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

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

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

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

And if that weren't enough, how about this: *Disk+* also provides cross-compatibility between different computers like IBM, Apple or the Model 4 using the Model 100 as the intermediary device. Quite a feature!

The snap-in ROM is really great because you can use other ROMs like *Lucid* or WRITE ROM. They snap in and out as easily as an Atari game cartridge and you never lose your files in RAM.

Anyone who ever uses *Disk+* simply can't do without it. But so many times we have had new users call us and say, "Wow! I had no idea when I ordered it that *Disk+* would be so fantastic. I just couldn't believe that I could use my desktop computer's disk drive with my Model 100 just like it is another main menu."

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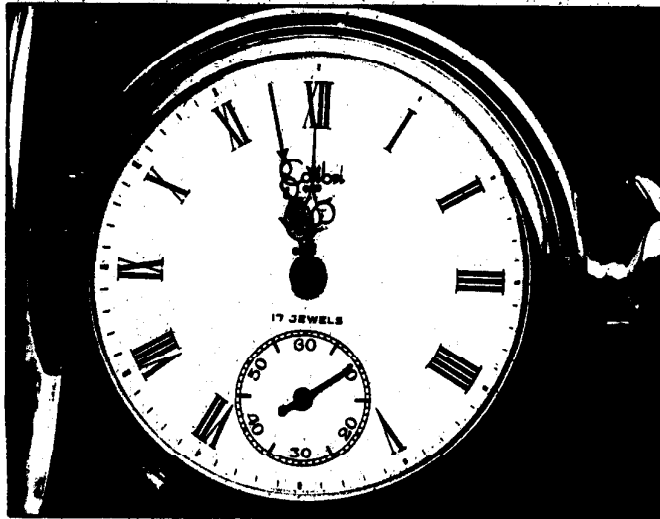


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100/200 VOLUME TWO, NUMBER TWELVE



COVER STORY

TIME IS MONEY 14
*Time wasted is money spent.
 TMPC — called the next generation
 interface — manages and prioritizes
 that most precious commodity.*
 By Mark Schorr

DATEBOOK FOR THE DISORGANIZED 20
*Don't despair if the hardest part about
 getting organized is getting organized.
 A date with CALNDR should help.*
 By Ray Mendenhall

Cover and Feature photos by Benjamin Magro

ARTICLES

VENDORS SOCK-ET TO 200	12
<i>The 200's expansion ROM socket has a couple of quirks. Learn how software vendors turn a curved ball into a grand slam.</i>	
By William T. Walters	
FUNCTION KEYS UNLOCK 100'S POWER — PART III	25
<i>Learn how function keys can streamline your keyboard operations.</i>	
By Danny Goodman	
BUYERS' GUIDE TO PRINTERS	34
<i>The number of printers on today's market is overwhelming. Use our extensive list to help with your choice.</i>	
By Deborah L. Davis	
NO MEMORY LOST WITH 200'S RAM MAP	45
<i>Last month we became explorers of the 200's ROM. Embark on a second expedition: Here's a map for discovering the Tandy's RAM.</i>	
By Greg Susong	

REVIEWS

THINWRITE 80	
Axonix Corp.	23
TRP-100	
Tandy Corp.	23

DEPARTMENTS

ROM WITH A VIEW	4
GIGO	6
SIG 100/200	9
NEW PRODUCTS	10
ADVERTISERS INDEX*	53
THE WIRE	64

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RS58

ROM WITH A VIEW

ABOUT TIME AND THE WASTING THEREOF

It's occurred to me that much of our reason for working is to *spend time*. I'm sure, if you closely examine the working habits of 10 people around you, all of them to some degree perform certain functions solely for the purpose of filling up time. Squandering some time for most of us is probably a necessity, a way of letting our mind slip into neutral and recharge before facing the next task or problem. Some amount of busy work, in other words, may be a form of recreation valuable to those of us tied to the workplace, unable to get up and walk out the door to go fishing.

In prior ages, productivity was measured more tangibly. If you went to bed hungry, you had not been productive in finding food. If you went to bed cold, then you obviously had failed to be productive in securing adequate clothing or fuel. If you went into the dark of night unprotected from the elements, wildebeesties or your enemies, then you were clearly guilty of being unproductive in providing shelter. Knowing for certain what is productive and what isn't in today's society is a dicey matter — and one of great subjectivity.

The information age presents us with an enormous challenge in time management and efficiency. Ushered in upon wings of mechanical and electronic gadgetry, it threatens the paper-shuffling habitue with certain extinction. It exhorts us to find the virtuous path of better organization, higher-quality time use and management, and ever greater productivity. As one blessed with the ability to do absolutely nothing for hours on end coupled with the curse of a certain rock-ribbed Yankee Methodist abhorrence for waste and inefficiency, the whole issue of time management raises cosmic and philosophical questions with which I am clearly intellectually inadequate to cope: I can't even ask the right questions, for Pete's sake!

It was the devilish connection of a bunch of spare gears, rotors, springs and such that resulted in the invention of the clock. That in turn gave rise to the industrial age and the entire concept of productivity being somehow related to time. The concept of management of labor for greater time productivity resulted in gross abuse of the human body and spirit and that gave unholy birth to the labor movement.

Time has been turned into a resource, a tangible textile commodity — money. *Time is Money*. When you spend time, you're spending money. Wasting time is wasting money. I suspect that therapists' couches are filled with those whose only malady is the guilt associated with wasting some quantity of time: "I've wasted my whole life, Doc! Please help me before it's too late!" And much of our day-to-day stress is related to our feeling of inadequacy in how we deal with time as we are hurled toward that final deadline.

