0
90 LPRINT "Qty  Description    Price
  Amount"
95 N=N+1:IF N>20 THEN PRINT "TOO MANY IT
EMS!":BEEP:GOTO 132
100 CLS:PRINT DATE$;TAB(31);TIME$
105 INPUT "        Qty:  ";ITM$(N,1):IF
LEN(ITM$(N,1))=0 THEN 132
110 INPUT "Description:  ";ITM$(N,2)
115 INPUT "      Price:  ";ITM$(N,3)
120 AMT=VAL(ITM$(N,1))*VAL(ITM$(N,3))
125 TSALE=TSALE+AMT
130 GOTO 95
132 PRINT #1,N-1
133 CLS:PRINT DATE$;TAB(31);TIME$:PRINT:
PRINT "Printing Receipt ... ":PRINT
135 FOR I=1 TO N-1
140  AMT=VAL(ITM$(I,1))*VAL(ITM$(I,3))
145  LPRINT USING M1$;VAL(ITM$(I,1)),ITM
$(I,2),VAL(ITM$(I,3)),AMT
150  PRINT#1,ITM$(I,2);",";ITM$(I,1);","
;ITM$(I,3)
155 NEXT I
```

Continued.

Listing 1. ACR.BA. *An easy* BASIC *program that prints sales receipts and helps you track sales.*

Because he didn't have a printer that fit his needs, I offered to loan him my Radio Shack CGP-115 printer/plotter. This little gem (which, unfortunately, is no longer manufactured) is small, lightweight and prints/plots in four colors. This ability to use color would also allow us to make his receipts look more professional. Also, because the CGP-115 prints on 4.5-inch wide paper, the receipts produced by the program wouldn't have to be manually cut from a full-sized piece of paper—another time saver for him.

```
160 LPRINT:LPRINT TAB(19);"Tot Mdse ";
165 LPRINT USING M2$;TSALE
170 PRINT "Taxable Sale (Y/N)?  ";
172 A$=""
175 A$=INKEY$:IF A$="" THEN 175
180 PRINT A$:TAX=0
185 IF A$="Y" OR A$="y" THEN TAX=TSALE*.
078:TSALE=TSALE+TAX
190 IF TAX=0 THEN 200
195 LPRINT TAB(18);"+      Tax ";:LPRINT
USING M3$;TAX
200 PRINT #1,USING M3$;TAX
202 A$=""
205 PRINT "Apply a credit (Y/N)?  ";
210 A$=INKEY$:IF A$="" THEN 210
215 PRINT A$:CRED=0
220 IF A$="Y" OR A$="y" THEN INPUT "Ente
r credit amount:  ";CRED
225 IF CRED=0 THEN 245
230 LPRINT CHR$(18):LPRINT "C3":LPRINT C
HR$(17);
235 LPRINT TAB(19);"-  Credit ";:LPRINT
USING M3$;CRED
240 LPRINT CHR$(18):LPRINT "C0":LPRINT C
HR$(17);
245 TSALE=TSALE-CRED
246 TSALE=INT((TSALE+.005)*100)/100
249 T9=13:IF CRED>0 THEN T9=14
250 LPRINT TAB(T9);"Total Purchase ";:LP
RINT USING M2$;TSALE
252 PRINT "Total Due is ";:PRINT USING M
3$;TSALE
255 INPUT "Payment by checK or Cash (K/C
)";TYP$:INPUT "Enter amount tendered:  "
;TNDRD
260 S$=" Cash":TYP$=LEFT$(TYP$,1)
265 IF TYP$="K" OR TYP$="k" THEN S$="Che
ck"
270 LPRINT TAB(13);S$;" Tendered ";:LPRI
NT USING M2$;TNDRD
275 CHG=TNDRD-TSALE
280 LPRINT TAB(16);"Your Change ";:LPRIN
T USING M2$;CHG
285 LPRINT:LPRINT:LPRINT DATE$;"      ";T
IME$;"      ";
290 LPRINT USING "###";CUSTNR
295 LPRINT:LPRINT
300 LPRINT TAB(14);"THANK YOU!"
305 LPRINT "      We Appreciate Your Pat
ronage":LPRINT:LPRINT:LPRINT:LPRINT
310 PRINT:PRINT "Enter <Q> to end progra
m":PRINT "      <cr> to continue
 ";
315 A$=INKEY$:IF A$="" THEN 315
320 IF A$="Q" OR A$="q" THEN CLS:CLOSE:S
TOP
325 FOR I=1 TO 20:FOR J=1 TO 3:ITM$(I,J)
="":NEXT J:NEXT I
330 GOTO 65
```

End of listing.

Cx Changes pen color:
x = 0 will change to Black
1 will change to Blue
2 will change to Green and
3 will change to Red

Sx Changes character size:
x = 0 gives 80 characters per line
x = 1 gives 40 characters per line

Mx,y Moves the pen (without drawing) to location x,y

A Resets the printer/plotter, returning to text mode *CHR$(17)*, when *LPRINT*ed in graphics mode, returns the printer/plotter to text mode.

Figure 1. Control codes for the Tandy CGP-115 printer/plotter. CHR$(18) *places the CGP-115 printer/plotter into graphics mode. While in this mode, the above commands are available.*

The program itself performs only two basic functions: it prints receipts for each sale and it updates a RAM (or disk) file with specific information on that sale. Because the data in this file are in a fixed ASCII format, his requirements for transferring it are met *and* a wide variety of simple programs can be easily written to summarize the day's sales. More on these programs later.

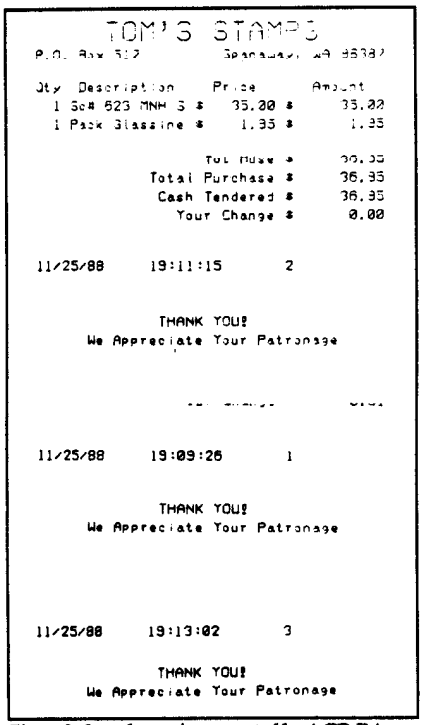
ACR.BA: THE PROGRAM

First, let's take a quick look at the logic of *ACR.BA*. After displaying a sign-on screen in lines 4 through 10, the main data array *ITM$* is dimensioned. My friend and I decided that no single customer was likely to buy more than twenty items, so we set up *ITM$* for twenty rows and three columns, one each for quantity, description, and price. Naturally, if your application requires more space, you can modify the dimensions.

ACR.BA prints receipts for each sale and updates a RAM (or disk) file with specific information on that sale.

Once the working array is declared, setup continues in line 14 where a unique tracking file name is constructed by using the month and day from the system's *DATE$* variable. For example, if the date is *09/25/88*, the file for that day would be called *S0925.DO* (for "Sales 09/25," ignoring the year). Using files named in this way lets you keep track of sales by day, storing these files for later mass analysis. Line 14 also opens the file for output, and lines 16-17 initialize the printing masks and counters used throughout the remainder of the program.

One note here—if you have a disk drive attached to your M102 and would like to store the tracking file on disk rather than in RAM, modify line 14 to add your operating system's device designator to the file name. For example, with my *TS-DOS* system, I place *0:* in front of the *Sxxxx.DO* portion of the name to store that file to disk (so it reads *0:Sxxxx.DO*).



```
TOM'S STAMPS
P.O. Box 512          Spanaway, WA 98387

Qty  Description     Price        Amount
  1 Sc# 623 MNH S $   35.00 $       35.00
  1 Pack Glassine $    1.95 $        1.95

                    Tot Muse $       36.95
              Total Purchase $       36.95
               Cash Tendered $       36.95
                 Your Change $        0.00

11/25/88      19:11:15        2

              THANK YOU!
      We Appreciate Your Patronage

11/25/88      19:09:26        1

              THANK YOU!
      We Appreciate Your Patronage

11/25/88      19:13:02        3

              THANK YOU!
      We Appreciate Your Patronage
```

Figure 2. Sample receipts, created by ACR.BA, *an automated cash register program. These receipts were used by a collectible stamp dealer for a part-time business.*

The main processing loop begins at line 18 with a call to the header printing subroutine at line 88. Here, the printer prints on the receipt the dealer's name and address along with the column headings. Obviously, you could include any other information you would like at the top of the receipt to be printed in this same subroutine.

Because we had decided to use the CGP-115 for output, this routine also contains several control codes that place the printer into graphics mode, change the size of the characters, change the color, and return to text mode. See a complete summary of these codes in Figure 1. You should modify the subroutine to use your printer's expanded, condensed, and regular character modes as needed.

Once the program prints the receipt heading, the inner loop (lines 20-34) begins execution. This loop continues asking for quantity, description and price information (all of which are stored in array *ITM$*) until either you press *RETURN* only for quantity, entering a null string, or until you have entered and stored twenty items. In either of these cases, control passes to line 40, which prints the detail lines on the receipt with automatic calculation of the total amount for each line and accumulation of the overall total sale amount.

Beginning in line 46, two questions are asked: Is the sale taxable, and is there a previous credit to apply to the sale? The program calculates taxes, if any (be sure to change this rate to reflect your local tax structure!), displays the total sale on the LCD, and requests the amount tendered. It calculates change or amount due and prints the final portion of the receipt.

Again, you should add, delete, or change any information in this area to your own personal taste or requirements. Also note the use of color for credits—you could do the same by using a different type style, size, and so forth, on your printer.

```
 2
Asst'd FDCs,10,.25
C23 Used Fine,1,5.00
$       0.59
 2
Sc# 623 MNH Superb,1,35.00
Pack Glassines #1,1,1.95
$       0.00
 1
Asst'd Used US,100,.04
$       0.31
```

Figure 3: Contents of S1125.DO *file created by* ACR.BA.

After the receipt is printed and "ejected" (actually several *LPRINT*s), control passes to line 310—entering a *Q* or *q* terminates the program and anything else (including a *RETURN* by itself, i.e., a null entry) returns control to line 18 where the header printing subroutine at line 88 is called and the process repeats itself.

```
15 ' RECAP1.BA
20 '
25 '  Recaps sales from Sxxxx.DO file
30 '
35 DIM ITM$(20,3) : TC=0 : TTX=0 : TSL=0
40 CLS : PRINT "RECAP1" : PRINT
45 LINE INPUT "Enter file name -> ";F$
50 IF RIGHT$(F$,3) <> ".DO" THEN F$=F$+"
.DO"
55 OPEN F$ FOR INPUT AS 1
57 LPRINT CHR$(18);"S0"
58 LPRINT "A"
60 LPRINT "RECAP OF ";F$,,DATE$,TIME$ :
LPRINT
65 M1$=" ###     \                \   ###
   $#,###.##   $##,###.##    $##.##"
70 M2$="         \                \   ###
    #,###.##    ##,###.##"
75 LPRINT "Cust#          Item
Qty     Price        Amount        Tax"
80 LPRINT "=====   ==================
===   =========   ==========   ========"
85 IF EOF(1) THEN CLOSE : GOTO 165
90 INPUT #1,INR : TI=TI+INR : TSAL=0
95 FOR I=1 TO INR : INPUT #1,ITM$(I,1),I
TM$(I,2),ITM$(I,3) : NEXT I
100 INPUT #1,TX$ : TX=VAL(RIGHT$(TX$,LEN
(TX$)-1)) : TTX=TTX+TX
105 TC = TC+1
110 QTY=VAL(ITM$(1,2)) : PRICE=VAL(ITM$(
1,3)) : AMT=QTY*PRICE
115 TAMT=TAMT + AMT : TQTY=TQTY + QTY :
TSAL=TSAL+AMT+TX
120 LPRINT USING M1$;TC,ITM$(1,1),QTY,PR
ICE,AMT,TX
125 IF INR=1 THEN 155
130 FOR I=2 TO INR
135   QTY=VAL(ITM$(I,2)) : PRICE=VAL(ITM
$(I,3)) : AMT=QTY*PRICE
140   TAMT=TAMT+AMT : TQTY=TQTY + QTY :
TSAL = TSAL+AMT
145   LPRINT USING M2$;ITM$(I,1),QTY,PRI
CE,AMT
150 NEXT I
155 LPRINT USING "     TOTAL SALE:  $###
,###.##";TSAL
160 LPRINT : GOTO 85
165 '
170 '  FINAL TOTAL ROUTINE
175 '
180 M3$ = "
###                $##,###.##   $###.##"
185 LPRINT : LPRINT USING M3$;TQTY,TAMT,
TTX
190 LPRINT : LPRINT "AVG SALE = ";:LPRIN
T USING "$#,###.##";TAMT/TC
195 LPRINT CHR$(18);:LPRINT "S1":LPRINT"
A":LPRINT:LPRINT:LPRINT:STOP
```

Listing 2. RECAP1.BA. *This useful utility summarizes your sales for the day. See Figure 4a for an example of the output you might get.*

The program occupies 2,306 bytes of RAM. The size of the data file, of course, depends on the number of customers and

