TANDY LAPTOP COMPUTING MAY 1990 -VOL. 7, NO. 5

TERRY KEPNER'S

portable 100

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A MONTHLY PUBLICATION (EXCEPT COMBINED JULY/AUGUST ISSUE)

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Mikey's wound up again. It's fun to hear what Michael Daigle gets when we toss around ideas for improving our Model T's, as he calls them. This time we hatched a hot project that, unlike some of our wild schemes, could actually happen.

The idea is basically a new version of the Model 100. We're not talking 80-column by 25-line displays and megabytes of RAM here. That's a bit beyond our capabilities.

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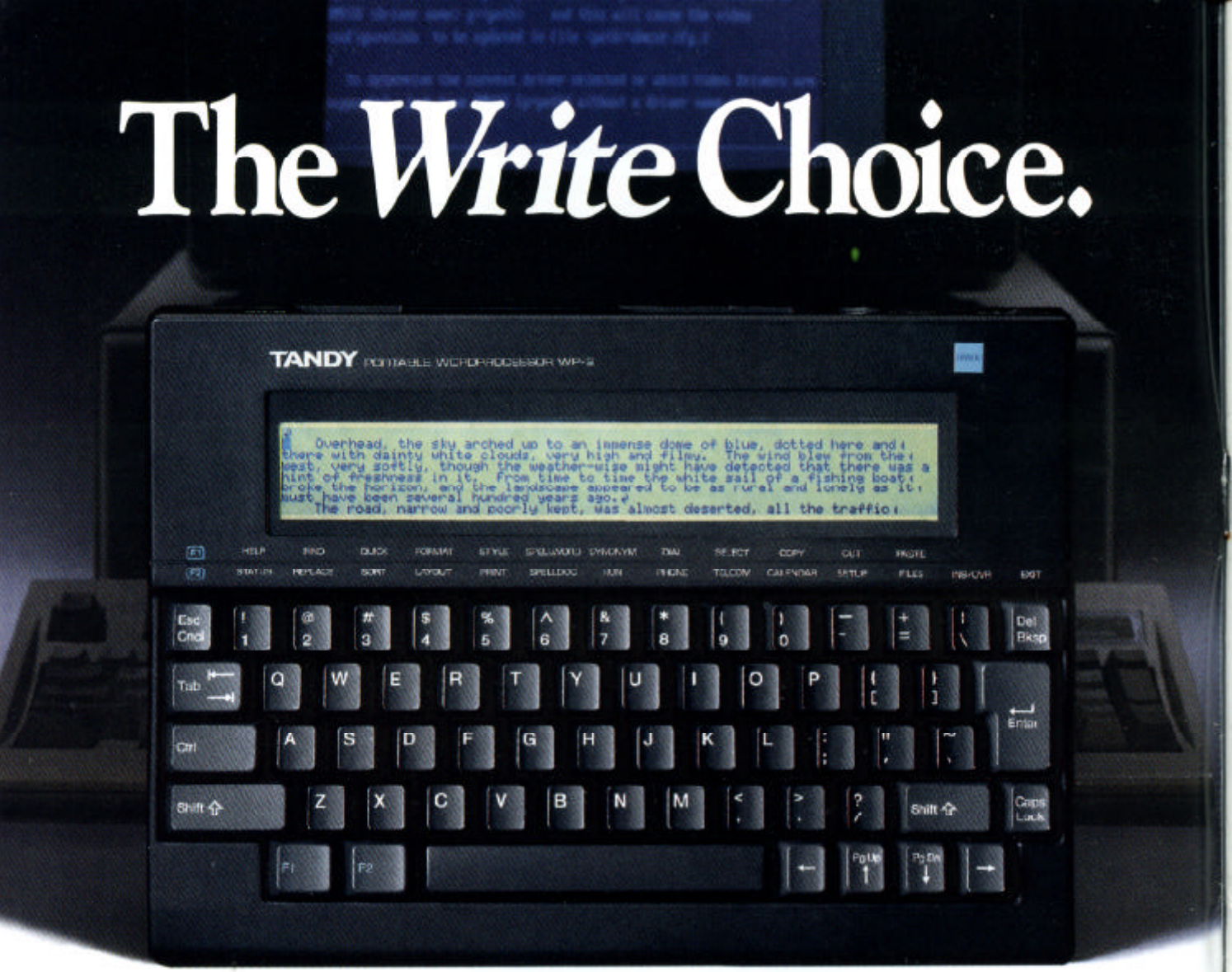

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Club 100 has, since 1983, been more than just a BBS. We hold meetings, do projects, and help folks use their laptops. Membership in Club 100 is free. Use of our BBS is also free. Mail-order sales, and volunteer work support club operations. We are a full-support club.

Of our over 10,000 registered members, few use their laptop in the exact same manner. There are, however, items that many of us use and love. Among these are: Lapdos, TS-DOS, The Ultimate ROM II, and ROM2/Cleuseau--all by Traveling Software.

Traveling Software discontinued their laptop line but, due to our long-standing dedication to laptop support, Traveling Software allowed our club the rights to revive and continue their laptop products. This is exciting news, indeed.

Others, needing our expertise, asked Club 100 to handle their items, as well. RAM chips and RAM Expansion Modules by American Cryptronics, laptop to Mac connections by Cabochon, and specific items by individuals, like WP2DOS for connecting the WP-2 computer to DOS machines, and the new, SuperStar programmer collections. (Attention programmers and manufacturers: we want to hear from you.)

If you own a Model 100, 102 or 200 computer, you are already a Club 100 member but may not be on our mailing list. Get on the list and receive our latest catalog of offerings and activities.

Welcome to Club 100... -Rick-

A scene from one of our monthly meetings...

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VOL. 7, NO. 5
May 1990

ON THE COVER:
Sample graphic screens dumped from Nuge's M100 to a Tandy LP-1000 Laser Printer using the programs listed in this month's issue of Portable 100.

ROM WITH A VIEW

Mikey's wound up again. It's fun to hear how excited Michael Daigle gets when we toss around ideas for improving our Model T's, as he calls them. This time we hatched a hot project that, unlike some of our wild schemes, could actually happen.

The idea is basically a new version of the Model 100. We're not talking 80-column by 25-line displays and megabyte RAM's here. That's a bit beyond our capabilities. But we do have some measure of control over software. Over the years, many people have contributed, in terms of hardware, software, and knowledge, to increasing the utility of our laptops. Couldn't we combine these individual contributions into a single integrated package, and maybe even customize that package for individual tastes? I think so.

For example, James Yi's neat-o *TEXT* enhancement programs, *TEXTe* and *TEXTp*, let you switch between insert and overtype modes, perform case-sensitive search and replace, append to the paste buffer, disable word wrap, and more. Wilson Van Alst's *MAYDAY* quickly recovers data after a cold start, and his *ZIP** series performs quick print formatting, text file sorting, locating information, and zapping duplicate records. My *HOTKEY* program provides adjustable tabs, automatic insertion of day, date, and time into *TEXT* files, sends a formfeed (or other printer code) to the printer, etc, and my *Dvorak* utility rearranges your keyboard. There are great *TELCOM* enhancements in Phil Wheeler's *XMDPW* series: Xmodem file transfer, split screen operation, access to *BASIC* and *TEXT*, macros, and many other goodies. Many folks have contributed to that package. And there's G.W. Flanders' screen dump utility (in this issue). The list goes on, adding many wondrous and clever enhancements to our lapwarmers.

Wouldn't it be nice to have them all? And nicer yet to have them in a single package? Maybe on a ROM, so they don't eat up your RAM? Well, why not do it? And while we're at it, let's include a disk operating system to let us swap and store files on a PC or Mac. There are already programs that make the PC and Mac act as a portable disk drive. And let's make it all work from the Model 100 main menu, via function keys. That would require a lot of f-keys, but I already know how to do that. (I'll be showing you how in my new column, ORG.ASM, beginning in this issue.)

Could we even rewrite the Model 100's ROM by copying it onto EME's extRAM, modifying it to suit our needs, and then running the M100 from the extRAM full-time? Toss out *TELCOM* on the menu and replace it with *XMDPW6*? In fact, by modifying the M100/102 boot-up code, we could possibly circumvent a problem that prevents us from using low memory techniques Paul Globman incorporates in his XOS utilities. It's worth looking into, and we obviously have plenty of smarts at our disposal.

Choices would have to made, and there are bound to be limitations and trade-offs, but isn't that just like life in general? Perhaps we can never have it all, but we can surely continue to have more. Let's do it.

Of all my computers, I still like my Model 100 best. As an enthusiastic Mikey once put it, it's compatible with—me. (He likes it! Hey, Mikey!)

Nuge

Toolbox

Manuscripts were typed into Microsoft Word 3.0 on a Tandy 1400 HD, where they were edited, spell-checked, and had basic format instructions inserted. From there they were loaded into a Tandy 4000 (80386 CPU, Tandy EGA Monitor, Tandy LP-1000 LaserPrinter) desktop computer and placed into Aldus' IBM PageMaker 3.01 Once there, design decisions on photo, figure, and listing sizes and placements were made. Here, pull quotes are placed, headlines, intros, and bylines are sized and positioned, and advertisements positioned.

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

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

TERRY KEPNER'S **portable 100**

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Editorial 603-924-9455

Advertising 603-924-9455

Circulation 603-924-9455

Bulletin Board 603-924-9770 (300/1200—8,None,1)

Portable 100 (ISSN 0888-0131) is published by Portable Computing International Corporation, 145 Grove Street Ext., P.O. Box 428, Peterborough, NH 03458-0428. *Portable 100* is an independent journal not connected with any hardware, software, or peripheral equipment manufacturer. *Portable 100* is published monthly, except for a combined July/August issue in the summer. Entire contents Copyright © 1990 by Portable Computing International Corporation, All Rights Reserved. No part of this publication may be reproduced without written permission from the publisher. Portable Computing International Corporation makes every effort to assure the accuracy of articles published in *Portable 100*, but assumes no responsibility for damages due to errors or omissions. Subscription Service: All subscription correspondence should be addressed to *Portable 100*, Portable Computing International Corporation, 145 Grove Street Ext. P.O. Box 428, Peterborough, NH 03458-0428. U.S. subscription rates: $19.95, one year; $34.95 two years. Canada and Mexico: US$24.95, one year; US$44.95 two years. All other foreign (surface mail): US$39.95, one year; US$74.95 two years. Foreign Air Mail, add US$50 per subscription year. All payment, except Canada, U.S. funds drawn on U.S. Bank. Second-class postage paid at Peterborough, NH 03458, and at additional mailing offices.

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VBASIC KUDOS, QUESTIONS

First, I wish to thank you for the article about *VBASIC* (Mar. '90) and the program which accompanied it. This one article and program by themselves were worth a year's subscription to *Portable 100*. I shall have my check in the mail in a few days for another year's subscription. I am using both *VBASIC.BA* and *VBASIC.EXE*, and I am having much success with both of them. I use the *.BA* on my M100 to work out modules and little ideas I have; then I upload them to my PC, where I am putting the total program together. After editing and making necessary changes, I then use the *.EXE* to write the whole program out. This is then downloaded to the M100 again and given a trial run. Both work as expected.

However, I have two questions. In the article, Dr. Verts mentions that in the series of questions which appear on the screen to initialize the program, one question asks if the symbol table should be written out to file *SYMBOL.DO*. This question is missing from the *.EXE* version. Is this an oversight, or was the omission intentional? Second, I do not understand the question regarding the conditional assembly modes, which is the last question asked. Are these modes already established in the program? If so, what are they? If not, how may I use them? And if they are already included in the program, is there an information key that will list them for me?

George E. Sherman
Ponca City, OK

Dr. Verts responds:

To answer your first question: When I wrote the programs two years ago, I intentionally omitted from the Pascal *version (the* .EXE*) the code that saved the symbol table. After looking at the source code again, I can no longer justify the reason for having done so. There are a couple of other design decisions about that version that have been bothering me as well: one is that the symbol table is limited to 110 symbols, another is that it is not currently possible to run the program from a batch file (i.e., placing the answers to all the interactive questions on the DOS command line). There are some efficiency issues I would like to address as well. I will make the required changes in the next few weeks and post the updated* .EXE *version to the* Portable 100 *bulletin board.*

To answer your second question: You must establish by yourself the places in your code where conditional assembly is required, and preface each relevant line with an appropriate mode digit (0 through 9). When you answer the conditional assembly question, you are telling the translator which of those lines to keep and which to treat as comments. Of all lines starting with a conditional assembly number, only those prefaced with an "active" mode will be passed through to the output file. For example, you might preface all lines of debugging code with 9. When you want the debugging code to run, activate mode 9 from the conditional assembly question. When you don't want the debugging code to run, translate the program with mode 9 turned off. Similarly, if you preface lines that are dependent on Model 100 features with 1, Model 200 features with 2, and Model 600 features with 6, you can write a single program that will run on many different machines. Therefore, to translate a program for the Model 200 with debugging code present, you must activate both mode 2 and mode 9. No harm is done if you accidentally activate mode 8 and no lines happen to start with 8.

I am delighted that you have gotten as much use out of the VBASIC *programs as your letter indicates. It is a good feeling to know that I'm not just hollering down a rain barrel!*

ABSOLUTELY RIDICULOUS

I just saw your editorial response to a letter from Paul Harris of Morristown, NJ (March 1990, pg. 5). I was surprised to see the comment that "Tandy doesn't really design most of their equipment; they market projects brought to them by developers. If no one designs this perfect machine and shows it to Tandy, Tandy won't sell it."

That ridiculous and absolutely false statement deserves a retraction!

The Model 100 was designed in a partnership between Bill Gates at Microsoft, the hardware vendor, and Radio Shack's merchandising and R&D departments. Other similar models were subsequently sold to Olivetti and NEC by the hardware manufacturer. The Tandy 102, 1100FD and 1400's are built for us by others, but we had considerable influence on their design. We design and manufacture all of the other Tandy computers, right here in Fort Worth, including the 2800 HD portable, which we also private label for another manufacturer under his name.

The idea that "Tandy doesn't really design most of their equipment" is dead wrong. I know that YOU know better. I'm surprised you would mislead your readers in this manner.

Ed Juge, Radio Shack
Fort Worth, TX

Sorry, Ed, I didn't mean to give the impression that Radio Shack simply takes products and slaps their name on them. That is blatantly incorrect. The Color Computer and the Tandy 1000 are great examples of Radio Shack products entirely designed and built by Radio Shack, in Texas. Obviously, with products that sell in the hundreds of thousands every year, Radio Shack has a vested interest in continuously redesigning their products to meet the market.

Unfortunately, the Tandy 100 line doesn't sell in that kind of volume. As a result, the potential for R&D payback is much less, and that means it will receive that much less attention and development.

What I was trying to point out to Paul is that while the Model 102 is selling well enough to keep it in stock, it can't be called a high volume, excellent profit product. Further, while the Model 102 was a clear redesign of the original 100 to make it smaller, lighter, and less expensive to manufacture, nothing further has been done to improve it since 1985. Compare that to the numerous incarnations that the Tandy 1000 line has gone through in the last five years.