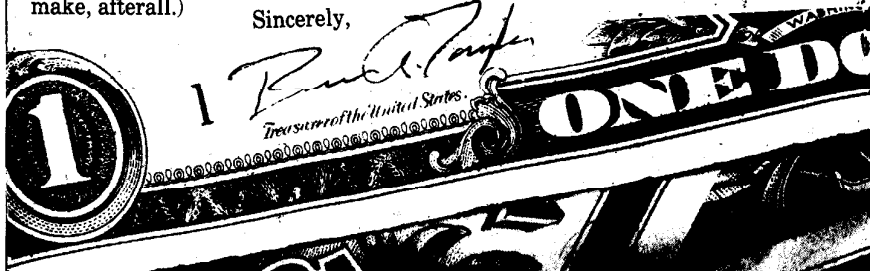
Time is analogous to the thermodynamics of heat: In every operation there is the loss of some of it. The computer is the latest weapon in man's attempt to capture time, to store it and squeeze every last drop of productivity out of it. But I'm not at all sure that all labor- and time-saving devices are good for us. Or that increased productivity and profitability have anything to do with happiness or fullness of the human spirit.

So, there you have it. *Time is Money* is this month's cover story, a feature review of TMPC (which stands for — can't you guess? — Time: The Most Precious Commodity) from Acroatix. It's a super time-management program based on the book by Stephanie Winston, *The Organized Executive*.

Also in this issue is our most complete ever Buyers' Guide to Printers — some of which were just announced at COMDEX in early May. Our only limiting criteria were the printers had to be priced under \$2,500 and be off-the-shelf compatible with the Model 100 and Tandy 200.

Whoops! Time for lunch! (There are certain sacrifices to the clock we all have to make, afterall.)

Sincerely,



portable

100/200

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GREAT SAVE

The fear of losing an 8,000-byte file prompted one Model 100 Californian to brainstorm this program. Cassette loading was the problem. The user's 100 could find the file, but would abort after reading it. The program opens a cassette file for input and a RAM file for output, then proceeds to write and read the file character by character. When an error occurs, the program reports the line and error number and continues by ignoring the error.

From an anonymous member of the Bay Area NEC/100 Users group, here's a BASIC program for those experiencing tape reading problems:

```
10 CLEAR 100:MAXFILES=2
100 OPEN "CAS:filenm" FOR INPUT
AS #1
:OPEN"SAVE:DO"FOR OUTPUT
AS #2
120 ON ERROR GOTO 400
130 A$=INPUT$(1,1)
140 IF EOF(1) THEN GOTO 300
150 PRINT #2,A$;
160 GOTO 130
300 CLOSE:END
400 PRINT"Error Code: ";
ERR,ERL:RESUME:NEXT
```

CHECK THAT SUM

For happier telecommunicating, avid 100 user and author Woods Martin has written a relatively short TEXT-file analyzer. DOWNCK.BA studies a file byte by byte, producing a number based on the values and positions of each binary word. This value, known as the checksum, has no meaning alone but will change if any data in the TEXT file is altered.

Before uploading, programs should be run through DOWNCK as an error-check. Conversely, received downloaded files can be looked at by DOWNCK to make sure text has arrived intact.

DOWNCK consumes 650 bytes, small enough to be stored in RAM and ready to use. Our Associate Technical Editor suggests the program also be used for file comparison. If the checksums match, the files match — right down to the last semicolon and carriage return.

For intermediate level Model 100 users, DOWNCK is a useful utility for catching garbled transmission errors.



```
1 REM DOWNCK.BA WM3 05-Apr-84 Woods Martin.
Compute checksum for .DO files.
10 MAXFILES=1
: CLEAR 1000
: DEFINT I
: DEFDBLC
: DEFSTRS
20 CLS
: PRINT@40,
: FILES
: PRINT@0, ".DO File to check (Quit=ENT) ? ";
: SI=""
: GOSUB300
: PRINT
: IF LEN(S1)=0 THEN 70 ELSE SF=S1
30 ON ERROR GOTO 90
: I=INSTR(1,SF, ".")
: IF I THEN SF=LEFT$(SF, I-1)
40 SF=SF+".DO"
: OPENSFFORINPUT AS I
: CLS
: PRINTSF;
50 IF EOF(1)=0 THEN LINE INPUT #1, S
: IL=IL+1
: PRINTIL;
: IF LEN(S)=0 THEN 50 ELSE FOR I=1 TO LEN(S)
: C=C+ASC(MID$(S, I))
: NEXT
: GOTO 50
```



```

60 CLOSE
   :CLS
   :PRINT@80,SF;USING" Checksum = #####,###";C
   :PRINT
   :PRINT"Another = A   Quit = ENT";
   :GOSUB330
   :IFS="A"THEN10
70 MENU
90 IF ERL=40THENBEEP
   :RESUME10
92 IFERL=50THENRESUME60
98 ONERRORGOTO0
300 GOSUB330
   :IFS=CHR$(13)THEN320ELSEIFS=CHR$(8)
   THENIFLEN(S1)>0THENPRINTS;" ";S;
   :SI=MID$(S1,1,LEN(S1)-1)
   :GOTO300ELSE320
310 IFS<" "THEN300ELSE SI=SI+S
   :PRINTS;
   :GOTO300
320 RETURN
330 S=INPUT$(1)
   :IFS>="a"ANDS<="z"THENS=CHR$(ASC(S)-32)
   :RETURNELSERETURN

```

REMOTE CONTROL

NEC owners still can use a cassette recorder for data storage even without a remote jack. The trick, writes Truly Portable author, Rachel Holmen, is to start recording *before* pressing Y or Enter at the Ready prompt. Only the record jack needs to be connected to the computer.

When loading a program, she adds, "set up the computer first, then play the tape. The output or earphone connection is all that's needed."

And if cassette storage organization is not your forte, Holmen suggests standardizing your files: Save files with names in either all lower-case or upper-case letters. This makes reloading easier. Before storing a file, use comment lines at the start noting details such as the data, time and on which tape it's stored. "This is particularly useful if you store different versions of a program as you develop it," advises Holmen.

