TANDY LAPTOP COMPUTING MAY 1989

TERRY KEPNER'S

portable 100

$3.95/CAN $4.95

LAST CHANCE FOR PICO BACK ISSUES!

That's right, this may be your last chance to pick up *PICO Magazine* back issues, many with articles and columns directed at the Tandy 100/102, 200, NEC-8201, Olivetti M10, and Kyocera KC-85 computers. Because we desperately need the warehouse room, any issues unsold by July 1, 1989 will be thrown away! As a result of that, we've priced these magazines to MOVE at the incredible low rate of just $1.50 plus 50¢ shipping and handling each. The minimum order quantity is $10.00 (foreign shipping is $1.50 per magazine for Surface, $5.00 per magazine Air Mail).

If you want any of these, just photocopy this page, circle the ones you want, add them up, and mail your check with the photocopy to: Portable Computing Int'l Corp, PICO Back Issues, P.O. Box 428, Peterborough, NH 03458. For faster service call 603-924-9455 and have your Visa, Mastercard, or Amex cards handy. Order TODAY, they might be GONE tomorrow! ***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.*

April: Browsing the Boards, Writers & Portables, KTI products, Badminton & NEC, Reviews of *Inside the M100, TTXPress Printer, PCSG Business Analyst*, Datapad 84 Zoomracks & ECFS.

May: Doctors with Portables, *Text to printer*, Hitting the Boards, Reviews of PC Convertible Add-ons, Holiday Best, Twist & Shout, *M100 memory Expansion.*

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.

July: Programming in the Portable Environment, Sysop intervierw, Talking portables (pt1), Portable Computer Buyer Guide, Reviews of *TS-Random*, Software Carosel, Popcorn & the Hyperion.

August: NEC 8201 tokens, Laptops in Movie filming. Talking Portables (pt2). Reviews of Casio FX-8000G, Tandy 1400 LT, and *System 100.*

September: *English Teachers use Laptops, Picos in Class, Document templates, Picos in the Oil Patch*, Reviews of HP ColorPro, and the *Sportster 1200 modem.*

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, *NiCd Notes*, 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.

ARTICLE INDEX!

With over 47 issues, and hundreds of articles, *Portable 100* is THE source for information, programs, and applications for your Tandy Portable Computer. But how do you find what you need among all those issues? The answer is the *Portable 100 Article Index*. Covering every issue from September 1983 to the combined July/August1988 issue, the index is designed to make it simple for you to find what you need. And at a cost of only $7.00 (postage and handling included), you should buy one today!

And what do you do when you find an article you want? Easy. First check the back issue chart below for back issue availability. If the issue is available, just order it using the handy order form in the index. If it isn't, don't despair. Photocopies of any article cost just $1.75 each. Simply list the article, or articles, by title, author, and issue, enclose payment, and in just a short time you'll have the articles in hand.

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February							
March			OUT		NOT PUBLISHED		
April		OUT					
May		OUT					
June		OUT					Not Available Yet
July		OUT		OUT		combined July/ August Issue	
August							
September	Premier Issue						
October		OUT		NOT PUBLISHED			
November							
December						OUT	

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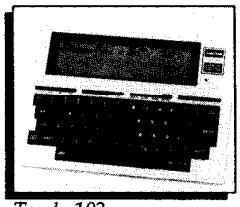
VOL. 6, NO. 5
May 1989

ON THE COVER:
Simplify.

THE IDEA BOX 9
by Michael Daigle
What's a poweruser junky think of the Tandy Model 200?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ULTRASOFT INNOVATIONS 11
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Why Richard Eckerlin is a powerful force in the Tandy market.

FILE TRANSFERS ... THE SAGA CONTINUES 12
by Bill Qualls
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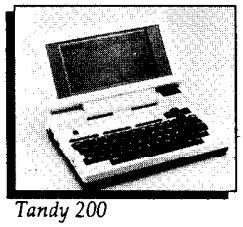
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by Tracy Allen
Preventing unwanted Model 100 hangups, and subsequent cold starts.

DIRECT PRINT FORMATTING USING A $190 EPSON LX-800 20
by Beverly Howard
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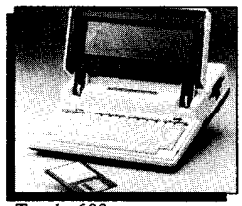
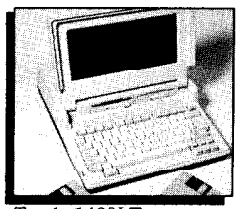

Tandy 600

BASIC BITS:A SOURCE FOR MODEL 100/102 PUBLIC DOMAIN SOFTWARE 21
by Thomas L. Quindry
It's not as hard to find as you might think.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FINGERS TIRED?

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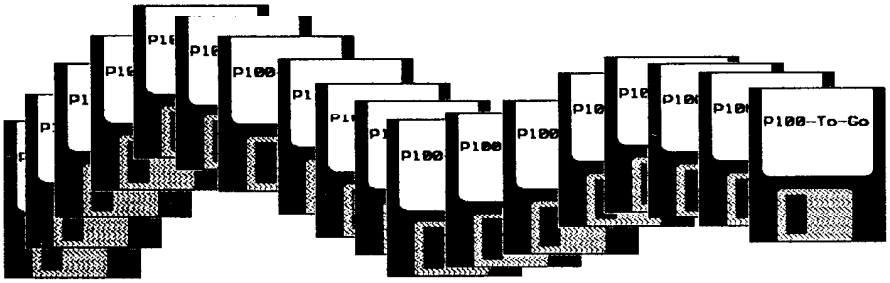

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- ❑ March '89 single issue ***P100-To-Go*** disk, $9.95.
- ❑ April '89 single issue ***P100-To-Go*** disk, $9.95.
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ROM WITH A VIEW

Simplify.

That's the message in this month's cover. And as Michael Daigle says so well in his new column, *THE IDEA BOX*, that's what the Model 100 family of computers is all about. No big bells and whistles, no complicated operating systems and power hungry hardware. Just flip a switch and start typing. No other machines can do that quite as well as our little Tandy idea boxes. And nobody says that quite as well as Michael does. I think you'll be be as happy as we are to have him aboard.

Along the same lines, Bill Brandon's *FULL POWER* column, which started last month, continues to show us how to get the most from what's already in our machines. Simply. Easily.

These notebook computers are still the best at what they were designed for. Even the hippest, flashiest MS-DOS power boxes still don't come close to matching the simplicity and ease of use of our notebooks. That's why the Model 100 is not a dying machine, as one reader wonders (see *DEFUSR*). Yes, there has been a lack of advertising. Where have the advertisers gone?

Well, the "little guys" like me got clobbered when *Portable 100* went under for a year. The "big guys," who had the means to survive that period are increasingly chasing after the MS-DOS dollar. That's a shame, because like you, we need the advertisers. And that's why we stress the importance of telling vendors that "*P100* sent me."

We do all we can to help small businesses start up and grow, and I'm happy to say that it's working. You've been seeing, and will continue to see, more new "faces" in our ads. People supporting your machine with products and services. Let's support them, too, so that they can continue to provide more of the things we users want.

Some of the hottest news this month comes from Ultrasoft Innovations, who have announced their new *Ultracard*, a memory expansion! As I write this, the press release is on the way, so I can't give you all the details here. But I hear it's going to be much more versatile and *economical* than similar products. Now maybe everyone can try this new technology! Be sure to look for the Ultracard elsewhere in this issue. And for a closer look at Ultrasoft, see Barbara Verity's profile of Richard Eckerlin, also in this issue.

And at last, my favorite Model 100 peripheral is back and available to all—the *HARD COVER 100* from Dyna-shield! As I mentioned in an earlier ROM WITH A VIEW, I've had mine for years, and it's absolutely one of the best things ever invented for the Model 100/102 (and NEC's). My sincere thanks to Dyna-shield for bringing it back.

And there's more good stuff on the way. At this very moment I have in my hot little hands the new Kodak *Diconix 150 Plus* portable ink jet printer, available from Zero-G Computers, one of our *P100* advertisers. Look for a review soon.

Also, look for the upcoming review of Optical Data Systems' *BAR+* bar code package. I got to check it out briefly before sending it on to the reviewers, and it's very impressive. I hadn't realized how useful bar codes can be. You'll soon see what I mean.

In our pages you'll also see an ad for *TRANS-IT*, Selective Software Company's inexpensive notebook-to-PC file transfer software. It's also in the hands of a reviewer, and we'll see what he has to say about it soon.

Next month you'll be hearing from Alpha Plastics in Minneapolis (out there in 3M-land), who are introducing a new type of computer case. They tell me this one is a hard case, but unlike hard cases we've seen before, this one is good looking, the sort of thing that's completely at home in a business office. I'm eager to see it. (Yes, of course, we'll review it!) Alpha Plastics has a long track record of making quality products for major corporate clients, like CORE Technologies, for instance.

There's more on the way, too, but I may be running out of space. But one thing I don't want to forget to mention is the POETIC LICENSE contest. The May 31 deadline for entries has passed, and we'll announce the winner in next month's issue. Judging is going to be tough, too, because there were some great entries. (I wish I had five or six cars, so I could have my favorite entries made into actual plates.) So tune in next month to see the winning entry (and other favorites) and to find out who's the lucky owner of a brand new Tandy Portable Disk Drive 2.

- Nuge

Toolbox

Manuscripts were typed into Microsoft Word 3.0 on a Tandy 1400 LT, 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 2.0a. There they were put into a rough approximation of the magazine's final appearance. Here, pull quotes are placed, headlines, intros, and bylines are sized and positioned, and advertisements positioned.

Next, the magazine was ported over to our Art Director's Macintosh II, using the 1400 LT and Mac-link. She then went over the publication using Aldus Macintosh PageMaker 3.01, making final design decisions on photo, figure, and listing sizes and placements. She precisely placed the text and added all the little things that go into making a nice looking publication.

Page previews were output from her Laserprinter. When everyone was satisfied with the appearance, the Macintosh disk was sent to Colorite Corp. in Wisconsin for final output directly onto photographic paper. 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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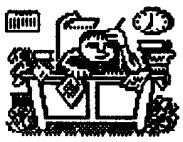

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GENIE'S LAPTOPS ROUNDTABLE

In the Feb. '89 article about the sketching program, reference was made to having to create the characters for oneself. You might advise your readers that the entire Model 100 character set is available on GEnie's Laptops RoundTable in the file *LAPTOP.BA*, file 157. Oops! *CHR$* 128-210 ONLY!

Informing ... the Laptops way...

.^Dave^.
GEnie

ANOTHER SATISFIED ADVERTISER

Just a note to thank you and Mike for your coverage of *WEETAX* in the March 1989 *PORTABLE 100*. I especially appreciated your attention to layout and page contiguity in the sequence of product announcement, review article, and one-ninth-page ad.

Best wishes for continued success.

Thomas M. Olsen
Phoenix, AZ

We try our hardest to make the layout of the whole magazine as consistent and attractive as is possible, we're glad you noticed.
-TK

A SOLUTION FOR MR. WALSTEAD

I have a solution for Mr. Walstead (June '88).

It is not impossible to use *FLOPPY* (for the PDD2) with Interactive Solutions (IntSol); it is just far less convenient than using *FLOPPY.CO* (for the PDD1). I dumped my #2 and got a #1, since I cannot give up IntSol. Then I got a second #1 for backup; next I will investigate Purple Computing's drive, since it is often mentioned with the PDD#1. Also, *Disk Power* is said to be located unusually low and so it may not conflict with IntSol; they also have some PDD#1's for sale at a bargain, if they have not run out.

First, the *Floppy1* system—you can get into IntSol after leaving *Floppy1*, but you cannot leave IntSol and get back into *Floppy*—you get a beep, clear screen and back to menu. So I put *GOFLOP.BA* on the menu and go back and forth between IntSol and *GoFlop*, from the main menu. You have to keep *FLOPPY.CO* on the menu, but the loss of file space is nothing compared to the convenience. Here is *GoFlop*:

```
10 CLEAR 256,59400
20 RUNM "FLOPPY"
SAVE "GOFLOP.BA"
```

I am aware that when you are using IntSol, you have part of *Floppy* still located at 59400-60200. It has not caused us any trouble.

However, today I tried another solution—I changed line 10 in IntSol to clear to 59400 instead of 60200. I tried then to access *FLOPPY* and lo and behold, you can get into it. I haven't run this very much yet, but it seems to work. If there is any trouble, go back to using *GoFlop* and change the 59400 back to 60200 in IntSol.

If you are just stuck with *Floppy* 2, here is how you do it. First, get set up—kill IntSol in *BASIC* and type the *CLEAR*

It is not impossible to use* FLOPPY *(for the PDD2) with Interactive Solutions' ROM

statement from the PDD2 manual. Now load *Floppy2*, access the Load feature and load *FREMEM.BA* to keep on the main menu. Next, kill the IPL file and re-type it in *BASIC* adding a new Line 5: *5 CLEAR 256,MAXRAM*. By putting the clear statement in the Loader program you save the extra step of typing it in *BASIC* before each re-load. Save the "new" IPL to the menu. Now begin—run *FreMem* to clear, remove *Floppy* and set the *MAXRAM* to normal. In seconds it runs and takes you to menu where you select IntSol and work on your files. When you're ready to save, select *IPL*, check the drive to make sure it's off, insert the system disk, press *ENTER* and turn on the drive. *Floppy* loads and takes you to menu. Select *Floppy*, remove the sys disk, put in your work disk and save. To go back to IntSol, run *FreMem* first. This is not as tedious as it sounds.

Since *Floppy2* changes the *MAXRAM*, changing the IntSol line won't work. Technically you must remove *Floppy* and reload it before and after using IntSol, but the above shortcuts help.

Good luck to Mr. Walstead. I'll decline the peerage, if you don't mind.

Katherine S. Wright
Chapel Hill, NC

KEEP IT COMING! *(WE WILL)*

Keep the advanced articles coming: machine language, hardware alterations/additions, and higher level *BASIC*. All too often I come across this statement... "Beyond the scope of this text ..." right when I was getting interested. Keep up the good work!

Robert Hamilton
Orland, CA

DISABLED COMMUNICATION

Because I am disabled (my hands shake, my speaking is not clear, and my memory sometimes fails me) I find the 102 a very useful communication device. It is light and can run off rechargeable batteries so I always have it with me. I have a printer at home to print out messages or files. Without the 102 I simply could not communicate and let my wishes be known.

Thank you for a very useful machine.

Herb Klassen
Brampton, ON (Canada)

While we didn't make the computer, we can certainly appreciate your position and will do our utmost to keep your computer as useful as possible. *-TK*

AN APPRECIATIVE READER

I am a Tandy M100 laptop owner, the only one in this area. This is the only computer I own, so my experience is limited. I find your magazine helpful in trying to understand and visualize the design and quirks of the 100. I would appreciate more articles of that type.

I would like to see a listing and consumer comparison/evaluation of all the hardware and software products available for the M100. What companies still support it? It seems the ads and catalogs

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INPUT/OUTPUT

emphasize the IBM compatibles. I would like to acquire some additional software and hardware and am shopping around.

I presently have Traveling Software's Ultimate ROM II and Booster Pak. I am disappointed in them and also the company. These products have a higher degree of sophistication than I am familiar with. I find it hard to understand their manuals and am having trouble getting their products to fit my needs. I have written with questions and they do not respond. Do they still support the M100? Have other customers had any problems?

Thank you for listening to me.

Susan E. Askew
Norfolk, NE

THE SWEDISH CONNECTION

In the March '89 issue you have a letter entitled "Doctor's Orders" in which you answer a question about *MENUTL.CO*. The writer says that to make invisible files reappear he must use *CTRL-C*, not *CTRL-V*. You said that he must have loaded the program incorrectly. While that is possible, it might also be that he has a non-American M100. I have an American M100 and my school has over 100 Swedish M100's made for the Swedish Telephone Company. (How that happened is another story.) With my American M100 I can load the program and everything runs as advertised; with the Swedish machine I have the same problem with *CTRL-C* not *CTRL-V* being the code that makes files visible. I would advise the letter writer to check the upper ASCII display and see if it is the same as that in the back of the Tandy manual, specifically the block graphics created by *GRPH*-[CAPITAL LETTERS]—ASCII 224 to ASCII 254. None of those graphics display with the Swedish version. The Swedish version is not a "clone"; it is made by Kyocera and has the sticker on the bottom which says "CUSTOM MFD. IN JAPAN FOR TANDY CORPORATION."

I am enclosing a copy of the codes that do work for the Swedish machine to show you better what I mean.

You may use my address—others may have the same problems. I am also reachable with e-mail on DASNET at: *tullychas@DCTWCS.DAS.NET*.

I had no idea that I would ever experience so many problems.

Thank you for a great magazine. I find something useful in every issue.

Charles Tully
Tokyo, JAPAN

A LISTING ERROR

In reference to the Tubman/Hansen letter in the March '89 "Input/Output," there was an error in the listing in the June '88 article which creates the *CODE-C/CODE-V* problem. The seventh byte of the 8th line should have been *0CEH* instead of *0BDH*. This is easily corrected by the following commands:

LOADM "MENUTL"

The screen will show:

Top: aaaaa
End: bbbbb
Exe: aaaaa

Then

POKE aaaaa+201,206
SAVEM "MENUTL", aaaaa, bbbbb, aaaaa

I have not figured out the rename problem yet as my copy does the same thing.