```
 12 ' RECAP2
 14 '
 16 '  Recaps Sxxxx.DO for count by item
 18 '
 20 DIM ITM$(50),CT(50) : MX=0
 22 CLS : PRINT "RECAP2 (BY ITEM)":PRINT
 24 LINE INPUT "Enter file name -> ";F$
 26 IF RIGHT$(F$,3) <> ".DO" THEN F$=F$+"
.DO"
 28 OPEN F$ FOR INPUT AS 1
 30 LPRINT "RECAP BY ITEM OF ";F$,,DATE$,
TIME$ : LPRINT
 32 PRINT "Processing ... ";
 34 IF EOF(1) THEN 62
 36 INPUT #1,INR
 38 FOR I=1 TO INR
 40   INPUT #1,L$,X,Y
 42   IF MX=0 THEN ITM$(1)=L$ : MX=1
 44   FD=0
 46   FOR J=1 TO MX
 48     IF L$=ITM$(J) THEN CT(J)=CT(J)+X
: J=MX : FD=1
 50   NEXT J
 52 IF FD=1 THEN 58
 54 MX=MX+1 : IF MX>50 THEN PRINT "NO MOR
E ROOM!" : GOTO 62
 56 ITM$(MX)=L$ : CT(MX) = X
 58 NEXT I : INPUT #1,Z$
 60 GOTO 34
 62 '
 64 '  SORT ARRAY ITM$()
 66 '
 68 PRINT:PRINT "SORTING ... ";
 70 SW=0
 72 FOR I=1 TO MX-1
 74  IF ITM$(I)>ITM$(I+1) THEN X$=ITM$(I)
:ITM$(I)=ITM$(I+1):ITM$(I+1)=X$:C=CT(I):
CT(I)=CT(I+1):CT(I+1)=C:SW=1
 76 NEXT I
 78 IF SW=0 THEN 82
 80 GOTO 70
 82 '  FINAL TOTAL ROUTINE
 84 '
 86 FOR I=1 TO MX
 88  LPRINT USING "\                    \
 #,###";ITM$(I),CT(I)
 90 NEXT I
 92 LPRINT:LPRINT:LPRINT:LPRINT:STOP
```

Listing 3. RECAP2.BA. *Another useful utility, this one summarizes your sales by item. See Figure 4b for an example of output.*

Cust#	Item	Qty	Price	Amount	Tax
1	Asst'd FDCs	10	$ 0.25	$ 2.50	$ 0.59
	C23 Used Fine	1	5.00	5.00	
	TOTAL SALE: $ 8.09				
2	Sc# 623 MNH Superb	1	$ 35.00	$ 35.00	$ 0.00
	Pack Glassines #1	1	1.95	1.95	
	TOTAL SALE: $ 36.95				
3	Asst'd Used US	100	$ .04	4.00	$ 0.31
	TOTAL SALE: $ 4.31				
		113		$ 48.45	$ 0.90
	AVG SALE = $ 16.15				

Figure 4a. The output from the RECAP1.BA *utility, which summarizes a day's sales from the file created by* ACR.BA.

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the number of items per customer. If you anticipate a large number of sales on any particular day, I suggest that you clear all the memory you can or use a disk drive for storage of the data file.

THE DATA FILE

Now that we've examined the logic of the main program, let's turn our attention to the sales data file that it creates. You'll remember that the kinds of information in this file and the file's structure are fixed. This is important because it allows us to write any number of auxiliary programs to analyze the stored data.

Two such programs are included here—bear in mind that they are NOT complete; there are situations (such as paging) that are not taken into account. However, they *are* functional programs that *do* work and which illustrate the concept of data analysis as it applies to our data file.

ANALYZE YOUR SALES

Perhaps the simplest analytical function we can make on our data is to summarize, or recap, the day's sales. See Listing 2, a program to do just this. *RECAP1.BA* is fairly straightforward with the exception of the code in lines 57, 58 and 195. Again, these codes place the CGP-115 into and out of eighty character per line mode.

One other function that we might need is illustrated by the program in Listing 3. *RECAP2.BA* summarizes sales by item. Obviously, complete standardization of the description portion of *ITM$* (perhaps by using part numbers, UPC codes, etc.) would make this program's output more readable.

In addition, the simple bubble sort routine used in this sample program is acceptable for fairly small arrays, but highly inefficient (and extremely time consuming!) for

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```
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S1125.DO   11/25/88          16:20:00

        Asst'd FDCs                 10
        Asst'd Used US             100
        C23 Used Fine                1
        Pack Glassines #1            1
        Sc# 623 MNH Superb           1
```

Figure 4b. The output from the second utility, RECAP2.BA, *which summarizes sales by item so you can keep track of your inventory.*

larger ones.

Finally, don't forget to modify the *DIM*ension statement in line 20 for the maximum number of different items you sell—otherwise you'll receive a report on only part of your sales.

A SALES TRACKING TOOL

As you can see, *ACR.BA* is a reasonably powerful tool for not only producing sales receipts, but also for creating a sales tracking file for later analysis. You could make this analysis, illustrated by *RECAP1.BA* and *RECAP2.BA*, either on your M102 or, by uploading the data file to a desktop, on a larger, faster system. You can customize your reports from these analysis programs to your wishes, and they can include just about any information or analysis that you can devise to show how you're doing in business.

Also, if you have other information that you would like to track, modify *ACR.BA* to save it to the data file as each sale is recorded. Just remember also to modify all the analysis programs you write that access that file!

This simple program seems to have met my friend's needs. With minimal reworking for your business and hardware, I hope that it will also serve you well and allow you to keep a better handle on your sales and inventory figures. Feel free to contact me with questions or problems (at P.O. Box 517, Spanaway, WA 98387). And good luck in your business ventures!

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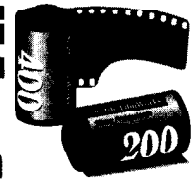

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1A. Title of Publication	Portable 100
1B. Publication No.	0 8 8 8 0 1 3 1
2. Date of Filing	11/15/91
3. Frequency of Issue	Monthly, except a combined July/August
3A. No. of Issues Published Annually	11
3B. Annual Subscription Price	$19.95
4. Complete Mailing Address of Known Office of Publication (Street, City, County, State and ZIP+4 Code) (Not printers)	145 Grove St Ext, POB 428, Peterborough, NH 03458-0428
5. Complete Mailing Address of the Headquarters or General Business Offices of the Publisher (Not printer)	same as 4.
6. Full Names and Complete Mailing Address of Publisher, Editor, and Managing Editor (This item MUST NOT be blank)	
Publisher (Name and Complete Mailing Address)	Mike Nugent, 145 Grove St. Ext, POB 428, Peterborough NH 03458
Editor (Name and Complete Mailing Address)	Terry Kepner, 145 Grove St. Ext. POB 428 Peterborough NH 03458
Managing Editor (Name and Complete Mailing Address)	Terry Kepner, 145 Grove St. Ext. POB 428 Peterborough NH 03458
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Full Name	Complete Mailing Address
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8. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages or Other Securities (If there are none, so state)	
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10. Extent and Nature of Circulation (See instructions on reverse side)	Average No. Copies Each Issue During Preceding 12 Months	Actual No. Copies of Single Issue Published Nearest to Filing Date
A. Total No. Copies (Net Press Run)	5,855	6,750
B. Paid and/or Requested Circulation 1. Sales through dealers and carriers, street vendors and counter sales	25	25
2. Mail Subscription (Paid and/or requested)	5,021	6,339
C. Total Paid and/or Requested Circulation (Sum of 10B1 and 10B2)	5,046	6,364
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F. Copies Not Distributed 1. Office use, left over, unaccounted, spoiled after printing	743	337
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G. TOTAL (Sum of E, F1 and 2—should equal net press run shown in A)	5855	6,750

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PS Form 3526, Dec. 1987

COMPATIBILITY: Tandy 1400 LT.

MS-DOS v5.0 and the Tandy 1400 LT

Here are some tips on giving your LT the lastest version of MS-DOS!

by Robert Causey

A couple of years ago, with much reservation, we purchased a Tandy 1400 LT. It has proved a valuable addition to our little family. Since then we have added a 20Mb hard drive and upgraded to MS-DOS 5. I want to share my recent experience in upgrading the 1400 LT to MS-DOS 5.

I followed the instructions included in the upgrade package. All went well without a hitch. After the upgrade I needed to make some small adjustments. In my *CONFIG.SYS* file I included the following lines.

```
DEVICE=C:\DOS\SETVER.EXE
DEVICE=C:\DOS\RAMDISK.SYS
DRIVPARM=/D:0/F:2
```

In my *AUTOEXEC.BAT* file I included the following line:

```
C:\DOS\CLKSET.COM
```

From the DOS command line I needed to enter one command:

```
C:\DOS>SETVER   RAMDISK.SYS
3.20 (and press ENTER)
```

These modifications were necessary due to the hardware design of the 1400 LT. The *SETVER* program is a unique feature of MS-DOS 5. Some programs look for specific DOS versions before they will run. Such is the *RAMDISK* driver included with the 1400 LT. By entering the above command it instructs DOS to report version 3.20 to the *RAMDISK* driver. The command only needs to be entered once after install. The commands in the *CONFIG.SYS* do the following:

- First the *SETVER* program is loaded, enabling DOS to selectively report version numbers to programs.
- Next the *RAMDISK* driver is loaded. This enables the ramdrive (D:\).
- Last the *DRIVPARM* parameter tells DOS 5 the type of diskette drive installed in drive A. By default DOS thinks the A drive is only 360K. This tells DOS that the A drive is a 720K drive. This allows the Format program to operate properly.

The *CLKSET* program in the *AUTOEXEC.BAT* file corrects one small problem with DOS 5. When the system boots with DOS 5 for some reason the clock initializes with 12:00a. The correct time is still contained in the Real Time Clock chip (RTC); however DOS 5 is unable to read it. The *CLKSET* programs reads the correct time from the RTC using BIOS commands, then sets the correct time in DOS using DOS function calls.

These modifications were necessary due to the hardware design of the 1400 LT.

The *CLKSET* program in the *AUTOEXEC.BAT* file corrects one small problem with DOS 5.

MS-DOS 5 has many powerful new features, including a new editor. I feel it was well worth the cost. DOS 5 runs very well and with no glitches.

A copy of my program *CLKSET .COM* is available on the *Portable 100 BBS*. Feel free to download it.

COMPATIBILITY: MS-DOS portables.

The Mouse and the ICON

Two graphic display pointing devices that use different technologies to reach the same goal.

by Terry Kepner

Using a mouse with your portable computer has usually been an exercise in frustration: Unless a flat surface is handy, finding a place for the mouse pad is a problem. Plus, neither the mouse nor the mouse pad were designed for easy transportation with a computer.

The arrival of the trackball somewhat alleviated the flat surface requirement for the mouse pad, but holding the trackball in one hand while working it with the other was deucedly awkward. Not to mention that the trackball devices were all much bulkier than their mouse counterparts.

Now, however, that situation has changed. Two companies have addressed the problem, but in different manners. Microsoft, the people who brought us MS-DOS, have produced a tiny trackball that clamps to the side of your computer's keyboard. Suncom Technologies, a small company in Illinois, has adapted a joystick, mounted in a small wedge-shaped case, to act like a mouse.

THE ICON ROUTE

Suncom's ICONtroller measures three inches long by one and a quarter inches wide, and tapers from a height of one and a half inches at the back down to only half an inch in the front. At the back is a slide switch which selects one of four definitions for the thumb-switch in the joystick. Below the joystick is a single speed-selection button, and below that are three buttons that perform the functions of the left, center, and right mouse buttons. At the front of the wedge is a selection switch that easily lets you change from normal mouse operation to Microsoft Mouse operation.

Sound complicated? It is, at first. But after you customize the settings to your own needs, it is simple and easy.