SOFTWARE, BEGONE

I recently purchased a new printer that makes it possible to do full-fledged word processing on the Model 100 using only the computer's built-in TEXT pro-

(continued on page 49)

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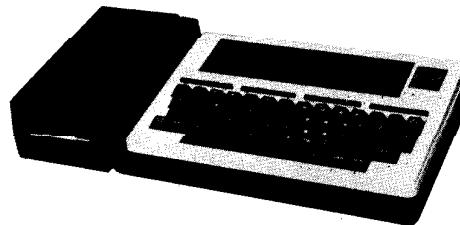
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BROWSING IN THE STACKS

There's a wealth of software available on the CompuServe's Model 100 Special Interest Group (SIG). Roughly 1,100 files currently are stored in the SIG's data base, with more being added daily. These files comprise actual programs, program documentation (often quite extensive), product reviews and machine usage tips. But unless one knows exactly what a file name is, it's a tough job to download a file, and even tougher to just browse around the CompuServe disk areas.

LIBRARIES OF DATA

The SIG software allows the data files to be stored in 10 separate file areas called data libraries (DLs). These are organized as follows:

- DL0 Text formatters, miscellaneous
- DL1 Telecommunications
- DL2 Business applications
- DL3 Games and musical programs
- DL4 Technical notes and utilities
- DL5 Personal software
- DL6 Textual reviews and bulletins
- DL7 Software for the NEC PC-8201A and the Olivetti M-10
- DL8 Information about SIG groups & conference minutes
- DL9 File indices

The command to access a data library from the SIG's standard Function: prompt is the letters DL followed by the data library number. For example, to access telecommunications files, issue the command *dl1*. As a note — it's easier to use the SIG *without* menus. To get rid of the menus — and change other SIG characteristics — use the *OPTION* command. For more information, issue the command *help option* at the main menu.

Once inside a data library, the system prompt will be the name of the library, such as *DL1*: for the telcom library. The easiest way of looking for interesting files is to read the names of each file in that data library, together with the author's short description and list of explanatory keywords.

Before reading the list of files and descriptions, save it. Echo printing is recommended — there are about 100 files.



After setting up the printer issue the command *scan /des*, which instructs the SIG to provide you with descriptions of each file. Without the */des* option the *SCAN* command merely lists filenames — useful for looking for a specific file, but not for browsing.

If listing the files seems to be taking too long, the *Ctrl-P* combination will cancel the scan and return you to the DL prompt.

CHECK THE DIRECTORY

Dave Thomas, the Model 100 SIG systems operator (*sysop*), maintains a list of all SIG files. The list is stored in *DL9* under the name *INDEX.100*. This index can be downloaded and examined — but be warned, it's over 37,000 bytes long, and takes a *long* time to download. To help with the file size problem Dave has made three shorter files with the same contents: *INDEXA.TOE*, *INDEXF.TOP* and *INDEXQ.TOZ*.

The files in *DL9* are all useful indices to the contents of the entire SIG. It's time well-spent to look through these files before hunting around the other data libraries.

LATEST AND GREATEST

Another handy file is the list of items uploaded during the previous seven days. This is called directly from the Function: prompt with the command *X9*. It displays the names of new files in

order by data library.

Before spending a lot of time searching through the SIG, take advantage of the excellent documentation available from the Function: prompt. Type *B* to go to the bulletin menu and print the nine basic help files. These help files will lead to other more detailed help files, such as *DOWNLD.HLP* (in *DL0*) which is essential for accurate program downloading.

MORE HELP FOR THE WEARY

Happy hunting! Remember, if you get stuck there are plenty of help files. Often, too, Dave Thomas is online and willing to help. From the Function: prompt, type the command *ust*. This will give you a list of users currently on the SIG. If you see number 76703,446 — that's Dave!

Note the job number next to his user number, usually a two digit code assigned by CompuServe. To send Dave a message, type *sen nn Help, Dave!* Here, *nn* refers to the job number.

Of course if you see the user number 76703,372 on your *UST* listing, send a message there too. That's the CompuServe ID for Portable 100/200 — and we're always there to help.

HOT FILES

It isn't necessary to conduct a survey to discover what programs are hot on the SIG — CompuServe does the figuring.

(continued on page 48)

NEW PRODUCTS

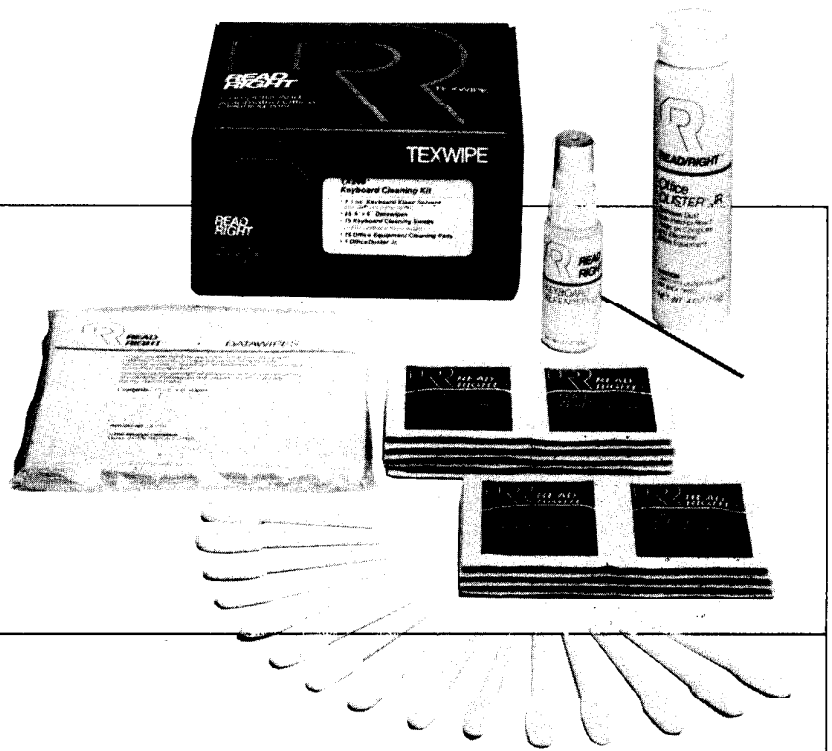
KEEP IT CLEAN

Portable computerists can clean up their act with a Read/Right Keyboard Cleaning Kit. Containing pump sprayers, swabs, wipes and compressed gas, the kit shows users how to develop good habits of machine hygiene. A clean computer doesn't fall prey to downtime.