Russ Wesp
San Francisco, CA

AN OLD READER RETURNS

About six years ago I purchased my Model 100 and I have been using it ever since. I had a subscription to *Portable 100/200* about three years ago, and like many neglectful subscribers, I let my subscription run out by not renewing it. When I recently purchased a video interface for my Model 100, I had no idea that I would ever experience so many problems. I was very delighted to see my local Tandy dealer hand me a copy of your December '88 issue, and see that the magazine still held out when I didn't.

I primarily use the M100 for word processing purposes for which my Interactive Solutions chip worked fine. After the first attempt at using the chip in connection with the interface, I was quickly made aware (after a few choice four-letter words when I dumped 12K of unsaved typed text) that the two are not compatible. I am currently using the *Scripsit 100* program for my word processing, but with the interface and program using memory, there is not very much memory left to work with (only about 10K). The more I inquire about the video interface, the more I realize that I have purchased what seems to be an archaic device. Support for the interface seems to be limited, if it does exist.

I am interested in programs available for my video interface, preferably word processing/file management, in the public domain or to be purchased. I am also interested in obtaining any back issues of *Portable 100* concerning the video interface, if available.

Any assistance you might be able to give would be greatly appreciated. Also, please find enclosed a check renewing my overdue subscription.

David Schafer
Gretna, LA

We welcome all letters from our readers, whether critical or complimentary. We print as many letters as space permits (some are edited for space considerations). Address your correspondence to: Portable 100, I/O Dept., P.O. Box 428, Peterborough, NH 03458-0428.

DEFUSR appears monthly to answer your questions about Tandy notebook computers.

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QUESTIONS, QUESTIONS...

Let me begin by saying that I have found *Portable 100* to be a very useful and enjoyable magazine. Through it and the *Portable BBS* I have received nearly 100 percent of the informational support needed for my computer, not to mention a significant amount of software. I have also used it as a guide for purchases of equipment and peripherals. There are, however, several specific areas in which I need help, and which I have not seen directly addressed.

First is a better DOS and/or DOS utility. I am currently using *DSKMGR*, acquired from the *Portable BBS*, which is a significant improvement over *FLOPPY.CO*. What I have in mind is something like *NSWEEP*, by Dave Rand, for CP/M computers. This allows batch file management with a minimum of typing.

Second is a communications program which supports (a) Xmodem protocol, and (b) allows flushing of download buffer(s) to PDD-1 (100K Portable Disk Drive) disk without breaking the communications link. *XMODEMT.DOC* suggests that *XMODEM.TAN* can do so, but gives no instructions as to how. Incidentally, I wonder if there is any documentation for *XMDLD.100*.

Third is a General Register/Checkbook template for use with *Super ROM*, which allows entry through *DATA*, or a stand-alone General Register/Checkbook program.

Fourth, can you comment on the compatibility fo the following programs: *Super ROM, DRIVER.BA/DSKMGR.CO, HOTKEY.BA, XMODEM.CO (XMD MLD.100), Men-u-tility*, and *TL2TEL.BA*?

Fifth, I downloaded *TXTSTR* from the *Portable BBS*, but I am having difficulty with it: ^*D*, ^*F*, ^*S*, ^*A*, ^*E*, ^*X*, ^*G*, ^*T*, and ^*Y* seem to work properly. ^*QY* works like ^*Y*. The remaining commands, ^*QD*, ^*QS*, ^*QE*, ^*QR*, ^*QX*, ^*QC*, ^*KB*, and ^*KD*, do not seem to work at all. I disabled all but *TL2TEL.BA*, but to no avail. Can you offer any help?

Sixth, in the March 1986 *Portable 100* there were instructions for adding a resistor to make the computer charge its own batteries when operating from the AC power supply. Do you know a way to make similar changes to the PDD-1?

William McWeeny
Dardanelle, AR

I'll try to address your concerns in order, William. First, DOS batch file management, often referred to as "tagging," is available commercially in Traveling Software's TS-DOS *and Ultrasoft Innovations'* Disk Power. Powr-DOS, *formerly a commercial product from Acroatix, is now available for downloading on GEnie and CompuServe. I believe some support files have been written for* Powr-DOS *that facilitate tagging as well. (By the way, I'm working out the details of putting* Powr-DOS *on the* Portable BBS.*)*

Regarding communications software: XMODEM.TAN *lets you drop into the regular* TELCOM *terminal mode, after which you cannot return to the Xmodem mode. It won't let you exit* TELCOM *without terminating the phone connection.*

Any documentation for XMDMLD.100 *would have been lost in the Great Portable BBS Crash of 1988. I'll bet the docs are available on CompuServe and/or GEnie.*

Also on CompuServe and GEnie are Phil Wheeler's XMDPW *programs, which do let you drop into* BASIC *and* TEXT *and then return to TELCOM, without losing the connection. Perhaps while in* BASIC *you can use* Powr-DOS *to save your files to disk and then return safely to* TELCOM. *I suggest you ask that question on CompuServe, the primary source of support for the* XMDPW *programs. I know of no other programs that might meet your needs.*

For a General Register/Checkbook template or program, again I suggest checking the major on-line services.

Can I comment on the compatibility of all those programs? Not within the space available, I'm afraid. It would require a complete article, due to the "hook-y" nature of all those programs. But for starters, I'll mention that XMDMLD.100 *duplicates* TL2TEL.BA's *function, making* TL2TEL.BA *unnecessary. If you have a more specific question or problem, send it along, and I'll have a shot at it.*

I suspect your TXTSTR *problem is just a misunderstanding of the two-key commands. For example, with* ^QD *you first press* ^Q; *then press* D *by itself. If instead you've been pressing* ^Q^D, *it won't work. I downloaded the program from the BBS and have confirmed that it works. The only glitch I find is one that existed from the beginning: The program somehow disables* TEXT's CTRL-LEFT ARROW *combination (no problem, as* TXTSTR's ^QS *serves that function).*

Finally, your question about modifying the Portable Disk Drive to recharge its own batteries: I don't know what it would take to do that, and I've never seen it mentioned elsewhere. But it's a great idea if it could work. Maybe some hardware-savvy reader will pick up on it and develop it (or at least tell us why it wouldn't work).

-MN

PAGE BREAKING DISPLAYS?

Is there any program for the Model 100 that displays page breaks, or can tell me (before I print it out) at what point in the file the last full page of text will end? The problem is, I have a file, my journal, to which I constantly add. When it fills up my meager M100 memory, I want to print out everything up to and including the last full page. Then I want to be able to delete the text I just printed and resume adding to the file until it gets full once

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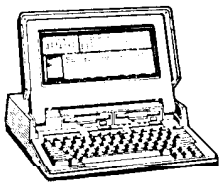

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again. What do you say, Nuge?

Also, where the heck have all the advertisers gone? I'm relatively new to the M100, and I'm wanting to buy, like many users, RAM upgrades (at a reasonable price!), a Safeskin, and other stuff. It seems like all the advertisers have dried up, compared to the wealth of products they offered in your pages two years ago (someone gave me some old back issues). What gives? Is the M100 a dying machine?

David Newcorn
San Diego, CA

T-Word *(on Traveling Software's* Ultimate ROM II*) has exactly what you need. Pressing* F3 (Pbrk*) takes you through the file, a page at a time, displaying the page number and the first three and last three lines of that page.* F4 (Disp*) does the same thing, except that it displays every line of the page. Then there's* F2 (Plot*), which displays a graphic representation of the text, page by page, along with the page number. Characters in the text are represented by pixels, so you see the "shape" of the text.*

Plot *is sufficient for your purposes. Since* T-Word *lets you specify the range of pages to print, you can simply specify the last full page of text (as shown by the plot) as the last page to be printed. Afterward, you can delete any text you choose.*

Although, to the best of my knowledge, Write ROM *(on PCSG's* Super ROM*) lacks* T-Word's Pbrk *and* Disp*, it does have a pixel plot feature and the ability to select a range of pages to print, making it equally suitable for your purposes.*

Both ROM's contain many powerful features and programs and are well worth owning. Which to choose depends on your particular needs. Check them both out to see which one best suits you. (As always, be sure to mention Portable 100 *when contacting vendors.)*

For a lowest-cost (but less versatile and more RAM-hungry) alternative, I believe there's a program on CompuServe that does pixel plotting, but I don't know whether you can specify a range of pages for printing. If money is really tight, that might be worth checking out.

Now, where have all the advertisers gone? See my editorial ("ROM with a View").

-MN

MAXED OUT

When I use the bar code program, *INVTRY.BA* (listing enclosed), the error *?BN* comes up in line 170. "BN" stands for "bad file number."

Do you have any suggestions as to a *good* file number?

Denman Shaw, Ph.D., M.D.
Chicago, IL

BASIC *requires a "buffer" for each file opened by a program. Your program opens two files, one in line 160* (OPEN "WAND:" FOR INPUT AS 1*) and one in line 170* (OPEN "INVTRY.DO" FOR INPUT AS 2*), so it needs two buffers. Apparently, only one was available.*

The solution is to use BASIC's MAXFILES = n *statement, where* n *is the number of buffers to reserve (in this case, two). Thereafter, the number of buffers never changes unless another* MAXFILES = n *statement is executed.*

One way to set MAXFILES *is to enter* BASIC, *type* MAXFILES = n, *and press* ENTER.

A better solution is to make a program responsible for its buffers by including a MAXFILES = n *statement at the beginning of any program that accesses files. That way, a program will always have the correct* MAXFILES *value, even if a previous program had changed it.*

By the way, any time you want to know the current MAXFILES *value, enter* BASIC, *type* PRINT MAXFILES, *and press* ENTER. *The current value will be displayed on the screen.*

-MN

DEFUSR

PATCHES TO THE RESCUE!

I was one of the earliest buyers of the Tandy 100 computer and have used it fairly steadily without taking time to really study the machine.

As a result, a couple of its expansions seem to be interfering, and I need a way out. Here is the setup: Model 100 computer, PG Design RAM expansion to 160K (5 banks, total), PCSG *Super ROM*, Tandy Portable disk drive (the original, 100K). I have recently begun to use *LapDOS II* to connect with an MS-DOS machine, but that shouldn't be a concern here.

The problem arises when I try to print from *Write ROM* (part of *Super ROM*). I must admit to having tried it only once; it froze the whole computer, and I had to cold start the bank I was in. As a result, I haven't tried it again.

I presume that *Write ROM* is in conflict with something else, but I have no idea what. I guess that if I were more of a hacker, I would unload everything and start putting them back one by one until I found a conflict, but even then I wouldn't know what to do about it.

Have you any cure for this?

H.W. Verseput
Kalamazoo, MI

As far as we know, there are no conflicts between Write ROM *and the P.G. Design RAM banks, the P.G. Design software* (MENU.BA*), or the Tandy PDD-1's* FLOPPY.CO.

There is, however, a conflict between FLOPPY.CO *and* MENU.BA. *Because you don't mention any patches, I presume you're using the unmodified version of* FLOPPY. *Your first step should be to install the appropriate patches to* FLOPPY.CO, *as listed in either P.G. Design's documentation or my "DOS Patches" sidebar* (Portable 100, *Sep. '88, p. 22).*

Your second step should be to do as you suggested—unload everything and then put things back in, one by one, until you find a conflict. That way, we'll have some solid "symptoms" from which to extrapolate your "cure."

Get well soon!

-MN

The Idea Box

Confessions of a Hardware Junkie

by Michael Daigle

Hi there. Welcome to "The Idea Box," a new column here in *Portable 100* magazine. My name is Michael Daigle, and we're going to go on some interesting journeys together.

I'll start this by giving you some background about myself. I'm a 34-year-old freelance writer. I live in Portland, Oregon, with my beautiful wife Elizabeth and my 10-year-old son, James—both of whom have their own computers—and with a dog, a cat, and a motorcycle.

In 1977, the same year that I got married, a little shop opened up in my neighborhood and began selling "personal" computers. For two grand, you got a box with a whopping 4K of RAM, no operating system, no monitor, and no keyboard. Programming was done in *octal* by flipping switches on the front of the box. No, really. Honest.

I couldn't afford one, but that didn't stop me from wanting one. I had no idea what I would actually *do* with one, but I kept thinking back to one day in 1968 ...

I left no stone unturned—and I got *very little done.*

FLASHBACK!

... I was 14 and I was hiding from a white-hot June afternoon, wrapped in the air-conditioned semi-darkness of the Hollywood theater, waiting for a new science fiction movie to begin. I was unaware that I was about to witness something so powerful that it would still have an impact on me twenty years later.

The lights went down, and *2001: A Space Odyssey* began.

The film floored me. Blew me away. When I was a little kid spending Saturday afternoons at the movies with my friends, the gaps between films were filled with those black-and-white Buck Rogers and Flash Gordon serials—you know, the ones where you could actually *see* the string that held up the "rocket ship" in the exterior shots. Now, less than ten years later, I sat wide-eyed in the darkness watching this. I'm surprised I even remembered to breathe while *2001* was on the screen. And of all the incredible things I saw that afternoon, the one that made the biggest impact on me was the HAL-9000 computer.

Watching the Discovery crew interact with HAL, I *knew* that I was getting a glimpse of computers as they would actually be some day. And somehow, I sensed that computers would play a large part in my *own* future. So when personal computers began appearing in the late seventies, I was primed. And as Altairs and Imsais gave way to the more affordable Apples and Ataris, I finally took the plunge.

Right into some *very* cold water.

TAKING A DUNK

I had spent a decade contemplating the sweet melody of intelligent talking computers—but the reality of my first machine was like fingernails on a chalkboard. It was a VIC-20 with 3K of RAM and a tape recorder for data storage. HAL compared to the VIC was like William F. Buckley, Jr., compared to Bill the Cat. Ack.

It was a big disappointment, but I knew that sooner or later technology would let the fantasy of HAL intersect the reality of my budget. I still believe that day is coming. But in the meantime, fueled by impatience, I became a hardware junkie.

Every new computer that hit the market offered to move me one step closer to Computer Heaven, and made the "dream system" I was suddenly stuck with seem as desirable as a burrito milkshake. I couldn't be left behind with "old" technology, could I? No way. So, I did what I had to do—I stepped up. Over and over and over again. And just to prove that you don't have to be a TV evangelist to be an idiot, I offer up the following litany of computers I've owned some time in the last few years:

Timex-Sinclair 1000; Vic-20; Atari 400; Atari 800; Atari 800XL; Atari 130XE; Commodore 64; Commodore 128; Commodore SX; Apple IIc; Apple IIc Plus; Atari 520 ST; IBM XT; and probably others that I've forgotten about. And software? How many programs have I taken the time to learn, only to decide that they weren't "good enough" for me? What little is left of my mind boggles.

In my search to find the most effective system I could afford, I left no stone unturned—and I got *very little done.*

But now, twenty years beyond HAL, the future looks brighter than ever. I earn a living with a computer, using it to write ad copy for businesses, magazine articles, and some fiction. Still, old habits die hard. My most recent system: a Mac Plus with 1 meg of RAM, a 30-meg hard drive, an Imagewriter II printer, and some very nice software. It took me months to learn to operate everything well enough to get consistent, professional results. So what do you think happened next? That's right—two months ago, I sold the whole system.

WISING UP

But this time, something different happened. This time, before I could run right out and fill the void with another computer, a simple question finally dawned on me: what the hell was I doing? Over ten different kinds of computers in less than ten years. Why? What was I searching for? I took a long, hard look at my motivations and came to a few conclusions.

I realized that my focus was all wrong. I was still infatuated with computers for what I knew they would someday *become*, rather than for what they can actually *do* right now. And I came

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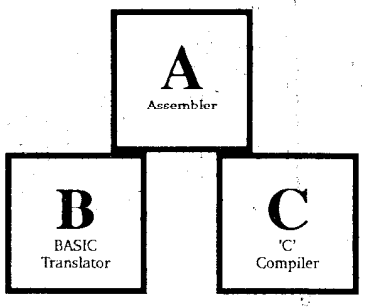

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to realize that by trying to rush the future, I was cheating myself out of the potential of the present.

So I thought about it. What did I really want—no, scratch that—what did I really *need* in a computer? What applications were important to me? Well, I'm a writer—I needed something I could write with. And because some of the people I write ad copy for are out of state and often need instant results, I needed telecommunications. Anything else? Surprisingly, the answer was no. I keep my appointments and my phone numbers in books, which are easily accessed and never lose data (unless I lose the books). I don't have any reason to use a spreadsheet—with hobbies like computers, photography, and motorcycling, I can keep track of what's left of my finances on my fingers.

OK, what about software? In the past, I've used powerhouse word processors like WordPerfect™ and Microsoft Word™. But in their endless quest to have one more obscure feature than their competitors, those programs have gone too far for me. They've become like the body builders who pop steroids and pump iron until they are grotesque icons of their obsession, barely recognizable as human. I felt the same way about terminal programs like Crosstalk™, which always made me feel like I was trying to kill a fly with a sledge hammer.

So as for what next, it was obvious that I needed to atone myself. I decided to think about the *results* I wanted instead of trying to find the highest-tech way to *achieve* those results. Finally, my new Zen-like mindset brought me to the Tandy Model 200. After exploring the options, I bought the Traveling Software *Sardine* ROM chip for it. This gives me *T-Word*, a great word processing text formatter with superb printer control features. It also gives me a tiny 7,000-word spell checker, also in ROM (and *that's* the way, uh-huh uh-huh, I like it, uh-huh uh-huh) backed up by a 35,000-word spell checker on a 3.5-inch disk. Next, I expanded the 200's memory to the full 72K. I paid $500 for the Model 200, got Sardine on sale for $100, and got lucky and found two used RAM chips for $50 each. So, I'm in the system for $700. I've used it for several weeks. I'm using it now over coffee at a local McDonald's. So how do I like it? Like pit bulls like poodle snacks. Like perverts like peepholes. I like it a *lot*.