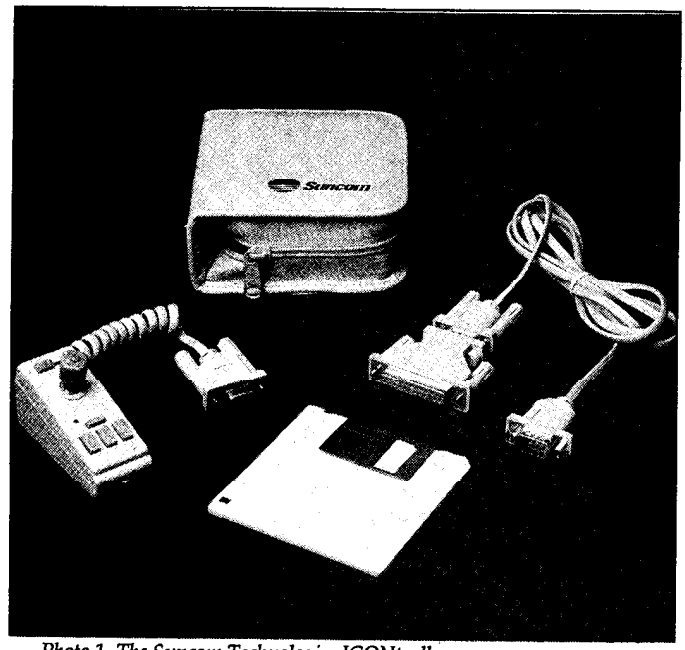

Photo 1. The Suncom Technologies ICONtroller.

Using the ICONtroller is easy, just tilt the joystick in the direction you want your pointer to move, and away it goes. Pushing it a little bit moves the pointer slowly, pushing it over all the way, doubles the speed. Below the joystick is a small button with a green LED beside it. This controls the speed of the joystick.

Normally, the joystick starts out very slow. Even a full tilt moves the pointer slow enough to easily track with your eyes. This isn't always wanted, however. Pressing the button below the joystick shifts the joystick from very-low speed to low speed. The LED beside the button blinks twice to indicate the new speed selection.

The difference in pointer movement is easy to see and acceptable for most work. Pressing the button again shifts to middle speed, with three blinks from the LED. Now it is much harder to see the pointer as it glides across your display. Pressing the button again moves you into high speed, and gives four blinks. The increase over low speed is dramatic. On an LCD display, the pointer simply disappears from the start position until you release it at its destination. Not even a blur appears. You need fast reactions to control the pointer, and fine adjustments of only a few pixels are almost impossible. But, you needn't worry about that, as pressing the "gear shift" button a fifth time resets the speed to very-low again, one blink of the LED. You can repeat the cycle whenever you want.

As I mentioned, the joystick has a small button on top. Normally, in a joystick, this is the "fire" button. But in a mouse there are usually two or three buttons. Which one is the "fire" button? The answer is: Whichever one you want is the "fire" button.

To help you set the joystick to your requirements, the slide switch above the joystick has four settings: left mouse button, center mouse button, right mouse button, and drag. The first three options are obvious and set the joystick button to emulate the mouse button you select. The first setting has a small raised dot below it, the second setting has two,

and the third has three. This is nice, but how do you handle the problem of clicking on a item and moving it across the screen while simultaneously holding down the joystick button with your thumb?

The fourth setting, with a small square below its setting, is designed to handle the problem of "click and drag" gracefully. Flipping it to this setting locks the joystick button to the left-mouse-button setting. Pressing it once toggles the button down. Now, move the pointer as you wish, and the pointer drags the item indicated wherever you want. Pressing the joystick button a second time releases the lock on the left-mouse-button, and lets go out the dragged item. Neat, convenient, simple. Changing the switch in mid-use is not a forbidden, so you can change the settings while you are working (but not while dragging).

Below the speed shift button are three buttons, which act like standard mouse buttons, left, center, and right. Below the left one is a small dot, below the second are two dots, and the third has three dots. These are a small reminder as to the definitions of the raised dots below the joystick settings switch. Not really necessary, but it shows considerable thought as to how people think.

Finally, at the front of the wedge, is a small slide switch with two settings. The first setting lets the ICONtroller act like and use software designed for a Mouse Systems mouse. If you already have a mouse installed on your computer, the odds are this setting will work for you. The other setting changes the joystick to act like a Microsoft mouse, using their built-in software, and retaining all the functions I mentioned above.

This is very useful, and lets you use software without having to reinstall the pointer device. You can simply plug this joystick wedge into your COM port and set the front switch to match your software. Should you not have any mouse software, the Suncom people include 3.5-inch and 5.25-inch disks with software to get you going.

Portability is the issue here, and Suncom fits right in with a zippered, small white leatherette carrying case with straps for holding the ICONtroller in place (with its short coiled cord), a twenty-five-pin to nine-pin converter (to handle all computer COM ports) and a button-down vinyl pocket for your 3.5-inch disk. For optional desktop use, a six-foot extension cord is included.

How do you attach the wedge to your computer? Simple. Suncom includes two strips of interlock tape with the ICONtroller. This tape is similar to Velcro™, but much, much stronger. Separate each piece into its two sections and attach one to your computer and the other to the ICONtroller. Naturally, by attaching it yourself, you can mount the ICONtroller to whichever side of the keyboard you are most comfortable with using. Because there are two strips of this tape, you can put the strips on both sides of the keyboard and ICONtroller, and swap it back and forth as you need. Or, you can use one strip on your portable and the other on your desktop, and switch the ICONtroller between the two computers. (More tape is available at any Tandy/Radio Shack store).

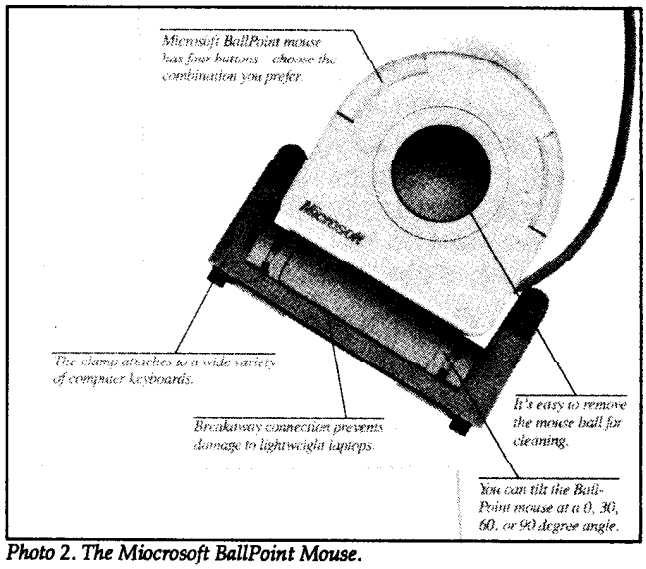

Photo 2. The Miocrosoft BallPoint Mouse.

Pressing the button again moves you into high speed.

THE MICROSOFT BALLPOINT MOUSE

The Microsoft BallPoint Mouse is a miniature trackball shaped like a half-moon. It is about one inch thick, one and a half inches wide, and projects from the keyboard about three and a half inches. On either side of the device (front and back) are two buttons, one above the other. These are your two mouse buttons. That's right, only two buttons are supported by the Microsoft BallPoint Mouse.

The BallPoint mouse is actually two sections: the detachable trackball device and its mounting clamp. The mounting clamp uses two small metal pieces that go over the side of the keyboard and hook into the edge of the keyboard by the keys themselves. Small screw handles let you tighten and loosen the clamps. To make sure their trackball fits all computers, Microsoft has included three sets of clamps: short, medium, and long. Select the length appropriate to your computer, and put them in the clamp.

Once the unit is mounted, you can adjust its angle by pivoting the trackball around a hinge at the edge of the clamp. This lets you adjust the trackball from an upright, at a right angle to the keyboard, position down to a full horizontal position similar to standard trackballs. Some people like the vertical position, some a forty-five degree angle, while I prefer the full horizontal setting.

You can also detach the trackball from the mount and place it on a table top, your leg, or any other convenient position. It works, but I found a tendency to accidentally hit the mouse buttons when I did this.

As I said, there are four mouse buttons on the BallPoint Mouse, two on the front and two on the back. How do you not hit the wrong buttons? Software. The installation software lets you define which set of buttons you want to use, and whether the top button emulates the left mouse button or the right mouse button.

The problem with this is that you cannot reverse the settings once selected without reinstalling the trackball, or keeping their Mouse Control Panel software in RAM as a TSR (I'm ambidextrous and like to switch hands occasionally—my right hand gets tired after a few hours of non-stop work—and PageMaker runs out of memory when I have their TSR installed). The fix suggested by the technician at Microsoft did not work.

The software lets you customize the BallPoint mouse regarding sensitivity, orientation (left side vs right side issues, like which way you move the ball to move up), and acceleration.

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At last! An economical adapter that allows you to use stock EPROMs (27C256) in the option ROM socket in the Tandy models 100/102/200. They're reuseable too, no soldering necessary. Remove an EPROM in seconds, reprogram, and reinstall in the same ROMBO. "The best!"

ROMBO: $9 ea . (1-9) $8 ea. (10 up)
27C256 EPROM: $6.50 ea.
plus $3 per order for shipping.

(Need a ROM emulator? See our extRAM ad.)

eme systems
voice: (510) 848-5725
fax: (510) 848-5748
2229 5th St., Berkeley, CA 94710

Circle 81 on reader service card.

The other problem I had was installing the driver for *Windows*. Following their instructions to the letter failed. A quick call to their technical support revealed that the instructions in the book were inaccurate and told you the wrong order in which to do things.

Like the Suncom ICONtroller, the Microsoft BallPoint Mouse comes with 3.5-inch disk software and a zippered vinyl carrying case. The case is smaller, but has room only for the trackball device. It is also black. Unlike the Suncom device, The Microsoft BallPoint Mouse does include a short PS/2 to nine-pin adapter.

IN COMPARISON

The Suncom ICONtroller operates just like a joystick, and not like a mouse. If you use a mouse, getting used to moving the pointer with the joystick is awkward. There isn't the tactile feedback of arm movement. Judging where the pointer is and tracking it as it moves requires watching the screen closely. Given the slow response of most LCD screens, it is easy to lose the pointer. The faster the speed setting on the joystick, the quicker it disappears. When you lose it, finding it again can be difficult.

These points are also the ICONtroller's advantages. Even though the ICONtroller can move the pointer in any direction, most of the movements are horizontal, vertical, or a straight diagonal, unlike a mouse or trackball which move in jagged spurts (just *try* drawing a straight line with a mouse). You can pick something up and *know* that you are moving it precisely horizontal or vertical.

Similarly, when the pointer seems lost, you have an idea where to expect the pointer to appear.

Using the joystick "fire" button with your thumb isn't as difficult as I first thought it would be. It quickly became my choice method of clicking, instead of the tiny buttons at the front of the ICONtroller wedge.

The only disadvantage to the ICONtroller is its low resolution, only 200 dots per inch. In PageMaker, a graphics intensive female dog of a program, this became a real problem in fine adjustments. A single tap on the joystick moved it too far for the alignment I wanted. In a lower resolution program, this would not be a problem.

The Microsoft BallPoint Mouse responds just like a trackball, a quick flick of the thumb and the pointer jumps across the screen to stop immediately. The tactile response of thumb movement in proportion to pointer movement lets you accurately move the pointer across the screen. It also lets you jiggle the ball and mess up your alignment.

One truly annoying problem is that releasing the ball, taking your thumb off, because you are at the position you want, sometimes makes the screen pointer move. If you are dropping an item into position, this means you dropped it in the wrong place and you must pick it up and try again.

The next problem is that the ball picks up grease and dirt, and begins to move erratically. It sticks, then suddenly rolls, or rolls but the pointer doesn't move at all. This tremendously complicates accurately positioning the pointer. Removing the ball and cleaning it helps some, but does not cure the problem.

Overall, the Microsoft BallPoint Mouse is more intuitive in its placement of the pointer on the screen and more accurate in its 300 dots per inch. Once installed, the software settings are difficult to change.

The Suncom ICONtroller is smaller, has more functions, and is easily altered to match your needs of the moment. It has a lower resolution, but movement is steadier and more accurate when a straight line or steady angle of direction is required.

I found both devices to be well designed and built. Which one you use depends on your requirements. The ICONtroller is less expensive, and might be better for a beginner. The BallPoint Mouse is better for detailed, high dpi graphics work.

MANUFACTURERS' SPECIFICATIONS

BallPoint Mouse — $175
A small trackball that mounts on the side of your computer's keyboard via two small clamps.

Microsoft Corporation
One Microsoft Way
Redmond, WA 98052

ICONtroller — $99.99
A small wedge-shaped joystick unit that mounts on the side of the portable's keyboard with interlock mounting tape.

Suncom Technologies
6400 W. Gross Point Rd.
Niles, IL 60648
(708) 647-4040

COMPATIBILITY: Model 100 and 102.

Model T Keyboard Cover Shootout

Turtle Shell vs. Dyna-Shield: How do they compare?

by Bob Liddil

The Turtle Shell, a brand new hard-surface protective computer cover, is now available from Club 100, the California based Model 100 users group. That brings to two the number of plastic keyboard/screen protection devices available to Model T users. From famine to feast, the marketplace is heating up. But this wasn't always so.

In the mid-1980's, the Southworth Corporation produced the first hard cover for the Tandy Model 100 computer. This heavy-duty transparent cover became the workhorse of keyboard and screen protection for the Model T, doing duty in oil fields, chemical plants, and just about anywhere else the computer might find itself in physical danger from the environment. Manufactured from ultra-heavy-duty PETG plastic (the same material used to make jet runway night light covers), they were close to bulletproof. Quite a few of them were sold, but after a while demand for the product faded away.