Swabs, wipers and pads are manufactured from non-linting synthetic fibers, and the keyboard cleaning liquid leaves no residue.

The kit, which sells for \$22.95, is available from the Read/Right Division, Texwipe Co., 650 Crescent Ave., Upper Saddle River, NJ 07458. (201) 327-9100.

Circle No. 172

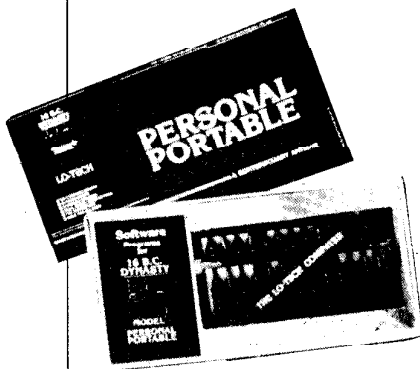


Latest From Time Immemorial

The latest offering from Sweet Gum Inc. traces back to ancient civilization. The 16 B.C. Dynasty, billed as the first low-tech personal portable computer, is a 91-bead abacus requiring no batteries. It retails for \$14.95.

For details on Dynasty call or write Sweet Gum, 15490 N.W. 7th Ave., Miami, FL 33169, toll free (800) 237-9338, (305) 687-9338 in Florida.

Circle No. 173



Remember More

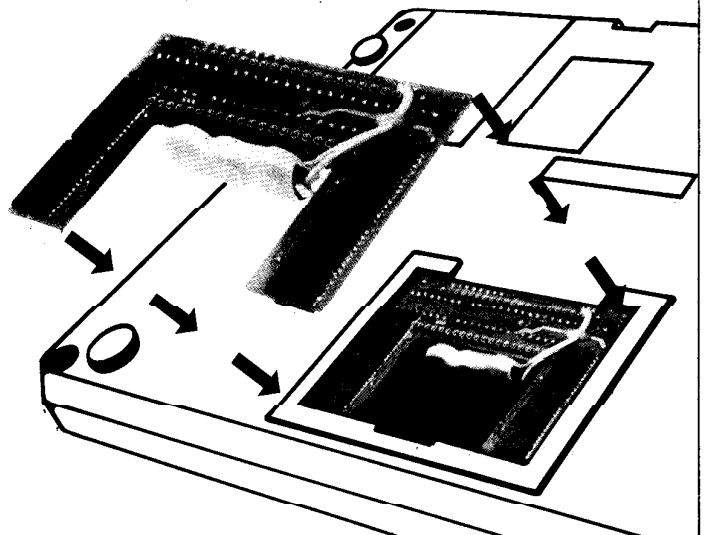
Memories are made of this: a 64K RAM expansion board from Portable Computer Support Group (PCSG). Manufactured by Cryptronics and marketed by PCSG, the RAM expander gives the Model 100 two additional 32K banks of addressable memory.

The back of the \$495 RAM expansion board frees the 100's ROM socket for any accessory ROM module. The system bus is also left free in case it's needed for Radio Shack's Disk-Video Interface, the Chipmunk disk drive or other devices.

Cryptronics' RAM expansion comes complete with software allowing copying, renaming and deleting of files in any RAM bank from the Model 100 Main Menu. RAM+, an included ROM module, is used to transfer user files between RAM banks. Contact PCSG, 11035 Harry Hines Blvd., No. 207, Dallas, TX 75229, (214) 351-0564.

Circle No. 174

(continued on page 54)



INTRODUCING THE

SIDESTAR

FOR THE NEC STARLET

The SideStar is a self-contained, plug-in, 128K RAM-disk cartridge the size of a wallet. It gives you more than memory—the SideStar gives your NEC Starlet (PC-8401A) new abilities.

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Vendors Sock-et to 200

The 200's expansion ROM socket has a couple of quirks. Learn how software vendors turn a curve ball into a grand slam.

By William T. Walters

If you want to understand the guts of the Tandy 200, examine its ROM. All of the 200's built-in software (see Tandy 200 review, Portable 100, Jan/Feb, 1985) is in read-only memory (ROM) chips.

BASIC, TELCOM, ADDR, SCHEDI, and TEXT are contained in two ROMs occupying a total of 40 kilobytes (K) of the 64K available address space. This leaves 24K for random-access memory (RAM), the user memory where BASIC programs and text files are stored.

Multiplan (MPLAN) is also a built-in program but must be studied in a different light. When the cursor is positioned over MPLAN at the main menu and Enter is hit, the 200 executes a particular set of program steps. The result is the substitution of a 32K ROM (which contains Multiplan) for the two 40K ROMs containing the other programs. In computer jargon this is bank switching. Note: Between the 32K MPLAN ROM or the 40K main ROMs, only one of them can be used since they occupy the same address space in computer memory.

Contained in the main 40K ROMs are software routines for handling clerical tasks and housekeeping — chores such as checking to see if a key was pressed, displaying a character on the screen, creating a file in memory and sending or receiving a character from the RS-232 port or modem. These are called input/output (I/O) functions.

It would be a waste of valuable programming space to duplicate such routines in the MPLAN ROM, so Microsoft developed a scheme to allow the two ROM banks to pass information between them.

This scheme shouldn't have been necessary. But the manufacturer elected to have bank switches cause deselection of the entire 40K main ROM, switching in a 32K expansion ROM. With a resulting 8K address space blank, the I/O routines were given a home.

DESIGN ERROR

Microsoft wrote 40K of software assuming that the upper 8K would remain selected and only the lower 32K would be bank switched. But Kyocera didn't design it that way. An unintentional ob-

stacle now blocks the easy development of ROM-based software that could be added to the expansion ROM socket.