The Model 102 is a good, solid computer. The biggest complaint against it is that it needs more memory. To re-design the Model 102 to use a megabit CMOS chip—providing 128K of RAM—would be a trivial exercise for Microsoft and the hardware manufacturer, Kyocera Ceramics, if Tandy were to request it for their next production run. After all, Traveling Software, PG Design, Node Systems, and several others have adapted the Model 100 and 102 to larger memory capacities. Similarly, there are two different versions of add-on RAM card and ROM card adapters for the Tandy 100/102 line. Obviously, it can be done. Just as obviously, there is a demand for such products. If

something isn't done to improve and update the Model 102, then it will eventually be replaced by another, more modern (and I don't mean MS-DOS) notebook computer from someone else.

I was trying to jump-start a third-party packager/developer, such as the man who originally brought the Kyocera/Microsoft project to Radio Shack, into perhaps putting together what we might call a Model 103.

-TK

BASIC-TO-*VBASIC* NEXT?

I have found Michael Daigle's articles entertaining, though sometimes they seemed emotionally (?) biased. I'm glad two people took the time and effort (E.H. Mackay—Feb. '90 and Ed Juge—Mar. '90) to provide more information and balance the viewpoints on some of the products Mr. Daigle has written about. I think that 98 percent of the Tandy computer products are well thought out, worthwhile products. As for the WP-2 and 1100 FD, I'd love to have one of each, but not to replace my Model 100.

The *VBASIC* program looks like one of the best ideas that has appeared for Model 100 programming, ever. I wonder if Dr. Verts would ever consider a program that would also do the reverse: translate standard *BASIC* into symbolic *BASIC*?

The ROM WITH A VIEW (Mar. '90) about packet radio is exciting. Computerists need to know about these other possibilities. I understand that Ed Juge *[Director of Market Planning for Radio Shack]* is a ham radio operator who's got a packet radio setup. Tandy also has a 10 meter transceiver that is capable of packet radio, don't they? There's a lot of possibilities.

From my limited experience with the Model 100 used as a BBS, it sounds like the *Serial 64* application note from King Computer Services' *Model 100/102 Application Notes* (see "Expertise-to-Go," Mar. '90) would help to make the Model 100 perform better in receiving incoming data as either a packet radio or telephone BBS. But as a mostly frustrated computer hobbyist who has to keep finding time for things such as (currently) painting the house, changing the carburetor on our '78 Buick, and changing the leaking fuel pump on our '74 Ford (to mention just three out of dozens of "honey-do" projects), I'm not ready to spend $200 to get those notes that I might not have time to put to use for quite a while. I'm sure that they are more than worth the price for any developer. Perhaps when the developer market has bought all the application notes it wants, they can be offered to hobbyists in a book, at a price comparable to other Model 100 books.

Glad to see you found a way to make *Portable 100* a little larger; keep up the good work!

John S. Neufeldt
Tucson, AZ

As a matter of fact, John, Dr. Verts already has a prototype of a program to convert standard BASIC *to* VBASIC. *We're looking forward to publishing the final version.*

And yes, the Tandy 10 meter transceiver will work with packet radio.

-MN

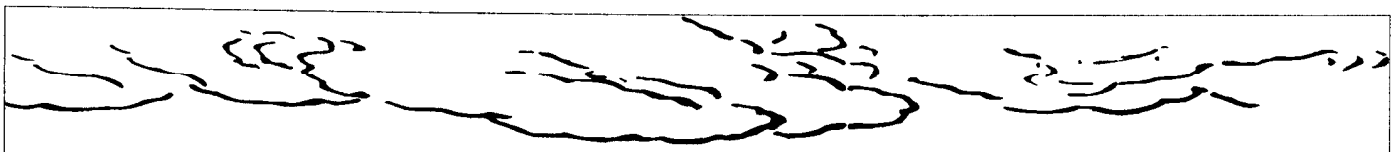
TIPS

I have enjoyed your publication for several years, and thought I'd mention a couple of useful tips I've yet to see mentioned in your columns.

Rechargeable batteries are terrific (some brands are guaranteed for five years), but they are not a normal battery strength of 1.4-1.6 volts, so their 1.2 volts times 4 only produces 5.0 volts, not enough for 6.0 volt applications. I've modified each of my Tandy 102's by adding a (Radio Shack) battery socket outside (just contact cemented) of the machine's 4-slot battery chamber (wired in series with any battery to terminal point—actually just "loose wired" in the form of my add-on battery socket leads having homemade "lugs" soldered on, and each one is covered on one side with masking tape). This works equally well with my disk drives and cassette recorder. Usage time of the better brands—do your price shopping based on milliamp-hours (mah)—is comparable to the best of the alkaline batteries, so that savings for frequent users is more than tenfold for battery costs over the three- to five-year normal lifespan. A drawback is that toward the end of one or more of the batteries' discharge cycles, the voltage drops much faster than normal, i.e., you'll just have 20 to 30 seconds warning. (For serious use, carry a spare set of freshly charged batteries.)

Also, during disk drive use, using a tape recorder for verbally recording file names from your disk directory display for immediate playback when back in *TEXT* mode, is helpful when forming an index file of your disk *.DO* files, and is easier than printing out a disk directory hard copy each time. (A disk index file, listing the *.DO* names of all disk files is indispensable when handling all of the data on each disk during a single *BASIC* program run with, for example, *TS-DOS*.)

Don Rycroft, REALTOR
Victoria, B.C., Canada



Reach Out, Reach Out and Clutch Someone!

Hi, gang. What a long strange journey it's been. What happened was this: I came down with a bad case of Malaysian "Monkey Brain," which is kind of like the flu on steroids (and rumored to be the disease that Bush had when he chose what's-his-name as his running mate).

The last thing I remember was taking a dose of Vick's "DayCare," which would probably replace cocaine as the recreational drug of choice if it weren't for the fact that cocaine is cheaper. Next thing I knew, months had passed, Ed McMahon still hadn't sent me a check, and "The Wizard Of DOS" had been written and submitted (and published, which proves that Malaysian Monkey Brain can be spread by e-mail).

Anyway, I'm back, I'm as normal as I'm ever going to get, and I've got some people I want you to meet. But first ...

When writing this column, I've always shied from writing "Model 100/102/200" to refer to the core family of Tandy notebook computers. It's awkward and wordy. But if I write "Model 102," people think that I'm excluding their beloved M100 or M200. To end the confusion, I propose the following solution, which I, for one, consider too brilliant for words, and which I will begin using immediately, right here before your very eyes.

From now on, whenever I refer to any or all of the "classic" Tandy notebook computers, the Model 100/102/200 series, I will refer to them as "Model T's." For example, the only time I'll use Model 200 (or M200) is if the distinction is important. Otherwise, it's a Model T.

I hope everyone will drop the clumsy "Model 100/102/200" handle and begin to use this handy shorthand. More than that, I hope everyone who does use it will mail me a check in gratitude for all the typing the new Model T tag saves them. (The Legal Department says I have to say "Just Kidding" now.)

On to business ...

You have a question about your Model T. You need help fast. Who you gonna call? Radio Shack? Please. Walk into a typical RS store and ask for information about the Model T—it's like visiting a sensory deprivation tank.

It's like asking a Republican for spare change. It's like waiting for a G-rated Arnold Schwarzenegger movie. So what do you do?

One of the best kept secrets in the Model T world is the electronic information titans of CompuServe and GEnie. You'd think that, since every single Model T ever made includes a modem, the community would be buzzing about these services. But noooooo ...

I can only guess that it's because a lot of people out there just aren't familiar with the services or what they have to offer. But I don't want to cover any old ground here. I'm not going to focus on the services themselves. Instead, I'm going to give you a good reason to find out more about these services on your own: I'm going to tell you about some of the people you'll meet there.

From now on I will refer to them as "Model T's."

Everyone's heard of CompuServe (800-848-8990 for info). It's easily the largest of the general interest information networks. For around $6.00 per hour at 300 baud or $12.50 an hour for 1200/2400 baud access, you can connect to CompuServe and visit the Model 100 Special Interest Group (M100SIG), an electronic clubhouse for Model T owners.

The M100SIG, just one of hundreds of special interest forums found on CompuServe, features a message area, private conference areas, a software library of over 4,000 programs and files for your Model T, and the best sysop I've ever seen anywhere.

The sysop (SYStem OPerator) is the head cheese of the forum. The sysop's role is so important that it sets the tone for the entire forum. A weak forum can be brought to life under the guidance of a good sysop. A good forum can disintegrate with the wrong person at the helm.

CompuServe has been blessed with Tony Anderson filling the role of sysop on the M100SIG. I've logged onto a lot of different systems, both local boards and full blown networks, and I've never seen anybody with such a vast overall grasp of their subject as Tony has. While others may have more specialized knowledge or a deeper understanding of specific areas, I can't think of anybody who knows more about the Model T's in general than Tony Anderson does, and that may well include anyone working for Tandy. His knowledge of the Model T is simply staggering.

Yet even more impressive is this: On a forum of over 9,000 members, a forum so popular that it logs hundreds of new messages each and every month, I have never seen Tony fail to respond to a single question or request for help. Never. Not even once.

Tony got his Model 100 in 1983. At the time, he worked on a job that gave him long stretches of empty time to fill. He got the M100 to write programs for his desktop CP/M machine, but once he started using the M100 he found that he liked it better than the CP/M box.

One day he saw a copy of *Portable 100* magazine on a newsstand. Inside was a small ad for CompuServe that mentioned that the M100SIG had 400 programs available for members to download. He bought a modem cable that day. (Trivia buffs take note: in 1983, *Portable 100* magazine was the sponsor of the

Portable 100 BACK ISSUES

With over 60 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 **updated** *Portable 100 Article Index*. Covering every issue from September 1983 to the combined summer 1989 issue, the index is designed to make it simple for you to find what you need. And at a cost of only $9.00 (postage and handling included), you should buy one today! If you have last year's index, don't despair. Update your index by adding our special 1988-1989 Update Index. It's a bargain at just $4 (P&H included).

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 ($5.00 each, postage and handling included). 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.

Month	83	84	85	86	87	88	89	90
January			Not Published		Not Published			
February								
March			OUT					
April		OUT	OUT					
May		OUT				OUT		
June		OUT						
July		OUT		OUT		combined July/August	combined July/August & Sept. (Summer 1989)	
August		OUT						
Septembr	Premier Issue			Not Published		OUT		
October		OUT						
November								
December						OUT		

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forum).

After downloading many of the programs, Tony began uploading. And uploading. And uploading. When sysop Dave Thomas noticed that at one point ten percent of ALL the files available in the forum had been uploaded by Tony Anderson, he invited Tony to become an Assistant Sysop. Luckily for all of us, Tony accepted.

In 1986, when Dave left to go elsewhere, Tony became Sysop. He now has two M200's, three M100's, and an entire home office (with a PC) dedicated to running the M100SIG. Tony is a perfect example of a single person making a difference to an entire community of users.

There are others. Paul Globman, for example. Is there anybody in the Model T community who hasn't come across this name? When pressed, Paul self-consciously confesses to having authored "a couple hundred" Model T programs and routines. He is probably best known as the author of *XOS*, the superb cross-bank operating system for the M200.

Like Tony, Paul also had a CP/M machine in 1984, an Osborne. Fed up with its small screen and tiny letters, he went out and bought a Model 100.

Paul was also interested in the impending release of the *Multiplan* spreadsheet—so much so that he made a deal with his Radio Shack dealer: he would buy the M100 with the provision that he could return it if *Multiplan* wasn't released in the near future. (Did I mention that Paul can be very persuasive?) The dealer agreed.

When *Multiplan* finally came out six months later, the M200 was just being released. For Paul, it was lust at first sight. He traded in the 100 on a new 200 and started changing Model T history.

Somewhere in the midst of his programming, his ROM experiments, and a collaboration on a project with PCSG in Texas, he heard about CompuServe and the M100 forum. He joined for a simple reason: he had written a lot of programs and wanted to find a place to share his creations.

Paul says he programs "to fulfill a specific need or to fill time." A pretty casual statement from a guy whose current projects include *SLX* (Save/Load/Exchange) and *EXTBAS.CO* for Tracy Allen's innovative extRAM chip; *RAMDSK.CO* for the Node Datapac and the new Rampac; *XView*, an *XOS* utility that opens a window to provide a view of a file in another bank; and who knows what else.

Yet despite all this, despite his consulting work in his home of Florida and his specialized programming for businesses there; despite the fact that Paul has a new column called "GLOBAL PERSPECTIVES" here in *Portable 100*; despite ALL of this, Paul is still one of the most helpful visitors to CompuServe's M100SIG, casually providing answers to matters so complex that I can't even understand the questions.

I suppose I shouldn't be surprised. Paul has both an Associate's Degree in Electronic Technology and a Bachelor of Science in Computer Information Sciences. He also has a pair of M200's and a Model 100.

Wilson Van Alst is another name that many in our community will be familiar with. His programming efforts have brought him a lot of well deserved atten-

Continued on page 28.

COMPATIBILITY: Tandy 100/102

Dump Your Screen!

This handy little program lets you make screen dumps from your Model 100/102 on an Epson-type printer.

by G.W.Flanders

Model 100/102 graphics and most printers don't get along very well. Printing modes change, the paper starts scrolling, unrelated letters appear—it's a mess. And printing bit-mapped screens without special program interdiction is unthinkable. There are probably many times when you'd like a hard copy of your screen, to preserve special bit graphics or to reproduce an image that incorporates graphic characters. *DUMP.CO* is a short (265 bytes), quick (about 35 seconds) machine language program for your laptop which can be called from *BASIC* or activated from within the built-in ROM programs with two keystrokes. It can be disabled just as easily whenever you like. Running the loader program in Listing 1 creates *DUMP.CO*.

Don't scowl at the consecutive commas in the *DATA* statements. *BASIC* interprets a blank data slot as a null (zero). Line 1 ends with the command *SAVEM "DUMP", 57650, 57908, 57650*. It is important that the third, or execution (*Exe*) address is included, even though it is identical to the starting address. Model 100/102 users are often advised that if the *Exe* address is the same as the starting address, it can be omitted when issuing this command. However, unless the *Exe* address is present in the command, the program will not be menu-selectable. It will load into place without the *Exe* address, but then must be *CALL*ed from *BASIC*. By using the EXE address, you can run it right from the Menu.

Printing bit-mapped screens without special program interdiction is unthinkable.