When Dyna-Shield bought the rights to the Southworth cover in 1989 the specifications were not changed. Essentially, the Southworth hard cover became the Dyna-Shield, and an additional several hundred were sold before demand again waned.

Both Southworth and Dyna-Shield tried to market the hard cover to Tandy as an accessory to the Model T. Each time, the pitch fell on deaf ears. Tandy, it seemed, was not interested in anything as simple, useful, and practical as a Model 100 hard cover.

Enter Club 100. There are in excess of 15,000 enthusiastic Tandy portable computer users in membership in Club 100. A high percentage of them are Model 100/102 owners. One of these members, Jon Shurtleff, an incurable entrepreneur, designed a screen/keyboard cover that could be marketed for less money than the Dyna-Shield, and offered it to Club owner Rick Hanson for resale.

DIFFERENCES ARE CLEAR

The most obvious difference between the two products is that the Dyna-Shield is transparent, and the Turtle Shell cover is opaque, a snappy, crinkle-finish black. The plastic used on the Club 100 cover is more flexible than the nearly rigid Dyna-Shield, but that is no disadvantage; it seems every bit as tough. If we were to use the Dyna-Shield "two-hundred pounds of fish landing on the computer" test, both covers would protect equally well.

Short of analyzing stress factors or other scientific means, it is difficult to say which cover is tougher. Anything that can shatter a Dyna-Shield or penetrate a Club 100 cover probably has enough force to do in the whole computer. But

Each is far tougher than it has to be.

for keeping out dust or foreign liquids (to a point) or just preventing scuffs, each does its job well.

The two covers are shaped close to identically. This is because the shape of the top of the Model T dictates it. Here the Dyna-Shield's precision engineered molding shows off a little, but you'd have to search carefully for the differences—they're that subtle. A circular indentation on the Turtle Shell accommodates the Club 100 logo, but because the cover is opaque, nothing is impeded.

TIGHT FIT

Both covers fit snugly over the top of the computer. The Club 100 cover secures by means of sticky-backed Velcro. The Dyna-Shield attaches by means of a large rubber band following a crease in the center. Both methods work well. The user is not likely to find his cover moving around in a briefcase independently of the Model T.

Users needing transparency for tasks such as taking readings from a passive data collector should consider the see-through Dyna-Shield. Users who are concerned with price need not worry that they might be getting a lesser product in the Turtle Shell. They aren't.

To sum up, the Turtle Shell/Dyna-Shield shootout is a draw, with both covers being winners. Both companies offer a money-back, no questions asked return policy. At $22.95, the Dyna-Shield is more pricey than the $14.95 Club 100 cover, but is transparent so you can see the computer's screen.

Each is far tougher than it ever has to be. Each seals well, each secures well, and as a final test of toughness, each has been sent coast to coast in an unprotected paper envelope, via U.S. Mail, and survived the experience without a scratch. No better endorsement exists.

MANUFACTURER'S SPECIFICATIONS

Dyna-Shield Hard Cover—$22.95
Transparent rigid keyboard/display cover
Dyna-Shield
Post Office Box 66
Peterborough, NH 03458

Club 100 Turtle Shell—$14.95
Opaque rigid keyboard/display cover
Club 100
P.O. Box 23438
Pleasant Hill, CA 94523-0438
Phone (415)932-8856
Fax (415)937-5039
BBS (415)939-1246

The Secrets of the ROM Revealed — A Special Offer

If you have been considering buying King Computers' book. *The Secrets of the ROM Revealed*, but haven't, you may want to do it now. Their special offer, $2500 instead of the normal $50.00, ends January 30th, 1992.

The Secrets of the ROM Revealed gives you all the information you need on how to put your machine language (assembly code) programs on the Model 100/102/200 option ROM, to free up your computer's RAM.

It is easy to understand and includes complete listings of everything you need to call standard ROM routines from an Option ROM, information on calling *TEXT* from *.CO* and Option ROM programs, and a diskette with the source code of key routines and an option ROM program that does search and replace on text files.

King Computer Services, 10350 Samoa Ave., Tujunga, CA 91042, (818) 951-5240.

The BCW-100 brings new precision and convenience to the barcode wand market.

HIGH-PERFORMANCE BARCODE WAND FOR TANDY LAPTOPS

Optical Data Systems has released the new *BCW-100*, a handheld digital barcode wand that plugs directly into the "BCR" port on Tandy 102, Model 100, and Model 200 laptop computers. It is intended for use in retail, office, light-industrial, electronics, manufacturing, video rentals, warehousing, processing labs, and healthcare environments. The BCW-100 uses the latest technology to provide a full-featured scanner, but at lower cost than competitive wands. It is an ideal choice when up-grading the Tandy laptop computers, as it includes several important features which were lacking in the original accessory wand offered by Tandy. These features greatly increase reliability and scanability, and include: higher resolution optics (7.5 mils.), which allow the user to read higher density codes; a brighter, lower wavelength LED, which helps in reading colored retail codes, or with poor print-contrast dot-matrix codes; a much greater depth of field, which lets the wand read further away; a lower current-drain which allows for longer operation from the laptop's batteries; and a user-replaceable sapphire tip, which provides an effective seal against dust and dirt.

The hard-wearing sealed tip is self-cleaning, and will not scratch the printed barcode.

The BCW-100 also has a power on/off switch, and is packaged in a rugged, lightweight housing. It has a five-foot-long cord, with a Tandy-compatible subminiature "D"-type nine-pin plug. The BCW-100 costs $119 in small quantities. It has a twelve-month limited warranty. For more information, please contact Linden Harrison, Optical Data Systems, POB 1987, Escondido, CA 92033, (619) 745-6563. *Or circle 63 on your reader service card.*

The small 9600 fax modem available from Micro Integrated Communications Corp.

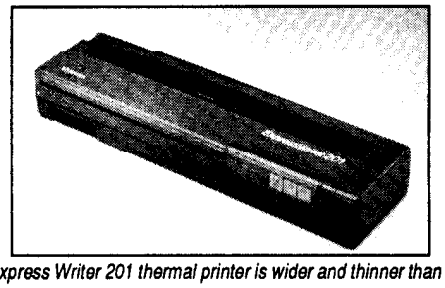
9600 BPS POCKET FAX MODEM

Micro Integrated Communications Corp. has released a six ounce, 5 x 2.75 x 1 inch pocket fax modem which sends and receives both fax and data at 9600 bit per second (bps).

The *MiCC Pocket Fax Modem* is available for both the PC and Macintosh computers. The product implements CCITT V.42bis data compression and V.42 error correction on a V.22bis modem that can transfer files at up to 9600 bps. It is compatible with the new EIA SP2388 specifications, and has the EIA Class II command set, which allows use of any fax software that implements the "+F" extensions to the Hayes AT Command Set.

The MiCC Pocket Fax Modem plugs into the serial port, operates on a standard nine-volt battery and also has an AC adapter. It comes with either Bitfax software from Bit Software of Milpitas, CA, or Quicklink II SR from Smith Micro of Huntington Beach, CA.

The suggested retail is $449. For more information, contact Micro Integrated Communications Corp., 3255-3 Scott Blvd., Santa Clara, CA 95054, (408) 980-9565. Or circle #64 on your reader service card.



The new Express Writer 201 thermal printer is wider and thinner than its predecessors.

TOSHIBA'S NEW EXPRESS WRITER 201

The new *Express Writer 201* is a twenty-four-dot thermal non-impact printer. It is a light-weight (1.87 pounds), small-sized (1.7 x 11.9 x 3.1 inches), fast (sixty-three characters per second at twelve characters per inch), medium resolution (180x180 dots per inch), printer for traveling executives. An optional battery pack allows the Express Writer 201 to operate from one to two-and-a-half hours.

Unlike most portable printers, the Express Writer 201 will print up to nine and one-eighth inches across. It supports both 10 cpi and 12 cpi, with fifty-three and sixty-three cps print speeds in two letter quality fonts — Courier and Prestige Elite. The printer's flexible paper handling features, conventional roller feed or a flat feed method of loading paper, allows printing on single sheets of regular paper with Toshiba ribbons or on thermal paper without a ribbon. A Centronics-compatible parallel port accommodates the most common computer interface configurations.

The printer supports the popular Epson LQ2550 emulation for compatibility and ease of use. The Express Writer 201 will retail for $499. For more information, contact the Computer Systems Division, Toshiba America Information Systems, 9740 Irvine Boulevard, Irvine, CA 92718, (714) 583-3936. Or circle #65 on your reader service card.

NEW PRODUCTS

edited by Linda M. Tiernan

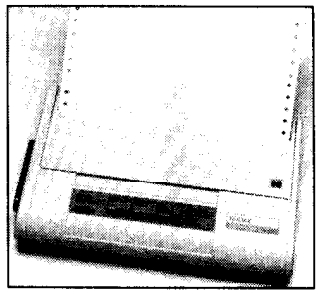
KODAK UNVEILS UNDER-$400 PRINTER

The *Kodak 180si* printer is the newest entry in Kodak's family of ink-jet printers which includes color and black-and-white for IBM and Apple compatible computers.

New features include: weighs in at less than three pounds (without the batteries); new fonts; functionally improved operator control panel; and built-in set-up mode.

The 180si prints text and graphics on plain paper at speeds of up to 180 characters per second in draft mode; it can also be set to produce letter-quality output. The printer measures 2 x 6.5 x 10.8 inches — roughly the size of a standard office dictionary. It uses single sheet or continuous feed paper, and can be attached to computers via either a parallel or serial port.

The printer retains important advantages of its predecessor, including a low cost operation and print resolution of up to 192 dots per inch. both 10-pitch (pica) and 12-pitch (elite) type styles are offered, providing the user with a choice of seventy or eighty-two characters per seven-inch line. Draft, quality, condensed, and superscript/subscript modes are offered for four different fonts. print modes may be selected from the operator control panel, or under software control. The popular IBM Proprinter and Epson FX-85 emulations are still available.



The Kodak Diconix 180si printer is the newest entry in Kodak's ink-jet line of printers. Weighing in at under three pounds, it is a perfect companion for a laptop or notebook computer, and is compatible with leading word-processing programs, spreadsheets, and other software.

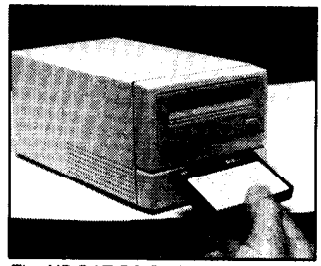
The user-replaceable ink-jet cartridge is easily changed by releasing the used printhead from a small clamp, inserting a mew printhead and resetting the clamp. The ink supply in each cartridge can print 300 to 500 pages.

The 180si printer uses "C" size rechargeable Nickel-Cadmium batteries and will print about fifty minutes before the batteries need recharging. the printer can still be used while the batteries are being charged.

The printer is priced at $399 for the parallel version and $419 for the serial version. For more information, please contact Eastman Kodak Company, 343 State Street, Rochester, NY 14650, (716) 724-4000. *Or circle #69 on your reader service card.*

HP INTRODUCES NEW DAT PC BACKUP SOLUTION

Hewlett-Packard has added the *HP DAT PC Backup Solution* to its range of external storage devices and standards-based personal-computer, local-area network products. The HP DAT PC Backup Solution provides a complete, easy-to-use, low-cost, high-performance backup solution in an attractive in an attractive, desktop design for PC and PC-LAN users. It incorporates the latest digital audio tape (DAT) technology with a Small Computer System Interface (SCSI)-2 host bus adapter, industry-leading software and digital storage (DDS) media.



The HP DAT PC Backup Solution from Hewlett-Packard Company provides a complete, low-cost backup solution in a desktop design for PC and PC-Lan users.

The HP DAT PC Backup Solution allows scheduled, unattended backup of computer data. It uses a two-gigabyte DAT drive designed for maximum data integrity. The drive saves 300 MB of data in thirty minutes and restores data at the same speed. The fast-search capability of the DDS format allows the drive to search for a file at 200 times the normal read/write speed and to locate a file on a DDS casette in an average of only thirty seconds.

The HP DAT PC Backup Solution is priced at $2,850. For more information, contact Hewlett-Packard Company Inquiries, 19310 Pruneridge Ave., Cupertino, CA 95014, (800) 752-0900. *Or circle #67 on your reader service card.*

T-200 Enhancement

XOS (Cross bank Operating System) will enhance your Tandy 200 and allow the three banks to share programs and data. XOS will bring a new level of computer functionality at the MENU, from BASIC, TEXT, and TELCOM.

From the Tandy 200 MENU you will be able to enter memos, rename files, set alarms, display and run programs that are in other banks, and much more.

Cut TEXT from one bank and PASTE it to a file in another bank. Open a "window" while editing in bank #1, and view other files from bank #2. Disable "word wrap" while editing for another perspective of your TEXT file.