When the 200 was first conceived it was envisioned with 40K of main ROM and two option sockets, each for a single 32K ROM. During development it was decided to bundle Multiplan with the 200 so one of those two expansion ROM sockets became permanently occupied. This left one expansion ROM socket empty so the main 40K ROM treats each option ROM socket identically, even though they're different.

When power initially is applied (a cold start), the main 40K ROM examines the sockets for both the MPLAN ROM and the expansion ROM. If ROMs are found plugged into these sockets, the main 40K ROM examines a particular location in each for its name and places it in the main menu.

Originally it was believed the 200's expansion ROM socket would accept a low power complementary metal-oxide semiconductor erasable programable ROM (CMOS EPROM). But for reasons known only to Kyocera, the expansion ROM socket was wired to be identical to the expansion ROM socket in the Model 100. One snag: *there is no CMOS EPROM that will fit directly.* Thus a second impediment deters third-party vendors from developing ROM-based software for the option slot.

Perhaps Kyocera thought someone would plug in expansion ROMs from the Model 100, such as Lucid from Portable Computer Support Group. This isn't feasible since all I/O functions in the 200's ROMs are located in different locations from their counterparts in the 100.

Now the main 40K ROM is made up of a 32K ROM and an 8K ROM. Both sockets are wired with standard pin connections to enable CMOS EPROM usage. The same is true for the internal 32K expansion ROM socket containing Multiplan. It's wired to accept a standard 32K CMOS EPROM.

Even Radio Shack executives admit the expansion ROM socket's lack of compatibility is a mistake.

SOFTWARE MINING

But the challenge of writing ROM-

based software has been met. Such entrepreneurs as Sam Redman and Michael Stanford of Portable Computer Support Group (PCSG) have a history of disassembling and deciphering the 100's ROM without help from Radio Shack or Microsoft. They unearthed how the 100's ROM communicates with the expansion ROM, enabling them to pack full of features the 8K Lucid CMOS EPROM.

PCSG says the task of solving the 200's 40K of ROM mystery is identical to the Model 100 puzzle. Expansion ROM communication is the same in both. Most of the internal routines used are the same, just shifted in location. But again, according to PCSG, software vendors must go this route alone.

For more than a year Polar Engineering and Consulting of Nikiski, Alaska has been using a technique to put BASIC programs into EPROM via the expansion ROM socket. The programs will run from the EPROM, but don't have to be copied into RAM.

According to Stu Weinstock, Tandy's buyer for the Model 100 and Tandy 200, all that's required to write firmware applications is an 8085 assembler. That's true only in theory. But the bank switch code won't be in the technical reference manual.

Programmers, said Weinstock, who want to develop 200 ROM software and find out about pin-compatible CMOS EPROMs for the expansion ROM socket will be hitched up with qualified vendors. Large accounts will be placed in contact with a member of the internal development staff.

There are hundreds of companies that could profit from customized applications coupled with the 200. A good example is the case of a small Texas meat packer who has a team of 30 salespeople. They're on the road five days a week, selling to grocery stores. Each night they write their orders on a form and send them via bus to the plant. On arrival, the forms are keypunched into the computer and processed.

The 100 can't help this company because of its volatile memory. A lot of headaches would be cured if programs
(continued on page 60)



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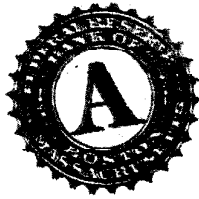


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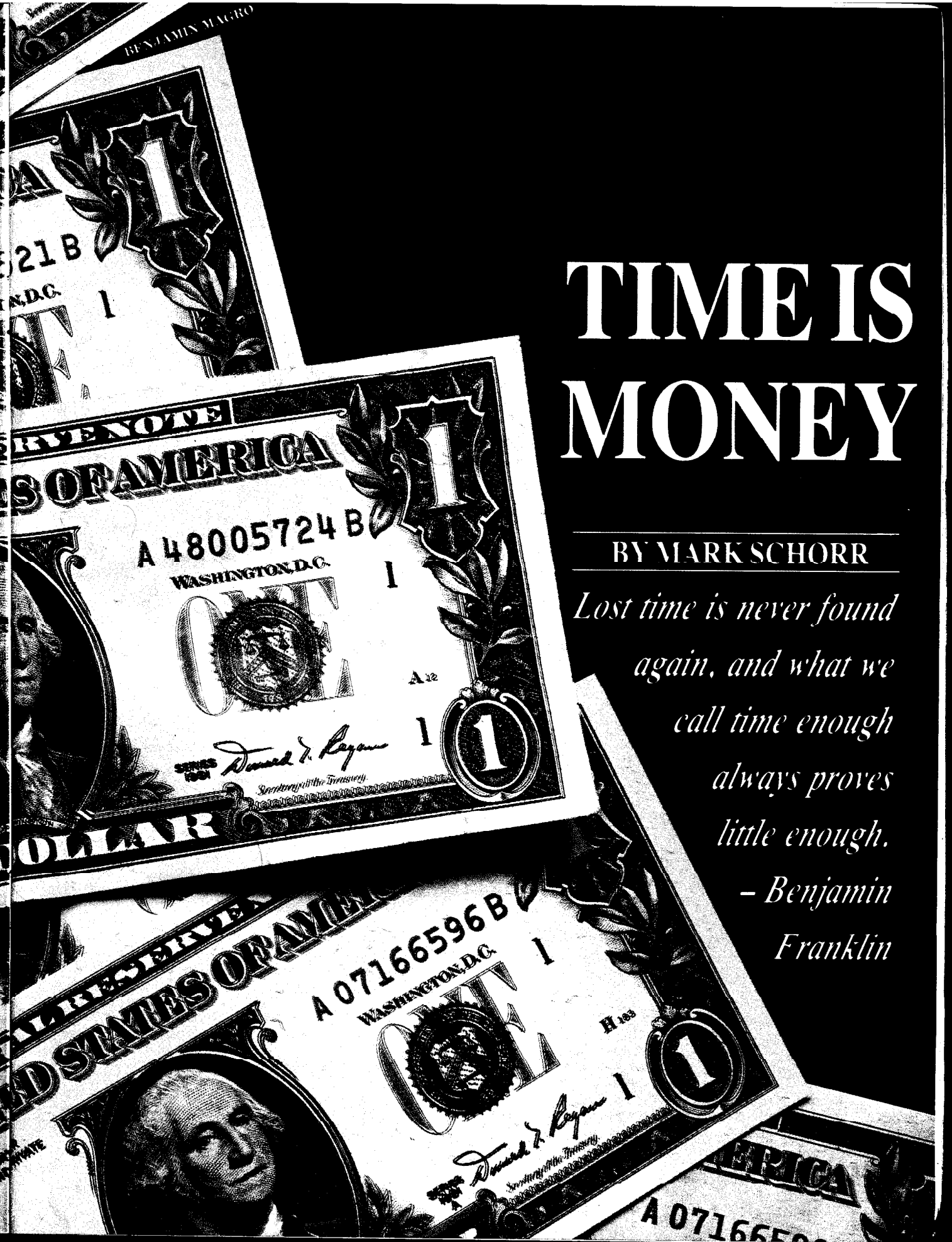
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TIME IS MONEY