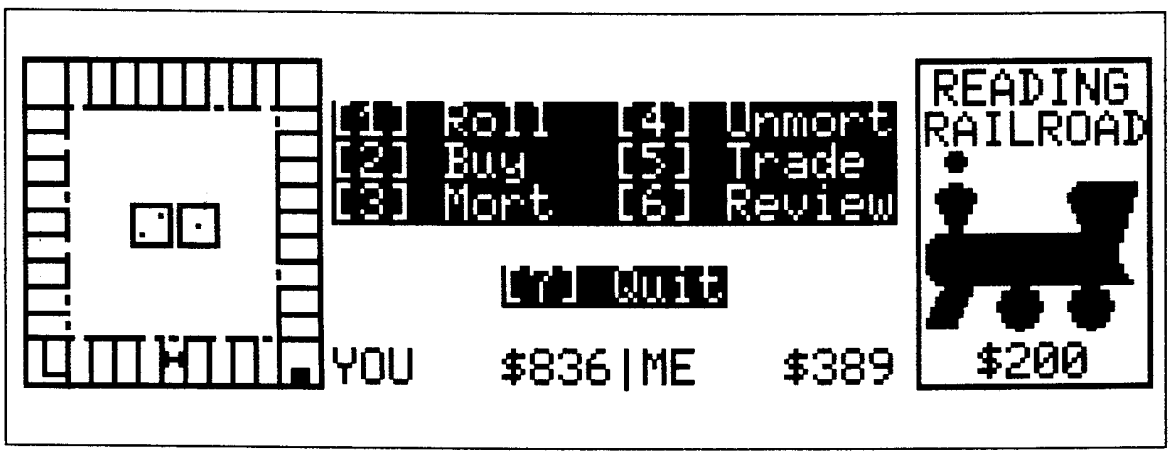
Once *DUMP.CO* has executed, all you have to do to force a screen dump to your printer is press the *ESC* and *GRPH* keys at the same time. This assumes that the ROM routine CHGET is invoked, as it normally is in *BASIC, TEXT, TELCOM, ADDRSS* and *SCHEDL* when user entry is called for. When you choose to disable *DUMP.CO*, press and hold *ESC* and *CODE* for a couple of seconds. *DUMP.CO* won't work if you press any other special key at the same time, or if the *CAPS* lock or *NUM* keys are down.

The first task of the program is to alter the address contained in the RAM vector used by the ROM routine CHGET at $12CB.

```
1 CLEAR 256,57650:FOR I=57650 TO 57908:R
EAD A:POKE I,A:NEXT:SAVEM "DUMP",57650,5
7908,57650
2 DATA 42, 222, 250, 34, 44, 226, 33, 63
, 225, 34, 222, 250, 201, 245, 58, 151,
255, 254, 8, 194, 245, 225, 58, 153, 255
, 254, 4, 202, 94, 225, 254, 8, 194, 245
, 225, 42, 44, 226, 34, 222, 250, 195, 2
45, 225, 62, 1, 50, 117, 246, 33, 13, 22
6, 205, 177, 39
, 175, 50, 244, 255, 33, 20, 226, 205, 1
77, 39, 175
3 DATA 50, 245, 255, 33, 47, 226, 205, 9
2, 118, 22, , 205, 50, 116, 17, 47, 226,
 6, 6, 58, 46, 226, 254, 1, 202, 185, 22
5, 26, 197, 213, 95, 22, , 33, 16, , 205
, 223, 55, 205, 247, 225, 209, 19, 193,
5, 194, 143, 225, 58, 245, 255, 60, 254,
 40, 194, 116,
225, 62, 13, 231, 62, 1, 50, 46, 226, 19
5, 109, 225
4 DATA 26, 197, 213, 95, 22, , 33, 16, ,
 205, 126, 55, 205, 1, 53, 205, 247, 225
, 209, 19, 193, 5, 194, 185, 225, 58, 24
5, 255, 60, 254, 40, 194, 116, 225, 62,
13, 231, 175, 50, 46, 226, 58, 244, 255,
 60, 254, 8, 194, 106, 225, 33, 25, 226,
 205, 177, 39,
175, 50, 117, 246, 241, 201, 125, 254, ,
 202, 9, 226
5 DATA 17, 29, 226, 61, 202, 8, 226, 19,
 195, , 226, 26, 231, 231, 231, 201, 27.
 108, 10, 27, 51, 22, , 27, 76, 208, 2,
, 27, 64, 13, , 192, 48, 240, 12, 204, 6
0, 252, 3, 195, 51, 243, 15, 207, 63, 25
5, , , , , , , , , .
```

Listing 1. This BASIC *loader program creates* DUMP.CO, *which gives a screen dump (copies the image on your screen to your printer) at the touch of two keys.*

[Hexadecimal addresses here are indicated by the prefix $, as used by some assemblers. Other assemblers may use the prefix &H or the suffix H to mean the same thing, e.g., &H12CB or 12CBH, respectively.—Ed.] CHGET is used to await a keystroke. Early on, CHGET issues an *RST 7* instruction with an offset of 4. This passes program control to whatever address appears in the "hook table" at $FADA plus the value of the byte immediately following the *RST 7* instruction. In this case, then, $FADA + $04 = $FADE. The default address at $FADE is $7FF3, which contains a *RET* instruction. Normally that doesn't accomplish anything, but our ability to change the RAM vector at $FADE allows us to examine each keystroke before CHGET does. *DUMP.CO* starts by storing the normal vector at $FADE in the buffer *HOOKBF*, replacing it with the start address of our working routine, which happens to be $E13F, seen in the source code at the label *NUHOOK*.



What we're looking for from the keyboard is evidence that the *ESC* and *GRPH* keys are being held down at the same time. It's reasonable to assume that when such an unlikely combination occurs, it's because the user wants an immediate screen dump. When *ESC/GRPH* is detected, we jump to the section called *DUMP*, which sends the current LCD screen information to the printer in a form that faithfully reproduces every pixel. If we don't detect *ESC/GRPH*, we return control to the CHGET routine; but not before we also check for the equally unnatural combination of *ESC/CODE*. If this pair of keys is being pressed, we place the original vector in $FADE and return, disabling *DUMP.CO*. To reactivate it, menu-select it again.

In performing a screen dump, *DUMP.CO* processes each of the 320 six-byte positions on the LCD (1,920 total bytes), printing each of the eight rows in two passes. The first pass prints values representing a double-high image of the low-order nibble (bits 0-3) of the true byte value MOD 16 (modulo 16). The second pass prints values representing a double-high image of the high-order nibble (bits 4-7) of the true value \16 (integer division). Moreover, each value is printed three times horizontally. The result is a hard copy, close to actual screen size, centered on your paper. At the beginning of each pass, the printer is commanded into double density high resolution mode and told how many bytes of information it will receive per pass.

The screen dump routine ends with the *RET* instruction CHGET must receive in order to get on with its own work. If neither *ESC/GRPH* nor *ESC/CODE* is detected, we *RET*urn immediately. In any case, the AF register pair (accumulator +

flags), often called the Program Status Word (PSW), are *PUSH*ed on the stack at the beginning and *POP*ped off the stack at the end. This assures that CHGET will be able to examine the original keystroke and act upon it if necessary. *ESC/GRPH* and *ESC/CODE* keypress combinations don't have any visible effect, and your screen will return to you just as you left it.

Here are some considerations which may pertain to your application.

1. The printer codes used are specific to my Epson LQ-850 and similar Epson clones/IBM-compatibles. To make *DUMP.CO* work with other printers, consult your printer manual and change the values in the data statements (see Listing 1, line 5) or in the source code at *SET*, *HR* and *FIX*.

This command is common to most printers.

SET contains printer commands which define the left margin and linefeed values. In the example, the left margin is set to 10. My printer recognizes *ESC* (ASCII value 27) plus lower case letter *l* (ASCII 108) as the left margin command, and sets the left margin to the decimal value which follows (in my case, ASCII 10). Hence, *SET* starts out with ASCII values 27,108,10. For hard copy appearance that suits me, I selected linefeeds of 22/180-inch. My printer recognizes *ESC* (ASCII 27) plus *3* (ASCII 51) as the command to set linefeeds to x/180-inch, where *x* is the next value. In this case, the numbers are 27,51,22. This means 22/180-inch. The null (*0*) at the end of *SET* signals the end of the commands to be sent.

HR contains the printer command that establishes the desired graphics mode and sets the number of columns to be printed in a pass. In this case, we want double density high resolution, the Epson code for which happens to be *ESC* plus *L* plus the number of columns to be printed, expressed here as *CHR$(208) CHR$(2)*. These values are interpreted as a low-byte/high byte pair, resulting in 208 + (2 * 256), or 720. Why 720? Because each screen position is six bytes wide, and there are 40 positions per row. 6 * 40 = 240 bytes of screen data in a row, and we are printing each of them three times per pass. 240 * 3 = 720 bytes of data flowing to the printer on each pass.

FIX is the way we want to leave the printer when we're done. It simply issues the *ESC@* command (27,64) to return the printer to its default settings, and adds a carriage return to separate one screen dump from the next if you will be doing more than one on the same page. As far as I know, this command is common to most printers. If you intend to use the *BASIC* loader (Listing 1) instead of assembling the source code yourself, find those numbers in the data statements and change them appropriately. Be sure that you don't use any more—or less—bytes than the original. Pad with zeros if your printer codes are shorter.

2. *DUMP.CO* is short enough to live in the alternate screen buffer (ALTLCD) used by *TELCOM*, but I've opted against that location in consideration of cassette users who would like to use the program without going through the trouble of reassembling it at a lower address. On the other hand, *DUMP.CO* is *ORG*'d at a lower address than some users might prefer. I did that to stay clear of *CDOS*, which controls a Chipmunk drive. If you use any peripheral that changes *HIMEM*, check that value before reassembling the source.

3. *DUMP.CO* can only work during a call to the ROM routine

CHGET, which, fortunately, occurs frequently in the built-in ROM programs, including *BASIC*'s command mode. When a program is running, CHGET won't necessarily be used at the desired time unless you program it in. An easy way is to insert a line like this:

```
100 IF INKEY$="" THEN 100
```

or directly, like this:

```
100 CALL 4811
```

Either method will wait for your keystroke, giving you a chance to enter the *ESC/GRPH* combination. If this method is used, you will have to enter something. If at that time you don't want the dump and don't want to mess up the display either, a non-destructive response would be to hit *ESC* by itself. Or, if there is a place in your program where you definitely want a screen dump, you can omit the prompt and insert *CALL 57694* (or whatever decimal address the label *DUMP* is assigned when you reassemble the source).

4. If you just want to call a screen dump from inside a *BASIC* program, then (a) shorten the existing source code by eliminating everything between the *ORG* declaration and the label *DUMP*; (b) at the label *RESET*, eliminate the *POP AF* instruction; and (c) reassemble at the address you want, and *CALL* that address directly from your program.

5. Option ROM's flit back and forth between their own code and standard ROM routines. This is true of PCSG's *SuperROM*, for example. CHGET is repeatedly called by *WriteROM*, and it would be surprising if *Lucid* and *Thought* didn't do the same. You may want to research this further by activating *DUMP.CO* and then entering your favorite option ROM.

6. The source code was written for the *TMN Assembler* (from Granite Street Portables) for the Model 100. If you will be using a different assembler, first make any required syntax changes in the source code.

SOURCE CODE: DUMP.CO

```
BYTES   EQU   $7432
CINT    EQU   $3501
DEVICE  EQU   $F675
DIV%    EQU   $377E
HOOK    EQU   $FADE
MOD     EQU   $37DF
NOINT   EQU   $765C
PRLP    EQU   $27B1
        ORG   $E132     ;57650
        LHLD  HOOK      ;get CHGET's RST 7 hook address
        SHLD  HOOKBF    ;tuck it away safely
        LXI   H,NUHOOK  ;fetch this program's start adress
        SHLD  HOOK      ;and put it into $FADE
        RET             ;now our program is installed
NUHOOK  PUSH  AF        ;save keystroke and flags
        LDA   -105      ;check special keys in the matrix
        CPI   8         ;is it ESC?
        JNZ   RESET     ;no - forget it
        LDA   -103      ;yes check for GRPH or CODE
        CPI   4         ;is it the GRPH key?
        JZ    DUMP      ;yes - dump the screen
        CPI   8         ;is it the CODE key?
        JNZ   RESET     ;no - forget it
        LHLD  HOOKBF    ;yes - get the old vector
        SHLD  HOOK      ;and put it back in $FADE
        JMP   RESET     ;we've disabled our program
DUMP    MVI   A,1       ;start the screen dump
        STA   DEVICE    ;select the printer
        LXI   H,SET     ;get the margin and line feed commands
        CALL  PRLP      ;and send them to the LPT
```

Continued on page 30.

Listing 2. Assembly language source code to create DUMP.CO. *(Those without assemblers can use the* BASIC *program in Listing 1 instead.)*

COMPATIBILITY: All portable computers.

The Stowaway 2400: A Truly Pocket-Sized Modem

Small, light, and the perfect companion for your portable computer!

By Terry Kepner

The new Vocal Stowaway 2400 baud modem is the smallest, lightest modem on the market today. It measures 2.2 inches wide by 3 inches long by 0.7 inches thick, much smaller than a package of cigarettes and less than half the size of a deck of 100 3x5-inch index cards. Its only flaw is that it has neither LED status lights nor a speaker, both elements sacrificed for small size and weight. Despite that, it is literally the most convenient portable modem I have ever seen.

How did they do that, you ask? Simple. They left out the battery and the power supply—completely. There are only two connectors on the unit: the RJ-11 jack on one end that goes to the wall telephone line, and the DB-25 female plug on the other end that goes to your computer. There's no battery compartment and no connector for an external power supply.

WHERE'S THE POWER SUPPLY?

But, you ask, how does the darn thing work without a power supply or battery? Again, the answer is simple. The modem derives all its power from the telephone line. This means a battery or separate power supply is plainly not needed. It also means that any telephone system capable of ringing the bell on a plug-in telephone will provide sufficient power to run the Vocal modem.

The other method of powering modems without a battery or power supply is to rely on the computer's RS-232C port to provide the required power. The Vocal Stowaway 2400's engineers deliberately avoided drawing power from the computer's RS-232C port, because not all computers provide a power supply pin for such a design to work reliably, not to mention the problems of slightly non-standard voltages in so-called standard machines.

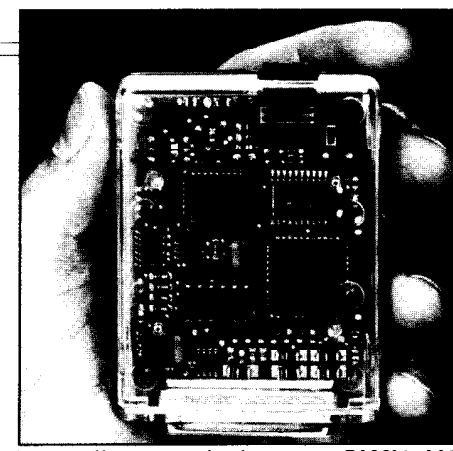
So, as a result, you never have to worry about a battery running down while you're using the modem, you'll never have to go looking for a battery because the one you have is dead, and you'll never have to worry about accidentally leaving the unit's power supply behind. The Vocal Stowaway 2400 will always be ready to work when you are, just plug it into the wall and your computer, and go to it.

HOW IT WORKS

The Stowaway 2400 operates at 300 baud, 1200 baud, and 2400 baud, all controlled by software settings you give. To make it easy for you to do this, the unit follows the Hayes AT Extended Command Set. Simply put, after plugging the modem to your computer and telephone line socket (via the included six-foot phone cable), set your terminal software to the desired baud rate, go into terminal mode, and press *ENTER*. The modem automatically detects the baud rate and adjusts itself accordingly.

If you want to talk to the modem directly, just type *AT* and press *ENTER*. The modem responds with *OK*. The Hayes AT command set is simply a series of two-letter codes that you use to tell the modem how to operate. For example, typing *AT H0* tells the modem to "hang-up the phone." *AT DP16039249770* tells the modem to rotary pulse-dial 1-603-924-9770 (our BBS, for example).