Why? Because it's light enough to take everywhere with me, even on the motorcycle. And because it's immediate—no disks to find, no software to load, just open the lid and hit the switch. This kind of access allows me to work on something the instant it occurs to me, regardless of where I am on those rare occasions that inspiration strikes. That makes this a very intimate machine—and *that* makes it more personal, more HAL-like, than all the other computers I used to own.

And it is that sense of intimacy that prevents a 100 or a 200 from being the simple text box that the "power user" crowd thinks it is. For those who understand its potential, it's the perfect portable *idea box*.

So the next time a power user sees you typing away and asks you in a superior tone of voice what your little computer is compatible with, do what I do—look him in the eye, smile, and answer: "Me."

Ultrasoft Innovations

Businessman Richard Eckerlin turned a college project into a thriving enterprise.

by Barbara Verity

Richard Eckerlin has a spider plant that he cares for regularly in his office in Montreal, Canada. Watching the plant grow and enjoying each time a new shoot appears, he is reminded of his company, Ultrasoft Innovations, because here too he seems to have a green thumb.

His efforts are clearly beneficial. You can see them in the growth of Ultrasoft Innovations and the new directions the company is taking.

Only three years ago, Eckerlin—now 29 years old—formed Ultrasoft Innovations. The roots, however, reach back several years. As an Engineering student in his final year at McGill University in 1983, he was put in charge of finding the right computer for students to use in class. After checking all laptops, he chose the Tandy 100.

Satisfactory use of that computer led him to form a laptop club for Montreal Tandy 100 owners two years later. Membership soon grew to 200, and the club bought and sold used Tandy computers, held product demonstrations, developed a library, and published a newsletter.

"It was very exciting and a great learning experience," Eckerlin says today. "What was a very interesting thing has become very serious. That's how I make my livelihood today," he says.

In 1966, the club went on to become a company, Ultrasoft Innovations, mainly so members could benefit from low prices for Tandy products. Ultrasoft also became a Tandy Value-Added Reseller, able to sell new computers. Today, the company buys and sells all brands of laptops.

From the start, Ultrasoft began creating and producing software of its own, such as the highly successful programs, *Text Power* and *Disk Power*. Both were written by club members and sell very well.

Initially, Ultrasoft aimed only at writing software, but has since expanded to selling all brands of software, hardware, and accessories—mainly through direct mail. Eckerlin counts on *Portable 100* magazine to get his message out. He says there would not be a Model 100 community without it.

His company has created other products as the need arises. A big winner recently is *Ultrascreen*, which allows you to see more characters on the screen: 60 columns of 10 lines instead of the usual 40 by 8.

Another new product is Ultralucent, which removes the scratches from the screen, thereby improving viewing. Now the company is developing a memory expansion system as well as a portable video interface, which will tie the Tandy to an 80-column by 25-line monitor.

"I see a very strong future in laptops."

The company has grown steadily, building on its successes. Eckerlin's February 1989 sales, for instance, topped any previous month for the company. He attributes that success to the corporate sales he has developed. Eckerlin is involved in providing laptop computers to McDonald's restaurants and Honeywell, Ltd., as well as to major newspapers and paging companies.

Eckerlin's success clearly comes from responding to market needs as well as creating new products, then marketing them well. It also comes from ingenuity, diversification and good customer service. His obvious expertise, attentiveness, and his easy, assured manner give customers confidence.

Laptop entrepreneur Richard Eckerlin shows off some of the products on which he's built a successful business beginning with a Model 100 club.

His belief in the laptop is solid. "It's not out of the question that Ultrasoft itself will be working on its own laptop computer," he says. "In the meantime, we have to find the right product mix."

He calls 1989 the year of the laptop, and points to some famous people who use them—Roger Ebert of "Ebert and Siskel at the Movies," Brit Hume of ABC News, and Patrick Watson of CBC Television.

"I see a very strong future in laptops—a light, portable, powerful laptop computer. The technology has come a long way in the past few years," Eckerlin says.

So, too, has Ultrasoft Innovations.

COMPATIBILITY: Tandy 100/102, 200, Kyocera KC-85, Olivetti M10, NEC 8201/8300 (See Editor's Note.)

File Transfers ... The Saga Continues

And you thought you had seen enough summer sequels already.

by Bill Qualls

I can't say enough good things about "Quick, Easy, and Cheap Model 100 to MS-DOS Computer File Transfer," by Beverly Howard (*Portable 100*, July/August '88). Over and over I had read how easy it is to transfer files from the Model 100 to an MS-DOS desktop. Finally, Mr. Howard's article enabled me actually to do it!

Before I explain how I used it, I should explain my application. In February I accepted a new position in our data processing training department, assuming responsibility for our project management curriculum. My predecessor had taught these classes for several years. But he had improved the content without necessarily updating the class scripts. And the existing scripts were handwritten. It was my plan to put all the classes in the curriculum onto disk to improve their maintainability.

I sat through the next offering of each class with my Model 100 in front of me, typing feverishly to capture as much material as possible: questions posed, answers given, time frames, etc. (I should mention that, to the Model 100's credit, this did not cause a distraction to the instructor nor the students.) I kept all the information for each course on a separate Portable Disk Drive diskette. Using PCSG's Super ROM I was able to produce excellent scripts, the likes of which had not been seen before in this department.

Collectively, these constitute a powerful tool box.

Our department has since become more involved with personal computers. So I needed to transfer my scripts to the desktop computers for two reasons: (1) they would be available to other members of my team, and (2) we could take advantage of desktop graphics packages. Hence my need for Mr. Howard's batch file.

In transferring files, however, I found two problems. The first involved Mr. Howard's batch file. As presented, the batch file transfers all data as 7-bit characters. This means that the transfer ignores the high order bit of any character with an ASCII value

M100 character	*CODE-u*	*GRPH-M*
ASCII value	184	246
Bits	10111000	11110110
Transmitted as	00111000	01110110
ASCII value	56	118
Character	"8"	"v"

Figure 1. An example of how two Model 100 special characters are converted to other characters when using a 7-bit transfer as described in "Quick, Easy, and Cheap Model 100 to MS-DOS Computer File Transfer" (July/August '88).

```
10Ø REM ========================= Ident
ification ========================
11Ø REM   TRANSLAT.BAS by Bill Qualls, O
ctober 1988
12Ø REM
13Ø REM   This program will translate gr
aphic characters contained within
14Ø REM   a text file from IBM to Tandy
 -or-  from Tandy to IBM.
15Ø REM
5ØØ REM ============================ Ma
inline ============================
51Ø GOSUB 1ØØØ
52Ø WHILE NOT EOF(1)
53Ø    GOSUB 2ØØØ
54Ø    GOSUB 3ØØØ
55Ø    GOSUB 4ØØØ
56Ø WEND
57Ø GOSUB 5ØØØ
58Ø END
1ØØØ REM ========================= Initi
alization =========================
1Ø1Ø REM ---------------------- Set Glob
al Variables ----------------------
1Ø2Ø LET TRUE = -1: LET FALSE = Ø
1Ø3Ø LET LINE.FEED$ = CHR$(1Ø)
1Ø4Ø LET CARRIAGE.RETURN$ = CHR$(13)
```

Continued

Listing 1. TRANSLAT.BAS *converts the "higher-order" characters from the Model 100 character set to the equivalent characters on your IBM-compatible, and vice versa, so the box you make on the screen of your M100 still looks like a box on your IBM.*

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Circle 20 on reader service card.

Original batch file line:	echo The transfer rate is 2400 baud, and the Model 100's STAT = COM:67N1D
Change line to:	echo The transfer rate is 2400 baud, and the Model 100's STAT = COM:68N1D
Original batch file line:	MODE COM%1:2400,N,7,1,P
Change line to:	MODE COM%1:2400,N,8,1,P

Figure 2. Lines to change in Beverly Howard's batch program to prevent the "high-order" bits of special characters to change, causing the characters to be converted as illustrated in Figure 1.

```
11ØØ REM --------------- Identify Progra
m and State Purpose ---------------
111Ø CLS: KEY OFF
112Ø PRINT "TRANSLAT.BAS by Bill Qualls,
 October 1988
113Ø PRINT "------------
114Ø PRINT
115Ø PRINT "This program will translate
graphic characters contained within
116Ø PRINT "a text file from IBM to Tand
y  -or-  From Tandy to IBM.
117Ø PRINT
12ØØ REM ---------------------------- Se
t Path ----------------------------
121Ø INPUT "==>  Path name (optional)  "
, PATH.NAME$
1215 LET INPUT.FILE$ = PATH.NAME$ + INPU
T.FILE$
122Ø IF PATH.NAME$ <> "" THEN IF RIGHT$(
PATH.NAME$,1) <> "\" THEN PATH.NAME$ = P
ATH.NAME$ + "\"
123Ø PRINT
124Ø SEARCH$ = PATH.NAME$ + "*.*": FILES
 SEARCH$
125Ø PRINT
13ØØ REM ------------------------ Open I
nput  File ------------------------
131Ø INPUT "==>  Input file name       "
, INPUT.FILE$
132Ø LET INPUT.FILE$ = PATH.NAME$ + INPU
T.FILE$
133Ø OPEN INPUT.FILE$ FOR INPUT AS #1
134Ø PRINT
14ØØ REM ------------------------ Open O
utput File ------------------------
141Ø INPUT "==>  Output file name      "
, OUTPUT.FILE$
142Ø LET OUTPUT.FILE$ = PATH.NAME$ + OUT
PUT.FILE$
143Ø OPEN OUTPUT.FILE$ FOR OUTPUT AS #2
144Ø PRINT
15ØØ REM --------------------- Get Trans
lation Option ---------------------
151Ø PRINT "==>  Translation option    "
152Ø PRINT "      1  From Tandy to IBM"
153Ø PRINT "      2  From IBM to Tandy"
154Ø ROW = CSRLIN - 3: CLM = 28
155Ø WHILE TRANS.OPTION <> 1 AND TRANS.O
PTION <> 2
156Ø    LOCATE ROW, CLM
157Ø    INPUT "", TRANS.OPTION
```

Continued

greater than 127, effectively converting half the characters available on the Tandy—the special characters—to other characters. This is fine if you transfer text only, which doesn't get converted. But if you use these high-order special characters, you're not going to get what you expect! For example, consider *CODE-u*, used to begin and end underlining in Super ROM; and *GRPH-M*, one of many symbols used in drawing boxes. Figure 1 shows how the high-order bit converts these two characters to other characters in transfer: *CODE-u* converts to the character 8, and *GRPH-M* converts to v as the high bit goes from 1 to 0.

To remedy this, I made two changes to Mr. Howard's batch file: Figure 2 shows the two lines to change if you want to update your own batch file. I have also made some additional enhancements to his utility by adding comments that repeat portions of his article—I didn't want to search for the magazine if I was having problems. I also made a version of the utility to send data from the desktop to the laptop. Both batch files are available on the *Portable Bulletin Board* and on the *P100-to-Go* diskettes as *M100TOPC.BAT* and *PCTOM100.BAT*.

Why is this division sign here?

WORKS WELL, BUT ...

OK, so I finally got the correct characters transferred. But wait! What's this garbage on my desktop screen? Why is this division sign here? That's supposed to be the lower left corner of a box!

I discovered then that I'd fallen prey to the inconsistent use of ASCII special characters (those above code value 127). Look at the ASCII codes chart in the back of the owners manual you received with your Model 100 (pp. 213-216; for Tandy 200 users, see the *Tandy 200 BASIC Reference Manual*, p. 80). And look at a comparable chart for your IBM-PC (any ASCII codes chart that shows the *IBM* character set will do; your printer manual may have one). Compare the characters for ASCII values greater than 127 and you'll see lots of inconsistencies. That's where *TRANSLAT.BAS* comes in.

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FILE TRANSFERS

TEACH THE PC TO SPEAK THE LANGUAGE

TRANSLAT.BAS is a *BASICA* program that copies a text file and converts IBM characters to their Tandy equivalents, or vice-versa. (Incidentally, I compiled *TRANSLAT.BAS* with Microsoft *QuickBASIC* to speed it up. I was able to compile it without any changes. If you have a *BASIC* compiler, you may want to do the same. If you don't have a compiler, the interpreter version works just fine!)

Use *M100TOPC.BAT* to transfer a file from the Model 100 to the PC. When the transfer is complete, run *TRANSLAT.BAS* and select translation from Tandy to IBM. The "echo" option displays the translated data on the screen. The target file on the PC should look just like the original on the Model 100.

Before transferring a file from the PC to the Model 100, run *TRANSLAT.BAS* and select translation from IBM to Tandy. After completing the translation, run *PCTOM100.BAT*. The target file on the Model 100 should look just like the original on the IBM PC.

Collectively, *M100TOPC.BAT*, *PCTOM100.BAT*, and *TRANSLAT.BAS* constitute a powerful toolbox, which in my case extends the useful life of the Model 100. I hope they do the same for you.

If you could use these tools but don't want to type them in yourself, I'll be happy to send them to you on 5.25-inch double-sided, double-density diskette. Send $5.00 to cover the cost of postage and handling to: Bill Qualls, 40 W 642 Rt. 64, Wasco, IL 60183-0258. You'll get *TRANSLAT.BAS*, *TRANSLAT.EXE* (the faster compiled version), and the text of this article. As a courtesy

```
158Ø WEND
159Ø IF TRANS.OPTION = 1 THEN FROM.TANDY
 = TRUE ELSE FROM.IBM = TRUE
1595 PRINT: PRINT: PRINT
16ØØ REM ------------------- Load Trans
lation Strings --------------------
161Ø CHANGE.FROM$ = "": CHANGE.TO$ = ""
162Ø READ TANDY, IBM
163Ø WHILE TANDY <> Ø
164Ø    CHANGE.FROM$ = CHANGE.FROM$ + CH
R$(TANDY)
165Ø    CHANGE.TO$   = CHANGE.TO$   + CH
R$(IBM)
166Ø    READ TANDY, IBM
167Ø WEND
168Ø IF FROM.IBM THEN SWAP CHANGE.FROM$,
 CHANGE.TO$
17ØØ REM ------------------------ Get E
cho Option ------------------------
171Ø INPUT "==>  Echo to screen (y/n)  "
, ECHO$
172Ø IF ECHO$ = "Y" OR ECHO$ = "y" THEN
ECHO = TRUE ELSE ECHO = FALSE
173Ø PRINT
1999 RETURN
2ØØØ REM ============================
Input ============================
2Ø1Ø CHAR$ = INPUT$(1,1)
2999 RETURN
3ØØØ REM ============================ P
rocess ============================
3Ø1Ø ASCII = ASC(CHAR$)
3Ø2Ø IF ASCII > 127 THEN FOUND = INSTR(1
, CHANGE.FROM$, CHAR$): IF FOUND THEN CH
AR$ = MID$(CHANGE.TO$, FOUND, 1) ELSE CH
AR$ = "?"
3999 RETURN
```

continued

```
4ØØØ REM ============================ O
utput ============================
4Ø1Ø IF ECHO THEN IF CHAR$ <> LINE.FEED$
 THEN PRINT CHAR$;
4Ø2Ø PRINT #2, CHAR$;
4999 RETURN
5ØØØ REM ============================ W
rapup ============================
5Ø1Ø CLOSE
5Ø2Ø BEEP
5Ø3Ø PRINT: PRINT: PRINT
5Ø4Ø PRINT "***   TRANSLATION OF "; INPU
T.FILE$; " IS COMPLETE!   ***"
5Ø5Ø PRINT: PRINT: PRINT
5999 RETURN
6ØØØ REM Tandy, IBM
6137 DATA 137, 251: REM   Square Root
6139 DATA 139, 228: REM   Sigma
614Ø DATA 14Ø, 247: REM   Approximately
6141 DATA 141, 241: REM   Plus or Minus
6161 DATA 161, 133
6162 DATA 162, 135
6163 DATA 163, 156
6165 DATA 165, 23Ø: REM   Mu
6166 DATA 166, 248: REM   Degrees
6172 DATA 172, 172: REM   One-fourth
6174 DATA 174, 171: REM   One-half
6176 DATA 176, 157
6177 DATA 177, 142
6178 DATA 178, 153
6179 DATA 179, 154
618Ø DATA 18Ø, 155: REM   Cents
6182 DATA 182, 132
6183 DATA 183, 148
6184 DATA 184, 129
6188 DATA 188, 151
6189 DATA 189, 138
```

Continued

I will include *M100TOPC.BAT* and *PCTOM100.BAT*.

EDITOR'S NOTE:

Space considerations prevent our printing the listings for M100TOPC.BAT *and* PCTOM100.BAT, *which are available on the* Portable BBS *and on* P100-To-Go *disks. Alternatively, you can modify Mr. Howard's original listing in* Portable 100 *as shown in Figure 2, to gain the main benefit of Mr. Qualls' methods.*

Olivetti and NEC owners should be aware that their graphic character sets differ from the Tandy and Kyocera machines and should consult their owner manuals where necessary.