BY MARK SCHORR

Lost time is never found again, and what we call time enough always proves little enough.
— Benjamin Franklin



BENJAMIN MACRO

Ring... ring...
 "Hello? The meeting was at 10 a.m.? Oh, Geez, I thought it was tomorrow. I know I should have been there, but my clock alarm never went off this morning, and then I showed up two days late for a dentist appointment because my calendar was on the wrong month. Yeah, I'll try and get better organized. Time has a way of escaping me."

Someone with time-management problems had better get his/her act together. Today's business world means moving in the fast lane. Missing appointments or assignments is a sure way to get derailed.

Man's preoccupation with time is nothing new. Adages such as *time is money* or *time is of the essence* testify to that. What's new is the information age's use and management of time as a resource.

A software company in the Boston computer belt is finding a niche in our obsession with time. Acroatix of Wilmington, Massachusetts has just released a time-management program for the Model 100: TMPC. The letters stand for *the most precious commodity*. It represents the next generation of the user/computer interface.

MOVE OVER, MAC

Next generation means software that not only provides a graphic interface, but uses graphics to help users build a mental picture. Some Macintosh applications such as Odesta's Helix and Telos' Filevision do that. Both relate flow chart graphics to objects in a data base. Until now no time-management software offered a mental plan. TMPC graphically represents a whole-management system, also known as spatial data base, loci or common places for the jargon oriented.

Skeptics may ask: "How can you have a next generation interface with last generation hardware?" Because the Model 100 is a software machine. Its eight-line by 40-character limitation has led to state-of-the-art solutions. With TMPC a large screen isn't needed. The small one is used effectively. In the Acroatix package, every Model 100 screen becomes a full-screen graphic icon, with text embedded in it. That makes the 100 icons more than three times larger (and more legible) than Macintosh icons.

An easy-to-learn and powerful Floor Plan interface of fourteen rooms is the basis for the TMPC icons. These rooms are completely described in the owners' manual, but you don't need a map. By the time you've scheduled one or two sets of tasks, you'll have the floor plan memorized.

Paradoxically the effectiveness of TMPC's screen presentation depends on how little you have to see. The interface zooms in on the key detail, highlighting single line entries. It warns you of a deadline to produce a summary of your project activities in two business days (Illustration one).

The package makes excellent use of the 100's eight-line x 40-character display. It's easier to cycle through two lines of the display than to scroll through the 100's eight lines of text editor (Illustration two).



WALK THE FLOORS

TMPC's presentation compensates for the lack of windowing in Microsoft's Model 100 operating system. It allows you to parallel time-management action in each area to the appropriate place in its Floor Plan interface. This relates your actions to the rooms in a house.

The To-Do List occupies the left portion of the house. Entering through a hall to a small study, priorities are assigned every item by stress level. A spacious living room turns out to be the familiar Model 100 editor. Time-based events occupy the right portion of the house. Entering through the time-event foyer, you move to another large room containing three months of calendar displays. Traveling along a long corridor is a navigation of time-based events, including holidays, repeating events and single appointments.

STICK FIGURE

Instead of a cursor, a symbol from the Model 100's character set is used to guide you through the Floor Plan. You direct this pointer character by the four directional arrow keys. The TMPC stick figure or default icon is driven by machine language. Pace can be slowed by adjusting the default to a slower speed. Settings are Walk, Run and Fly.

Some may object to the little person (descended from Maxwell's demon) who walks, runs or flies from room to room. If it bothers you to affirm the connection between good business software and games (the avowed roots of this one are the 100 adventure mazes), redefine the stick figure as a character in the machine's 255-character set.

Once the Floor Plan is mastered, wrong moves are few. Use of directional arrow keys to point becomes second nature (Illustration three).

LOAD 'EM AND RUN

So it's easy to remember, but does it supply the things a time-management program should? A tape and one page of instructions will tell you. Your machine must have about 10.5 kilobytes (K) of RAM — 10K for the two programs and 500 bytes for an average task file.

From BASIC, type *clear 100*, the address provided on the distribution label and CLOADM the program. Then CLOAD a small BASIC program which runs the package from your main menu. Once two programs exist on the 100, the date string must be checked before the TMPC data file, called a task file, is initialized. This is because TMPC uses the date string to measure activity against the file.

TMPC allows you to maintain multiple task files on the system, keeping multiple schedules or separate notebooks for each project. Size of task files varies with complexity and richness of events to manage. A startup file with six or seven elements occupies about 1 K of memory.