The modem, as delivered from Vocal is preset to certain parameters that you might not want it to use. I suggest that when you first connect the modem, type *ATB1V1X0*. This will enable the modem



to tell you such things as *BUSY, NO DIAL TONE, RING, CONNECT 300, CONNECT 1200, and CONNECT 2400* when you use it. If you intend to use the modem primarily with software, such as *PROCOMM* or *Crosstalk*, then this won't be necessary, although you may have to create an "initialization" string for the software to configure the modem before using it.

WHAT IT CAN DO

The Stowaway 2400 is a complete originate and auto-answer asynchronous modem capable of using both the Bell standards (103, 212A) and the European CCITT standards (V.22 and V.22 bis) for communicating over the telephone lines. The Hayes AT command set lets you control not only the speed and type (CCITT or Bell) of the communication, but also how many rings to wait before answering the phone on incoming calls, whether or not to use pulse or tone dialing, putting the telephone on or off hook, what escape, line feed, carriage return, and backspace codes to use, carrier detect response time, and a host of other functions including storing up to

three different modem configurations in non-volatile modem RAM (with phone numbers).

Unfortunately, the booklet that comes with the modem is even smaller than the modem itself (20 pages long and 4 inches by 2.75 inches). While it provides an adequate reminder for an experienced user as to the AT commands, for a neophyte it is almost useless. And, sadly, there aren't any books around that describe how to use the Hayes AT Command Set.

IN USE

Once you get the modem set up, it's quite a thrill to watch the incoming characters just shoot by at 2400 baud. While many services attach premium charges for such high speed usage, the time saved in downloading files completely offsets the extra charges. In fact, if you use an automated message handling program such as *TAPCIS*, you can call in during the high-cost daytime hours to leave and retrieve messages and still spend only a dollar or so in actual on-line charges. At night the cost for a month's worth of downloads, say five hundred thousand characters, would still end up costing under ten dollars. Not a bad deal.

For the Tandy 102 or WP-2 the 2400 baud speed is a real killer in lost characters when receiving text. Both machines lose characters because of the slow scrolling speed of the displays. If you switch to Xmodem protocol for downloads, however, you can get reliable reception because the displays are dropped out of the incoming data loop. For the Tandy 102 this means a program other than *TELCOM* must be used. Fortunately, such programs exist in the CompuServe databases of the Model 100 SIG and the *Portable 100* BBS..

Of course, you don't have to use the modem at 2400 baud, you could use it only at 1200 baud. While half the speed of 2400, it is still four times faster than the normal 300 baud the Tandy normally uses.

Manufacturer's Specifications

Vocal Technologies, Ltd
3032 Scott Blvd.
Santa Clara, CA 95054
(203) 356-1837
(203) 358-9266 Fax

Stowaway 2400—$295

Line-powered (No battery or AC)
300/1200/2400 bps
CCITT V.22 and V.22 bis
Bell 103 and 212A
Hayes Extended AT Command Set compatible
Automatic fallback
Automatic answer
Tone and pulse dialing
40-character command buffer
FCC approved
One year warranty

IN SUMMARY

The Vocal Stowaway 2400 is a dandy little modem. At a suggested list price of $295 it is only $4 less than the Touchbase WorldPort 2400 sold by Tandy, but the Stowaway 2400 is smaller, lighter, and doesn't require power from your computer or from batteries. Tandy 1100 FD, 1400 LT, 1400 FD, 1400 HD, 1500HD, 2800 HD, and WP-2 users will need to buy a 9-pin to 25-pin female-to-male cable connector. Tandy 102 users will need a simple 25-pin male-to-male gender changer.

If you want to buy a high speed portable modem for your portable computer, or just upgrade from your current modem, then give the Stowaway serious consideration. I recommend it highly.

COMPATIBILITY: WP-2—Macintosh (Model 100/102—Macintosh version available)

Cabochon's *WPduet* Reviewed

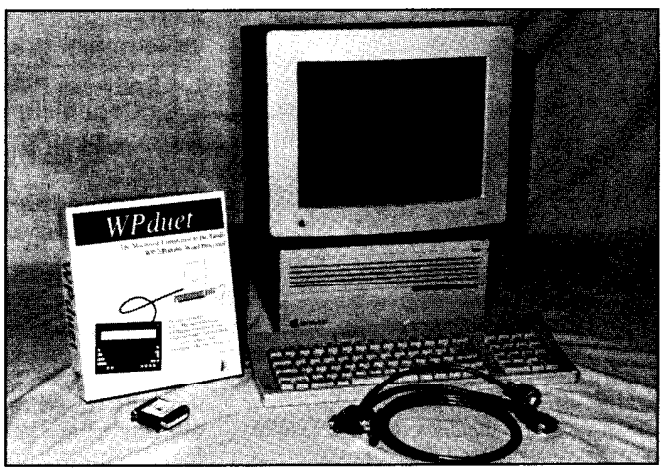
Make your WP-2 sing in harmony with your IBM-PC or Macintosh computer!

by Joseph O. Holmes

I originally bought the WP-2 as a "data bucket," as a Boston Computer Society writer once dubbed notebook computers. That is, I just wanted a way to write while I was away from my desk and then dump the results into my Mac. The WP-2 looked very promising. A three-pound, dedicated word processor, it runs for ten or fifteen hours on four AA batteries. On sale it's less than $300.

But then I discovered that transferring files between the WP-2 and my Mac was going to be a major problem. First, neither Tandy nor any one else makes a cable to connect the WP-2 to the Mac's serial port. Though I'm no klutz, my attempts at soldering one met with limited success (though I've heard that some users have had better luck). Even assuming a working cable, the WP-2's built-in *TELCOM* software is infamously arcane, non-intuitive, and extremely unforgiving. (There are constant discussions on CompuServe and GEnie forums on the source of and solutions to the problems. I'm convinced that *TELCOM* is extremely sensitive to settings; in addition, the cable apparently uses nonstandard pin assignments.) Files I did manage to transfer had to be stripped of carriage returns at the end of each line. All formatting was lost. In short, I was very, very discouraged. Then last week I bought *WPduet*.

WPduet solves the data transfer problems with one simple trick.



WPduet, remarkably, solves all the transfer problems through one simple trick. It fools the WP-2 into treating the Macintosh as a floppy drive instead of a remotely connected computer. The flaky *TELCOM* software is never invoked. *WPduet* comes packaged with a four-headed Hydra of a cable. One end fits either the DB-9 connector found on the older Macs or the DIN-8 connector on everything from the Plus on. The other end will either plug into the WP-2's RS-232C disk drive port or it can be used to attach a Tandy Portable Disk Drive 2 to the Mac, a procedure I didn't test since I don't have one.

The software consists of a single 63k *Multifinder*-friendly application, with a cute little black WP-2 as its icon. It's booted on the Mac in the usual way, by double-clicking the icon. Then, by choosing *Direct connect to WP-2* from the *Direct* menu, the Mac is put into its ready mode. (The first time that's done, and occasionally thereafter, *WPduet* prompts the user to select a default folder that will act as the virtual disk drive. The folder can be on any disk in any drive.) From that point on, the Mac is in a passive sending and receiving mode, which can be broken only by invoking the standard cancel command—*Command-period*. All the transferring is run from the WP-2.

Learning to transfer files is simple, since every operation is performed using the standard WP-2 file commands. The same copy, delete, and merge operations run right from the familiar *FILES* screen. If you've installed a RAM disk, then you already know how to perform all the operations necessary. If not, it's all in the WP-2 manual.

To copy a file, for example, from the Mac to the WP-2 (once the Mac is in its Direct Connect mode), go to the *FILES* screen, select the *DISKETTE* menu and press *Enter* to display the contents of the Mac folder. The WP-2 thinks it's reading from a floppy disk, but in fact the Mac responds by sending a catalog of all the files in the selected folder. Now highlight a file from that list and press *F1-C* for copy. When the target *Device* menu then

appears, choose *MEMORY* or *RAM DISK* and hit *Enter* to begin the transfer. Then for fifteen seconds or so, the WP-2 screen reads *Working* and a window on the Mac displays *Sending Catalog, Receiving Data*, etc. And then the icon of the transferred WP-2 file appears in the selected folder on the Mac.

Uploads from the WP-2 to the Mac are relatively slow. I clocked transfer at about 80 bytes per second, but since I don't expect any heavy duty file transferring, I don't consider speed to be critical. Downloading from the Mac, however, is speedier. A 10k file took just 12 seconds, or better than 800 bytes per second.

A more annoying slowness occurs at the *DISKETTE* menu. It takes a couple seconds to move the highlight down to each file name on the menu; trying to highlight the last name on a list of eight or ten can seem to take forever.

WPduet translates files into any of five text formats as they are being transferred onto the Mac: a WP-2 proprietary format, plain text, plain text with carriage returns at the end of each line (for telecommunications), *MacWrite II* format (be warned—not the old *MacWrite* format), and Rich Text Format (used by Microsoft in *Word* and *Write*, and by T/Maker in *WriteNow*). Since the software takes care of all formatting, there is no longer any need to use the WP-2's ASCII-convert procedure. Files appear in the Mac word processor in the Geneva font (with Chicago displayed where an alternative font was marked on the WP-2), and underlining, boldface, centering, and tabs are completely intact. There are never any annoying carriage returns every eighty characters. *WPduet* does not support format transfers in the other direction, from the Mac onto the WP-2.

The decision to include the WP-2 proprietary format was very smart, for it allows painless back-up of all the WP-2 files, in memory or RAM disk, onto the Mac. In fact, since you can choose to direct the transfer directly to a 3.5-inch floppy disk, the Mac can act as a very expensive WP-2 floppy drive. The Rich Text Format transfer, remarkably, appears on the desktop as a Microsoft *Word* icon; double-clicking it boots up *Word*! The same goes for *MacWrite II*. Quite an improvement over telecommunications transfers!

WPduet is a pleasure to use. It took me all of fifteen minutes to learn the basic procedures, and another half-hour of exploring to discover some features not included in the 27-page, clearly written manual. One thing I discovered is that,

WPduet translates files into any of five text formats

since the WP-2 thinks the Mac is just a floppy drive, many of the standard *FILE* commands work just fine. Copying all files from or to the Mac employs the usual *F1-8* command. It's an equally simple matter to *MERGE* a file from the Mac into the middle of a current working document, or to use the *VIEW* function to read any file on the Mac without downloading it. In fact, I found I could even delete files on the Mac by pressing the *F1-D* command on the WP-2! And the warning *FILE EXISTS—Overwrite?(Y/N)* appears whenever an attempt is made to transfer a file when one with the same name already exists.

Some operations, however, apparently work only with a real floppy drive. I couldn't *RENAME* files on the Mac with an *F1-R* command on the WP-2, and I couldn't *SWAP* a file in working memory with one on the Mac (which might be useful). I don't consider either of these a major drawback. (I did not attempt to reformat my hard drive with the *F1-F* command!)

Although the WP-2 attempts to read the free space on any device, it told me I had 326K free on my hard drive instead of the nearly 30 megs that are actually free. My advice: ignore the reading. If you try to transfer a file to a full disk, such as a floppy, *WPduet* uploads the entire file before checking the free space (it apparently has no way of knowing how large the file is going to be until it's received), and it then puts up a dialog box ordering you to choose a new disk. No damage is done, but the transfer must be started over from scratch, and a zero-K file is left on the target disk. Just be sure to use a floppy with sufficient free space.

Even as I performed all these experiments, trying every operation I could think of, the WP-2 never locked up. I wish I could say the same for my earlier experiments with *TELCOM*.

I did run across two bugs in version 1.0. At one point, as the *DISKETTE* menu listed the files on my Mac, it mysteriously began to multiply the name of one file. Every action I took in the menu caused the top file to be bumped off the list and another copy of the last file to be added. When I left that menu to do something else and then returned, the problem disappeared. It hasn't recurred, and none of the files on the Mac or WP-

2 were affected in the least. It may have been caused when I dragged a file to the trash on the Mac but failed to empty the trash. The only other erratic behavior I experienced was when I transferred a file in Rich Text Format to Microsoft *Word 4.0*: the centering formatting failed to center text and in fact clipped off the first word of the line.

The *WPduet* manual lists no telephone support number, but I found Cabochon's number on my invoice, so I called Scott Andersen, the author of *WPduet* and the owner of Cabochon. His answering machine took my message, and he called me back in less than an hour to discuss my experiences. (By the way, I've never met Scott Andersen, I have no association with him, and I paid full price for *WPduet*. I did not mention until the end of my phone call with him that I intended to write a review of *WPduet*.)

Andersen was not aware of the *Word 4.0* centering problem. He had tested the RTF translation on Microsoft *Write* (and on T/Maker's *WriteNow 2.2*) and naturally assumed that *Word* would use an identical method of translation. The problem sounds relatively simple to track down and fix, and he said that he'd begin to work on a fix and a revised release soon.

The *DISKETTE* menu problem may be tougher. Andersen saw the same symptom appear early in his work on the software, and when it didn't recur, he hoped that it had been solved. He explained that it's probably a by-product of the WP-2's method of listing the catalog of the disk: rather than read the catalog and then hold the list in its memory, it retrieves the entire catalog from the drive each time it redisplays the list. That explains why even just moving the highlight down the menu causes such a delay. According to Andersen, the Mac responds to requests for a catalog much faster than the Tandy Disk Drive 2, so occasionally the WP-2 may be fooled into believing that multiple copies of a file exist. I'm not sure there's an easy solution, but I never experienced anything but mild inconvenience from the problem.

WPduet is relatively expensive. At $99 (plus shipping) it adds more than 25 percent to the list price of the WP-2. But it comes bundled with a cable, which alone accounts for $30 or more of the value. To me, the *WPduet* was worth every penny. Before I got it, I was extremely frustrated at the gap between the three-pound data bucket I thought I had bought, and the quirky, fussy, buggy product that I owned. *WPduet* changed that. Now I feel like my Mac has a detachable 3-pound keyboard. And I take it everywhere!

Manufacturer's Specifications

WPduet (WP-2—Mac)—$99.95
100duet (M100/102—Mac)—$99.95

(Quantity pricing available)

Cabachon, Inc.
1740 Massachusetts Avenue
Boxboro, MA 01719
(508)264-4648

Here's my wish list for future versions of *WPduet*. First, it would be very useful to transfer underline, bold, and other formats from the Mac onto the WP-2, not because the formats are useful per se on the WP-2, but because text could make the round trip to the WP-2 and back without the need to reapply formatting. Another feature I'd like to see is default fonts other than Geneva and Chicago. I'm no programmer, but it couldn't be too difficult to add a standard Font menu before translation. Finally, I hope that Scott Andersen has the opportunity to bundle some actual programs for the WP-2 on the next disk. The little thing could definitely use a little macro program!

A final note: One warning that ought to be included in the next edition of the manual, and should have been included in the WP-2 manual, is to turn off the WP-2 whenever connecting any cable or power cord. Doing so with the power on will sometimes cause the low battery or low back-up warning to come on, and it's very resistant to being shut off.

This review was written entirely on the WP-2 and transferred to the Macintosh with *WPduet*.

COMPATIBILITY: Tandy 100/102 ; others with variations.

Twisted, Shrunk, and Packed

The previous screen dump program (pg. 8) revised, reduced, and packed into BASIC

by Mike Nugent

"Once upon a time, they lived happily ever after." Doubtless, such bliss can be attributed in part to the fact that, having never even heard of Model 100's, they were not yet plagued by rival *.CO* files battling over system resources. But that was then, and this is now. and things are different.