While on-line with TELCOM, display FILES and Bytes Free, enter and edit TEXT files, or jump to another RAM bank without losing the host computer connection.

BASIC programs can read/write to files in other banks. Jump to programs in other banks or bring the program into the current bank and run it.

XOS provides fundamental database entry and retrieval functions with user defined fields, prompts, and display parameters. A bargain at **$24.95**

Node Datapac Users Replace your ROM!!

RAMDSK.CO will replace the Node ROM and allow you to use one of those other ROMs you've always wanted. Retain all of the Node menu functions, plus the ability to move, kill, and name Datapac files under program control. A MUST for Node Datapac owners who have other option ROMs. RAMDSK.CO is available for the **M100/M102 and T200... only $24.95**

N-READ.CO will allow a BASIC program to read a TEXT file stored in the Datapac without moving the file into RAM. An absolute necessity for multi-file database projects where the datafiles are kept in the Datapac. N-READ.CO is only **$9.95** but is yours for **$5** when ordering RAMDSK.CO.

For Your Amusement...

A beguiling PUZZLE/GAME program for your Tandy 200. A logical challenge that will keep you busy for many hours. Only **$10.00** for PUZZLE #3. Order with XOS or RAMDSK.CO and I'll send three additional puzzle/game/maze programs for your Tandy 200, at NO EXTRA CHARGE.

Software shipped on PDD1 (100K) diskette. All prices include shipping. Send your order with check or M.O. to:

Paul Globman
9406 NW 48th St., Sunrise, FL 33351

Circle 121 on reader service card.

NO-SLOT TAPE DRIVE ATTACHES TO PRINTER PORT

Micro Solutions announces the *Backpack* tape drive, the latest addition to the Backpack line of no-slot peripherals. This external tape drive is compatible with any PC portable that has a standard parallel port. It requires *MS-DOS 3.0* or higher.

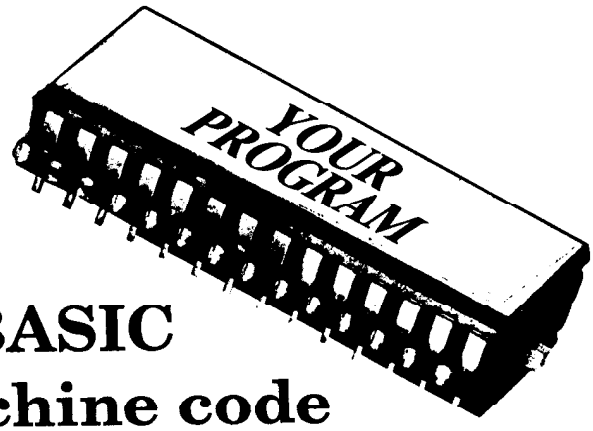
The Backpack is easy to install; plug the drive into the printer port and run the automatic installation program. It requires no interface card because data transfers go through the printer port. The drive has a printer port to enable a printer or another Backpack to be attached.

Two models of the tape drive will be available using DC2000 cartridge tapes: 40MB and 80MB units. Pricing is $569 and $669, respectively.

The 40MB and 80MB models will be compatible with their respective QIC 40 and QIC 80 standards. The 80MB model will be able to read QIC40 tapes as well. Long length tapes will boost storage capacities to 60MB and 120MB. Software data compression will also be included. Typical compression ratios average two to one. the drive will transfer data at a 600kbs rate through the parallel port, making it as fast as an internal floppy-tape drive.

For more information, contact Micro Solutions Computer Products, 132 W. Lincoln Hwy, DeKalb, IL 60115, (815) 756-3411. Or circle #68 on your reader service card.

Your own Program on a Rom



8K or 32K Your BASIC or machine code program on a custom ROM ready to snap into your Model 100 or Tandy 200.

You can't tell your program from a built-in.

Starting at $50.00 each.

Minimum order of 10.

Quantity pricing as low as $15.00

Another fine product from the innovative people at PCSG

Distributed by

Tri-Mike Network East

Post Office Box 372 Peterborough, NH 03458

1-603-924-8663

VISA MASTERCARD C.O.D

Circle 75 on reader service card.

NEW PRODUCTS

NEW COMBINATION COMPUTER/ BRIEFCASE FROM CP+

Designed to serve as a carrying case for a portable computer as well as a professional briefcase, the *Traveler* is now available from Computer Products Plus (CP+). This combination computer case and briefcase has the functionality, look and feel of a professional briefcase and the protection of a computer case.

The case came from the realization that traveling professionals are always looking for ways to lighten their load and reduce carry-ons. The Traveler means that these travelers can carry one less case without sacrificing either computer protection or paperwork needs.

The case is manufactured by Tamrac, a leading camera case producer. The case is made of top grade leather and Ballistic nylon and it is completely padded with a closed-cell foam for excellent shock protection.

Inside the main compartment is an expandable file folder and smaller pockets for paper clips, diskette, business cards, etc. In front, a full length zippered pouch folds down for easy access to pens, notebooks, calculators or eye glasses.

Behind the main compartment is an expansion pocket for power cords, AC adapters and other computer accessories. This pocket is easily expanded to carry additional files or even a portable printer. On the back of the two zippered pockets; the top one provides quick access to airline tickets, passport or car rental agreement. The bottom pocket stores the padded shoulder strap, extra batteries or even a small umbrella.

The CP+ Traveler computer briefcase has a suggested retail price of $249.95. For more information contact Computer Products Plus, 16351 Gothard Street, Huntington Beach, CA 92647, (714) 847-1799. *Or circle #66 on your reader service card.*

The CP+ Traveler is a combination computer case and briefcase has the functionality, look and feel of a professional briefcase and the protection of a computer case.

COMPATIBILITY: Model 100/102 and 200 computers.

Go with the .*IN* Crowd!

Save time and RAM with Write ROM's .in *command.*

by Mike Nugent

Welcome back! In the last two installments of SUPER HERO, you learned about global defaults, printer codes, fonts, dot commands, the *Map* function, and some of the terms used in printing in general and *Write ROM/Super ROM* in particular. If you experimented with them as I urged you to do—and will always urge you to do—you're starting to get pretty "hip" to what's happening. You've probably also "wasted" a lot of printer paper. Great! Cheapest education you'll ever get!

If you're new to SUPER HERO, I'd hate to see you confused or discouraged by stuff that seems way over your head. It really isn't. Get some back issues so you can catch up. As a *Write ROM/Super ROM* owner you already have all you need to "dress up your documents." You've paid for it, so get the most from it!

Why retype it every time I write a letter?

DIGGING .*IN*

Last month I mentioned using the *.in* dot command to produce my "tmne" letterhead, shown in Figure 1, SUPER HERO, Nov. '91. The *.in* command automatically includes another whole file within your final printout, letting you "boilerplate" (include frequently used phrases, paragraphs, or entire files) within your documents.

```
        Thank you for your interest in
TMN East products and services. As
always, if I can be of further
assistance, feel free to contact me by
mail or phone (see letterhead) or by
carrier pigeon (housebroken only,
please!).
```

Figure 1. Save time and memory with Write ROM's *"boilerplating" capability. By saving this frequently used paragraph as a file named* THANKS.DO, *it can be automatically inserted into any other document at printing time with the dot command* .in THANKS.DO.

Suppose, for example, that I commonly end my business letters with the following paragraph:

Thank you for your interest in TMN East products and services. As always, if I can be of further assistance, feel free to contact me by mail or phone (see letterhead) or by carrier pigeon (housebroken only, please!).

Why retype it every time I write a letter? Instead, I can store that paragraph in a separate file named *THANKS.DO* (Figure 1). Wherever I want it included in a document, I type *.in THANKS.DO* on a line by itself, and that paragraph is automatically inserted and properly formatted when I print the document.

Besides saving the hassle of repeatedly retyping, it also saves memory, since *THANKS.DO* is stored only once in the computer rather than being duplicated in every letter.

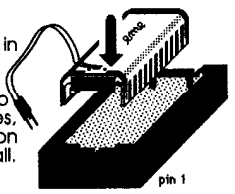
```
.oc on
Tri-Mike Network East
P.O. Box 372 / 145 Grove St. Ext.
Peterborough, NH 03458
(603)924-TMNE voice (603)924-9441 fax
----------------------------------------

%w %d
.oc off
```

Figure 2. LHEAD.DO *is an example of a simple letterhead. Include it in a document with the command* .in LHEAD.DO.

Advanced Memory for your 100/102/200!

extRAM is a 32K byte read/write memory expansion that fits into your Tandy's internal option ROM socket.



There are two ways to use extRAM: (It's one or the other at any one time.)

As a ***RAM-file-bank***, you double your space for .DO, .BA and .CO files. You store reports, data and programs you aren't currently working with out of the way in the extRAM and call them back instantly when you need them. Our new, improved file-bank software hides in the extRAM itself, so it uses minimal RAM space, and it is "cold boot" proof too. It also now includes extensions to BASIC for reading and transferring individual text files. Adapted from original software, *SLX* and *EXTBAS*, © 1989 by Paul Globman.

As a ***ROM-file-bank***, or ***emulator***, you can load extRAM with the kind of software that normally resides on option ROM chips. But no more physical chip swapping! You swap in new ROM *images* on command, from files stored on disk or RS232. Great for users of more than one ROM, or ROM developers. Loads 32K image in 40 seconds. Works with most ROM software. Software R2D2X © 1990 by Wilson Van Alst.

The software comes with each extRAM in the form of listings and instructions in a thorough manual. Optionally, to save typing, you can order a disk with all the programs in machine- readable form.

We accept Visa/Mastercard, check, money order ($ U.S.) or qualified Purchase Order.

____ extRAM for M100 $75ea. .....
____ extRAM for M102 $75ea .....
____ extRAM for T200 $75ea .....
____ extRAM software disk $15ea .....
(circle 3.5" disk format: tpdd ms-dos Mac)
subtotal _____
+ tax (California sales only) 7.25% .....
+ domestic priority mail shipping .....
Total _____

(Circle 83 on reader service card)

eme systems
voice: (510) 848-5725
fax: (510) 848-5748
2229 5th St., Berkeley, CA 94710

SUPER HERO

```
.in LHEAD.DO
.up 12
Russell Upsom Grubb
1256 Chow Downs
Feed, ME 01234

Dear Mr. Grubb,
        Your proposed use of the Model
100 to track your restaurant's sales and
 ordering info is right up ¡Super ROM¡'s
 alley. I've enclosed additional
information for you to "digest."
.in THANKS.DO


Sincerely,



Mike Nugent, Pres.
Tri-Mike Network East
```

Figure 3. An example letter showing the use of the .in *dot command to produce a letterhead and a "boilerplate" paragraph. The resulting printout is shown in Figure 4.*

SIMPLE LETTERHEAD

The *.in* command is well suited for making letterheads. Just create your letterhead as a separate file, and then include it at the beginning of any document in which you want it to appear.

Figure 2 is an example of a simple letterhead file named *LHEAD.DO*. The *.oc on* command turns on centering, which automatically centers each line between the left and right margins. The *%w %d* automatically prints the day of the week and date when the letter is printed (for more info, see your *Write ROM* manual, *SPECIAL WORD PROCESSING FEATURES*, p.57) And finally, *.oc off* turns the centering off in preparation for the rest of of the letter.

Figure 3 shows how to include *LHEAD.DO* and *THANKS.DO* in a sample letter, and Figure 4 shows the resulting printout.

Try making your own letterhead using the *.in* command. While you're at it, experiment (there's that word again) with font codes, italics, bolding, etc. in your letterhead. If you come up with an interesting approach, by all means, tell me about it, so we can perhaps share it with your fellow *Write ROM/Super ROM* users.

The *.in* command is well suited for making letterheads.

.IN THE FUTURE

What other uses can you think of for the *.in* command? Here's one possibility. Suppose you send monthly sales reports to both your regional and district managers. You want to send the same set of figures to both, but you want different text to precede it for each.

Your sales figures are kept in your *Lucid* spreadsheet (naturally!), called, for example, *SALES.CA*. Enter *SALES.CA* and print the spreadsheet to a RAM file named *SALES.DO*. If only parts of the spreadsheet should appear in the report, you can simply edit *SALES.DO* afterward to remove the unnecessary portions. Or you could use *Lucid*'s direct-to-*TEXT* access (SUPER HERO, Oct. '91) to create *SALES.DO* and then use *Lucid*'s cut and paste feature to paste the desired spreadsheet sections into *SALES.DO*.

Having created *SALES.DO*, you can

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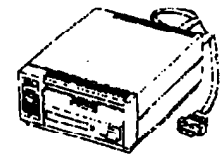

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now write a different letter to each manager. At the appropriate place in each letter, put the command *.in SALES.DO* to include the same spreadsheet figures in both printouts. Voila! Different text, same figures!

TUNING .IN AND WRAPPING UP

Play around with the *.in* command to your heart's content. Please share any interesting results with me, so I can share them with others.