To archive task files, additional memory must be available. I archived a month's worth of sample tutorial files in 300 bytes (nine entries), and a years' worth of TMPC tutorial sample task file elements in 6,500 bytes (270 entries). The latter took about three minutes.

TMPC also provides a mechanism for checking date discrepancies according to the one last accessed. Each time you enter, TMPC archives inactive data to a human readable text file called DIARY.DO.

There's some protection if the Model 100 date is inadvertently reset. The documentation describes these data files in detail.

GETTING ALONG WITH OTHERS

TMPC enjoys the best of both worlds: the speed of machine-language programs and operation on generic 100 text files. Users are alerted not to tamper with the task files format. Files can be transmitted from modem, cassette, communications (RS-232C) and printer ports.

If other machine-language programs are used, TMPC must be loaded to HIMEM, and then the others loaded via a special utility that allows these programs to coexist with TMPC. Acroatix warns that all machine-language programs may not be compatible. BASIC programs supplied on the tape provide additional utilities for printing and generating custom reports from task files.

Also provided is a tutorial sample file.

To load the accompanying tutorial, load sample task file TOM.DO from tape and set date string to a fictitious date on which tutorial takes place.

In the event TMPC software needs to be temporarily removed from the computer, delete the basic program and issue the command CLEAR 0, MAXRAM to regain the memory occupied by the machine-language program.

ADVERTISING CLAIMS

Acroatix's ad campaign isn't overstated. I tested all of the advertised features and found them to be alive and working. It advertises the ability to display appointments "in a single keystroke" where two or three is closer to the truth. But many features not adver-

tised were present, and these were among the most innovative of any time-management software on any machine.

The novel features of TMPC are its integration, flexible to-do entry, repeat appointment scheduling, automatic diary keeping, ability to reckon both calendar and business days, monitoring of deadlines and crisp three-month calendar presentation.

The secret of integration here is the tightly-organized interface that forces the making of daily decisions about tasks, appointments, inspirations and even time off. It lives up to its claim as a time manager: It's the first time-management software program I know of that truly helps users place events in priority according to stress level.

People like things to be flexible, and TMPC provides room to move. Customization of icons, choosing the speed of the display refresh and even free-form line items (in both calendar and to-do's), gives the user power. I found myself thinking of a task file in different ways depending upon the kind of project I had to schedule.

With TMPC it's easy to schedule repeating events — whether they occur regularly or irregularly. With TMPC the pattern of repeating events grows out of the core elements of each project.

Diary-keeping gives control not only over the future and present, but the past as well. Additional utilities are included in the form of documented BASIC programs to help you print, offload and recombine diary files as useful records of task files. The nice feature is that these records can be kept and used for anything from income tax documentation to status reporting.

The warning feature can be used to monitor approaching deadlines. But one feature that did not work too well was the routine to get TMPC to calculate days in advance of a certain point in time. By moving an event nine months in advance and scheduling it as "days before such and such a date", a red flag is suppose to be set as a signal. Unfortunately, the algorithm for calculating future dates slows down an otherwise fast interface.

RELIABILITY AND SUPPORT

TMPC began marketing its program by offering telecommunicated free samples. In early versions a bug in the code caused loss of files. Acroatix sent the losers no-cost cassette copies of the sample, and quickly devised more reliable software for loading.

The same kind of follow through with

their product as I found with their sample can be expected. The freeware hot line is a mechanism by which customers can log messages to receive constant support.

MORE THAN PASSING TIME

The documentation is substantial and complete. An 85-page, two-color printed user manual includes a five lesson tutorial and a reference section. It's clear and easy to follow.

The tutorial is more than an instruction book, doing something manuals rarely venture — taking a philosophical position. There's more than a passing suggestion on how to improve your time-management style. The example used in the tutorial is provided on the distribution cassette. This is fortunate. Learning a subliminal interface such as TMPC is a lot easier at the keyboard than through a book.

The user who loads the sample file and works through the examples will realize the full benefits of the interface. The extended example of organizing fictitious user Tom's task file is a practice run, giving an edge for when you begin your own use of the package.

The user who doesn't easily grasp the tutorial will need more fundamental help in time structuring. Recommending the approaches used by author Stephanie Winston in her book *The Organized Executive*, Acroatix developers recognize that there's help available for the chronically disorganized. "We agreed with her concept," says Thomas Diep, "and computerized it."

The reference section of the manual is useful for most questions. It's clearly organized by screens (each illustrated), even though there's no index. Some technical information also is provided. Lesson five of the tutorial explains how to allow TMPC to share HIMEM with other machine-language programs.

The only things lacking in the documentation are a quick-reference card and an index. Although there's no replacement for these two, there's redemption found in the excellent chapter organization, complete illustrations (one for every screen in the program) and running headlines throughout the manual.

TRIAL RUN

After reading the manual and working through the tutorial, I created two

task files to manage two separate aspects of time. On the job I need to coordinate a large hardware and software project for a product fair. Based on past experience, this six-week task involves tracking from three or four elements per day at start-up time, to 70 or 80 to-do elements on the days immediately prior to the main deadline.

I planned and entered six initial tasks in 15 minutes (after finishing the tutorial). In the planning stages of a project enter the tasks as they present themselves and save them in a holding area called the warehouse.

With few keystrokes you can review, prioritize and activate these items, or place them on your calendar for a specific time. Alternately you can dispose of them when they become obsolete but still keep them in the running history of the project. The task files for this project currently occupy 1,200 bytes — less space than a couple of memos. By the time the project is in full swing, I expect between 60 and 70 tasks entered.

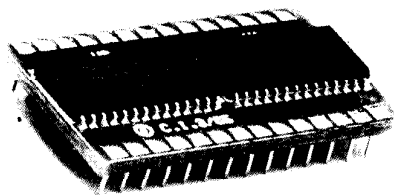
At project evaluation time the audit trail TMPC keeps will provide something my paper agenda doesn't offer.