A (VERY) BRIEF HISTORY

Somewhere between Once Upon A Time and now, the Model 100 got invented, and folks thought it was great. Programmers glommed on it, and soon all manner of nifty *BASIC* programs and utilities sprang up to fill its little RAM—filling it so well, in fact, that there was less and less room for actual data!

In that kind of situation, where space is tight, machine language programs can really strut their stuff. Far smaller and significantly faster than their *.BA* brethren, it was inevitable that more and more machine language (*.CO*) programs would arrive to ease the crunch and improve our lives. More and more of them. And more.

Which brings us up to Nowadays and the problems of ...

.CO-HABITATION

Alas! Wonderful as they are, these zippy little *.CO* dynamos come with problems all their own. Most of them require twice their size to run. Most crave the same high RAM space. Most require special handling before and after use. Few are user-friendly.

Thus, many otherwise useful machine language programs go unused or are unduly difficult—even dangerous—for non-computer-jocks to use, due to their design.

YEAH ... WELL?

Not quite Once Upon A Time, but certainly long, long ago, I promised to detail some methods for making machine language programs smaller, safer, easier to use, and more compatible with other programs. And in ROM WITH A VIEW last month, I opined that the Model 100's full capabilities remain untapped, and urged the programmers among you to push the limits. It's about time I kept my promise and helped to get you started.

In this series of articles I'll be sharing some knowledge and techniques I've developed, discovered, and learned or stolen from others. I won't attempt to teach machine language programming here; that's been well covered in various books and articles, which I'll list in a future installment. This series is for those already familiar with assembly language programming.

```
1Ø REM---------1---------2---------3----
-----4---------5---------6---------7----
-----8---------9---------Ø---------1----
-----2---------3---------4---------5----
-----6---------7---------8---------9----
-----Ø---------1---------2---------3----
-----4
2Ø PRINT "CHDUMP.BA":PRINT "Copyright 19
9Ø Tri-Mike Network East"
3Ø PRINT "by MJ Nugent, Jr.":PRINT "All
rights reserved"
4Ø PRINT "Installing ..."
5Ø '--- m/l size, variables ---
6Ø READ D,KB,WH,F$,SZ,DA,FL,LL
7Ø '--- locate pgm in RAM ---
8Ø PRG=PEEK(WH)+256*PEEK(WH+1)
9Ø '--- set line 1Ø pointer ---
1ØØ X=Ø:L1Ø=PRG+5+X
11Ø PØ=PEEK(PRG)+256*PEEK(PRG+1)
12Ø '--- install m/l in line ---
13Ø BASE=L1Ø:J=SZ:GOSUB 36Ø
14Ø '--- find pgm dir entry ---
15Ø A$="":FOR I=3 TO 1Ø:A$=A$+CHR$(PEEK(
D+I)):NEXT
16Ø IF A$<>F$ OR PEEK(D)<>128 THEN D=D+1
1:GOTO 15Ø
17Ø 'store dir attrib adr in pgm ---
18Ø MSB=INT(D/256):LSB=D-MSB*256:IF MSB=
Ø OR LSB=Ø THEN 48Ø
19Ø POKE L1Ø+DA,LSB:POKE L1Ø+DA+1,MSB
2ØØ '--- set up to kill these lines ---
21Ø OPEN "KILLER.DO" FOR OUTPUT AS 1
22Ø FOR I=FL TO LL STEP 1Ø
23Ø PRINT #1,STR$(I)
24Ø NEXT
25Ø CLOSE
26Ø '--- stuff cmds into kb buffer ---
27Ø A$="KILL"+CHR$(34)+"KILLER.DO"+CHR$(
34)+CHR$(13)+"MENU"+CHR$(13)
28Ø FOR I=1 TO LEN(A$)
29Ø   POKE KB+2*I,ASC(MID$(A$,I,1))
```

Listing 1. CHDUMP.BA *employs machine language embedded in* BASIC *to create a 277-byte memory-resident screen dump program for IBM/Epson-compatible printers.*

Owing to my workload, the series will likely be somewhat unstructured, perhaps not quite monthly, and of indeterminate length (read: I'm wingin' it!). Nevertheless, it will, I hope, provide the impetus for your own exploration and plant the seeds of your own discovery.

BEGINNINGS?

I'm going to start at the end. Whereas many programming series have "built" a program in stages, ending with the completed program, I'm going to reverse that. By starting with the finished program, everyone, including non-programmers, can make immediate use of it. Then next month we'll begin to analyze it and see how it developed into its final (or at least present) form.

My program, *CHDUMP.BA* (Listing 1), is derived from George Flanders' screen dump program, *DUMP.CO*, published on page 8 in this issue ("Dump Your Screen!"). It simply prints a copy of the Model 100/102 screen to an IBM-compatible printer. I chose this program for several reasons, not the least of which was that I had just modified it for a client's use, so it was already handy. Plus, with the IBM/Epson being one of the most common printer types, the program is useful to a large number of people. And finally, several features of the original program lend themselves well to illustrating some of the techniques I plan to show you.

This program works much like George's original, using the same keystrokes to start and to disable the screen dump. The major difference is that, while his program is a *.CO* file that operates high RAM, mine is machine language packed inside a *.BA* file, which resides in low RAM, thus minimizing conflicts with other *.CO* files, like print formatters, disk operating systems (e.g., *FLOPPY*), screen enhancement software (e.g., *Ultrascreen*, *View-80*), and what-have-you.

To use *CHDUMP.BA*, type it in and save it as *CHDUMP.BA* (it expects that name). To save memory, you may leave out unnecessary spaces and delete remarks, but you must use all existing line numbers, and remark lines must contain at least the line number and the apostrophe. If in doubt, just type it in exactly as shown. This creates the *BASIC* installer program. Save it to tape or disk, so you'll never have to type it in again.

Before running the installer, first kill any *.BA* files that you may later want to remove. Some *BASIC* programs don't show a *.BA* extension (for example, *UR-2*, *RANDOM*, *T-WORD+*). When in doubt about a file, kill it. You can reload it later. **Caution: Mistakes made in typing *CHDUMP.BA* can have potentially disastrous results. The first time you run it, back up any important files first!**

Now you can run *CHDUMP.BA*. When run, it installs the machine code into line 10, and then deletes any unneeded lines, shrinking itself from 3K to 277 bytes. (If you get a *Load Error* message, see the LOAD ERROR section below.) *CHDUMP.BA* is now ready to use.

To arm the program (i.e., to make it ready to do a screen dump) just run it from the main menu like any other *.BA* program. The Model 100/102 main menu quickly returns, and *CHDUMP.BA* is missing. It's been made invisible so that it can't be killed. Killing it while it's armed can cause a cold start. To indicate that it's armed, *BASIC* on the main menu is now named *BASIC+*, and any time you press the *ESC/GRPH* key combination, it will initiate a screen dump to your printer. If the printer is not connected and ready, the computer will beep to inform you.

To disable *CHDUMP*, press *ESC/CODE*. When you return to the main menu, *BASIC* has lost the + symbol, and *CHDUMP.BA* is back on the menu. It is now disarmed and can be safely killed. However, being so small, it is usually easier to leave it on the menu, making it convenient and handy whenever needed.

```
30Ø    POKE KB+1+2*I,Ø
31Ø NEXT
32Ø POKE KB+1,I-1
33Ø '--- waste lines, end install ---
34Ø MERGE "KILLER.DO"
35Ø '--- install/relocate m/l ---
36Ø FOR I=Ø TO J
37Ø    PTR=BASE+I
38Ø    READ A:IF A=>Ø THEN 44Ø
39Ø    READ A,B:REL=A+256*B
4ØØ    FX=REL+LØ
41Ø    B=INT(FX/256):A=FX-B*256
42Ø    IF A=Ø OR B=Ø OR A=-13 OR B=-13 THEN
 48Ø
43Ø    POKE PTR+1,B:I=I+1
44Ø    POKE PTR,A
45Ø NEXT
46Ø RETURN
47Ø '--- load error ---
48Ø BEEP:PRINT "Load Error!"
49Ø END
5ØØ '--- d,kb,wh,f$,sz,da,fl,ll ---
51Ø DATA 63842,65449,631ØØ,"CHDUMPBA",23
9,14,2Ø,86Ø
52Ø '--- line 1Ø m/l code ---
53Ø DATA 17, 222, 25Ø, 237, 229, 33, -1,
 34
54Ø DATA Ø, 217, 225. 34. -1. 6. Ø. 33
55Ø DATA 255, 255, 126, 238, 8, 119, 4Ø,
 3
56Ø DATA 26, 238, 1Ø4, 18, 33, 1Ø6, 249,
 126
57Ø DATA 238, 11, 119, 2Ø1, 245, 33, -1,
 59
58Ø DATA Ø, 229, 58, 151, 255, 254, 8, 1
92
59Ø DATA 58, 153, 255, 254, 8, 2Ø2, -1,
Ø
6ØØ DATA Ø, 254, 4, 192, 195, -1, 61, Ø
61Ø DATA 241, 2Ø1, 219, 187, 23Ø, 6, 238
, 2
62Ø DATA 194, 41, 66, 62, 1, 5Ø, 117, 24
6
63Ø DATA 33, -1, 2Ø9, Ø, 2Ø5, 177, 39, 1
75
64Ø DATA 5Ø, 244, 255, 2Ø5, -1, 1Ø8, Ø,
58
65Ø DATA 244, 255, 6Ø, 254, 8, 194, -1,
82
66Ø DATA Ø, 33, -1, 221, Ø, 2Ø5, 177, 39
67Ø DATA 175, 5Ø, 117, 246, 2Ø1, 2Ø5, -1
, 111
68Ø DATA Ø, 33, -1, 216, Ø, 2Ø5, 177, 39
69Ø DATA 175, 5Ø, 245, 255, 33, 192, 252
, 229
7ØØ DATA 2Ø5, 92, 118, 175, 87, 2Ø5, 5Ø,
 116
```

Continued.

CAUTIONS AND CLARIFICATIONS

First, never edit the installed *CHDUMP*. The embedded machine code in line 10 may run afoul of the computer's editor,

and it may refuse to restore itself to *.BA* form, forcing you to kill it and start over.

Second, if you disable it from the main menu, *CHDUMP.BA* won't reappear (and *BASIC+* won't lose the +) until you've left the main menu and returned. A bit of a quirk, perhaps, but what do you want from a 277-byte program?

Third—and this applies to George Flanders' original version as well—when pressing *ESC/GRPH* or *ESC/CODE*, you must first hold down *GRPH* or *CODE*, and then press *ESC*. If you press *ESC* first, nothing happens. It has to do with the way the M100/102 scans for keys; nothing we can do about it.

And finally, don't bother saving the installed (277-byte) *CHDUMP.BA* to tape or disk, intending to reload it later to avoid hassling with the normal installation procedure. Upon reloading, it won't be able to find itself in the directory, so it won't work properly. In other words, if you ever remove *CHDUMP.BA*, always reinstall it using the uninstalled (3K) version, as described above.

LOAD ERROR

Packing machine language into a *.BA* program (as *CHDUMP* does) can be a complex affair, because you can't predict where the program will reside in memory. Since the values of certain bytes depend on the program's location, sometimes a byte contains a value *BASIC* misinterprets. The *Load Error* message warns you of such a byte. You must move the code higher in memory, a byte at a time, until all bytes are acceptable to *BASIC*. Here's how:

1. Type *NEW* and press *ENTER*. Type *KILL "CHDUMP.BA"* and press *ENTER*.
2. Load a fresh copy of *CHDUMP.BA* from disk or tape, and save it to RAM as *CHDUMP.BA*.
3. Edit line 10 (type *EDIT 10* and press *ENTER*). Insert an *X* right after the *REM*, making it *REMX*. Then press *F8*.
4. Edit line 100 (type *EDIT 100* and press *ENTER*). Change *X=0* to *X=1*. Then press *F8*.
5. Edit line 870 (type *EDIT 870* and press *ENTER*). Change the *+5* to *+6*. Then press *F8*.

You've just moved the program code up one byte in memory. Try running the program again. If it still fails, repeat steps 1-5, inserting another *X* in line 10 (e.g., *REMXX*) adding 1 more to the numbers in lines 100 and 870, and then run it again. One or two *X*'s should do the trick. If you've added 5 or 6 of them without success, carefully check your program listing for errors.

COMPATIBILITY

As described in George Flanders' article, the program uses the CHGET hook in the Model 100/102 keyboard ROM routine. Some other programs may alter that hook without first checking to see if it's in use, and/or without restoring its contents afterward. See George's article for further details. Until you've experimented a bit and are sure of its compatibility with your other programs, make frequent backups. (Good advice when using any new software.)

HAPPY TRAILS

Well, there's our first project. Use and enjoy it. Next installment, we'll begin to study its evolution from its initial form to its present form, along with the how, the why, and some what-if's. Catch ya!

❁


```
71Ø DATA 2Ø9, 6, 6, 26, 197, 213, 95, 17
5
72Ø DATA 87, 46, 16, 1Ø3, 2Ø5, -1, 193,
Ø
73Ø DATA 125, 183, 2Ø2, -1, 163, Ø, 17,
-1
74Ø DATA 224, Ø, 131, 95, 21Ø, -1, 162,
Ø
75Ø DATA 2Ø, 26, 231, 231, 231, 2Ø9, 19,
 193
76Ø DATA 5, 194, -1, 136, Ø, 58, 245, 25
5
77Ø DATA 6Ø, 254, 4Ø, 194, -1, 118, Ø, 6
2
78Ø DATA 13, 231, 62, 1, 238, 129, 5Ø, -
1
79Ø DATA 186, Ø, 2Ø1, 58, -1, 186, Ø, 18
3
8ØØ DATA 25Ø, -1, 2Ø3, Ø, 195, 223, 55,
2Ø5
81Ø DATA 126, 55, 195, 1, 53, 27, 1Ø8, 1
Ø
82Ø DATA 27, 51, 24, 34, 27, 76, 2Ø8, 2
83Ø DATA 34, 27, 64, 13, 34, 192, 48, 24
Ø
84Ø DATA 12, 2Ø4, 6Ø, 252, 3, 195, 51, 2
43
85Ø DATA 15, 2Ø7, 63, 255
86Ø '--- turn CHDUMP on/off ---
87Ø CALLPEEK(631ØØ)+256*PEEK(631Ø1)+5:ME
NU
```

End of listing.

COMPATIBILITY: All computers equipped with an RS-232C serial port.

Whoops and Auntie Em : A Tale of Two Computers

by Stan Wong

I've got good news and bad news. The good news is that this article marks the start of expanded coverage of Tandy's WP-2 Portable Wordprocessor by *Portable 100* magazine. The bad news is that future articles will be written by someone else ... okay, okay, so it's all good news.

"Whoops" is my WP-2. "Auntie Em" is my Model 100 (as in *M*100). Why does a long-time Model 100 owner/user need a WP-2? This article consists of my observations and experience with the two machines. I'll tell you how this M100 owner found that he needed a WP-2.