Next month we'll get a bit more technical, doing fancier letterheads with the *.in* command. Til then, I'm *.outta* here!

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Mon Dec 09,1991



Russell Upson Grubb
1256 Chow Downs
Feed, ME 01234

Dear Mr. Grubb,
        Your proposed use of the Model 100 to track your
restaurant's sales and ordering info is right up Super ROM's
alley. I've enclosed additional information for you to "digest."
        Thank you for your interest in TMN East products and
services. As always, if I can be of further assistance, feel free
to contact me by mail or phone (see letterhead) or by carrier
pigeon (housebroken only, please!).

Sincerely,


Mike Nugent, Pres.
Tri-Mike Network East
```

Figure 4. Here's the output produced by the example letter in Figure 3 (bottom cropped to fit box—eds.).

COMPATIBILITY: All MS-DOS computers.

Hail and Farewell

George says "so long" in his last article.

by George Sherman

Life, the final frontier. These are the voyages of the good ship Retirement. It's continuing mission to explore strange new worlds, to seek out new life and new civilizations. To boldly go where (apparently) everyone else has gone before. (With all due apologies to Commander Spock and Captain Picard.)

This is my last article on the subject of Tandy's excellent graphical interface known as *DeskMate* and also my last article for *P100* magazine. Oh, I may occasionally drop by at some future date if the mood strikes and I am stationary for any length of time.

What only a few of you knew is that I am now sixty-three years old, the father of five, and the grandfather of twelve. Through the good graces of the United States Government, whose employee I was for nearly twenty-six and one-half years, I was turned out to pasture early in 1987. I soon tired of that and returned to work, three times. Each time I retired again, the last in January of 1991.

The lovely woman who first consented to be my wife thirty-nine years ago is to retire from her employment with the Continental Oil Company, a Dupont subsidiary, April 1, 1992. On that date we plan to shut the house down, give the keys to my son, and leave.

Our first stop will be in an area of these United States that we both love, the Colorado Rockies. We also plan to take a cruise to Alaska in June, and follow that up with a trip, we hope, to New England, my birthplace, and on into Canada, Nova Scotia, and particularly Prince Edward Island. After that—who knows?

RETROSPECTIVE

In the ten articles that preceded this one, I tried to present to you a comprehensive look at *DeskMate*. I was beginning to wonder if anyone was reading my articles. Then in the October, 1991, issue Linda Tiernan indicated she had been reading them. Well, that's at least one person.

From the first article to this one, I have gone through three versions of *DeskMate*. By far the biggest improvement for the better was between versions 03.02.00 and 03.03.01 when Tandy came up with their tutorial system, which I still believe to be one of the best. I said at the time it was almost like having a Tandy expert sitting at your elbow. The newest version, 03.05 has not changed that view one bit.

I said at the time it was almost like having a Tandy expert sitting at your elbow.

I have had some astounding successes through the articles as I explored one facet or another of the total package. I've also had some disappointments. One of these was *Q&A Write* for *DeskMate*. Initially it worked with the hardware I had, although it did require a somewhat tedious manual change of my printer parameters to work.

When my printer died and I had to purchase another (a Tandy, too, by the way), I could *not* get *Q&A Write* to work with it. At least not in the way I had come to expect. Several written and phone conversations with Symantec, and also several unsuccessful attempts to secure an answer online through their CIS forum, resulted in first, complete misinformation and second, a weak response to the effect that that was just the way Tandy did things and I would have to accept it. Bad news. Since then I have switched to another word processor.

JOYS

Two of my biggest joys were with *Lotus Spreadsheet* for *DeskMate* by Lotus Development Corporation and *Print Magic* by Epyx, which I did not get to report on. I have used the former to set up all sorts of records and financial reports, and it remains a pleasure to use. I have used the latter to design a different letterhead for my stationery for each month of the year, design and print banners, and design and print cards of all types. It's a fun program to work with.

I still constantly use *Calendar* and *Filer*, oh, and also *Address*. I'd be lost without them.

There are many more subjects I could have written about within the *DeskMate* environment. One of these is *Draw*. According to all the manuals and books I have read on the subject, the program can be run without the use of a mouse. However, I would strongly urge that a mouse be used with it because of the ability to exercise much finer control of the cursor movement.

I have only recently discovered that I can accomplish almost the same effect in *Draw* without the mouse if I remember

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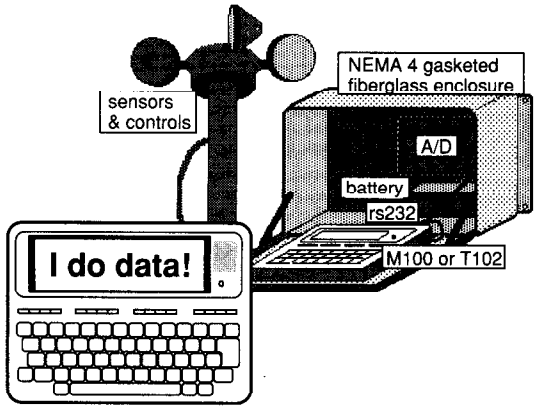

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that every time I press one of the cursor control arrows it jumps eight pixels to the right or left, or up and down eight pixels or one line. It is possible to tell the cursor to move another distance by inputting the number of pixels and then pressing the appropriate arrow.

For instance, to move 50 pixels to the right, type *50* and press the right arrow. However, Picasso I'm not. Even Charles Schultz I'm not (the Schultz who draws *Peanuts*). I'll leave the exploration of this to some younger and more talented individual.

Another feature I liked about *DeskMate* was the available accessories, particularly the calculator. It's so great to be able to pull up an onscreen calculator in the middle of running another program whenever you need to, run your computation, exit the calculator, and then put the result into your current work. This becomes particularly handy in one of my *Filer* files having to do with my monthly debts and obligations. I can be active on the screen, call up the calculator, subtract last month's payment, exit the calculator, and then enter the result arrived at on the current screen.

In a previous article toward the beginning of this series, I discussed customizing your desktop. Mine is in a constant state of change. I am never satisfied with it. Most recently I deleted my *Q&A Write* list box. But adding and deleting these boxes, moving them around on the desktop for a more pleasing effect, even resizing the boxes, is as easy as pie, and only a few keystrokes away.

My hopes for the future of *DeskMate* include a better printer interface. The printing operation, to one used to almost instant action in this regard, can be agonizingly slow.

I'd be lost without *Calendar* and *Filer*.

I would also like to see an option added to allow two-sided printing, for several reasons. I am able to do that now with a fairly inexpensive shareware program downloaded off of CompuServe, so the technique is there. Also it saves on paper and trees.

Another hope for the future in this same area would allow *DeskMate* to work with the manual settings I have entered into my printer. I have, more than once, set my printer manually to do one thing, only to have *DeskMate* override my settings and do it ITS way.

To *Portable 100*, to my friends Tony, Stan, Paul and all the others on the M100SIG, to the staff at *P100* whom I KNOW had to pick up my fumbles more than once, and most of all to Nuge who started this whole mess and kept the whip coiled and ready to make sure I met the deadlines, a great big T-H-A-N-K-S !! It's been fun, really. And I'm going to miss you guys. Hopefully, I'll still be reading about you for many months and years to come.

BY GEORGE!

Unless otherwise stated, all quotations contained in this article are from the following books:

Getting the Most Out of DeskMate 3. Michael A. Banks. A Brady book. Simon & Schuster, Inc.

The First Book of DeskMate. Jack Nimersheim. Howard W. Sams & Company, Macmillan Computer Book Publishing Division.

You can contact George on CompuServe (ID 72300,3203) or by mail, either c/o Portable 100 *or directly at 1701 Clarke Street, Ponca City, OK 74601. (Please enclose SASE if requesting a reply.)*

COMPATIBILITY: Tandy 100, 102, 200, NEC 8201A/8300,.

Ultimate ROM II, Part One

This multifunction ROM has some unique features.

by Gene Wilburn

For years I used my Model 100 the way it came from the factory. *TEXT*, *TELCOM*, and *BASIC* provided me with everything I felt I needed in a laptop used as an adjunct to my desktop systems. It never even occurred to me that there might be more advanced ways to use a Model T. I was a happy camper.

All that changed last year when Rick Hanson of Club 100 shipped me an *Ultimate ROM II* chip. "Here," he said. "Try this and find out what Model T computing is all about."

What Model T computing is all about, I discovered, is finding the ultimate software to plug into the Model T's ROM socket. In the years since the introduction of the Model T, there have been a number of ROM chips designed for the expansion socket. Tandy itself offered Microsoft *MultiPlan ROM* in that format for the Model 100/102. Over time, some manufacturers combined their individual ROM programs into a single super chip.

The most famous of these are *Ultimate ROM II*, designed by Traveling Software (now distributed by Club 100), and *Super ROM*, designed by Portable Computer Support Group (now distributed by Tri-Mike Network East). You'll find ads for both products in *Portable 100*.

Last month we finished an overview of the *Super ROM* chip. Now let's look at *Ultimate ROM II*.

Ultimate ROM II

The *Ultimate ROM II* chip, or *UR-2* for short, contains the following programs: *T-Word*, *IDEA!*, *T-base*, and *ROM-View 80* (not included in the Tandy 200 version), plus drivers for *TS-DOS* and *Sardine*. *TS-DOS* is a popular disk operating system for Model T's. *Sardine* is a disk-based spelling checker that is no longer on the market. *[News Flash—Club 100 has just re-released Sardine, see their ad for details!]* This month we'll look at *T-Word* and *ROM-View 80*.

To avoid any confusion, be aware that there are three versions of the *UR-2*: Tandy 100/102, Tandy 200, and NEC PC-8201A/PC-8300. The versions are not interchangeable.

Installing *UR-2* is a two-step process. First you carefully insert the chip into the expansion socket. Then you enter a short instruction from *BASIC*. On the Tandy 100/102, the instruction is *CALL 63013,1*. As soon as you've finished, there is a new menu item on the screen—*UR-2*. Selecting this item opens the door to the *UR-2* goodies.

ROM-View 80

Before even delving into the details of the main *UR-2* application programs, I should mention that the *UR-2* gives your Tandy 100/102 or NEC machine a brand new look. The *ROM-View 80* utility allows you to select a display of up to 60 characters per line. It can actually do an 80-character line by scrolling, but only 60 characters can be displayed at a time.

It accomplishes this by using fewer pixels for each displayed character, which results in a slightly squished appearance. For writing on a 100 or 102 the additional 20 characters per line is a godsend. It's not quite WP-2 quality, but it aids the writing/editing process. *ROM-View 80* works with *TEXT*, *TELCOM*, and *BASIC*. Of all the utilities I've used for the Model T, *ROM-View 80* is the one that has brought me the most pleasure.

T-Word

If you've ever connected a Model T to a printer, you've grappled with the shortcomings of *TEXT*. *TEXT* is a decent, but minimal, text editor that does not support formatting commands. It does not understand printers.

T-Word is a ROM program that works in conjunction with *TEXT* to provide a true word processing system for the Model T. It adds formatting functions plus other enhancements. *T-Word* displays a print menu that allows you to set left, right, top, and bottom margins on a page, as well as page length. Monospaced fonts can be printed right justified. A spacing function allows you to enter a number for spacing—for example, *1* for single space, *2* for double space, *3* for triple space, etc.