The Model 100 TELCOM *stat settings (*68N1D*) in Figure 2, should be changed to* 68N1DNN *for the Tandy 200, and* 6N81NN *for the NEC machines.*

For some reason, the batch file transfer method doesn't work reliably on the Tandy 1400LT. When I have been able to transfer files to the 1400LT, the resulting files contain many nulls. I've found no solution or explanation yet.

-MN

```
6192 DATA 192, 131
6194 DATA 194, 14Ø
6195 DATA 195, 147
6196 DATA 196, 15Ø
6198 DATA 198, 137
6199 DATA 199, 139
62ØØ DATA 2ØØ, 16Ø
62Ø1 DATA 2Ø1, 161
62Ø2 DATA 2Ø2, 162
62Ø3 DATA 2Ø3, 163
62Ø5 DATA 2Ø5, 164: REM   n tilde
6215 DATA 215, 144
6216 DATA 216, 143
6231 DATA 231, 223: REM   Upper Half Blo
ck
6232 DATA 232, 22Ø: REM   Lower Half Blo
ck
6233 DATA 233, 221: REM   Left Half Bloc
k
6234 DATA 234, 222: REM   Right Half Blo
ck
6239 DATA 239, 219: REM   Solid Block
624Ø DATA 24Ø, 218: REM   Upper Left Cor
ner
6241 DATA 241, 196: REM   Horizontal Bar
6242 DATA 242, 191: REM   Upper Right Co
rner
6243 DATA 243, 194: REM   Drop Down
6244 DATA 244, 195: REM   Drop Right
6245 DATA 245, 179: REM   Vertical Bar
6246 DATA 246, 192: REM   Lower Left Cor
ner
6247 DATA 247, 217: REM   Lower Right Co
rner
6248 DATA 248, 193: REM   Drop Up
6249 DATA 249, 18Ø: REM   Drop Left
625Ø DATA 25Ø, 197: REM   Cross Bars
6999 DATA  Ø,  Ø: REM   End WHILE Loop
```

End of listing.

Continued from page 17

byte at 92959 each time it executes a restart.) Line 40 defines the autologin sequence in the standard M100/102 format. Lines 50 and 60 define the *COM:* settings and *POKE* them into memory where the computer looks to find them when it goes to dial the phone. Line 70 sets the program up for automatic restart via the *IPL"LOG IN.BA"* instruction. If this is the first attempt to dial, the program jumps from line 80 right into the dialing; otherwise, lines 90 to 120 provide a 30-second delay between retries. This delay comes from the *WATCHDog* timer, but *LOGIN.BA* doesn't let the dog bark. It stops short of that. You can see how the bark can be tamed and used for other purposes.

The *WATCHDog* as such is really activated in line 130, to allow 60 seconds to complete the login. Then down to business: The *CALL* in line 160 passes control to the M100's built-in *TELCOM* autologin routines. The autologin either succeeds and the program arrives at line 170, or it sticks, and the *WATCHDog* timer reboots the system, and *LOGIN.BA* starts over from the beginning with the next higher retry number. If it does get to line 170, the program beeps and transfers directly to *TELCOM*'s terminal mode with the *CALL 21608* in line 180, after disabling *WATCHDog*. When you sign off, you return to the MENU, not to *BASIC*.

Note that before exiting, the program disables the *WATCHDog*. Don't press *BREAK* to exit from this program! It will just restart on you after 60 seconds. Likewise if you press *PAUSE* or *PRINT* without a printer on line, the program won't let you stop it. Try! That's the idea. All roads lead back to the program. You can disable the *WATCHDog* from *BASIC* by typing *POKE 62975,201* (no typos, please!), or alternatively, if *LOGIN.BA* is loaded, by typing *RUN 190*.

My own use for *WATCHDog* is in remote-site data loggers. There the *WATCHDog* hardly ever barks, because the main loop of the data-logging program repeatedly feeds it and feeds it. It is insurance, like a real watchdog. With it the data-logging program, including printer and phone support, is much simpler and safer than it otherwise could have been.

Tracy Allen has a Ph.D. in Biophysics and is president and owner of Electronically Monitored Ecosystems, which develops electronic & M102-based instrumentation for use in the out-of-doors in agriculture and environmental research. He is an avid backpacker and amateur naturalist. You can reach him on CompuServe (76670,326), the Club 100 BBS, or c/o Portable 100 *magazine (SASE required).*

Editor's Note:

The programs shown here are specifically for the Tandy 100/102. While the changes required to use WATCHDog *on other computers are too extensive to detail here, the technique can be used on all notebook computers. It will be necessary to change the* ORG *address in Listing 1 and all machine-specific address references in any application program that installs and/or calls* WATCHDog.

-MN

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COMPATIBILITY: Tandy 100/102 (For other models, see Editor's Note.)

WATCHDog
A Background Timer Utility

Guard against unwanted Model 100 hangups.

by Tracy Allen

A "watchdog" is a specialized piece of hardware or software that monitors a computer's activity and can bring it back into operation if anything short of catastrophic goes wrong. The watchdog itself is simple-minded. All it watches is its food dish, empty or full, zero or one. Empty means simply that normal program flow has ceased, and somebody hasn't gotten around to feeding the dog. It then barks a *reset* or *bootstrap* command. If the computer is set up right, bingo! The application program is restarted in an orderly way.

Now, it sometimes happens that applications running on the Model 100/102 become stuck. Some examples include the *LPRINT* command or the *PRINT* button when the printer is off line or out of paper, a telephone autologin when the phone at the other end doesn't answer or is garbled, a cat's paw on the *PAUSE* button, a user who forgets to respond to a prompt, a bug in the program code, a lightning-induced trip to never-never land. ... These hangups are usually no big problem if someone right there knows what to do. But it is a different story when the system operates unattended. The situation might be a remote-site data logger, or an automatic telephone information exchange system, or any system that has to be operated by computer-illiterate personnel. These situations call for a watchdog to keep things running. A watchdog can help with everyday programming too, as I'll show in the autologin routine I use as an example included here.

WATCHDog is only 29 bytes of machine code, tethered to the clock-cursor-keyboard background task. You should know that the background task is the heartbeat of the M100/102 code executed in response to a hardware interrupt from the μPD1990

```
        ORG 62931   ;load in high memory
                    ;starting at 62931
STRT: PUSH PSW      ;save registers
        PUSH HL     ;
        LXI H,CNTS  ;point to seconds counter
        MOV A,M     ;test for seconds = zero
        ORA A       ;
        JZ EXIT     ;zero means WATCHDog
                    ;disabled—exit
        DCX H       ;point to 1/256th seconds
                    ;counter
        DCR M       ;decrement counter
        JNZ EXIT    ;exit if not zero
        INX H       ;point to seconds counter
        DCR M       ;decrement seconds
        JNZ EXIT    ;exit if not zero
        INX H       ;point to time-out flag
        INR M       ;increment flag
        RST 0       ;warm boot
EXIT: POP H         ;restore registers
        POP PSW     ;
        RET         ;to CCK background task
CNT:    DB 0        ;count 1/256ths second
CNTS:   DB 0        ;count seconds     62958
FLG:    DB 0        ;time-out flag     62959
```

Listing 1. WATCHDog, *a utility that guards your computer and prevents it from getting hung up by unexpected intruders.*

Technical Notes:

LISTING 1: *WATCHDog*

The machine language program *WATCHDog*, created by this assembly language source code, is executed 256 times per second as part of the clock-cursor-keyboard (CCK) background task. It begins by saving the processor status and the contents of the HL register. It then checks its seconds-counter variable. If the counter variable equals zero, it means *WATCHDog* is disabled, so a *JuMP* is made to the end of *WATCHDog*, where the HL register and processor status are restored, and a *RET*urn is made back to the background task. If the counter variable is not already zero, then the routine proceeds to tick off the time. There are two counters, one for 1/256ths of a second, one for seconds (maximum is 255 seconds, or 4.25 minutes). When the seconds counter decrements to zero, *WATCHDog* puts up a flag (by incrementing the *FLG* byte) and jumps to the warm boot routine by executing the *RST 0* op code.

LISTING 2: PROGRAM *LOGIN.BA*

The usual precautions about backing up all your work before trying a new machine language program apply here. If you have other routines in high memory, you will have to relocate *WATCHDog*. Line 40 defines *PH$*, the autologin sequence, following conventions in the Model 100/102 operation manual. People living in the 415 area code should delete the initial *1415*. Monitor the call the first time to be sure you have the phone number correct so you don't infuriate somebody. The byte at 62958 is the *WATCHDog* seconds counter variable, and the byte at 62959 counts the number of timeouts, and the bytes at 62975 through 62977 are the *hook* to the background task.

```
1Ø REM public domain program "LOGIN.BA"
 by Tracy Allen (CIS 7667Ø,326)
2Ø IF PEEK(62975)=2Ø1 THEN CLEAR256,6293
Ø:GOSUB1ØØØ 'load WATCHDog
3Ø IF PEEK(62959)>5 THEN BEEP :GOTO19Ø '
already 5 tries->menu
4Ø PH$="14159391246<??PORTABLE^M??GUEST^
M??Y?:PASSWORD^M?:?:=>"
41 REM above line is standard BBS autolo
gin sequence
5Ø CP$="M8N1E" 'modem parameters
6Ø FORI=1TO5:POKE63Ø66+I,ASC(MID$(CP$,I,
1)):NEXT 'set baud rate etc.
7Ø CLS:IPL "LOGIN.BA" 'autoboot this pro
gram
8Ø IFPEEK(62959)=ØTHEN13ØELSEPRINT"Delay
ing 3Ø for try:";1+PEEK(62959)
9Ø PRINT"Hit ESC key to exit"
1ØØ POKE62958,32 'set timer for 32 sec.
11Ø IFINKEY$=CHR$(27)THEN19Ø 'user press
ed ESC->menu
12Ø IFPEEK(62958)>2THENPRINT@9,USING"##"
;PEEK(62958)-1;:GOTO11Ø
121 REM lines 8Ø->12Ø allow 3Ø sec delay
 between redials or user ESCape
13Ø POKE 62958,6Ø:CLS:PRINT"Now dialing.
..."; 'allow 6Ø seconds
14Ø CALL 212ØØ 'connect to phone line
15Ø M=VARPTR(PH$):AD=PEEK(M+1)+256*PEEK(
M+2) 'find PH$ in memory
16Ø CALL 21293,Ø,AD 'dial & autologin
17Ø BEEP 'successful!
18Ø POKE62975,2Ø1:IPL"":CALL216Ø8 'disab
le WATCHDog & enter telcom
19Ø POKE62975,2Ø1:IPL"":MENU 'disable WA
TCHDog & exit to MENU
1ØØØ REM subprogram loads WATCHDog from
 62931 to 62959 into RAM
1Ø1Ø RESTORE1Ø4Ø:FORI=1TO29:READ D%:POKE
 6293Ø+I,D%:NEXT 'load
1Ø2Ø POKE 62977,245:POKE 62976,211:POKE
62975,195 'hook
1Ø3Ø RETURN
1Ø4Ø DATA 245,229,33,238,245,126,183,2Ø2
,234,245,43,53,194,234
1Ø5Ø DATA 245,35,53,194,234,245,35,52,19
9,225,241,2Ø1,Ø,Ø,Ø
```

Listing 2. The program LOGIN.BA *calls the Club 100 bulletin board and automatically logs you on. Among other uses here,* WATCHDog *prevents your log-on sequence from hanging and tying up the phone.*

clock chip 256 times per second, that is, once every 3.90625 milliseconds, although rarely it will skip a beat if it competes with lots of writing to the LCD screen, printer, etc. This background task resides mostly in ROM, but there is a *hook*, a location in RAM (bytes 62975 through 62977) called right at the beginning of the task where you can attach your own code. To do so, you will replace the *RET*urn op code, which is initially there, with a *JuMP* to *WATCHDog* (see Listing 1), which you will have already loaded into protected RAM. *WATCHDog* concludes with a *RET*urn to the background task so it will complete its execution. Thus *WATCHDog* will be executed 256 times per second along with the rest of the background task.

When called upon to do so, *WATCHDog* acts as a countdown timer. A *POKE* from the application program (the one being watched) loads a time interval into *WATCHDog*. But normally the application re-ups the interval periodically, so the time never runs down to zero. If something does go wrong and the time runs out, *WATCHDog* calls the M100 warm boot routine. The main menu then appears, but just for an instant. Since the application had named itself in an *IPL* command, now it restarts automatically. That's all there is to it! *WATCHDog* also raises a *flag*, which the restarting program can subsequently see, and which means "dog barked."

Why go through all this? Why not simply jam a *BREAK* character into the keyboard buffer, or use the *ON TIME$* facility to do the job of pulling the program back from never-never land? Unfortunately, the most problematic I/O routines don't use the standard *breakcheck* call—they check the keyboard directly. Nix also the *ON TIME$* interrupt, which *BASIC* checks between execution of statements, but not *during* them. Fortunately, the background task ticks away during these operations. If you think about it, the jump to warm boot covers a lot of possibilities at one stroke and leaves the programmer fewer responsibilities. Just feed the dog and listen when it barks.

AN EXAMPLE PROGRAM

To clarify how it works in practice, here is an example using *WATCHDog*. *LOGIN.BA* (Listing 2) is a telephone dialer/redialer and autologin routine. It attempts to call and log onto Rick Hanson's Club 100 Bulletin Board Service (BBS). If it doesn't succeed the first time, it tries again, up to five retries. When it does succeed in getting through, it transfers to the *TELCOM* terminal mode. You can use this routine exactly as it is written to log on to the BBS. Rick has set up an account for a user named *Portable Guest* who lives in *Portable Magsville* and uses the password, *PASSWORD*. You will find yourself at the main menu of the BBS and ready to explore. If you like it, sign on later under your own name. (You can try the BBS without using this fancy program, too, of course.)

However, the *TELCOM* autologin routine called in line 180 of Listing 2 is one of those that can stick, due to phone busy, bad data, etc. Once stuck, it sticks forever until you press *BREAK*. *WATCHDog* does that for you, and also counts the redials.

PROGRAM FLOW

Line 20 of *LOGIN.BA* tests the hook byte to determine whether *WATCHDog* is already active. If not—that is, if the byte equals 201, which equals *RET*urn—then the *BASIC* subroutine starting at line 1000 loads *WATCHDog* into space *CLEAR*ed in high memory and redirects the computer to include *WATCHDog* in the background task. Line 30 checks the *WATCHDog* flag to see how many redials have occurred, and the program stops if there have already been five. (*WATCHDog* increments the flag

Continued on page 15

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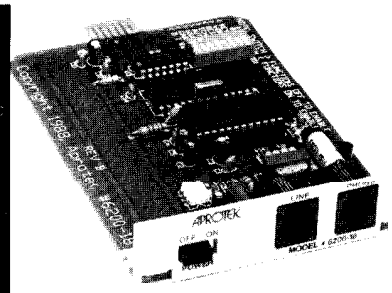

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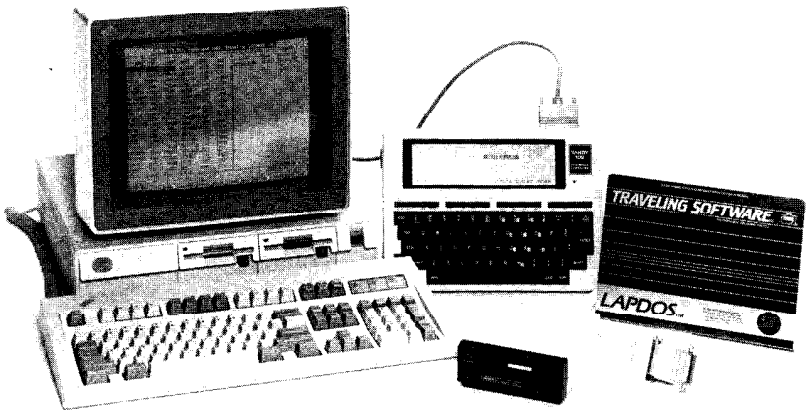

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Direct Print Formatting Using a $190 Epson LX-800

Take advantage of your printer's hidden features.

by Beverly Howard

Word processors are getting smarter. And running right along in their shadow, computer printers are getting smarter as well. Now I'm not talking about the big expensive printers like the laser jets, but the small inexpensive ones like the Epson LX-800. As a result, you may already have an excellent self-formatting printer ideally suited to work with a Model 100 computer and to overcome some of the limits of the built-in *TEXT* program.

The LX-800 is currently the lowest priced printer in Epson's line, and for that matter it is one of the lowest cost printers around—period. This printer is available at most retail computer stores across the nation as well as virtually every mail order computer supplier. If you travel with your Model 100, you probably have a better chance of finding one of these to print out your files than of finding most other types.

Although this article addresses one specific printer, Epson codes carry across to other Epson printers and many models produced by other manufacturers. As an example, I know that the *ESC-a* sequence discussed here is also implemented in the Epson EX and LQ series of printers. Check it out. You may be pleasantly surprised at some of the hidden options lurking in the technical part of your printer manual.

Like a magic portal, the increased sophistication of these printers has opened the door to embedding printer control codes directly into Model 100 text files for full formatting control without the need for any additional software. While the Model 100 has always given you the option of directly embedding control characters in text, it has correspondingly presented a double bind since you can set line lengths only with the *SHIFT-PRINT* option, which in turn will not transmit embedded printer control characters. Alternatively, the *F3* (*Save to LPT:*) option transmits the correct characters, but long paragraphs print as a single unbroken line of text.