NEW KID ON THE BLOCK

The WP-2 is the latest from Tandy in innovative, light-weight, battery-powered notebook computers. Bucking the current trend in laptop computers, their latest offering, like the T102, does not run the IBM PC-DOS operating system.

Conventional wisdom says you've got to build a DOS machine these days. People, however, want solutions to their problems. The continued popularity of the M100/T102 is evidence that that unconventional machine solves a lot of people's problems.

So why would I want to buy a WP-2? The M100 works just fine and does everything I ask it to do. It's a versatile machine; its flexibility, however, is what drove me to buy a WP-2.

THE M100 STANDARD

The granddaddy of the notebook series, the Model 100 is still with us in the form of the Tandy 102. Like the gold standard, it's the notebook computer by which all others are measured, including the current crop of DOS laptops. Many of today's computer journalists cut their computer teeth on the Model 100. It's no wonder the M100 still is used as the standard for portability and functionality.

Now, with two notebooks to choose from, which one is right for you? I won't pretend to make a recommendation for you, since your needs probably differ from mine. For me the answer was not an either/or question. The solution was to own both.

HOW I USED THE MODEL 100

I use the built-in *BASIC* of the Model 100 for programming chores. I also use *BASIC* to run utilities created by other people. I use it for telecommunications. I use it for text entry and word processing.

With two notebooks to choose from, which one is right for you?

To accomplish all this, however, required two commercial option ROM's and a portable disk drive (PDD) to store everything. My programming chores required swapping option ROM's. I hate to admit that, in spite of earning a masters degree in computer science, I do not write perfect code. (I hope my employer doesn't read this magazine!) Cold starts are a way of—and a fact of—M100 life.

Daily word processing chores meant that my programming work got saved to the PDD, option ROM's were changed, and work in progress restored to memory. Some insidious programming mistakes sometimes didn't manifest themselves right away, and loss of data would be the unfortunate result. I always keep an ice pick handy to chip off the ice when an "arctic freeze" sets in.

ON THE HORNS OF A DILEMMA

As a long-time Model 100 owner and user, I own many of the Tandy peripherals and third-party option ROM's. My primary use of the machine is for text entry and telecommunications. I also use it to write first drafts of documents. It was with some trepidation (and $300) that I went to my local Radio Shack dealer to inspect the WP-2 after it was introduced and on sale. (How many new machines are introduced and discounted right away? Did Tandy want to build a market or did they realize that they had made a marketing blunder?)

Why not buy another M100? One for programming and one for writing? I thought that the WP-2 must employ the latest in technology. It was introduced six years after the Model 100. In those years we've seen the Intel 8086/8088 reign supreme, to be followed in quick succession by the Intel 80286, 80386, and now the 80486. Of course, we've also seen the space shuttle grounded twice and the Hubble space telescope crippled. But the Model 100 and its technology still sell well.

And having no purpose in mind, what was I going to do with the machine? As the saying goes: "When the going gets tough, the tough go ... shopping!"

COMPARISON SHOPPING

When the WP-2 was first introduced last year there was speculation that the WP-2 would be the T102 replacement. It

wasn't hard to imagine where that speculation came from. When you give a cursory examination to the list of features of each machine, they are very similar.

Each has a word/text processing function, each has a telecommunications module, calendar function and phone book function.

The WP-2 lacks the *BASIC* interpreter and the internal modem that the Model 100 has.

The WP-2 does have a print formatter, spelling checker and thesaurus that the Model 100 lacks.

These comparisons are for the unenhanced machines as they are sold by Tandy. The Model 100 can be enhanced with powerful word processors such as the *Ultimate ROM II* and the *Super ROM*. There is no commercial spelling checker or thesaurus program sold for the M100, although used copies of the *Sardine* are still available.

The WP-2, for the writing task, is a much better bargain. It lists for $349 and is on sale from time to time for $299. You can bet that Tandy will put it on sale once or twice a year. You can purchase the machine for even less from some discount mail order houses.

The Model 100 lists for $599. Add $199 for a *Super ROM* and you have an $800 machine, or over twice the cost of the stock WP-2. With numbers like these it's easy to see why the WP-2 can be the ideal "second" machine for the Model 100 owner.

TARGET MARKET

My first clue as to Tandy's intended market for the machine came when I called my local Radio Shack Computer Store. They said the regular Radio Shack stores were handling the machines. To me, that meant that the WP-2 is targeted primarily for non-computer oriented people, those who need to get some writing done and who couldn't care less about bits and bytes.

The WP-2 can be the ideal "second" machine.

There are more of the non-computer stores, so the machine could get a wider distribution. That and the low-selling price makes the machine almost a "throw-away" item. Tandy is a mass merchandise marketer. They intend to sell the WP-2 as a "commodity" rather than as a "computer."

I believe that Tandy is targeting the student and professional markets. With the built-in word processor, thesaurus and spelling checker the WP-2 is ideal for preparing documents, especially those that are to be printed directly from the WP-2. The machine is essentially an electronic typewriter, but without the printing mechanism built in. This gives you ultimate portability in the field. Later you can attach the system to a printer and get your finished document. Or transfer it to your PC for further wordsmithing and formatting.

This is exactly what I use the WP-2 for. Rather than reconfiguring my Model 100, I reach for the WP-2 and dash off quick letters, *Portable 100* articles, and other large documents either at home or on the road. Its portability lets me follow the kids around the house and keep an eye on them, and lets me work at the same time, too. (Of course, the drawback is that my kids, like all kids, are fascinated by computers, so whenever they see me working they want to help with the data entry task.)

The other built-in functions are sure

to appeal to professionals and students alike. The built-in calendar function lets you keep track of your tasks and appointments. It's similar to the Model 100 *NOTE* and *SCHEDL* programs.

The WP-2 word processor not only can produce finished and formatted documents, it can convert your prose to plain ASCII text. You can hook up the WP-2 to your PC (Mac, or another computer—yes, even to a Model 100) and transfer your text for final finishing or inclusion in another document.

HOW OTHERS USE THE WP-2

I've been rambling on about how I use the WP-2. Now listen to how some others use the machine.

Joseph Holmes is a Legal Aid attorney in New York. He uses the WP-2 for more than note taking. "I've actually used the WP-2 to take a 20-odd page appellate brief home to work on over the weekend. I just divide the brief at a convenient point, like between the fact and law sections. Then I easily load each section into working memory with the *Swap* command. The 22K limit is much less of a serious drawback to me than the slowness of the word processing functions."

When he's finished he transfers the document to his Mac via the *WPduet* program (see his review in this issue). Try doing that on a regular basis with a Portable Mac, or most DOS "laptops" for that matter.

Carmen Paone is a newspaper journalist. To him the WP-2 is ideal for a writer. He's also found a novel use for the machine. He says, "Here was the clincher for my usage: It has low radio frequency emissions, and I can use the WP-2 as logging device for my shortwave hobby."

Dennis Lowrey is a Professor at West Point. He uses the WP-2 to take research notes at the library. The 22K file memory and 32K RAM disk memory is not enough to hold a day's worth of research. The 32K works out to be the equivalent of 9-10 typewritten pages. He uses a 128K RAM disk, which is enough to hold several days worth of notes. (See the March 1990 issue for a review of extra storage options for the WP-2).

No MS-DOS laptop has enough battery power to last an entire day. And did you ever try to find an AC outlet at the library? When you do that much text

The 32K works out to 9-10 typewritten pages.

entry, it is essential to have a full-size keyboard. Only the Model 100, WP-2 and Cambridge Z88 have what I consider to be the "right stuff" for tasks such as these.

POLYGAMY

I've lived with both machines for about nine months now. For writing tasks, the WP-2 is the hands-down winner. For programming and telecommunication tasks the Model 100 is the clear choice for me. On local car trips where space and weight is not important sometimes both machines accompany me. If I had to choose only one machine for all my work ... well, fortunately, I don't have to make that choice. The WP-2 is small, light, powerful, and inexpensive enough that I can afford to have it all.

I've been extolling the virtues of the WP-2. What don't I like about the WP-2? Well, for one, I don't like the keyboard. It's not bad as far as laptop keyboards go, but the key travel is too short. I have "twitchy" fingers, so my text looks like I have a "st-tut-t-t-tering" problem. The Model 100 keyboard has a much better feel to me.

The slow LCD on the WP-2 is a problem. When inserting text into the middle of a paragraph, the screen is very slow to update itself. I can easily outrun the keyboard buffer which means that not only must I wait for the text I've just typed to appear, but I lose some of it, too.

A neat trick to beat the slow LCD is to insert a carriage return where you are going to insert text. Now type a back-arrow. That'll put you at the end of the current line, and you can now type in the additional text without suffering from slow screen updating. When you are finished, press *Shift-Delete* to delete the current character, which is the extra carriage return you entered.

The reason for the slow LCD seems to be related to the automatic formatter. As you type, it figures out where to word wrap, and then shuffles the LCD contents accordingly. The more there is in a paragraph beyond where you are typing, the more text it has to move around on each keystroke.

This seems to be related to how text is organized in memory. Each line must be stored separately (probably as some sort of linked list) with a carriage return (CR) marking the end of a line (paragraph).

File Transfer Tips

Transferring files to your PC is easy if you know how! And the WP-2 manual isn't of much use. It's just plain wrong in some spots, and it doesn't tell you the consequences of certain transfer modes. Here's some of what I've found so far. If you have some more tips, send them to me or to *Portable 100*, and we'll collect them for a future issue.

DIRECT CONNECT TO PC

Connecting the WP-2 to a PC is easy (Mac transfers will be covered in another issue). The manual, on page 120, states, "Be sure that the computer system is properly connected to your WP-2 before you proceed." Yeah, sure, right, thanks for the useful tip.

It turns out, however, that a standard null modem cable will do the trick nicely. But be careful—all null modem cables are not created equal! The standard Radio Shack null modem connector p/n 26-1496 works well. You may also need a 9-pin/25-pin adapter p/n 26-1388 or 26-265 depending on your configuration) as well to accommodate the WP-2 9-pin serial port.

If you are making your own null modem cable the proper connections are 1-1, 2-3, 3-2, 4-5, 5-4, 6&8-20, 7-7, 20-6&8. This is illustrated in Figure 1.

Now that you've got both machines properly cabled, you need to "properly" configure the WP-2.

WP-2 *TELCOM* SETUP

The manual says that you transfer files at 300 baud, 8 bits, no parity, and half duplex. I've been able to transfer to the PC at 9600 baud and full duplex. Oddly enough I can only transfer at 1200 baud into the WP-2. It's not a real problem, though. I don't often need to transfer data into the WP-2 once it's been massaged on the PC. And files on the WP-2 usually aren't very big, so it doesn't take long to transfer data at 9600, and not much longer at 1200 baud.

Now that the WP-2 is ready, you have to run a communications program on your PC. Most any "modern" program will do. I use *Procomm*.

PC COMM SETUP

Simply set the PC's parameters to match the ones you have set for the WP-2.

If you are transferring files into the WP-2 set your communications program to strip the linefeed (LF) from CR/LF pairs. You can have the WP-2 do the same job if your PC communications software can't handle this task. This won't work if you are going to do protocol (Xmodem) transfers. See the section on binary transfers for more information.

The WP-2 terminates lines with a CR. The PC world uses CR/LF, so be sure you match both ends.

ASCII TRANSFERS

If you are transferring text files to the PC, I presume that you are going to incorporate the text into a document using a word processor such as *Wordstar* or *WordPerfect*.

Creating plain ASCII text, without the formatting codes and WP-2 file header, is easy. Just press *F1-A* at the *Files* menu.

Following the procedure in the manual, you transfer the file. Simple? Yes, but ...

Two problems will immediately surface (at least two that I know of).

First, a CR character will be automatically inserted every 80 characters. That's fine if you write one-line paragraphs. What you actually want is for each paragraph to consist of a stream of words with a CR at the end. PC word processors will reform your text to fit the parameters of the page and paragraph layout you've set. You will have to manually strip the extraneous CR's or set up some sort of macro to do the job.

Second, be sure to set the *Outgoing CR* parameter to *CRLF*. The WP-2 marks the end of lines with a CR. Most PC word processors want to see the CR/LF combination. Most PC-compatible printers want to see the same.

If you can't automatically adjust the WP-2 CR-only line terminators to the PC's CR/LF, you can often get your word processor to do the job. Most programs have a "find & replace" function.

For *Wordstar* users, here's a procedure you can follow:

^QR	top of document (control-Q then R)
^QA	find & replace
^P^M	search for CR
^P^M^P^J	replace with CR/LF
GN	options Global and No confirm
	and away you go!

BINARY TRANSFERS

The WP-2 has the Xmodem-CRC protocol built in. Why not transfer the file that way? Yes, why not?

You can transfer a .DO file to your PC. You will have three problems. One, the WP-2 stores a 128-byte header at the be-

ginning of each file. It will show up in your word processor as a couple lines of garbage. You can remove this easily with your word processor, though.

Files are transferred by Xmodem in 128-byte chunks. PC-DOS usually stores the exact length of the file as part of the directory entry. Since it receives the files in 128-byte chunks, then many word processors will "see" some garbage at the end of the file. Again, you have to edit this out.

A few word processors indicate the end of a file by using the EOF character (ASCII 26). These will properly handle WP-2 *.DO* files, since the file is terminated by an EOF character.

Lastly, I've noted that *^H* characters appear every 80 columns or so in long paragraphs. Where they come from or what purpose they serve, I have no idea at this time. Using the *^QA (Find & Replace)* command in *Wordstar* I can easily change them to blanks.

In a future issue I'll discuss some utilities to help you with getting your precious prose out of your WP-2 and into your PC or Mac.

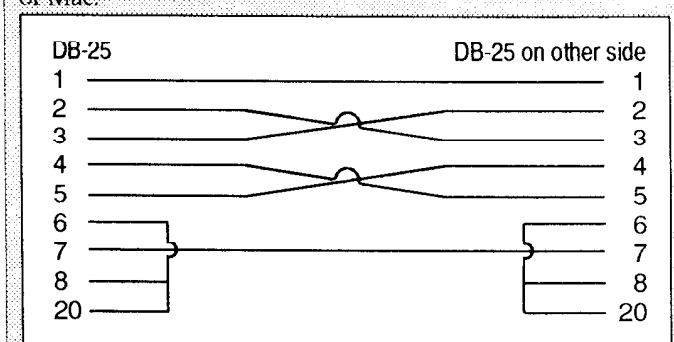


Figure 1. Correct wiring scheme for a null modem cable (or adaptor) for transferring files between WP-2's and PC's.

When inserting text in the middle of a line, the text after the insertion point has to be shoved upward in memory, one character at a time. When inserting text at the end of a line, there is nothing to move, so the machine can keep up.

What don't I like about the Model 100? It's a great and flexible machine, but for a writer there's no built-in spelling checker and thesaurus. Also, there is no built-in print formatter. With the addition of an option ROM, such as the *Ultimate Rom II* (from Club 100) and the *Super ROM* (from PCSG), you have a dynamite word processing system. Still, there is no convenient spelling checker available. (*Sardine*, a ROM- and disk-based system, used to be available from Traveling Software, but it's no longer sold. You may be able to get one used, however.)

TOOLBOX

This article was written entirely on the WP-2. My usual practice is to write articles using the WP-2 or Model 100 for the first draft. I then upload the text to my desktop PC for final finishing, since articles are submitted electronically rather than on paper. This time every byte was written on Whoops.