A font selector selects the pitch, such as 10, 12, or 17. The print menu also offers a *Wait between pages* function if you need to pause your printer at the end of each print page. *Number start* allows you to set the beginning page number of a document. If set to 0 it processes the first page, such as a cover sheet, without a number and begins numbering with 1 on the second page.

A valuable feature of the print menu is the *Add line feed* option. This sends out a line feed after every line to printers that require it, which includes most non-Tandy printers.

There is an option for setting the number of copies to print. The print menu also allows you to select a beginning page and ending page for printing or previewing.

The settings in the print menu apply to the overall formatting of the document and provide the default settings. As you'll see, many of these settings can also be embedded in the document itself for more complex combinations of formatting changes.

EMBEDDED COMMANDS

T-Word provides the Model T with a

rich set of embedded print controls that rival, and even exceed, those built into the Tandy WP-2. All embedded commands are entered via control codes—*CTRL-P* (^*P*) plus another character. Many of the commands come in pairs, some of them similar to *WordStar* commands. Be warned, though, that the correlation is not one-to-one. You have to think *T-Word*, not *WordStar*.

For instance, *CTRL-B* (^*B*) pairs around text indicate boldface and ^*D*'s indicate double strike. But while ^*Y*'s indicate italic, *T-Word* uses ^*U*'s for underscore, not *WordStar*'s ^*S*. A ^*S* pair in *T-Word* indicates superscripts. *T-Word* commands, thankfully, are more mnemonic.

Some *T-Word* commands take arguments, such a ^*A2* (change line spacing to double space) or ^*V23* (change conditional paging to page 23). *T-Word* lets you specify headers and footers that print at the top and bottom of each printed page.

PREVIEWING

One of the interesting feats of *T-Word* is its ability to preview print pages on the screen, using a miniature pixel map. While the words themselves do not show, you get an excellent overview of how the page looks. It helps in spotting widow and orphan lines. The effect is similar to looking at a *greeked* page in *PageMaker* or *Ventura Publisher*.

TEXT ENHANCEMENTS

In addition to providing a superior text display through *ROM-View 80*, *T-Word* provides three excellent word-processing enhancements to *TEXT*. A ^*O* issued from anywhere in *TEXT* toggles between insert and overwrite modes. A ^*L* adds search and replace, which handles strings of up to 24 characters and offers you the option of replacing all occurrences of a match automatically, confirming each replacement, or replacing the string n number of times.

For me, the best enhancement is ^*J*, which invokes a fast, machine-language word and byte count routine. As I've said before, writing to a word count is standard procedure for journalists, writers, and students—the principal market for Model T's and WP-2's. Leaving this feature out of the initial design was criminal. Thankfully, *UR-2* supplies this essential missing feature.

MERGE PRINTING

T-Word is also capable of merge printing, used for printing out form letters and documents with variable blocks and fields of text. Invaluable for creating labels and mass mailings. The data portion of a merge file is simply an ASCII comma-delimited file that you can create and maintain with *TEXT*. *T-Word* also merges with files from *T-Base* (more on this next month).

In addition to merge printing, *T-Word* can also perform chain printing, printing a sequence of files one after another. This is useful when you break apart a longer document into smaller chunks and print it as one document.

If you own the Traveling Software *TS-DOS* program, *T-Word* can do its merging and chain printing from files on disk.

CONFIG.DO

As might be expected, *T-Word* can be configured so that its default settings reflect the way you want to work with your particular printer or printers. A configuration file, *CONFIG.DO*, can be edited to set defaults, such as 2 for double spacing.

T-Word supplies fields for printer code information in its *CONFIG.DO* file. Escape sequences and values for fonts and attributes can be customized. The examples in the manual are geared to dot-matrix printers made by Epson, Comrex, C. Itoh, Toshiba, and Okidata. *T-Word* was written in the days before laser printers were prevalent. However, forum members on CompuServe's *M100SIG* have reported success in using *T-Word* with HP LaserJet and DeskJet printers.

DOCUMENTATION

As mentioned, Club 100 is the current distributor of *UR-2*. The docs that accompany the product are photocopies of the original Traveling Software manuals, copied two pages in landscape mode on 8.5 x 11-inch paper. These manuals, produced with the permission of Traveling Software, are not quite as attractive as the originals, but they serve well.

WRAP-UP

My reaction to *UR-2* was quite simply one of surprise. I had no idea that so many useful programs could be contained in such a small chip. Installation was easy and the benefits were immediate. Best of all is the price: $89.95. This has to rank as one of the Model T world's great bargains.

Next month we'll look at the rest of *UR-2*: *IDEA!* and *T-Base*.

You can communicate with Gene via CompuServe (his ID is 72435,732), through regular mail in care of Portable 100, *or direct at 91 Inglewood Drive, Mississauga, Ontario, Canada L5G 1X9. Please add sufficient postage if you mail to Canada and an international reply coupon when requesting a reply.*

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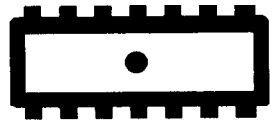

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LUCID© is here now. It is on a ROM cartridge that snaps into the compartment on the back of your Model 100. It takes no memory to load and no memory for operating overhead. That means you have the full 29.6k bytes free to store your data.

First, LUCID© is memory conserving. It will let you build a large spreadsheet – 255 row by 126 column capacity. You build huge spreadsheets in your Model 100's RAM that could consume 80 to 100K on a desktop computer.

Secondly, LUCID© is fast. LUCID© is so rapid, a 36 column corporate financial statement took less than 4 seconds to calculate.

Thirdly, LUCID© has features you won't find in most other spreadsheets. For example, when you type a label (text) it will cross column boundaries; in other words when you type a label or title it will appear as you type it irrespective of column or width. LUCID© also allows you to set column widths individually, and of course LUCID© has insert row and insert columns, as well as other standard features. LUCID© even lets your formulas refer to cells in other spreadsheet files.

Further, LUCID© has what no other spreadsheet has: Cut, Copy, and Paste. It uses the same keys as Cut and Paste in TEXT, but here's the difference: it takes all the formulas with it when you paste and they all automatically recalculate with the entire sheet.

And here is what is really amazing. You can copy or cut from one spreadsheet and paste into another spreadsheet or even a TEXT file.

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COMPATIBILITY: WP-2.

Telcom ROM Bugs: The Fix Is In

You can risk sending Tandy your WP-2, but don't let them fix your cat.

by Denny Thomas

I have covered telecommunications topics in the last several months. Among these topics included a bug in the WP-2 in the Telcom *module of early models. Since the software resided in a ROM, one of the chips inside the WP-2 had to be replaced to fix the problem.*

Tandy instituted a policy of replacing the flawed ROM's only if users complained. The WP-2 uses advanced surface mount technology (SMD) to reduce the assembly cost as well as board space. Unfortunately, replacing a surface mount device is not as simple as unplugging a device and putting in a new one. The SMD's are soldered directly to the CPU board. Repairs are tricky and potentially dangerous to the health of your WP-2. This is truly a case where the cure can be worse than the disease!

This month, Denny Thomas, a CompuServe sysop, is our F1/F2 *guest columnist. Denny decided to take advantage of the WP-2* Telcom *ROM fix. This is his story.*

—Stan Wong.

PROLOGUE

Some of you may have heard the reports that there is a problem with the WP-2's ability to handle higher speed telecommunications. As explained to me and others by Ed Juge, Tandy marketing vice president, through messages on the CompuServe Model 100 Forum, it seems that a percentage of the early units had problems with one of the components that made the WP-2 lose characters while communicating at speeds above 300 bps (bits per second).

Eventually Ed announced that there is a fix available. It would require that the offending chip be replaced by the factory in Fort Worth. The replacement was advertised as being free to the customer whether the unit was in or out of warranty.

Well, I have one of those early units and I thought it would be a *swell idea* to have the problem fixed. I wasn't using the WP-2 for anything critical at the time, so why not? Also, there was a lot of message traffic on the forum about whether it would be a good idea to allow Tandy to replace a component (SMD) that is usually regarded as difficult to work with. SMD's (surface mount devices) have very small connecting legs and require special tools and a deft hand to remove without destroying the circuit board underneath. In light of the apprehension felt by the forum members I thought it might be helpful if we had at least one experience with this operation.

I thought it might be helpful if we had at least one experience with this operation.

THE SAGA BEGINS

In an effort to do this in such a way that would be a common experience for others, I tried to pick methods that would normally be used by those not experienced with the Tandy bureaucracy. So first I picked a store that would represent a basic, small, neighborhood Tandy outlet. Luckily, I have a store just like that about a block from my house. I don't frequent the store enough for them to know much about me, so it seemed that this would be a fair test.

Thus, armed with my trusty WP-2, I made my way to the store. While talking with the first salesman that I encountered, it became immediately clear that they didn't have a clue as to what I was talking about. The first disheartening comment was "WP-2? What's that?" Sigh.

The first salesman quickly called the manager over so we could get down to business. The manager was cooperative, but hadn't heard of the upgrade policy. He was willing to take the unit only after I dropped Ed Juge's name and that he should call Ed directly for confirmation. I had hoped that I wouldn't have to use this information, but I guess I should have known better.

The store manager said he'd call the home office and try to confirm that the upgrade was indeed something that he could handle. So I left with a repair ticket in hand. Later in the week the manager called me and confirmed that the upgrade was valid and he was going to send the WP-2 into the service center. He also explained that it would have to go back to Fort Worth because of the complexity of the upgrade.

One point that I failed to mention (on purpose) to the manager was that there was a 128K RAM expansion in the WP-2. I knew this was a gamble, given that old-timers know Tandy is notorious for removing anything non-Tandy from an item to be repaired and then somehow

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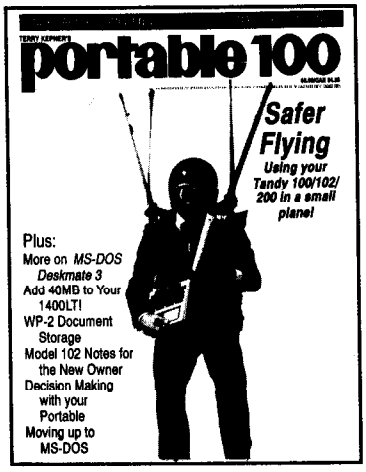

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losing it in their vast corporate structure. So in keeping with theory that I was a hapless, inexperienced WP-2 user, I prepared to donate my RAM chip for the cause.

WAITING FOR GODOT

Knowing that my WP-2 was going to Fort Worth for surgery, I expected that it was going to be a long wait. Well, I wasn't disappointed. During the wait, I called to check on it just once, but it seemed that they hadn't forgotten about me—it was just going to take a while.

I finally called a second time and they said they had received the WP-2 back from Fort Worth. I asked them why they hadn't called me, and they said they had. I eventually found out they had called my wife, but since they didn't explain the whole situation, my wife thought they were from a different planet and promptly forgot the whole thing. That delayed the return by about two weeks.

While I was at the store talking to the manager, it became apparent that there was a problem with the repair/modification. It seems that the repair center didn't understand that this was supposed to be a replacement of one component and went ahead and replaced the entire motherboard! Not only that, they were going to charge me for the repair! The manager was rather flustered by this. In any case, he ate the entire $119.88 bill.