With a printer like the LX-800, you can set the line length at the printer, and the printer ROM is intelligent enough not only to "wrap" lines in a paragraph just as the *TEXT* program's *SHIFT-PRINT* option does, but also to insert extra spaces to justify pages completely. You can also set the printer to center or left justify text (carriage returns are then necessary), and if you select double wide print, the printer automatically compensates for the new character width.

Bold ON	ESC-E
Bold OFF	ESC-F
Italic ON	ESC-4
Italic OFF	ESC-5
Underline ON	ESC-1
Underline OFF	ESC-Ø
Left justify ON	ESC-aØ
Center text ON	ESC-a1
Right justify ON	ESC-a2
Full justify ON	ESC-a3
Double sized ON	ESC-W1
Double sized OFF	ESC-WØ
Condensed ON	CTRL-O
Condensed OFF	CTRL-R

Figure 1. Some control codes you can send to your Epson (or compatible) printer.

INITIALIZING THE PRINTER

I'll break this process down into two steps. First, initialize the LX-800 to set the top, bottom, left, and right margins and to justify fully any text that exceeds the space between the left and right margins. Then, after initializing, you can insert control codes for boldfacing, underlining, and the like.

The following process should work on many of the modern Epson printers. Check your printer manual for *ESC-a* sequences. The following is the sequence of control characters to initialize the Epson LX series of printers:

ESC x1 ESC a3 ESC l CTRL-F ESC Q J ESC N CTRL-F

Any spaces are for clarity—don't include them. You can either put this *initialization string* at the beginning of any text file for printing (useful for experimentation) or build a small *BASIC* program to initialize your printer each time you turn it on.

If you decide to type this initialization string at the top of your text file, type *CTRL-P* prior to each *ESC* and *CTRL-F* in the string shown above. (Pressing *CTRL-P* prior the the other characters is not necessary, but will not hurt the process if you do.)

The result should appear at the beginning of the text as:

^[x1^[a3^[l^F^[Q^[N^F

Note the difference between the numeral one (*1*) following the *x* and the lowercase letter *l* following the third *ESC* (*^[*).

Once you have these characters typed in and have finished editing your text, hook up the printer and turn it on. Since this string sets the "perforation skip-over," turn the printer power on with the paper perforation about two to three lines above the print head. Press the *F3* key on your Model 100 and type *LPT:* at the prompt.

About the only text formatting feature lacking in this method is page numbers. Well, you can't have everything for free plus no RAM or ROM penalty.

TECHIE TYPE TIPS

For you techie types, the *CTRL-F*'s and the *J* above are numeric values following

Continued on page 23.

by Thomas L. Quindry

A Source for Model 100/102 Public Domain Software

Most of the public domain programs described this month will be most useful to those who write their own programs or who aspire to write them. Many of these programs—utilities for the machine language programmer—run on both the Model 100 and 200 as is.

One of the programs described this month is a shareware program. You don't see many shareware programs in the Model 100/200 arena, though it is a familiar way of distributing programs with MS-DOS computers. Shareware is a "try before you buy" type of distribution, slightly different from public domain. You can still copy a shareware program freely and give it to your friends. However, if you like the program and find it useful, you should send the author a requested fee.

Now why should you send good money to people you don't even know when you already have their programs? The concept behind shareware is its low cost of distribution. By allowing you to copy the program from other sources and try them out, the authors have no distribution costs and can sell their programs for much less than equivalent commercial programs. By paying the fee, you encourage the authors to improve on the program and write others that can benefit you. Better programs will be produced and you, the Model 100/200 user, will be able to get more programs for your computer and at a lower cost, especially important since fewer commercial programs are available each year for this market. Sometimes authors of shareware, especially in the MS-DOS world, include benefits such as typeset instructions, additional documentation, and extra utility programs in return for their "registration" fee.

The shareware means of distribution may be your only source of new Model 100/200 software in a few years, so if you use a program, contribute and encourage these authors.

DISASM.BA

BY PHIL WHEELER

Disasm was written by Phil Wheeler. He has been a prolific writer of public domain programs for the Model 100/200, and you see his name often. His name also appears on improved versions of programs by other authors. Unfortunately, Phil does not wish to have programs he has written or modified become part of my distribution disk. So, if you want this program, you have to find it on local bulletin boards, CompuServe, or GEnie. I have seen this program in several places. *Disasm* runs on a Model 200.

NWDIS.BA

BY G. K. BERKHEISER

I am including another disassembler with the distribution disk although it is not as good as Mr. Wheeler's. It is called *NWDIS.BA* and was written by G. K. Berkheiser and modified by Steve Hansen. I have also made some modifications that let you use it with the assembler program per the following discussion, though you can't use it as easily because of other editing you have to do. As the main modification, let the disassembled code be written to a file as Phil Wheeler's Disasm allows. I do not know whether *NWDIS* runs on the Model 200 but believe it will. The only differences will probably be in the screen display area.

The concept behind shareware is its low cost of distribution.

BYTEIT.BA

BY PAUL PAPANEK STORK

BYTEIT.BA is a shareware program by Paul Papanek Stork of Don't Pa..Panic Software. For this program, the author requests $10. *Byteit* is an 80C85 assembler for the Model 100 and 200. With *Byteit*, you use your Model 100/200 text editor to create the source code file, using certain rules for setting this up: Comments can be in any column. Anything after a semicolon is treated as a remark, so remarks must follow any assembly code that may be on the line. Columns 0-7 are the label field, columns 8-15 the mnemonic field, and columns 16-23 the operand or address field. After entering your data in one field, you can move to the beginning of the next field by using the *TAB* key.

Numeric values can be type, hexadecimal, decimal, octal, or binary. Just end the numeric value with the first letter of the number type. You can also include string values by using a single quotation mark (') before or after the string. You can include offsets like *$+2*, *$-1*, etc.

Six pseudo-ops are recognized: *DB* to define byte, *DW* to define a 16-bit word, *DS* to define storage, *EQU* to equate a label to a value, *ORG* to specify the origin of the assembled program, and *END* to show the end of the assembly. Following the *END* pseudo-op, you should enter the transfer address, the address where you jump to the program to run it.

Not many machine language programs provide more than one version to load and run. To run a program at a different address than where the author wrote it for, you can create a new version by disassembling the program with *DISASM.BA*, then edit and reassemble it with *BYTEIT.BA* at a different address. You may have a lot of questions about how to do this, but please don't ask me because I wouldn't have time to answer letters to all who may have trouble.

The source code is simple to create for *Byteit*. After you create the disassembled

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BASIC BITS

file, modify the text file according to the *Byteit* instructions for creating an assembly code file. You need to add an *ORG* address at the top of the file and a transfer address at the end. Then examine the mnemonic code and edit the file slightly to add hexadecimal notation for data and addresses, such as addresses for ROM calls, that fall outside the range of the program.

Each line of disassembly starts with a label field equivalent to the address of where the code is in the disassembly. If any of the commands point to an interim location not covered by the labels, you have to make modifications. In the right-hand column are the ASCII equivalent symbols for the disassembled code. Text areas are not usually a problem unless they result in a command labeled as <?>. In this case, you have to edit that part of the file to define the hex or decimal code that should appear there.

I found one nonconformity between the disassembly using *Disasm* and the file needed by *Byteit*. *Disasm* uses the notation *PUSH AF* and *POP AF*, really Z80 notations, for the 80C85 command *PUSH PSW* and *POP PSW*. Z80 is an enhanced version adding to the code of the 8085 chip. Edit the disassembly file to change manually the notations from *AF* to *PSW* before you assemble it with *Byteit*. Otherwise the assembled code will be wrong with no warning given.

Figures 1 and 2. Figure 1 shows the code for a machine language subroutine disassembled using DISASM.BA. *Figure 2 shows the equivalent code modified so that it can be assembled with* BYTEIT.BA.

Figure 1. Disassembled code from 6144Ø to 61486 using DISASM.BA for an example subroutine. Remarks added for some of disassembly for clarity.

```
;Must add an ORG address here
FØØØ    SIM             ;3Ø      Ø
FØØ1    LXI     SP,3332 ;313233 123
;See Figure 2 for Byteit corrections
FØØ4    INR     M       ;34      4
FØØ5    DCR     M       ;35      5
FØØ6    MVI     M,37    ;3637    67
FØØ8    <?>             ;38      8
FØØ9    DAD     SP      ;39      9
FØØA    MOV     B,C     ;41      A
FØØB    MOV     B,D     ;42      B
FØØC    MOV     B,E     ;43      C
FØØD    MOV     B,H     ;44      D
FØØE    MOV     B,L     ;45      E
FØØF    MOV     B,M     ;46      F
FØ1Ø    JP      E5ØØ    ;F2ØØE5   ^@
;Note changes made if Figure 2
;could just have easily used
;mnemonic: JP ØE5ØØH
FØ13    LXI     HL,FØ1Ø ;211ØFØ  !^P
FØ16    MOV     M,A     ;77      w
FØ17    RRC             ;ØF      ^O
FØ18    RRC             ;ØF      ^O
FØ19    RRC             ;ØF      ^O
FØ1A    RRC             ;ØF      ^O
FØ1B    ANI     ØF      ;E6ØF     ^O
FØ1D    MVI     H,FØ    ;26FØ    &
FØ1F    MOV     L,A     ;6F      o
FØ2Ø    MOV     A,M     ;7E      ~
FØ21    RST     4       ;E7
FØ22    LXI     HL,FØ1Ø ;211ØFØ  !^P
FØ25    MOV     A,M     ;7E      ~
FØ26    ANI     ØF      ;E6ØF     ^O
FØ28    MVI     H,FØ    ;26FØ    &
FØ2A    MOV     L,A     ;6F      o
FØ2B    MOV     A,M     ;7E      ~
FØ2C    RST     4       ;E7
FØ2D    POP     HL      ;E1
FØ2E    RET             ;C9
;Must add END and a Starting Address
```

Figure 2. Equivalent code to be assembled by BYTEIT.BA for example given in Figure 1. See remarks to highlight certain items.

```
        ORG     6144Ø   ;FØØØH (Hex)
FØØØ    SIM             ;3Ø      Ø
FØØ1    LXI     SP,3332H;313233 123
;In preceding, note "H" for Hex value
FØØ4    INR     M       ;34      4
FØØ5    DCR     M       ;35      5
FØØ6    MVI     M,37H   ;3637    67
FØØ8    DB      38H     ;38      8
FØØ9    DAD     SP      ;39      9
FØØA    MOV     B,C     ;41      A
FØØB    MOV     B,D     ;42      B
FØØC    MOV     B,E     ;43      C
FØØD    MOV     B,H     ;44      D
FØØE    MOV     B,L     ;45      E
FØØF    MOV     B,M     ;46      F
FØ1Ø    DB      ØF2H
;Note "Ø" before F and "H" after it
FØ11    DB      ØØH
FØ12    PUSH    HL      ;E5
FØ13    LXI     HL,FØ1Ø ;211ØFØ  !^P
FØ16    MOV     M,A     ;77      w
FØ17    RRC             ;ØF      ^O
FØ18    RRC             ;ØF      ^O
FØ19    RRC             ;ØF      ^O
FØ1A    RRC             ;ØF      ^O
FØ1B    ANI     ØFH     ;E6ØF     ^O
FØ1D    MVI     H,ØFØH  ;26FØ    &
FØ1F    MOV     L,A     ;6F      o
FØ2Ø    MOV     A,M     ;7E      ~
FØ21    RST     4       ;E7
FØ22    LXI     HL,FØ1Ø ;211ØFØ  !^P
FØ25    MOV     A,M     ;7E      ~
FØ26    ANI     ØFH     ;E6ØF     ^O
FØ28    MVI     H,ØFØH  ;26FØ    &
FØ2A    MOV     L,A     ;6F      o
FØ2B    MOV     A,M     ;7E      ~
FØ2C    RST     4       ;E7
FØ2D    POP     HL      ;E1
FØ2E    RET             ;C9
        END     FØ12    ;64158 (Dec)
```

BASIC BITS

AN EXAMPLE

One of the reasons I call this column "*BASIC* Bits" is so I can give little tips that can help you use these programs and your computer. Figure 1 gives an example of the output from *DISASM.BA*. Figure 2 shows the source code needed by *Byteit* to assemble the same thing. This code, incidentally, is a machine language subroutine written by Pat Ellison of Arlington, Virginia, to convert decimal values to their hexadecimal equivalents and display a converted value at the cursor position on the screen. It was written as a machine language subroutine to be called from a *BASIC* disassembler program not covered here.

You can change the *ORG* address for reassembling at another location. In this way you can make the alternately addressed file to use with *Basbld* (covered in my Nov. '88 column). Note that the labels starting at column zero represent the original hexadecimal addresses, but as labels, they just point to a relative location in the file. When the *ORG* address is changed, the program still assembles properly but at the different starting address.

Since this example is a subroutine called from *BASIC*, it ends with a return (*RET*) statement. The transfer address (the last value in Figure 2) shows where the subroutine starts, though the program really isn't intended run from the menu. This way, to find the start, end, and transfer address, just use the *LOADM* command in *BASIC* to read what they are. It could just have easily been set to zero, to return to the menu after the routine is loaded.

Particularly, notice that all code down to the label *F012* in Figure 2 (masked in Figure 1) is data as seen in the remarks columns. Remarks start after the semicolon. First is the data representation in hexadecimal form. Then it is displayed in ASCII. Characters starting with the carat (^) symbol are control codes. Some of the code must be edited since it doesn't relate to actual mnemonics for the 80C85. The statement starting at label *F010* in Figure 1 didn't have to be changed to assemble correctly, but Figure 2 illustrates what it actually is. The data here, *F200H*, is actually the value to be converted and displayed by the program. It doesn't matter what these two values are during compiling since this is where the value to be converted is stored.

Characters starting with a carat symbol (^) are control codes.

NEXT TIME

As a convenience to readers, I will make this month's programs, *Nwdis* and *Byteit*, available to readers on a 100K TPPD1 disk for $7. I'll include some other programs that aid the assembly language programmer, since I have plenty of room on the disk. Included will be a monitor program, a couple of other disassemblers that give the output in Z80 notation, and *SAVEML*, which I described last column. There will be Model 200 versions for the monitor and disassembler. *SAVEML* already works on both the Model 100 and 200. To order the selection of programs described in this column or any other "*BASIC* Bits" Column, send $7 along with the month and year of the column to 6237 Windward Drive, Burke, VA 22015. This includes packaging and handling. The cost per disk is not to pay for the programs but for the cost of distribution. If you would rather have the programs in ASCII format for Radio Shack Model 3 TRSDOS or MS-DOS, please specify them. The cost is the same. A self-addressed label will speed your order.

PRINTING

Continued from pg 20.

the margin set sequences (*ESC I* and *ESC Q*) and the perf skip sequence (*ESC N*). The first *CTRL-F* sets the left margin at 6 characters, the *J* sets the right margin at 74 characters, and the final *CTRL-F* sets the value of the perforation skip over spacing to 6. *CTRL-F* is a *CHR$(6)*, *J* is *CHR$(74)*—look up these values in the ASCII code table in your Model 100 manual ... get it?

A better way to use this information regularly is to use a *BASIC* program to initialize the printer. Just type the following lines, either as a stand-alone program or as part of another utility program:

```
10 LPRINT CHR$(27) + "x1" + CHR$(27) + "a3" + CHR$(27) + "I";
20 LPRINT CHR$(6) + CHR$(27) + "QJ" + CHR$(27) + "N" + CHR$(6);
```

The characters that follow an ESCape are case sensitive.

ADD FEATURES

Now you can implement some of those features that have been locked in your printer waiting for a $200 word processor to free them. For example, if you move the cursor to the beginning of a word and press *CTRL-P* followed by the *ESC* key then an *E*, you signal the printer to turn on BOLDFACE type (emphasized mode). The same sequence using an *F* instead of an *E* turns boldface off. (The "boldface ON" command appears on the Model 100 screen in the text as ^*[E*. The "boldface OFF" command appears as ^*[F*.)

See Figure 1 for some standard Epson codes. Again, to insert an *ESC*ape character in your text, press *CTRL-P*, then press the *ESC* key. The characters that follow an *ESC*ape are case sensitive. For example, *ESC-e* will not set boldface on but instead sets the *TAB* size.

Note that some of the functions in Figure 1 may not work with others. For example, enlarged text formats correctly within justified or centered text, but condensed font (since it is not a near-letter-quality font) will not.