The 8-line screen prevents me from standing back and getting "the big picture" of how the article flows. So I printed drafts on an HP Laserjet and a TTXpress portable thermal printer. A good printer can make almost any text look good, even mine.

What don't I like about the Model 100? There's no built-in spelling checker and thesaurus.

There was a time not too long ago when the cost of the computer dominated any system. Now I have a $300 computer driving a $1500 laser printer. My, how times have changed. But for the better.

CONCLUSION

It is better to use specialized tools for a given task rather than a general purpose "one size fits all" type of tool. Sure, you can pound screws with a hammer, as well as build a cabinet with it, but you'd be better off adding a screwdriver to your tool box.

Both Whoops and Auntie Em have important work to do for me. Whoops has taken over most of the writing chores from Auntie Em. Whoops also travels with me more places, since with its light weight and low profile, about half that of Auntie Em, I can carry it in my briefcase all the time and still carry all the papers I need.

Auntie Em still has an important place in my computing arsenal. She still excels at telecommunications with her built-in modem, and I still use her as an RS-232 "data scope" in the lab.

From now on it's Auntie Em and WP-2. Or as my grade school teacher would correct me: "It's Auntie Em and WP-2 also."

Stan Wong is a programmer with a major manufacturer of PC chips, boards, and peripherals. Formerly with the defense electronics industry he is now working to make our lives better through computing. We wish, instead, that he'd stick to skateboarding in sunny Southern California. He hangs out, computerwise, on the M100SIG of Compuserve. His user id is 70346,1267.

COMPATIBILITY: Tandy 100/102/200

IF... THEN... ELSE... in Super ROM's *Lucid*

They said it was impossible... but Paul proved them wrong!

Here's a good *SuperROM* tip: *SuperROM* does not support IF ... THEN ... ELSE (IF) logic. Page 74 of the *Lucid* manual poses the following problem:

Suppose you need to calculate the price of a service that was priced at ten dollars per hour, but had a four-hour minimum.

The manual goes on to offer a solution that requires the use of a lookup table. This may be the only way to accomplish this task with the *Lucid* ROM, since it does not support logical operators, but with *Lucid* on the *SuperROM* the technique is quite different.

I've spent a fair amount of time learning the *SuperROM* and would like to report that I'm able to perform IF ... THEN ... ELSE decisions within a single cell of *Lucid*, without having to refer to any outside table.

This comes from the use of *relational operators*, which the *Lucid* manual does not discuss. The *Lucid Database* manual discusses (very) briefly the use of relational operators for criteria selection in the "report definition block" for output.

Relational operators can be used in any cell to obtain a *TRUE* (*-1*) or a *FALSE* (*0*) value, which when multiplied by -1 yield, some fantastic options. Please note these examples:

Assume:
A1 = number of hours worked on a job.
Minimum charge is for 4 hours.
B1 = billable hours

The formula for cell B1 is:
-(A1<=4)*4-(A1>4)*A1

The first - is equal to *IF*. The * is equal to *THEN*. Additional -'s are read as *ELSE IF*. So the above example is:
IF A1<=4 THEN 4 ELSE IF A1>4 THEN A1

If the first *IF* is false, the cell value will be zero unless an *ELSE IF* is included.

Now enter some data in cell A1 and watch the results. Cell B1 will display the number of hours billed. Multiply B1 by the hourly rate ($10.00), and you get the amount billed.

Pretty POWERFUL indeed! This formula is the essence of the decision-making processes in some financial spreadsheets.

It can be used for tax calculations like this:

IF deductions > 3000 THEN display deductions - 3000 ELSE display 0
(where cell A6 = total deductions):
NEW CELL formula:
-(A6>3000)(A6-3000)*

Or how about applying a five percent discount on total sales (cell A5) exceeding twenty dollars:
NEW CELL formula:
+A5+(A5>20)(.05*A5)*

(Note: "NEW CELL" in the above examples is another cell, say, cell B1, where you want the result to be placed.)

I developed this aspect of *SuperROM*'s use of relational operators in June 1986. I informed PCSG back then, hoping to find a way of enlightening other *SuperROM* users. I hope some of you *Portable 100* readers can make adequate use of this info, and I apologize for waiting so long to share this.

by Paul Globman

Paul can be reached by modem on CompuServe (72227,1661) and GEnie (P.GLOBMAN). Or by mail at 9406 N.W. 48th St., Sunrise, FL 33351 (please enclose SASE if you're requesting a reply).

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

Send your queries to: DEFUSR, PORTABLE 100, P.O. Box 428, Peterborough, NH 03458-0428.
Please enclose a stamped, self-addressed envelope for our reply.

A FEW QUESTIONS

Is it okay to use the AC adapter on my Tandy 200 while the batteries are in? What effect will this have on the batteries?

My Tandy 200 screen flickers every once in a while, and a few of the pixels appear to have gone darker than the others. Cause? Where can I get a replacement screen, if needed?

Is there a program that will automatically send a "paper advance" to the printer at the end of a line of text? I frequently use printers in other offices, and I hate having to play around with DIP switch settings.

Ronald K. Caldwell
APO New York, NY

It's perfectly okay to use the AC adaptor while batteries are installed. Your computer is wired in such a way that plugging in the AC adapter disconnects the batteries from the circuit, and unplugging it reconnects the batteries.

Your screen problem is hard to diagnose without a hands-on examination, but it sounds like something that only Radio Shack (or a knowledgeable techie friend) could fix. Radio Shack might be costly, but it may be your only option. If it turns out to be expensive enough, it may be cheaper to buy another Tandy 200 and keep your original for parts. (Can anyone else help us with this?)

The "paper advance" problem is easily solved. Several utilities exist to add linefeeds to carriage returns sent to the printer. Some are built into text processors, such as on the Ultimate ROM II *and* Super ROM, *and others can be downloaded from on-line services, including our* Portable BBS *(look for* LINEFEED.100 *and* LINEFEED.200*). People who can't (or won't) go on-line can send us a stamped, self-addressed envelope for a copy of the program that they can type in themselves.*

—MN

SPREADSHEET-LIKE

Regarding the letter from Sean Raymond (DEFUSR, Mar. '90), late advertising for Traveling Software's *Ultimate ROM II* had the following:

"*T-base*—The true relational database. Borrow information from up to seven other files. Set up formulas for spread sheet-like calculations. Use easy report writing feature."

I have *Ultimate ROM II* on a Tandy 200, and I use *T-Base* for accounting—one file for debits and one file for credits. I have never gone the "spread sheet-like" route, but I can see some applications. Sean might explore it.

David Line
Missoula, MT

I use T-Base for accounting

GUIDANCE, PLEASE

I'm a writer/editor who needs immediate computing assistance. I was given a very old, beat up Model 100 and was glad to get it, but the modem didn't work, and the whole logic board had to be replaced. Now the auto-dial feature still doesn't seem to work, but no matter; I can dial manually (in most places).

My real problem is this: I want to use the Model 100 in libraries (where I do a lot of research) and then transfer the notes to an MS-DOS machine. I was able to do this with my old CP/M machine with an ASCII dump from the RS-232C port to the same on the CP/M by just disabling the M100's modem and uploading. But the same procedure doesn't seem to work with the MS-DOS machine (a Kaypro 2000+). When I upload (modem turned off), all I get on the MS-DOS side is graphic symbol laden garbage. This garbage is echoed on the M100, too. All the parameters (parity, etc.) are set the same between the *Crosstalk* I'm using on the MS-DOS machine and the M100. Can you offer any help?

I feel that the M100 would do a lot of the things I need a portable writing/telecommunicating machine to do. I'd like not to junk it and be sucked into buying an expensive MS-DOS laptop or something. I've seen a *TRANSFER.COM* program advertised in your magazine for ten dollars, from a guy in Walnut Creek, California, but I wonder if that's what I need when I already have telecommunications programs on both sides. How come the CP/M would take the ASCII from the M100, and the MS-DOS turns it into garbage?

Also, I have a printer cable to connect the M100 to my Panasonic KX-P1124 printer, but the files don't seem to send a line feed to the computer so that it knows to advance the paper at the end of each line. Thus, it just types over and over on the same line. Do I need to run my files through some formatting program that adds line feed commands or something? Where can I get such a program?

And one last question. I want to expand the memory of my M100, but the only place Tandy could point me to was Purple Computing, which sells modules at $40 for only 8K additional RAM. I'd like to have at least 64K or 100+K and not spend $40/8K to get it. What's your advice on the best route to follow for

expanding the RAM of my machine?

I appreciate any advice you can offer.

James Rhem
New York, NY

The Model 100 is indeed an ideal machine for writing and telecommunicating, James, and file transfers to MS-DOS machines are quite routine. We just need to sort out your problems.

Unfortunately, your description of the symptoms is a bit lacking in detail. "Doesn't seem to work" doesn't tell much about your modem's auto-dial problem. The dialer uses pulse dialing, meaning it "clicks" the relay the correct number of times for a given digit. If you listen closely, you can hear the clicking. If you can hear it, it means the M100 is in fact dialing, and your problem may simply be that you've forgotten to include the angle brackets (<>) after the number. Without those, the computer will hang up immediately after dialing. If you don't hear the clicking, I'd suspect a hardware problem that Tandy failed to fix, in which case, I'd suggest returning the machine for more repairs. (You paid to have the machine fixed, and it wasn't!)

Many people routinely transfer files between their M100's and other computers. using commercial programs like TRANSFER.COM, LapDOS II, Port-

The PC echoed garbage.

Comm, *etc., or just using* TELCOM *and a comm program on your PC, as you've tried with* Crosstalk. *Although you've indicated that you're using matched parameters, the results you describe sound like they're caused by a mismatch. Again, more detail would aid in diagnosing the problem, but we can try a few things.*

First, set both machines to the lowest possible baud rate (300 baud). Use 38N1E *on the M100 (300 baud, 8-bit word, no parity, 1 stop bit, XON/XOFF handshaking enabled), and make the same settings on the PC. Next, put* Crosstalk *into* Local *mode, put the M100 into* Term *mode (press* F4*). and set the M100 to half duplex (see the label over* F4*; if it says* Full*, press* F4 *to make it say* Half.*) Now the M100 will display on its screen the characters it sends to the PC.*

You mentioned that the PC echoed the garbage back to the M100. You want to set Crosstalk *to half duplex as well, and* not *to echo received characters back to the M100.*

At this point, you should be able to type characters on the M100 and see them on both the M100 screen and the PC screen. Conversely, anything you type on the PC should appear on both screens. If this much works, then all is well, and you can proceed to transfer .DO *files. The procedure is to set* Crosstalk *to capture incoming data into a file, and then send the desired file from the M100 using* F3 (Up) *and pressing* ENTER *at the* Width *prompt. You should see the file displayed on the PC screen as it comes across. When the M100 finishes sending, close the capture file on the PC.*

Examine the file as received by the PC. If it looks right, you're happening. If not, it may need linefeeds added to received carriage returns, and Crosstalk *should have a setting to do that. Then try it again.*

Assuming all went well, you can now use higher baud rates for future transfers. If something still isn't right, try using the M100 to communicate with a different PC, and using the PC to communicate with a different PC. This will eliminate the possibility that either machine itself is defective. If all else fails, call me at Portable 100, *so we can work it out with more detailed descriptions of the symptoms.*

There are several solutions to the printer linefeed problem. One is to use commercial text formatting programs or a linefeed utility. Another is to set a switch on the printer itself (see your printer manual). Please refer to the letter from Ronald Caldwell elsewhere in this column.

As for the RAM, I don't know of another source for 8K chips, so I suggest you go ahead and get one (or more) to expand your machine to the full 32K. After that, RAM expansions are available from several of our advertisers, in sizes from 32K to a couple of megabytes. Most require that you have the full 32K internal RAM before you can use them, but the Node does not. Some other types of RAM expansions are no longer manufactured but are sometimes available used. Check the Portable 100 BBS *(phone number and stats appear in our masthead), CompuServe, GEnie, local BBS's, and our classified ads, for starters. As for which is the best way to go, that's subject to your personal preferences and way of using the computer. Ask around and see what others say.*

One last suggestion: Consider putting orthodontic rubber bands (from Club 100, see their ad) under the keys to make them quieter. I'm typing this reply in my favorite "office," the John Hancock Inn (Hancock, NH). In such a quiet atmosphere, clicking keys can be distracting to others, and the rubber bands solve that problem nicely, as evidenced by the fact that I'm still welcome here. It's a good idea for your library work as well (although the librarian probably won't keep refilling your coffee the way Jude does at the Inn!) -MN

Continued from page 7.

tion. But such was not always the case—and in Van's story lies a nugget of hope for all the Model T novices among us.

Van is a television reporter for KRON, the NBC affiliate in San Francisco. He's worked in TV for ten years, in radio for 15 before that. He and his M200 specialize in the crime beat.

Van says he'd always been fascinated by computers, but was put off by their complexity. One day in 1985 he came across a Model 100 in a local Radio Shack store and started playing with it. He was impressed with its simplicity. He was VERY impressed with the keyboard. He was sold.

But when he got home, Van came to realize that he knew nothing about his new machine. Nothing. He set about to change that. With a single-minded sense of purpose usually reserved for the heroes of Victor Hugo novels, Van began his transformation.

He spent a full year studying Dr. David A. Lien's book *The TRS-80 Model 100 Portable Computer*. In addition, not wanting to embarrass himself before the forum "superstars," he spent an entire year reading messages on CompuServe before he worked up the nerve to post his first message asking for help!

My, how times have changed!

Van is now the Archival Sysop for the M100SIG. He has four Model T's—a pair of M100's and a pair of M200's. He uses one set of each for work and the other set of each for programming. Programming? Oh yeah.

Van is the author of some of the slickest little programs around. Many are familiar with his machine language *ZIP* series, available on CompuServe: *ZIPSRT*, the fastest sorter available for the Model T's; *ZIPFYI*, an enhanced FIND utility; *ZIPSUB*, a pumped up search and replace enhancement; *ZAPDUP*, which searches a text database and deletes duplicate records; and other programs.

Van has even written a commercial program called *TV-TC* that helps professionals in the TV news industry use the Time Code signal encoded on video tape. His clever program resides in the computer's AltLCD display buffer and works its magic in a remarkable 260 bytes! It's being used by many in Van's line of work, including his girlfriend Kitty, a professional video editor.

And just think—they laughed when he sat down to play the piano.

CompuServe is vast and popular—but it isn't the only service of its type out there. CompuServe's biggest competitor is GEnie (800-626-2000 for info), a service run by General Electric that is the Avis to CompuServe's Hertz. Like Avis, GEnie is trying harder.

For instance, GEnie charges just $6.00 per hour, *regardless* of connect speed (baud rate). They have a menu system that some (but not all) find easier to navigate than CompuServe's. And they have some of the best columnists and feature writers that I've seen anywhere.

GEnie does not have a large, separate Model T section. GEnie does not have half a million subscribers. But GEnie does have Dave Thomas and Mortimer.

Remember Dave Thomas? He was the Sysop on CompuServe when Tony Anderson first joined. And Mortimer? Well, Mortimer is Dave's Model 100. No, really.