Knowing that Tandy had replaced the motherboard, I got home with almost certain knowledge that my RAM chip was history. Before even turning it on, I broke open the WP-2 and of course I wasn't disappointed. I immediately called the store manager to get him on the hunt for my RAM chip. I knew it was a long shot at best. So far, 8 months later, I still haven't gotten a call from him.

So far, 8 months later, I still haven't gotten a call . . .

I don't know if I could recommend doing this to your WP-2—it took 4 months to complete the repairs and the worst part is that the problem still exists! Somehow they must have replaced my motherboard with another old style motherboard that didn't improve anything.The best advice is to make sure that you have the newer version that is supposedly much better at handling *Telcom*.

My adventures in "Tandyland" netted me no change in my *Telcom* problems. And I lost my 128K RAM chip to boot! As it is, my WP-2 still drops characters even at 300 bps.

POSTLOGUE

How do you tell if you have the Telcom *bug? New model WP-2's were issued with an "A" suffixed to the model number (e.g., 26-3930A). One of the problems with the* Telcom *bug in pre-"A" machines is that* Telcom *problems seemed to manifest themselves differently for different machines. Some users reported no problems at all. For me, I could transfer information into the WP-2 only at a maximum of 1200 baud. All other operations worked flawlessly at all speeds. Denny, however, reports that he had problems even at 300 baud.*

You'll have to test your particular setup and decide if the hassle and risk to your trusty WP-2 is worth the gain.

- SW

Denny Thomas is an assistant sysop for the CompuServe Model 100 Forum.

The Portable 100 Classifieds

Software

FAST (tm) 3x turbo cassette LOAD/SAVE utility for Tandy M100/102, M200 (specify). See 11/89 P100 review. SASE for information. Cassette, manual $19.95 ppd. Zwillenberg, 475 Richmond, Maplewood, NJ 07040

Hardware

Model 100 32K with Super Rom $275.00 firm. Call (308)527-3506.

Model 100 32K, Multiplan ROM, DV/I, Modem, Cable, Recorder, Software, book, $450.00; C. Itoh printer $150.00. (812)853-3297.

Tandy 102 32K, Portable Disk Drive & portable Brother printer $350.00; Tandy 1100FD 640K and modem $450.00. (213)828-1997.

TRS-80 Model 100 32K, Super ROM, case, legs, adapter, seven software packages, books. Needs new LCD screen. $199.00. Peirce, 2948 Blairstone Ct., Tallahassee FL 32301.

EMM, integrated ExtRAM/RAM/PDD-1&2 file manager. Runs in ExtRAM, utilizing unoccupied space for file storage. Features aggregate file selection and file compression. Send SASE for information or $15.00 for disk. TPSIG, P.O. Box 684473, Austin TX 78768-4473.

Record voltage or other analog parameters with your 100/102/200. DATAMITE A/D converter connects to cassette jack, software provides voltage readout and/or emulates scrolling chart recorder on your Tandy screen. $66 + $4 S&H: Jones Service & Design, 1842 S. Nugent Rd., Lummi Is., WA 98262. (206)758-7258.

Data Acquisition with M100/102. REI, RR1 Box 113F, Royalton, VT 05068. (802)763-8367. 10/91

Tandy 102 w/32K, adapter, & null modem. Rarely used. $225.00 (409) 935-5637 5/91

For Sale

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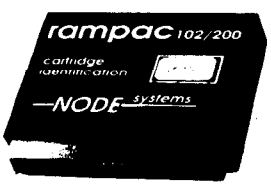

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ADVERTISERS			ADVERTISERS		
RS#		Page	RS#		Page
165	Club 100: A Model 100 User Group	1	151	Robert Rice	28
170	Club 100: A Model 100 User Group	44	20	Shreve Systems	24
33	Club 100: A Model 100 User Group	19	127	Software Versand	24
142	Computer Reset	9	99	Solarmetrics	15
5	Destiny Technology	13	18	System Peripheral Consultants	18
81	EME Systems	28	71	Tri-Mike Network East-WR	CII
83	EME Systems	34	73	Tri-Mike Network East-D+	5
85	EME Systems	37	75	Tri-Mike Network East-CR	32
30	Granite Street Portables	24	74	Tri-Mike Network East-Lucid	40
35	Granite Street Portables	35	72	Tri-Mike Network East-SR	CIV
01	Infogrip	CIII	134	Ultrasoft Innovations	16
116	King Computer Services	39			
37	MicroMime	18			
149	MicroMime	35			
121	Paul Globman	31			
45	Pacific Computer Exchange	7			
117	Portable 100—Gender Changer	13			
55	Purple Computing	28			
49	Purple Computing	13			

New Products

66	Computer Products Plus	32
69	Eastman Kodak Co.	31
67	Hewlett-Packard Co.	31
64	Micro Integrated Comm.	30
68	Micro Solutions Comp. Prod.	31
63	Optical Data Systems	30
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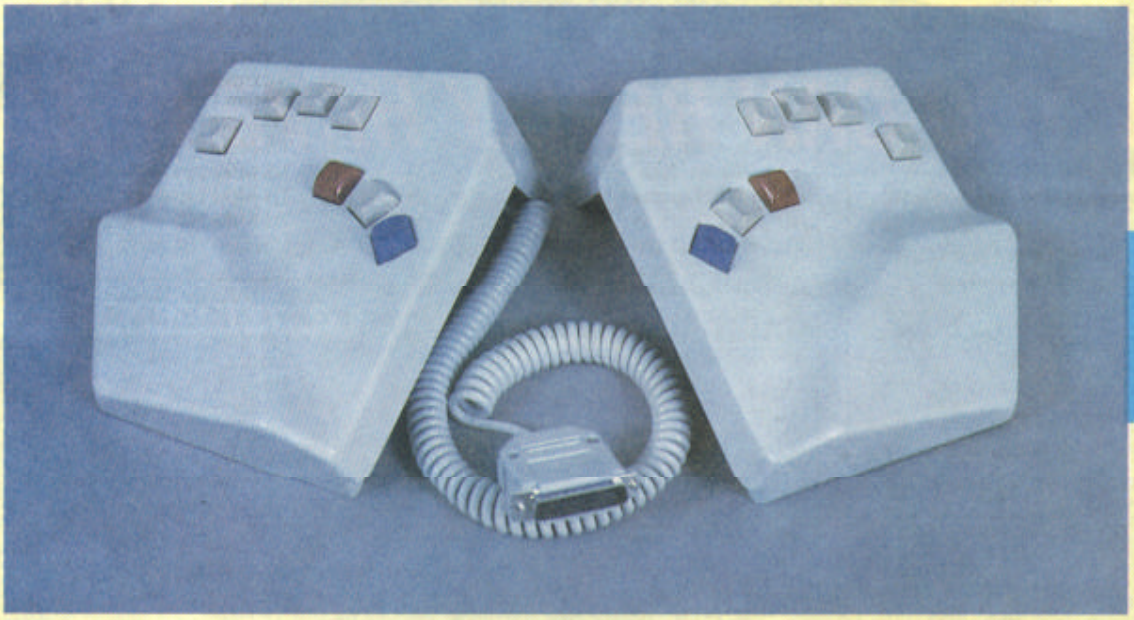

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1. Which Portable(s) do you own?
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   B. ❑ Tandy 200 E. ❑ T1100FD H. ❑ Olivetti M10
   C. ❑ Tandy 600 F. ❑ T1400LT/FD/HD I. ❑ Kyotronic KC-85
   I. ❑ Other _____
2. If you own another computer, what kind is it?
   A. ❑ MS-DOS E. ❑ Amiga
   B. ❑ Macintosh F. ❑ Atari ST
   C. ❑ Apple
   D. ❑ Commodore 64/128 G. ❑ Other _____
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6	31	56	81	106	131	156	181
7	32	57	82	107	132	157	182
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9	34	59	84	109	134	159	184
10	35	60	85	110	135	160	185
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12	37	62	87	112	137	162	187
13	38	63	88	113	138	163	188
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16	41	66	91	116	141	166	191
17	42	67	92	117	142	167	192
18	43	68	93	118	143	168	193
19	44	69	94	119	144	169	194
20	45	70	95	120	145	170	195
21	46	71	96	121	146	171	196
22	47	72	97	122	147	172	197
23	48	73	98	123	148	173	198
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1. Which Portable(s) do you own?
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   B. ❑ Tandy 200 E. ❑ T1100FD H. ❑ Olivetti M10
   C. ❑ Tandy 600 F. ❑ T1400LT/FD/HD I. ❑ Kyotronic KC-85
   J. ❑ Other _____
2. If you own another computer, what kind is it?
   A. ❑ MS-DOS E. ❑ Amiga
   B. ❑ Macintosh F. ❑ Atari ST
   C. ❑ Apple
   D. ❑ Commodore 64/128 G. ❑ Other _____
3. Do you use your portable for...
   A. ❑ Business B. ❑ Personal C. ❑ Both
4. If you are responsible for more than one portable, what is the quantity? _____
5. If you are not a subscriber, please circle **199** (at right).
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14	39	64	89	114	139	164	189
15	40	65	90	115	140	165	190
16	41	66	91	116	141	166	191
17	42	67	92	117	142	167	192
18	43	68	93	118	143	168	193
19	44	69	94	119	144	169	194
20	45	70	95	120	145	170	195
21	46	71	96	121	146	171	196
22	47	72	97	122	147	172	197
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Note: The italicized entries in each month below are Tandy 100/102 related articles.

1985

January: DG has the One to Go, *Model 100 Proves Itself in the Jungles of Nicaragua*, Meet the Dulmont Magnum, *Telecommuter: Software that's Ingenious, Kyocera's Three Aces. End Telephone Tag with M100's.*

February: NEC Wishing upon Its Starlet, In-Depth Reviews of HP 110, Sharp PC-5000, *Chattanooga Systems AutoPen, AutoPad, Trip.*

March: Reviews of Epson Geneva and Osborne 3, Comparisons of Two Thermal Printers (Brother HR-5 and Printex TH-160); *The Pluses and Minuses of Batteries, M100 Data Acquisition.*

April: Reviews of Sord IS-11, Sharp PC-1350, *DISK+, T-BASE*, and Roadrunner; *Free Software: Textpro*, Technology Transfer Damming the PICO Pipeline to Russia.

May: Review of DG1, Which Spreadsheet Should you Buy? Servicing Picos, LCD Screens in Color, Federal Express.

June: Reviews of *Tandy 200, 2.2 Companion*, and *T-Backup, M100 File Transfer*; Wrangler improves the Odds with Sharp PC-5000s, Dow Jones News/Retrieval On-line Database, *Courtroom M100's.*

August: Reviews of Datavue 25 and *Touchbase Modem*; QuickTrip Convenience Stores More Efficient, Tracing Tribal Roots and Translating the Bible in Jungles of Papua New Guinea.

September: Reviews of HP Portable Plus, *WriteROM, ThinWrite 80 Portable Printer*; A Flat Mac, *M100 Meets Challenges at Woods Hole Oceanographic Institute.*

October: Reviews of Kaypro 2000, *T-View 80*; Computerized Fire Department, Stretching the limits of Telephone and Computer, *BASIC translation Tactics.*

November: Reviews of Bondwell 2, NEC 8027A Printer, CQ Haste; *PICO Formatter*, Search and Rescue Via Computers, Industry Views from an HP Exec.

December: Close Look at Ericsson Portable and *TMPC (time management software)*, Travel Tips, Tricks for Traveling, *Dialer Program, Project management with the M100.*

1986

January: Reviews of Gridcase 2, Access, WordFinder, and Prospecting, CP/M and MS-DOS, *Security Program*, Can Universities Cope with Picos? News from Comdex, *Jazz up your LCD.*

February: Reviews of ZP-150, and LeScript Word Processing; *Stevie Wonder Inspires Stardom in M100*, Can Universities Meet Expectations of Computer-literate Students? *Cold-Start recovery, Personalized Form Letters.*

March: Reviews of Panasonic Exec. Partner, Lync 5.0, and *Hardwire*; University Rethinks its Tasks, Picos in Medicine, *Auxiliary Battery Packs Spell Independence, More Muscle for the M100.*

May: Reviews of Toshiba T1100, IBM PC Convertible, Casion FX-7000G Calculator, SG-10 Printer; *MIKEY, Appointment Manager*, and *FAST*, IRS Crowns Zenith';s Z-171, Handhelds in Restaurants.

June: Reviews of Zenith Z-171, *LapCoder, SuperROM, LAPDOS, and BlackJack*; Go Shopping at PC in Rochester, NY, OM10 RAM Map (pt 1), A Tale of Two City Councils.

July: Reviews of Bondwell, ROM2, Letterjet HS-80, and Sidestar,; Electronic Cottage, Taking Stock of Investment databases II, NEC 8201A's LCD, OM10 RAM Map (pt 2)..

August: NH's Governor discusses Laptops, PC-7000 from Sharp. Choosing your test-oriented Database manager. *Model 100/200's Lend a hand to Job Seekers*, NEC-8201A's Communication Connection.

October: Reviews of Toshiba 1100+, New Word, *Diconix Printers*, Fortune 500 Picos, Interview with DG Exec's, Desktop publishing with Picos.

November: Picos in Libraries, *Clever M100 Combinations, Exploring TPDD Part I*, Reviews of Datacomputer 2.0, *TPDD, TS-DOS.*

December: Pcios on Wall Street, Connecting to On-line Databases, Telephone Problems, *TPDD Part II.* Reviews of *Cleuseau, French/German Tutor 3, Pocketsize Modems*; 1986 Article Index.

1987

January: Book Publishing With a Pico, *Framework in a Pico*, Review of Right-Writer, JK Lasser's Money Manager, HP+Enhanced, Electric Webster, *Disk Power*, Pico's Computer Buyer Guide.

February: *Poor Man's Idea Processor*, Macintosh-Pico Connection, *M100 Cursor key alteration*, Handhelds: HP-18C, Langenscheidt 8000, TI-74, Reviews of Sord IS11-C, *Lets Play Monopoly, $100 letter quality printer.*

June: Lawyers & Laptops, *Personal Management System, M100./Mainframe Terminal Prog.*, Reviews of Wang Portable, *Search, Sprint and Supercalculator, Best of Compuserve book*, Chess-to-go.

November: *Control That Printer, Academia & Laptops*, Laptops on Capital Hill, Starlet Secrets, Reviews of Psion II, *DVORAK keyboard*, & Spark.

December: Global Laptopping, Starlet Software, Toronto Blue Jays & GRiD, *NiCdNotes*, Review of IMC LCD-286, 1987 Article Index.

1988

January: Portable Computer Cellular Communication, Laptop Roundtable, Pico Portable Guide. Reviews Telemagic, Direc-Tree Plus, SchwabLine, Quotrek.

February: TenniStat, Flexibility of Form, T200 and T16. Reviews Eclipse, T1100 Hard Drive.

May: Handhelds Fight Crime, A Pico in China, Compaq Port. III, Datavue Snap, Fax hits the Road, HP Portable Vectra, T1400LT, Three Pocket Modems, Close-Up's Customer & Support.

June: Multispeed in the Tropics, *Monitoring Alkaline Batteries*, PSION and Mass Storage, Datavue Spark, Smith Corona Portable Word Processor.

July: Toshiba on the Road, *Diskette Ratings, Metered NiCd Manager*, Procomm on the NEC, WordPerfect 4.2 on the T1000, Sales Ally.

September: Laptops & the Learning Disabled, WordPerfect 5.0, Dynamac EL, HP-71B, WordPerfect Executive, Webster's New World Writer II.

October: Portables at Sea, Macintosh Navigating, Piloting and Celestial Progs, NEC-8300, Compaq Port. 386, File Transfer, Golden Parachute.

November: European EMAIL, New Tricks for your Casette Recorder, Pico Pillows, Amstrad PPC-640, Selecting the President, Sales Power, Sales Strategy, Office Writer goes Light.

December: *FASTECH*, Automating Your Sales Force, AI, ScriptWriter, LiteDrive, Homeword Plus, VP-Expert.

TERRY KEPNER'S

portable 100

January 1992

Portable 100 (ISSN#0888-0131)
P.O. Box 428
Peterborough, NH 03458

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