Editor's Note:

Mr. Howard's techniques should work equally well on all but NEC models. While I know of no direct way to embed printer codes in NEC text files, you can still use a BASIC *program to set up a printer, as described in the article.*

-MN

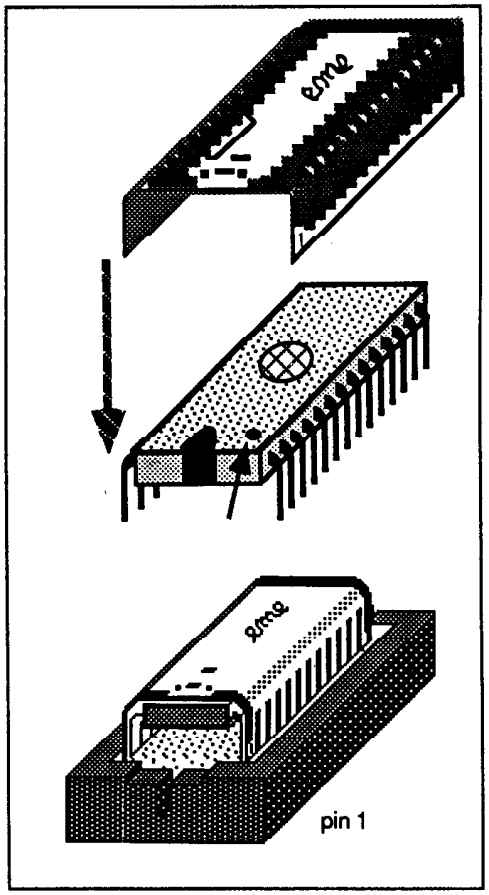
DVORAK KEYBOARD SYSTEM

Give your laptop the Rolls-Royce of keyboard systems. The *Dvorak* key arrangement eliminates wasted motion, reducing finger travel by more than 90%! Type faster and more accurately. And it feels better-more natural, more relaxed. So there's less effort, less error, less fatigue. And learning to type is much easier on a Dvorak keyboard. No hardware! Just run the program once and forget it. Uses less than 500 bytes of RAM. Works in *BASIC, TEXT, TELCOM*, etc., just like it came from the factory that way! (Tandy 100, 102, 200, and NEC-8201) **$36.95**—Portable Disk Drive Disk. **$39.95**—Standard Tape. US Postage and Handling included. The DVORAK Keyboard System for notebook computers, from:

Granite Street Portables
P.O. Box 651
Peterborough, NH 03458-0651
Please allow six to eight weeks for delivery.

Circle 29 on reader service card.

Option ROM Adapter Board



ROMBO is an inexpensive EPROM carrier that lets you use programmable EPROM's on your Model 100/102.

If you've ever wanted to make your own Model 100/102 or Tandy 200 option ROM's, you soon discover a sad fact: you need an adapter to mount a standard 27C256 EPROM in your computer's oddly-wired option ROM socket. Until now, adapters have been either mediocre or proprietary, always hard to find and difficult to use.

But not anymore! Now there's *ROMBO* from EME Systems. ROMBO is a thin fiberglass circuit board (*not* polyimide film) in the form of a rigid sleeve that slips over your standard EPROM. The assembly seats snugly and reliably into the option ROM socket and can be removed easily.

Furthermore, you can extract the EPROM from the carrier in seconds for reprogramming, and then replace it. The EPROM pins are never bent, spindled, or mutilated. Later, to discourage tampering, you can solder the EPROM to the carrier.

ROMBO comes to you ready to use with instructions. Priced at $10 for one, $9 each for two to nine, or $8 each for ten or more (plus $2 postage and handling per order), ROMBO is available now from EME Systems, 2018 Parker St., Berkeley, CA 94704 (415)848-5725.

ROMBO can also be ordered via computer BBS from the Club 100 marketplace. Phone (415)939-1246 with your modem parameters set to *8N1E* (300/1200 baud, 8 bits, no parity, one stop bit, XON/XOFF enabled). At the main menu, choose option 5 for *RMarketS*, and follow the menu choices to *ROMBO option ROM adapter board.*

For more information contact EME Systems, 2018 Parker St., Berkeley, CA 94704 (415)848-5725. *Or circle #67 on your Reader Service card.*

The Hard Cover 100 is Back

Dyna-Shield, of Peterborough, NH, has just announced the return of the *Hard Cover 100.* This molded-plastic protective device form-fits over the top of Tandy Model 100/102, and NEC 8201/8300 notebook computers. More by far than just a "dust cover," the Hard Cover 100 protects delicate keyboard and screen areas from spills, dropped objects, poking fingers and other potential home or office hazzards. It also keeps briefcase and suitcase items at bay during travel as well.

Lauded by Portable 100's editor Mike Nugent as "one of my most valuable peripherals," this indispensible little cover is made of unbreakable Eastman PETG clear plastic and carries a 100% 30-day money-back guarantee.

The low price of $22.95 hasn't changed in four years, and includes US shipping and handling charges (add $6.50 for foreign shipping charges).

For more information, see the ad on page 27, or contact Dyna-Shield, PO Box 66, Cornish Rd., Peterborough, NH 03458. *Or circle 151 on your Reader Service card.*

New Product from Paul Globman

It's here! *XOS-C* is the new, improved version of the award-winning *XOS* cross-bank operating system that allows your Tandy 200 to be used as a "one-bank" system.

Among its main features is two-level function key control of many of *XOS-C*'s capabilities, right from the Tandy 200 main menu:

F2 does *reverse* bank switching.
F3 a) calls your option ROM, or
b) runs a program in another bank.
F6 a) copies the paste buffer while bank switching, or
b) renames the file selected by the cursor.
F7 a) starts background printing so you can use your Tandy 200 while printing, or
b) displays the files of all three banks on the menu
F8 toggles the between a) or b) functions of *F3*, *F6*, and *F7* keys.

In addition, *XOS-C* does the following:

- Adds cross-bank capabilities to *BASIC* allowing other RAM banks to be referenced as devices in *BASIC*, for loading and running programs (e.g., *F$="2:PROG.BA"*).
- Uses only 768 bytes of low memory RAM (per bank). And other "LOMEM" programs can still be used above *XOS-C*.
- Installs itself and becomes part of the Tandy 200 operating system. RAM-resident programs remain undisturbed by the installation of *XOS-C*.

Sound like a lot of power for just one program? You're right. *XOS-C* is actually *three* programs combined in such a way that by running only one program—in just one bank—you get all three banks "connected" in a most convenient way! Your Tandy 200 never had it so good!

XOS-C is available now. And it's free to CompuServe subscribers! Just download *XOS-C* from Data Library 10 of CompuServe's Model 100 Forum (*GO M100SIG*).

If you're not a CompuServe subscriber, you can still have *XOS-C* by mailing a check or money order for $14.95 to Paul Globman, 9406 NW 48th St., Sunrise, FL 33351. You'll receive a PDD-1 (Tandy 100K) disk containing the *XOS-C* software and documentation, and just to make it even sweeter, several useful support command files. *Or circle #60 on your Reader Service Card.*

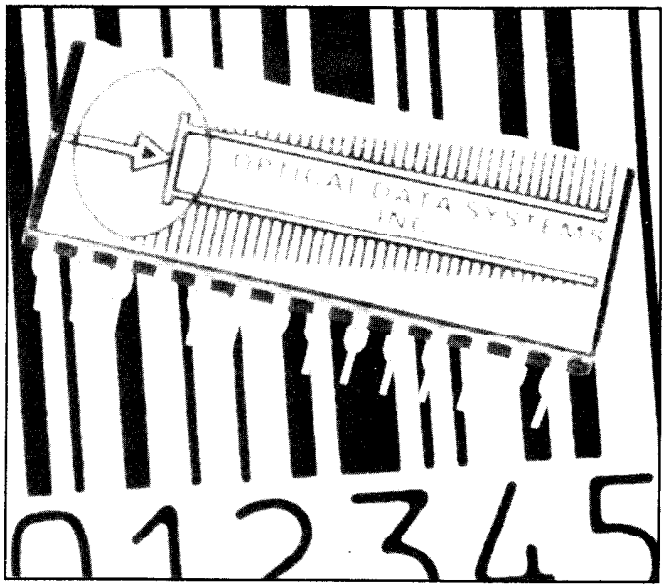
Smart ROM Converts M100 into Complete Bar Code System

Optical Data Systems, Inc., has announced the *BAR+*, a low-power CMOS ROM chip that plugs into the option ROM socket of a Tandy Model 100/102, converting it into a multi-purpose barcode system. Because it is a ROM product, it takes up virtually none of the computer's valuable RAM storage area, unlike disk or cassette software. BAR+ takes only a few seconds to install, supports both cassette and disk operation, and enables you to implement a sophisticated barcode system quickly with little or no programming skills.

BAR+ reads the various formats of many industry standard barcodes, including LOGMARS, the military standard; HIBC, the health industry standard; AIAG, the automotive industry standard; UPC, the grocery industry standard, and two widely used industrial barcodes. BAR+ also prints some of these on Tandy's range of DMP (dot-matrix) printers to the required specifications.

Six application programs are contained in the ROM, with enough flexibility to enable the portable computer to be used for innumerable barcode-scanning tasks. A built-in, multi-function file manager is included, as well as a calculator. BAR+ opens up many new, practical applications in manufacturing, distribution, warehousing, retailing, and health-care. It provides advantages in price and performance over expensive, less capable portable barcode readers and print generators.

The BAR+ ROM costs $195, and includes a comprehensive user manual and two useful accessories. Attractive quantity discounts are available for volume users. The Tandy 100/102 can also be upgraded with a wide range of barcode scanners, readily available from Optical Data Systems. For more information, contact Optical Data Systems, Inc., P.O. Box 1987, Escondido, CA 92025 (619)745-6563. *Or circle #65 on your Reader Service Card.*



Optical Data Systems' *BAR+* provides a complete barcode system for your Model 100.

A New Machine-Language Debugger

Tri-Mike Network East has announced that it now has *DEBUG*, a machine language debugger for the Tandy 100/102 and the Olivetti M10. This utility allows you to explore the internals (such as the ROM's) of these machines as well as debug your assembly language programs.

A *BASIC* program creates the executable *DEBUG.CO* file in memory. Another *BASIC* program relocates *DEBUG* in memory, permitting it to coexist peacefully with most any other software.

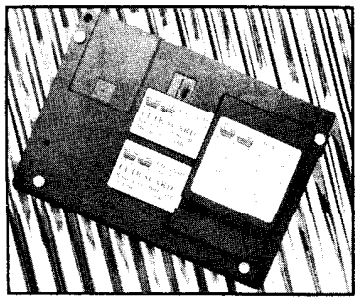
DEBUG provides seventeen functions including these important features: a built-in mini-assembler for writing short programs or modifying existing software; a disassembler, translating machine language to assembly language so you can analyze RAM and ROM programs; the ability to single-step through program execution in either RAM or ROM; dump parts of memory in hexadecimal or ASCII to the screen or printer; move, compare, and search chunks of memory. You can redirect screen output to the printer for many functions, such as memory dumps.

DEBUG.CO is compatible with the Tandy Disk/Video Interface and Traveling Software's *TS-DOS*. And it even correctly handles the 8085 microprocessor's "undocumented" opcodes and flags. All this in a package that requires less than 5K bytes!

The perfect companion to Tri-Mike's *TMN Assembler*, *DEBUG* is priced at only $32.95 on disk, and $35.95 on cassette. Prices includes shipping and handling.

To order, or for more information, contact Granite Street Portables, P.O. Box 651, Peterborough, NH 03458-0651. *Or circle #74 on your Reader Service Card.*

Credit Card Size Memory Expansion



The Ultra Card Interface, with cards in place.

Ultrasoft Innovations has announced a memory enhancement system for the Tandy 100/102 computer, using the same technology as the NEC UltraLite.

The *Ultra Card* adds both RAM and ROM expansion, with addressable memory up to 16MB thru two card ports. Cards come in sizes of 128K, 256K, 512K in RAM and up to 1MB in ROM, with larger sizes on the way. Cards are removable and can contain text files, *BASIC*, or machine language programs and can even hold ROM applications such as *Super ROM*, *Sardine*, etc.

The Ultra Card Interface ($199.95) connects to the Option ROM socket, leaving the other ports available for other uses. Dimensions are 6.25"x4.25"x0.5" and it weighs eight ounces

. The cards, made by Epson (about $1/K in 256K size), contain a replaceable lithium battery, have low-power detection, battery backup and even write-protect on RAM cards.

Scheduled for August 1989 shipment for the Tandy 100/102, it will be available for the Tandy 200 and KC-85 later. For more information contact Ultrasoft Innovations, POB 247, Champlain, NY 12919, (514) 487-9295. *Or circle #62 on your Reader Service Card.*

Tying Files Together

Forum is where you can show off your expertise and help your fellow readers! Address your tips, hints, and techniques to: Portable 100, Forum Dept., P.O. Box 428, Peterborough, NH 03458-0428.

In the February issue "MN" commented in the "Input/Output" section that Mo Budlong's technique for accessing *TEXT* file from *BASIC* could result in a front end technique for tying files together. Mo Budlong's work is an important breakthrough in capability for designing new programs. My response to your interest is twofold.

The first involves the use of *TXTSW*.BA* to deposit the Budlong machine language switching program into a 100 byte space below the existing *HIMEM*. The second is the use of *THOUGHT* within Super ROM as a conveniently invoked and modified file manager.

I first read of Mr. Budlong's work in *PCM* and set to work incorporating his technique within a calendar program we use that reads and posts entries from *NOTE.DO*. The program had the capability of appending a new appointment to the *NOTE.DO* file, but could not do other editing chores. The switching code replaced this feature with great success. New entries could be added, unneeded entries deleted, dates and other items revised. On return the program would re-read the file and display these revisions. This improved performance was encouraging.

I had a general purpose calculator program that would save an on-screen calculation to a *TEXT* file and prompt for a comment that would also be appended to the file. While this scratch pad recording facility was very useful I realized that the ability to also edit within this file while using the calculator would be desirable. I first intended to add the same switching code to the calculator program.

However, I realized that the addition of this same code to two different programs occupying the same bank of memory would potentially consume approximately 1,000 bytes. Since the operating machine language program took less than 100 bytes I determined to develop a program that would deposit this code and then disappear from the memory.

The result is *TXTSW*.BA* which has the following features: It uses a checksum to verify the accuracy of the code being deposited into memory. It uses the existing *HIMEM* to locate where the code will be deposited. In our case this feature automatically configures the location for M100's and M102's whether they do or don't have other high memory software such as *FLOPPY*. The user doesn't have to deal with the location decision. If the checksum fails then *HIMEM* is reset to its initial value before reporting the error and exiting the program. This completes a fail-safe design attempt. When the program successfully deposits the code it *KILL*s itself. Therefore it cannot be run twice in a row by accident. Without this feature *HIMEM* could possibly be set lower and lower resulting in wasted memory.

This program must be run before the first use of the programs it will support. For instance, setting up a machine from inventory involves loading *FLOPPY* and *FREMEM.BA*. Then *TXTSW*.BA* is loaded from disk if either or both the calendar and calculator programs are to be used. *TXTSW*.BA* is then run to deposit the switching code.

The calculator program has a feature that allows it to read a named *TEXT* file and add up the formatted entries. When done, the total, item count and date are appended to this same file. This can be used for some tasks where *LUCID* is not present in the machine or the staff person is not trained in spreadsheet usage. When this feature is invoked this named file becomes the default for switching into from the calculator program.

This program must be run before the first use of the programs it will support.

The normal default file, *CLIST.DO*, is restored on the first use of the save function. So in this case the same code is used successively to enter more than one *TEXT* file in the same session of calculator usage.

To modify an existing program or write a new one, switching control into a *TEXT* file requires (1) setting *FN$*= [filename] and (2) branching to a statement: *"CALL HIMEM,,VARPTR(FN$)"*. (*Ed. note: Yes, two commas.*) This standard calling address is another benefit of this method.

On exit from the *TEXT* file the next *BASIC* statement must (1) rewrite the screen appropriately and (2) transfer control back to some operator input function. Switching into the *TEXT* file and restoring the program on return can all be included in a one-line subroutine.

The calendar program returns to a display of the calendar for the current month marked with icons for appointments and trips. The calculator program rewrites the calculator present when the switching took place. Since the registers are also reset, the calculation is still "alive" and can be then completed or chained into new operations.

An unexpected, but very welcome, bonus of the Budlong switching code is that you can cut/copy a number from the *TEXT* file, return to the calculator program, and paste it into the program input. You cannot paste into the program input if the program was just entered from the main menu. You might think of *CLIST.DO* as longer term memory for the calculator. This flexibility is further extended when you consider that both *LUCID* and *THOUGHT* can also directly access these *TEXT* files.

Altogether, these capabilities have significantly enhanced the utility of these two programs and the switching code is now easily available for access by a new program. Programs using this code will have names ending in * to identify the need for the presence of the switching code.

I would nominate Mr. Budlong for the *Portable 100* academy award.

The code for *TXTSW*.BA* is shown in Figure 1.

Super ROM-*THOUGHT* allows the naming of a *TEXT* file on a headline and the user is immediately transferred into this file. On return from the file the first lines of its text are displayed instead of the file name. To reenter the file again you press *F6* when the cursor is over this text line.

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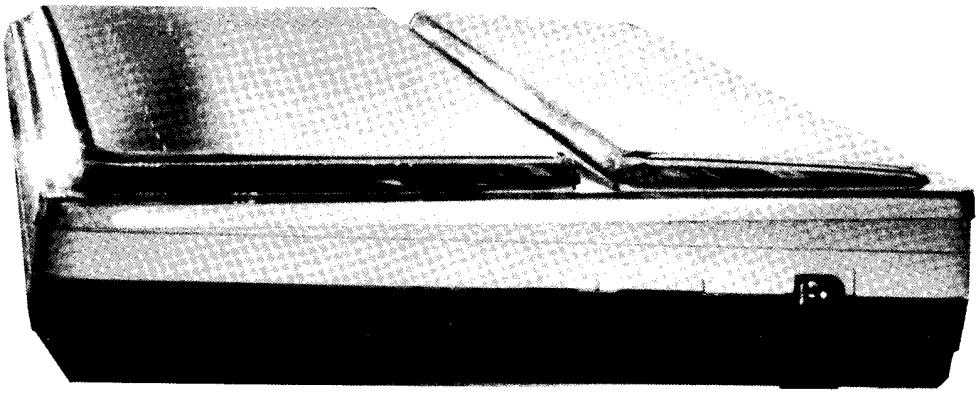

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With this cover, your 100 slips easily into any briefcase, shoulder bag, under your arm or in a stack of books without risking its reliability. It becomes readily accessible because you can carry it in ways that suit YOUR needs. Those who use it say it removes so many restrictions from integrating the 100 into their work methods, they would never be without it again. Like user designed lens covers and camera cases, this user designed hard cover is advancing the art of portable computing by simply making the equipment more adaptable to the new ways it is being used.