Dave (aka .^Dave^.) originally developed an interest in *BASIC* from using a Radio Shack PC2 Pocket Computer, a machine he still speaks highly of. He says he went on to get a Model 100 "out of curiosity," even though he had no specific need for one. His curiosity cost him—Dave is one of the guys who paid a thousand dollars for an 8K Model 100 when they first came out. Dave was a pioneer.

GEnie charges just $6.00 per hour, regardless of connect speed (baud rate).

(I asked Dave if he knew what they said about pioneers. He did. For those of you who don't: It's easy to identify a pioneer—he's the guy with all the arrows in his back).

Dave's life changed when he got a modem cable for his Model 100. Since it came with some free CompuServe connect time, he logged on and looked around the young (circa 1983) M100SIG. He says that the first time he logged on and actually found a message addressed to him he nearly wet his pants. Dave instantly became a telcom junkie.

He became so active on CompuServe that he soon became an Assistant Sysop. And when John Mello, the original sysop, wasn't able to keep up with the forum, Dave took over and became the sysop himself.

Dave stayed with CompuServe until 1987. That's when Mark Eppley, head of Traveling Software, asked Dave to head up the Laptop RoundTable that Traveling sponsored on GEnie. Dave agreed.

Unlike the M100SIG on CompuServe, GEnie's Laptop RoundTable covers ALL laptop computers. There are sub-sections of the RoundTable, one of which deals with the Model T family of computers. So far, the Laptop RoundTable holds over 3000 files for all machines covered. Traveling Software has just released all of its non-ROM Model T software, including the entire *Business Manager* series, to the RoundTable. The files are available to any GEnie member for just the price of connect time while downloading.

Dave seems well equipped for the formidable task of overseeing such a vast RoundTable. He owns a Model 100 and a Model 600, an NEC Starlet and an NEC 8201, and a desktop PC. In addition, he stays up to date on what's happening in the laptop world by attending industry events like the Portable Computing Trade Show, among others.

Dave has always been there for people with questions. And if he doesn't have the answer, he probably knows who does.

These are just some of the people you'll meet when you reach out through your Model T modem port. There are so many others who should be mentioned here, but can't be. There are thousands of people out there in the electronic ether that forms the network neighborhoods.

Like any neighborhood, you'll find all types there. Angels and devils, bullies and saints, quiet know-it-alls and loud know-nothings, the "in" crowd, the untouchables, the brilliant, the lost and the hopeless, today's wannabees and tomorrow's superstars, an entire community of Model T users ...

... just waiting for you to come home.

by Michael Daigle

Radio Shack Introduces Tandy 2800 HD

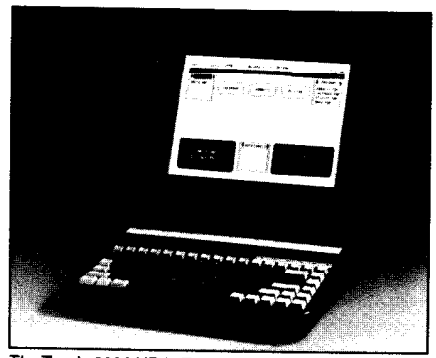
The *Tandy 2800 HD* is the first Tandy-labeled, 80286-based laptop computer, and also the first laptop computer manufactured by Tandy in Fort Worth, Texas. It contains an 80c286 microprocessor, operating at selectable clock speeds of 12 or 6 MHz. It can also serve as a desktop system that can be easily carried anywhere.

The 2800 HD, in a balck case with built-in carry handle, has a 9.125 x 8.625-inch full-size, backlit, EGA-compatible ICD with 640 x 400 resolution; an enhanced 84-key keyboard with true 101 key emulation mode and a standard keyboard 3.5-millimeter key stroke; and the ability to exchange batteries without turning the system off.

The 2800 HD's storage capacity consists of 1 MB internal memory, expandable to 2 MB; an internam 20 MB hard disk drive; and one 3.5-inch 1.44 MB floppy disk drive. DeskMate 3.3 and MS-DOS 3.3 are factory-installed on the hard drive.

The 2800 HD has a replaceable, rechargeable lead acid battery that provides up to two hours of computing power. The battery can be charged inside or outside of the system. An external battery charger is also included.

Additional features of the 2800 HD are a bidirectional parallel port, a serial communications port, connections for an external EGA monitor and



The Tandy 2800 HD *is Tandy's first 80286-based laptop computer.*

101-key keyboard, an internal modem slot. and and 80C287 coprocessor slot. The machine weighs less than 12.5 pounds (with battery) and measures 3.125 x 12.25 x 14.25 inches. Options include an internal 2400 bps modem ($199.95), 1 MB memory upgrade ($399.95), replacement battery ($49.95) and assorted carrying cases.

Suggested retail price of the Tandy 2800 HD is $2,999.00. For more information, contact your local Radio Shack store or Radio Shack Computer Center *or Circle #60 on your Reader Service card.*

Tandy Introduces1500 HD Portable

Tandy Corporation has released the *Tandy 1500 HD* portable computer, an under-six-pound (including battery) notebook PC equipped with both standard floppy and hard disk drives. The 1500 HD has a NEC V-20 microprocessor, a clock speed of 10 MHz and zero wait state memory. 64K RAM is expandable to 1:64 MB RAM; a LIM 4.0 expanded memory driver is also supplied to configure additional memory.

One 3.5-inch, 1.44 MB floppy disk drive and an internal 20 MB hard drive (23 millisecond access speed) are standard. MS-DOS 3.3 and DeskMate are also included.

The 1500 HD has a high-definition, blue-on-white LCD with 640 x 200 CGA color resolution. Backlit for improved contrast and readability, the 1500 HD's screen measures 7.5 by 4.8 inches.

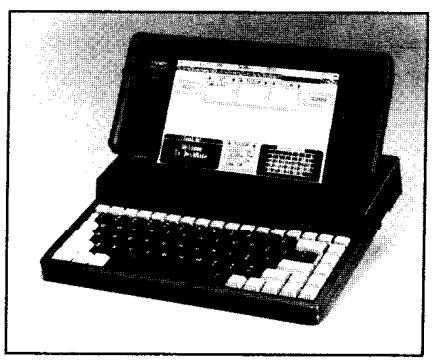
A rechargeable, removable nicad battery gives more than three and one half hours of computing power. To monitor the battery status, the new Tandy *Power View* LED system is located on the top right of the 1500 HD's case. Both the On/Off indicator and battery indicator are clearly visible, without lifting the display. The power switch is also located underneath the display to prevent accidental battery drain. The battery weighs 0.75 pounds and recharges in four hours if the unit is off (eight hours if unit is on). An AC adapter/charger is included.

The 1500 HD's 84-key keyboard has a new, exclusive Tandy Key-Switch feature that allows the user to interchange the Control key cap and function with the Caps Lock key cap and function. By switching these two keys, the 1500 HD's keyboard layout resembles a standard typewriter. The full-size keyboard also has 12 function keys and an embedded numeric keypad.

Other features are an internal modem slot, one 25-pin parallel port and one 9-pin RS-232C serial communications port.

Options include a 1 MB user-installable memory upgrade ($399.95); a 2400 bps internal modem ($199.95); a spare battery ($99.95); and a choice of carrying cases.

Suggested retail price is $1,999.00. For more information, contact your nearest Radio Shack store or Radio Shack Computer Center (or contact Radio Shack, Tandy Corporation, 700 One Tandy Center, Fort Worth, TX 76102), *or circle #61 on your Reader Service card.*



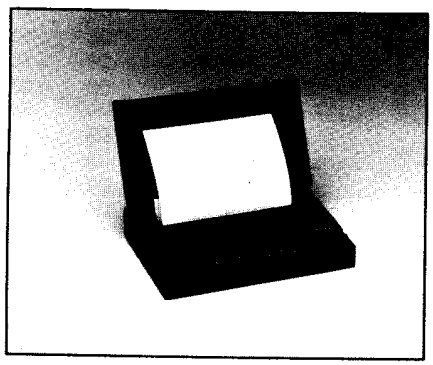
The Tandy 1500 HD *comes with a standard 3.5-inch floppy drive and a 20 MHz hard drive.*

Canon's New Bubble Jet Portable Printer

The *Canon BJ-10e Bubble-Jet* printer is a personal printer that weighs 4.6 pounds, with an optional rechargeable battery pack. It measures 12.2. x 8.5 x 1.9 inches. It prints on plain paper with 360 DPI resolution in text mode utilizing the standard IBM Proprinter X24e emulation.

The BJ-10e is virtually maintenance-free because of its snap-in disposable cartridge, which contains both the Bubble-Jet print head and ink supply. Each snap-in cartridge for the BJ-10e prints approximately 500 sheets. It prints at a quiet 45 dBA. Printing speed is 83 cps to 142 cps. It prints Courier and Prestige Elite at 10, 12 or 17 cpi or proportional spacing.

Suggested list price for the BJ-10e is $499.00; replacement cartridges $25.00 each. For more information, contact Canon U.S.A. Inc., One Canon Plaza, Lake Success, NY 11042 (516)488-6700



The Canon BJ-10e Bubble Jet *printer provides up to 360 dpi resolution (10 cpi) on plain bond paper.*

or circle #62 on your Reader Service card.

continued from page 11.

```
;read each of the 240 bytes in each LCD row twice. On the first pass, send
;values which produce double-high images of the original bytes MOD16, + CR
;next, send values which produce double-high images of the original bytes\16
;followed by a CR
;
        XRA     A
ROW     STA     -12
NUPASS  LXI     H,HR
        CALL    PRLP
        XRA     A
COL     STA     -11
        LXI     H,IMAGE     ;six-byte buffer
        CALL    NOINT       ;disable interrupts
        MVI     D,0         ;source=screen, target=buffer
        CALL    BYTES       ;transfer six bytes of data to IMAGE
        LXI     D,IMAGE     ;get ready to process them
        MVI     B,6         ;counter
        LDA     PASS        ;is this the MOD16 (0) pass or
        CPI     1           ;the \16 (1) pass?
        JZ      DODIV       ;if 1, do the\16 pass
DOMOD   LDAX    D           ;if 0. do the MOD16 pass
        PUSH    B
        PUSH    D
        MOV     E,A         ;set up for MOD16 operation
        MVI     D,0
        LXI     H,16
        CALL    MOD
        CALL    CNVRT       ;(see CNVRT subroutine)
        POP     D
        INX     D           ;next byte in buffer
        POP     B
        DCR     B
        JNZ     DOMOD       ;do all six bytes
        LDA     -11         ;now do next column
        INR     A
        CPI     40          ;done yet?
        JNZ     COL         ;no - do another column
        MVI     A,13        ;yes - insert carriage return
        RST     4
        MVI     A,1         ;and set up for the \16 pass
        STA     PASS
        JMP     NUPASS      ;go back to start it
DODIV   LDAX    D           ;do the \16 pass
        PUSH    B
        PUSH    D
        MOV     E,A         ;set up for integer division
        MVI     D,0
        LXI     H,16
        CALL    DIV%
        CALL    CINT        ;make sure an integer value is in A
        CALL    CNVRT       ;(see CNVRT subroutine)
        POP     D
        INX     D           ;next byte in buffer
        POP     B
        DCR     B
        JNZ     DODIV       ;do all six bytes
        LDA     -11
        INR     A
        CPI     40          ;end of row?
        JNZ     COL         ;no - do another column
        MVI     A,13        ;yes - send carriage return
        RST     4
        XRA     A
        STA     PASS        ;and set up for a MOD16 pass
        LDA     -12
        INR     A
        CPI     8           ;have we done all eight rows?
        JNZ     ROW         ;no - do the next one
        LXI     H,FIX       ;yes - reset the printer
        CALL    PRLP        ;send code for default plus CR
        XRA     A
        STA     DEVICE      ;ro activate screen
RESET   POP     AF          ;get original keystroke & flags
        RET                 ;and exit
;
;this subroutine exchanges an original byte value (MOD16 for low-order nibble
;or \16 for high-order nibble) with a value which produces a double-high
;image of the original when printed. This creates a larger printed image.
;
CNVRT   MOV     A,L         ;place the result of the operation
                            ;in the accumulator
        CPI     0           ;is it zero?
        JZ      GO          ;yes - print it
        LXI     D,BYTS      ;no - find what it should be
NLP     DCR     A           ;
        JZ      GET         ;fetch a value
        INX     D           ;index to the next conversion
        JMP     NLP         ;and start over
GET     LDAX    D           ;get the new value in A
GO      RST     4           ;print it
        RST     4           ;three times
        RST     4           ;for a wider hard copy
        RET
SET     DB      27          ;ESC
        DB      108         ;"l" - controls left margin on Epsons
        DB      10          ;left margin = 10
        DM      27          ;ESC
        DB      51          ;"3"
        DB      22          ;"^V" - for Epsons this sets
                            ;linefeeds to 22/180"
        DB      0           ;end of code
HR      DB      27          ;ESC
        DB      76          ;"L" - double density mode
        DB      208         ;208+(2*256)
        DB      2           ;=720 columns to print per row
        DB      0           ;end of code
FIX     DB      27          ;ESC
        DB      64          ;"@" - set LPT parameters to default
        DB      13          ;send a carriage return
        DB      0           ;end of code
;
;Because we are sending each row twice, the MOD16 pass only reads bits 0-3 and
;the \16 pass only reads bits 4-7. This section substitutes values which print
;representations of the processed values
;
BYTS    DB      192
        DB      48
        DB      240
        DB      12
        DB      204
        DB      60
        DB      252
        DB      3
        DB      195
        DB      51
        DB      243
        DB      15
        DB      207
        DB      63
        DB      255
HOOKBF  DW      0           ;hold original vector here
PASS    DB      0           ;keep track of which pass we're on
IMAGE   DS      6           ;buffer to hold each 6 byte image
        END
```

End of listing.

The Portable 100 Classifieds

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TRANSFER.COM MS-DOS/Tandy Laptop $9.95 plus $1.00 shipping and handling (Min. $18 for MC or VISA orders; Calif. residents add 7% tax).

Easily transfers .DO files both ways between MS-DOS computers and your Model 100, 102, or 200 laptop. MS-DOS formatted 5.25-inch disk contains the transfer program, complete documentation and several unique files, including laptop programs not found anywhere. Write to: McBride Services, 984 Hawthorne Drive, Walnut Creek, CA 94596. Order phone number (415)939-5285. 1/90

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Database: This is a relational data base like no other. You can do everything from mailing lists to invoices. No complicated pseudo-coding, you create input screens as simply as typing into TEXT. You are not limited by size; you can have as large an input screen as you wish. Prints out reports or forms, getting information from as many files as you like. Complete math between fields. Total interface with Lucid worksheets.

Outliner: Does everything that Thinktank does on a PC but a whole lot better. Includes a Sort for your headlines. Lets you have headlines of up to 240 characters. Has cloning, hoisting and sideways scroll up to 250 characters. Like Lucid, this one sets a new standard for outliners. This is the way to plan and organize your projects.

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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 Formattor*, 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: Picos 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, Langenschiedt 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 Boar[OUT] of PC Convertible Add-ons, Holiday & 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 Por[OUT] Reviews of Casio FX-8000G, Tandy 1400 LT, and *System 100.*

September: *English Teachers use Laptops, Picos in Class, D[OUT]mplates, Picos in the Oil Patch*, Reviews of 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.