✔ **PROTECTION IN TRANSIT** **ONLY $22.95**

Because nothing can scratch the screen or break the keys, you can carry the 100 safely in the same briefcase with other items. It lifts off easily so you can even use your 100 right in a briefcase. An elastic strap, which slips off the back when you lift the front of the cover beyond 45 degrees, is provided to keep it securely in place when carrying your 100 in a less-than-full briefcase, a loose fitting soft case or without a case. Adds nothing to the length or width of the 100 and only 1/8 of an inch to the height.

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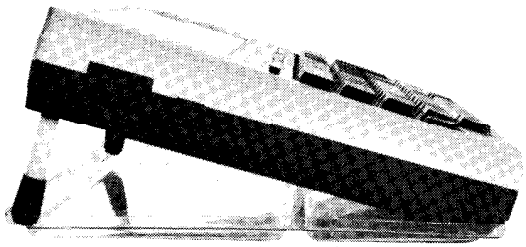

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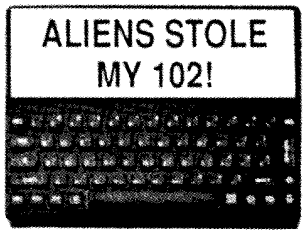
Circle 151 on reader service card.



Mojave Desert, June 15, 1988—I was on my way to another conference on adolescent substance abuse; my acne was acting up and my hangover was killing me. The road ahead was desolate. Suddenly I saw a bright flash... .

I awoke in a harshly lit, white room, feeling as though someone had done a cold start on my brain. I sat up and immediately felt worse. I grabbed my 102 carrying case, stood up, and looked at the door. It had no handle. I sat down to wait. With nothing better to do, I reached for my computer.

But my trusty old 40-column Tandy was gone! In its place was a machine so sleek and light that I could hardly believe it. It was a Z88. Where had it come from? Who made it? It had a built-in word processor, spreadsheet, database, diary, calculator, and a bunch of other programs all in ROM. It had pop-up menus and had been expanded to 1.5 megs of RAM! The keyboard made no noise when I typed, and the 8-line screen was 102 characters across! What a machine, and God, was it fast!

As I sat spellbound by this incredible machine, the door behind me opened. An alien walked in.

As if reading my mind, it spoke. "You want to know why you are here."

I nodded.

He continued in a perfect imitation of Saturday Night Live's Don Pardo, "We have come to Earth to market this small but powerful computer, and we need your help. I am authorized to offer you a planet-wide dealership for the Z88."

"Great!" I said. "Where do I sign?"

Another blinding flash and he was gone. I was back in my car driving along that deserted road, with the Z88, a ONE YEAR warranty, a dealership agreement, and an 800 number for some star in the Horse Head Nebula ...

I've got to talk to someone about this. If you've ever been abducted by alien computer entrepreneurs or want to learn more about an out-of-this-world portable computer, call me, Jonathan Pazer, at (914)496-5199.

Call for prices on the Diconix 150 Plus Portable Printer

Special Cosmic Discount Package: Z88 CPU w/160K RAM & PCLink $649, Z88-to-Mac $799 (cables & software included with both)

Zero-G Computers, Inc.
914-496-5199
48 Maple Lane, Blauvelt, NY 10913

Circle 191 on reader service card.

FORUM

You can identify more than one file in the same outline. For instance, *ADRS.DO* and *NOTE.DO* can be named. You can then go from one file to the other without passing through the main menu. One use I have for this feature is an outline named *AGENDA.CT*. Besides these *TEXT* files it includes headlines for undated items to take care of, calls to be returned and other items classified on-the-go as needed.

I can work out of this file for most daily tasks including jotting down one-liners as they occur to me—sort of like Post-it-Notes. They are easily dragged into subheadings as seem useful at the time. On PC's, programs with these same capabilities are termed personal information managers.

Since Super ROM is also part of our office standard then configuring these kinds of controls for various tasks is easy to do.

An undocumented feature of *THOUGHT* is the capability to search through an outline using *F1*, which will also search through the named *TEXT* files if nothing is found in the preceding outline headlines. For instance an outline entry might be to call Mr. Scrooge. In operation you can *F1 "scrooge"* and the process will take you into *ADRS.DO* and locate the phone number for this person. You therefore have single-point access to multiple files, a facility that can be thought of as front-end access.

Transferring control between *TEXT* files within an outline reduces the number of steps required to leave one file and enter another. This can be very useful when doing large-scale editing on a document by creating its replacement in another file. Cut, copy, and paste work between files without going through the main menu.

Together, the *TXTSW*.BA* and *THOUGHT* programs provide outstanding facilities to enhance the power of M100/102 applications.

E.H. Mackay, CEO
ATM Service Corp.
San Diego, CA

HOMEBREW BATTERY "WATCH"

I read with great interest about *Battery Watch* for the 1400LT. That function is just what I wanted for my Model 100. It was the memory demands, not the cost, that quickly killed my excitement. But the concept is a good one. I do like to know how much time is left on my *Power Pole* power supply.

My solution takes no memory and costs about ten dollars. All it took was an inexpensive analog clock and a connector that matches the bar code reader port. The clock only runs when the Model 100 is on. A quick glance at the clock, therefore, indicates the total run time.

After I charge up my NiCd's, I reset the clock to 12:00. This is the "full" mark on my "fuel gauge." When 3:00 rolls around, the tank is "empty." With a little effort, the clock face could easily be modified to read *Full* and *Empty*, rather than time.

The clock is a Spartus quartz alarm clock which normally takes a single AA battery. The 9-pin connector mounts on the bottom of the clock and extends into the clock's battery chamber. I found that a 1000-ohm resistor plus a common light-emitting diode (LED) made a simple power supply. They, too, fit in the clock. The Model 100 outputs 5 volts, and the LED develops about 2 volts across it. The clock runs fine on this 2 volts.

The "fuel gauge" is easily removed when the laptop is returned to its case. And since the clock is analog, loss of power has no effect on the cumulative run time stored in its "memory."

Rick Sparber
Wheaton, IL

TXTSW*.BA

```
800 CLEAR200,HIMEM-100:Z!=HIMEM:ONEERRORGOTO900:GOSUB810
805 C$="new"+CHR$(13)+"kill"+CHR$(34)+"TXTSW*.BA"+CHR$(34)
+CHR$(13)+"menu"+CHR$(13)+CHR$(0):C=VARPTR(C$):POKE63020,P
EEK(C+1):POKE63021,PEEK(C+2):END
810 FORA!=Z!TOZ!+65:READN%:POKEA!,N%:NN!=NN!+N%:NEXT:IFNN!
<>8657THENERROR100
820 D%=INT((Z!+48)/256):C%=INT((Z!+47)-(256*D%)):POKEZ!+42
,C%:POKEZ!+43,D%:RETURN
830 DATA 229,213,197,245,126,35,94,35,86,235,95,205,11,76,
205,175,32,202,237,20
840 DATA 35,94,35,86,42,157,251,229,33,0,0,34,231,246,57,3
4,157,251,213,62
850 DATA 1,33,77,245,195,113,95,225,225,34,157,251,205,156
,108,175,50,80,246,61
860 DATA 50,173,250,195,237,20
900 BEEP:BEEP:PRINT"Improper load",ERR,ERL:CLEAR0,Z!+100
```

COMPATIBILITY: Tandy 100/102 (Tandy 200, Olivetti M10, Kyocera KC-85—with modifications)

Use your Tandy every day without learning to program.

Editor's note: Last month, Bill showed how anyone can set up a diary/appointment book/project folder/address book on a Model 100/102, or any notebook computer that uses SCHEDL *or* ADDRSS. *The system he described uses "templates," a non-technical way of organizing information so you can get to it efficiently, and which you can adjust to suit your needs. Using such techniques, you can immediately expand the use of your notebook computer without learning a computer language or buying expensive programs. In this issue, Bill builds on last month's column with two easy programs that can help you make better use of your information database, and if you want, provide you with a medium for learning* BASIC *programming.*

The information storage techniques I described last month may give you all the tools you need to store and retrieve appointments, addresses, client information, and the like, with ease and speed. But you may want to speed up and simplify some of the boring, repetitive operations connected with these techniques, or expand the usefulness of the tools you already have. With that in mind, I've provided two programs, *UPDATE* and *FETCH!* The former program facilitates and automates data entry; the latter program expands *ADDRSS* and *SCHEDL* to work with a wider variety of data, and retrieves information from several different files.

This program opens ADRS or NOTE and adds information in the formats I've used for years.

UPDATE.BA

See Listing 1 for a program that you can type in and save under *UPDATE.BA*. This program opens *ADRS* or *NOTE* and adds information in the formats I've used for years. It is easy enough to change the program to suit your needs. In this version, I tried to keep things simple and well-commented so that beginners could learn from it.

NOTES ON *UPDATE.BA*

UPDATE organizes your data entry problem so that you develop well-structured *NOTE* and *ADRS* files and can maintain them with a minimum of time and effort.

When you run the program, it asks you to choose the file to be updated. If you are adding an item to *NOTE*, you can choose the type of entry from among four standard types. The program then gives you a series of prompts and places the results in the

```
10    ' UPDATE
20    ' Formatted entry into NOTE.DO and
30    ' ADRS.DO for the Model 100/102
40    '
50    ' (C) 1989: W. R. Brandon
60    '           534 Via Corona
70    '           Mesquite TX 75150
80    '
90    '
100   DEFINT A-Z : CLEAR : DIM FL (30) :
DIM CHAR$ (31)
110   CLS: PRINT CHR$(27) + "V"
120   PRINT @ 17, "UPDATE"
130   LINE (100,12) - (140,12)
140   PRINT @ 132, "<A>DRS.DO Entry"
150   PRINT @ 172, "<N>OTE.DO Entry"
160   PRINT @ 252, "<Q>uit"
170   A$ = INPUT$ (1)
180   B = INSTR (1,"aAnNqQ",A$)
190   IF B THEN 210
200   BEEP : GOTO 170
210   ON ((B+1)\2) GOTO 900, 500, 220
220   PRINT CHR$(27) + "W" : MENU
500   PRINT @ 84, "You have asked to upda
te NOTE.DO"
510   PRINT @ 120, CHR$(27) + "K"
520   PRINT @ 166, "Select: <E>vent   <M>
emo   <Q>uit"
530   PRINT @ 200, CHR$(27) + "K" : PRINT
 @ 240, CHR$(27) + "K"
540   PRINT @ 254, "<T>o-Do   <P>hone"
550   A$ = INPUT$ (1)
560   B = INSTR (1,"eEmMpPqQtT",A$)
570   IF B THEN 600
580   BEEP : GOTO 550
600   ON ((B+1)\2) GOTO 1000, 1000, 1000,
 110, 1000
900   B = 7
1000  FOR I = 1 TO ((B+1)\2)
1010  READ DO$, CAT$, NF
1020  FOR J = 1 TO NF
1030  READ F$(J), FL(J)
1040  NEXT J
1050  NEXT I
1060  RESTORE : I = 0 : J = 0
1070  GOTO 2000
1100  DATA "NOTE", "EVENT", 4, "DATE:" ,8
, "TIME:", 8, "PLACE:", 30, "DESC/KEY:",
```

Continued

Listing 1. UPDATE.BA. *This simple program automates entries into your* NOTE.DO *or* ADRS.DO *files to speed you up and eliminate errors.*

selected file.

Dates, times, and telephone numbers can contain up to eight characters. You can use any style you wish to make these entries. A date, for example, could be entered as *03/01/89*, *1 Mar*, *03-01-89*, or any other way you choose, as long as it fits into eight characters. Priorities on projects and to-do items are also allowed eight characters. All other entries—names, places, remarks—are allowed thirty characters. You can include key words to help you find items later.

There are only two "rules" (one of which you can violate without causing any harm). Don't use commas in your entries, and do press *ENTER* when you finish an item. (Note that you can press *ENTER* without giving any information in response to a prompt.)

When you have typed the maximum characters allowed, *UPDATE* automatically enters the data for you and moves to the next item. Use the backspace key (don't use *SHIFT* with it!) to rub out mistakes before you enter the data, though.

UPDATE is about 3000 bytes long (around ten percent of the memory in a fully-expanded-but-stock Model 100). If you don't type the comments and leave out all the spaces except the ones after line numbers and inside quotation marks.

PROGRAMMING NOTES

This is a strictly optional section, ok? You don't have to read it to type in or use *UPDATE*. If you just want to get on with things, mosey on down the page, pardner, and start entering the code.

On the other hand, if you want to learn how this program ticks, perhaps to enhance your own skill at writing *BASIC* or if you want customize the screens, or if you'd like to run *UPDATE* on other computer models, read on:

As a bonus, escape codes are nearly universal

SCREEN HANDLING AND ESCAPE CODES

As fine a machine as the Model 100 is, the LCD (liquid crystal display) screen is very slow. This can be extremely irritating when you use a program just to make quick notes. This happens when the program uses the *CLS* statement to erase the entire screen and then rewrites the entire screen for the next prompt. I designed the screens to keep them as uniform as possible, and then erase and rewrite only those parts that have to change.

As one solution, you can "erase" by simply overprinting the required number of blank spaces, on top of the stuff you want to remove. However, it is faster in a program to use the machine language routines in the ROM (read-only memory, where the built-in programs are stored). The only problem with this is that a call in the Model 100 won't work on the Model 200 and other computers.

Fortunately, you can use what are called "escape codes" to invoke these fast routines instead of using machine-dependent *CALL* statements. As a bonus, escape codes are nearly universal—not just among laptops, but among operating systems.

In *UPDATE*, any place you see *PRINT @ nnn, CHR$(27)+'K'*, the correct machine language routine for each computer is called automatically. It erases the line the cursor is on, from position *nnn* to the right side of the screen. Other escape codes I've used include *CHR$(27)+"V"*, which keeps the screen from scrolling,

```
3Ø
111Ø DATA "NOTE", "MEMO", 2, "HEADS UP!:
", 3Ø, "KEY:", 3Ø
112Ø DATA "NOTE", "PHONE", 4, "CALL:", 3
Ø, "AT:", 8, "BECAUSE:", 3Ø, "KEY:", 3Ø
113Ø DATA "ADRS", "ENTRY", 3, "NAME:", 3
Ø, "PHONE:", 8, "KEY:", 3Ø
114Ø DATA "NOTE", "TO DO", 3, "PRIORITY:
", 8, "DATE:", 8, "KEY:", 3Ø
116Ø ' DATA: .DO file, category, number
of fields, field name, field length
2ØØØ CLS : PRINT CHR$(27) + "V"
2Ø1Ø PRINT @ 1, "UPDATE: Appending to ";
 DO$; ".DO" : PRINT @ 124,"No commas;
press <ENTER> when done."
2Ø2Ø PRINT @ 82, CAT$, ":"
2Ø3Ø FOR I = 1 TO NF
2Ø4Ø PRINT @ 88, CHR$(27)+"K" : PRINT @
16Ø, CHR$(27)+"K"
2Ø5Ø PRINT @88, F$(I); " ("; FL(I); " ch
aracters max)"
3ØØØ C = INSTR (1, "PHONE:DATE:TIME:AT:"
, F$(I))
3Ø1Ø IF C THEN START = 174 ELSE START =
164
3Ø2Ø PRINT @ START, CHR$(154) : BEEP
3Ø3Ø FOR CHAR = 1 TO FL(I)
3Ø4Ø CHAR$(CHAR) = INPUT$(1)
3Ø5Ø TEST = ASC(CHAR$(CHAR))
3Ø6Ø IF TEST = 127 GOTO 31ØØ
3Ø7Ø IF TEST > 31 GOTO 311Ø
3Ø8Ø IF TEST = 13 GOTO 32ØØ
3Ø9Ø IF TEST = 8 GOTO 33ØØ
31ØØ BEEP : GOTO 3Ø4Ø
311Ø FIELD$(I) = FIELD$(I) + CHAR$(CHAR)
312Ø PRINT @ (START + CHAR), CHAR$(CHAR)
 : GOTO 35ØØ
32ØØ CHAR = FL(NF)
321Ø GOTO 35ØØ
33ØØ CHAR = CHAR - 1
331Ø IF CHAR < 1 THEN 332Ø ELSE 333Ø
332Ø BEEP : CHAR=1 : GOTO 3Ø4Ø
333Ø PRINT @ (START+CHAR), CHR$(32)
334Ø FIELD$(I) = LEFT$(FIELD$(I),CHAR-1)
335Ø GOTO 3Ø4Ø
35ØØ NEXT CHAR
36ØØ ENTRY$ = ENTRY$ + FIELD$(I)
361Ø IF I < NF THEN ENTRY$ = ENTRY$ + ",
"
362Ø NEXT I
37ØØ D = INSTR(1, "PHONEMEMOTO DOEVENT",
 CAT$)
371Ø X = (D\5) : ON X GOTO 373Ø, 374Ø, 3
75Ø
372Ø ID$ = CHR$(128) + CHR$(32):GOTO 38Ø
Ø
373Ø ID$ = CHR$(129) + CHR$(32):GOTO 38Ø
Ø
374Ø ID$ = CHR$(135) + CHR$(32):GOTO 38Ø
Ø
375Ø ID$ = CHR$(143) + CHR$(32)
38ØØ ENTRY$ = ID$ + ENTRY$
4ØØØ IF DO$="ADRS" GOTO 45ØØ
```

Continued.

```
4Ø1Ø OPEN "RAM:NOTE.DO" FOR APPEND AS #1
4Ø2Ø PRINT #1, ENTRY$
4Ø3Ø CLOSE #1
4Ø4Ø GOTO 5ØØØ
45ØØ OPEN "RAM:ADRS.DO" FOR APPEND AS #1
451Ø PRINT #1, ENTRY$
452Ø CLOSE #1
453Ø GOTO 5ØØØ
5ØØØ CLS
5Ø1Ø PRINT @ 9Ø, "UPDATE AGAIN? (Y/N)"
5Ø2Ø A$ = INPUT$ (1)
5Ø3Ø B = INSTR (1,"yYnN",A$)
5Ø4Ø IF B < 1 THEN 5Ø6Ø
5Ø5Ø ON ((B+1)\2) GOTO 1ØØ, 22Ø
5Ø6Ø BEEP : GOTO 5Ø2Ø
514Ø GOTO 5Ø1Ø
6ØØØ END
```

End of listing.

```
1Ø    ' FETCH!
2Ø    ' Use SCHEDL/ADDRS in files
3Ø    ' other than NOTE and ADRS.
4Ø    '
5Ø    ' Based on original research
6Ø    ' by Jesse Bob Overholt, pre-
7Ø    ' sented in the March 1984
8Ø    ' Portable 1ØØ.
9Ø    '
1ØØ   ' This implementation (C) 1989:
11Ø   '       W. R. Brandon
12Ø   '       534 Via Corona
13Ø   '       Mesquite TX 7515Ø
14Ø   '
15Ø   DEFINT A-Z : I$ = CHR$(27) + "p" :
      N$ = CHR$(27) + "q"
16Ø   CLS : PRINT CHR$(27)+"V"; CHR$(27)+
"Q"
17Ø   PRINT@ 17, "FETCH!" : LINE(1ØØ,1Ø)-
(136,1Ø)
18Ø   PRINT@ 128,"File to read:         .D
O":LINE(135,2Ø)-(192,34),1,B
19Ø   START = 143 : C$ = CHR$(95)
2ØØ   FOR C = Ø TO 5
21Ø   CP = START + C : PRINT@ CP, C$
22Ø   K$(C) = INPUT$(1)
23Ø   T = ASC(K$(C))
24Ø   IF T <> 127 GOTO 242
241   GOTO 28Ø
242   IF T > 122 GOTO 29Ø
243   IF T > 96 GOTO 244 ELSE GOTO 25Ø
244   T = T - 32 : K$(C) = CHR$(T) : GOTO
 24Ø
25Ø   IF T > 31 GOTO 29Ø
26Ø   IF T = 13 GOTO 37Ø
27Ø   IF T =  8 GOTO 31Ø
28Ø   BEEP : GOTO 22Ø
29Ø   F$ = F$ + K$(C)
3ØØ   PRINT@ CP, K$(C) ; GOTO 38Ø
31Ø   C = C-1
32Ø   IF C < Ø THEN 33Ø ELSE 34Ø
33Ø   BEEP : C = Ø : GOTO 21Ø
```

Continued.

Listing 2. FETCH!.BA. *This program uses a "back door" to let you use files other than* NOTE.DO *and* ADRS.DO *for your data. With this, you can use one data file for your sales leads and one for your Christmas list.*

and *CHR$(27)+"W"*, which unlocks the screen as you quit the program. You can make the program shorter by changing line 90 to read *ERASE$ = CHR$(27)+"K"*, then substitute the variable *ERASE$* for the escape sequence in lines 510, 530, and 2040. I left them in the longer form in the program listing to make it easier for beginning programmers to follow the flow of the program. (You won't save any bytes by changing the "lock/unlock" codes, though you can certainly do them too, if you want.)

MODIFICATIONS

The main change you should make is to leave out all spaces, except for the ones following line numbers or inside quotation marks. However, if you upload this program to a local BBS, (or otherwise give it away) you must leave the copyright notice in lines 10-100 in place.

Other than that, the only obvious modification is to change the categories, fields, and lengths of items for which you are prompted. Do this by changing the *DATA* statements in lines 1100-1140. Use the comments in line 1160, and the *READ* statements in lines 1010 and 1030 as your guides. You may also need to change the *PRINT* statements and the *INSTR* arguments in lines 500-560, 3000, and 3700. Pay attention to what you're doing and your changes will come out fine.

Think of program bombs arising from your changes as a playful way the universe has of teaching you how to do applications programming! Confusion is the doorway to understanding, you know.

DATA INPUT ROUTINES

Lines 3000-3610 do the main work of collecting your keystrokes, erasing your mistakes, and assembling your entries.

Think of program bombs as a playful way the universe has of teaching you how to program!

This is actually two loops. The outer loop runs from 2030 to 3620, stepping you through all the data input needed, one field at a time, until your entry is complete. The inner loop, from 3030 to 3500, assembles individual keystrokes. Each key you press is collected by 3040, tested to see if it's input, editing, or junk, and added (if valid input) at 3110. Line 3120 prints each key on the screen. If you backspace to clean up a mistake, lines 3300-3350 get rid of the offending character(s) and set things right. This is a simple data input routine that you can use in your own projects, and which you'll see more of here.

FETCH!.BA

Nearly all users eventually wish they could use the power of *ADDRSS* and *SCHEDL* on other lists. Well, you can! The program shown in Listing 2 is a bit more advanced, but it gives you control over the file from which *ADDRSS* or *SCHEDL* reads. You still have to set this file up using *TEXT*, and the same guidelines for constructing entries apply here as in *NOTE* and *ADRS*. In effect, this program gives you the ability to create as many decks of note cards as you need, for whatever purposes. I have used this program to set up special prospect lists, to print out task analyses and job studies, to organize, track and report on projects, and to manage my greeting card mailings. What uses can you find for

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it?

NOTES ON *FETCH!.BA*

FETCH! (see Listing 2) uses some advanced programming techniques for using *SCHEDL* and *ADDRSS* with files other than *NOTE* and *ADRS*. This means you could keep inventory lists, math formulas, or foreign language phrases in their own files, yet have rapid access to them. The program is based on an idea presented in this magazine five years ago by Jesse Bob Overholt ("Tap into the Free Database within your ROM," Mar. '84, p. 36).

When you run *FETCH!*, it asks you for the name of the file you want to read. You can enter any printable symbol, including special characters; it converts lower case letters to upper case, so you don't have to have the *CAPS LOCK* on. You can correct errors by using *BKSP* or *CTRL-H*. When you have entered six characters or pressed *ENTER* or pressed *CTRL-M*, the program asks whether you want the word *Adrs:* or the word *Sched:* used as prompts.

The prompt you choose will make no real difference. Pressing *A* or *S* immediately gives you the familiar screen, but when you *Find:* information, the items you get will be returned from the file you selected, not from *NOTE* or *ADRS*.

PROGRAMMING NOTES

FETCH! takes up about 1500 bytes if you leave out the spaces and comment lines. As with *UPDATE*, you must leave the copyright notice in the listing if you upload to a BBS.

ESCAPE CODES

In this program, I've used two new escape codes to get reversed printing (white on black). *CHR$(27)+"p"* reverses the image, and *CHR$(27)+"q"* puts things back to normal. Using lower case for the *p* and *q* is important, and be sure to use the double quotation marks.

SCREENS

The program also shows how to combine text and graphics on the same screen. In this case, it uses a box to set off the file name input area.

CASE CONVERSIONS AND SPECIAL CHARACTERS IN FILE NAMES

The Model 100 permits you to use any printable character in file names, but *SCHEDL* and *ADDRSS* require all alphabetic characters to be uppercase. If you tell *FETCH!* to use a file called *latin.DO*, you'll be told the program was unable to find it, even if *LATIN.DO* is on the menu. One way to deal with this would be to require you to type all letters upper case—leave the *CAPS LOCK* on. I prefer not to do that, since it elevates an irrelevant feature of the machine to a higher level of importance over the user's convenience. So lines 242-244 automatically convert any lower-case letter into its upper-case counterpart. Leave the *CAPS LOCK* off or on, as you prefer.

POKE ROUTINES

I'm not going to give a lesson in *POKE* programming here, but you might want to know how *FETCH!* works. (If you don't care, feel free to skip this part.)

FETCH! capitalizes on the feature that the *ADDRSS* and *SCHEDL* programs share most of their instructions. Both are really only *front ends* for the program that actually does the work of *Find*ing/*Lfnd*ing items in a file. *ADDRSS* is six bytes long, and *SCHEDL* actually occupies only about five bytes in the ROM. Each of these snippets does four things:

- Loads the A register with a value that

Modifications for other Computers

UPDATE.BA—The Olivetti M10 has different graphic characters. You can substitute your own from the Olly's character set, listed in your owner's manual. Then modify the appropriate *ID$ = CHR$(value)* statements in lines 3720-3750 with your chosen values.

FETCH!.BA—To run on many different computers, a program should avoid machine-specific calls and addresses. Sometimes it can't be helped, and sometimes it can.

As listed, *FETCH!* stores the desired file name in an unused area of Model 100 memory. But other computers may already use that area. By storing the file name in a string instead, each computer can store it safely wherever it desires and still find it easily. Replace lines 510-550 with the following to make that portion of *FETCH!* compatible with any machine, including the Kyocera KC-85 and Olivetti M10:

```
510 F$ = F$ + CHR$(0)
520 F = VARPTR(F$)
530 F2! = PEEK(F+1) + 256 * PEEK(F+2)
540 CALL VARPTR(FETCH!), P, F2!
```

A machine-specific call (contained in the *DATA* values in line 500) was unavoidable in *FETCH!* To run *FETCH!* on Olly and Kyo machines, change line 500 as follows:

Kyocera—*DATA 235, 195, 127, 88*
Olivetti—*DATA 235, 195, 124, 91*

TANDY 200 NOTE

FETCH!.BA is unnecessary in the Tandy 200. Instead, just enter the desired text file and press *F4 (List)*.

MN

```
34Ø  PRINT@ CP, C$
35Ø  F$ = LEFT$(F$,C)
36Ø  GOTO 21Ø
37Ø  C = 5
38Ø  NEXT C
39Ø  F$ = F$ + ".DO"
4ØØ  PRINT@ 2Ø4,"Prompt to use: "; I$: "
S"; N$; "CHEDL     "; I$; "A"; N$; "DRS"
41Ø  A$ = INPUT$(1)
42Ø  T = INSTR(1,"aASs",A$) : IF T GOTO
44Ø ELSE GOTO 43Ø
43Ø  BEEP : GOTO 41Ø
44Ø  PRINT CHR$(27)+"W" : P = (((T+1)\2)
-1)
45Ø  FETCH! = Ø
46Ø  FOR I = Ø TO 3
47Ø  READ CODE
48Ø  POKE VARPTR(FETCH!)+I, CODE
49Ø  NEXT I
5ØØ  DATA 235,195,116,91
51Ø  FOR I=1 TO LEN(F$)
52Ø  POKE 64984+I, ASC(MID$(F$,I,1))
53Ø  NEXT I
54Ø  POKE 64985+LEN(F$) , Ø
55Ø  CALL VARPTR(FETCH!), P, 64985
```

End of listing.

tells the main program whether to prompt the user with *Adrs: (0)* or with *Sched: (1)*;

- Loads the address of a special file name buffer into the DE register;
- Loads the name of its particular file into the special file name buffer, with a *0* on the end to let the main program know it's valid; and
- Jumps to the main program.

FETCH! pulls a fast switch on the ROM program. Lines 460-500 load a small machine language program into memory. This tiny program is called in line 550 to enter the main program without going in through either of the *front end* programs. (This is like a kid sneaking into the side door of one of those multi-screen theaters and then slipping into an R-rated movie—where he wouldn't be allowed if he'd come through the regular process.) However, the main program still needs the information described above to be pre-loaded into the various registers and the file name buffer. So lines 510 to 540 put your selection of prompts (*0* or *1*, remember?) into the A register, the file name of your choice into the special buffer (with a *0* at the end), and puts the file name buffer address into the DE register. Line 550 triggers execution to the main ROM routine. The routine looks at the A and DE registers, finds everything as it should be and then picks up your file name from the buffer instead of *NOTE* or *ADRS*, never the wiser.

With that, I'll leave you to type the programs in and play around with them at your convenience.

Enjoy!

Valeas, qui legis quod scripsi! (May you fare well, who shall read what I have written!)

Bill Brandon

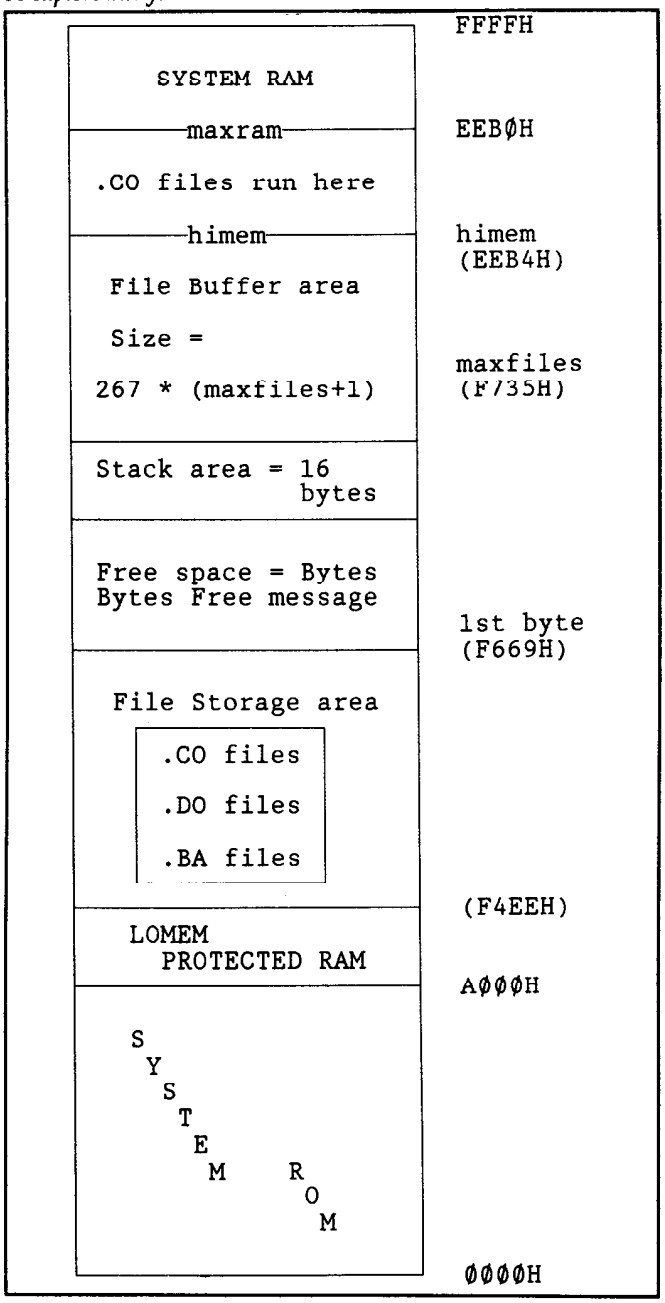
Bill Brandon is an independent developer of adult training programs and a freelance instructor. Bill is the assistant Sysop of the DP Trainer's Forum on CompuServe; you can reach him there, through the editors of Portable 100, *or at the address shown in the program listings.*

Tandy 200 Memory Map

Editor's Note:

While Paul Globman is off in some deep, dark dungeon, cooking up another exciting project (no, he won't even tell me what it is!), he's sent us a memory map of the Tandy 200.

If you've ever wondered just where all those files, buffers, and other computerphernalia actually reside inside your T200, perhaps this will help clear things up a bit. Note that the numbers in parentheses represent the address at which a pointer to that particular area is stored. For example, the pointer to HIMEM *is stored in two bytes starting at EEB4H. The value of* MAXFILES *is stored in one byte at F735H. Numbers not in parentheses represent the actual address (i.e., 0000H is the very bottom of RAM, and FFFFH is the highest address in RAM). So explore away!* —MN



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Lucid Spreadsheet: This is the one PICO magazine says "blows Multiplan right out of the socket" and Infoworld performance rated as "excellent" and said "makes the Model 100 compute." Gives you features you cannot get with Lotus 123. Lets you build spreadsheets in your Model 100 that would consume 140-150K on a desktop. Program generating capability with no programming knowledge required. Variable column widths. Includes find and sort with function key control. It's fast, recalculates like lightning. No feature has been taken from the original, only new ones added.

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Present Lucid and Write ROM owners can upgrade for $150. If you have both it's $125.

As usual PCSG sells the Super ROM on a thirty day guarantee. If for any reason you are not satisfied, simply return it for a full refund.

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