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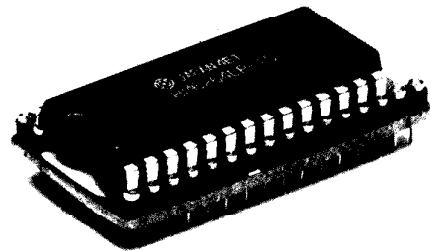
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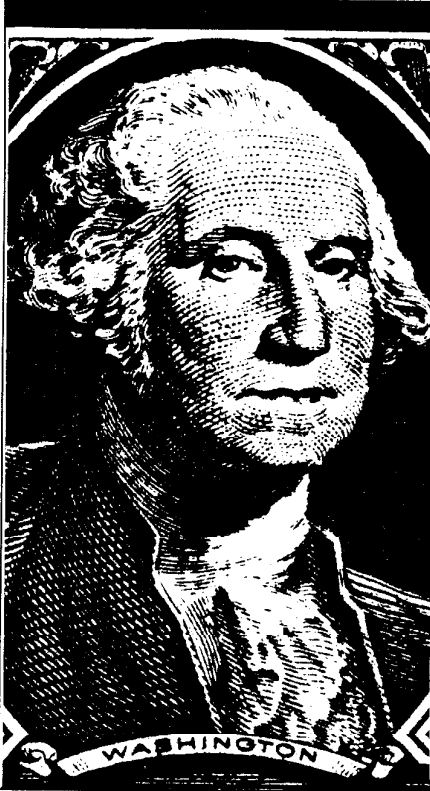
ments at one time over a six month period, I was thoroughly convinced I had a powerful tool and not just another on-line list. I like TMPC's way of forcing me to grade, prioritize and test my assumptions, and the way it lets the 100 serve as a convenient warehouse for my inspirations.

An undocumented glitch in the program was caused by the machine-language program interacting with the text editor. I keep my power default set at 2.5 minutes so my machine shuts off when kept in the text editor. But while running a BASIC program the Model 100 does not power off. So when the editor is entered either from the Appointment or To-Do corridor, and the default power-off time is exceeded, TMPC shuts off.

Inexperienced users who see the screen go blank might panic, but the solution is simply to turn the power off and on. Users who rely on AC adapters and don't have to worry about automatic power off, can completely avoid the problem by disabling the automatic power off and typing *power cont.*

USING YOUR HEAD

TMPC represents the next generation



of interface for users. Some would say that next generation will be natural language query interfaces and other artificial intelligence mechanisms that emulate human thought. While I don't discount these, I believe that TMPC and similar programs do something at least equally important for individuals.

They allow us to use our natural memory and God-given intelligence in an every day working relationship with our computers.

TMPC will sustain the time-management habits you've evolved to manage your business or job. If the regular working environment is the Model 100 and you are reasonably well-organized, TMPC provides an alternative to *paper-only* time management. Newcomers to the Model 100 should incorporate this program as a part of their computer routine. TMPC is a package kept resident on my 100. It's a must for managing that most precious commodity called time.

During his working day, Mark Schorr designs and tests office software for Wang Laboratories. After 5 p.m. he turns into a Model 100 aficionado. — Ed.

(continued on page 30)

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Datebook for the Disorganized

Don't despair if the hardest part about getting organized is getting organized.
A date with CALNDR should help.

By Ray Mendenhall

There are some people who'd say there's such a thing as being *too organized*. For these free spirits, an elaborate time-management program offered by Acroatix (see cover story, this issue) probably puts more order in their lives than they deem necessary.

This calendar and scheduler is simpler. The program gives you scheduling power and flexibility from the present until December 2099. As it interacts with the Model 100's NOTE.DO file and built-in SCHEDL program, appointments are displayed by selected date.

Once loaded, the current month with today's date in reversed characters should appear on the left of the screen. Brief instructions for the use of function keys F1 through F6 appear on the right side. (For more about function keys, see Goodman's article this issue.)

If the current month and day aren't correct, make sure the Model 100's internal date setting is accurate. An additional check should be made by pressing F3 (NEW MO/YR) and entering 1 and 1901.

BOOKED 'TIL THE 21ST CENTURY

The first function keys control the calendar display, with F3 permitting any

```
10 'CALNDR
11 'R.E. MENDENHALL
12 '
20 'KEY VARIABLE LIST
21 '
22 'M$(N): MONTH
23 'DA$(N)&DB$(N): DAY OF WEEK
24 'A$: LINE FROM NOTE.DO FILE
25 '
30 'M(N): MONTH
31 'Y(N): YEAR
32 'CD: NUMERICAL DAY OF MONTH
33 'D: CURRENT DAY OF MONTH
34 'D1: DAY OF MONTH START POSITION
35 'T: TOTAL DAYS IN MONTH
36 'M2: MONTH FROM NOTE.DO
37 'D2: DAY FROM NOTE.DO
38 'H&Z: TOGGLE VARIABLES FOR CONTROL
100 CLS: CLEAR
110 DIM M$(12)
120 DATA TU,WD,TH,,FR,SA,,SU,MO
130 DATA JAN,FEB,MAR,APR,MAY,JUN,JUL,AUG,
    SEP,OCT,NOV,DEC
140 DATA SU,MO,TU,WD,TH,FR,SA
150 FOR N=0 TO 8: READ DA$(N): NEXT
160 FOR N=1 TO 12: READ M$(N): NEXT
170 FOR N=1 TO 7: READ DB$(N): NEXT
180 M(1)=VAL(LEFT$(DATE$,2))
```





```

190 Y(1)=VAL(RIGHT$(DATE$,2))+1900
200 CD=VAL(MID$(DATE$,4,2))
210 CLS:M(2)=M(1)+1:Y(2)=Y(1)
220 FOR N=1 TO 2
230 IF M(N)>2 THEN 250
240 A=0:B=Y(N)-1:GOTO 260
250 A=INT(.4*M(N)+2.3):B=Y(N)
260 T(N)=365*Y(N)+31*(M(N)-1)+1+INT(B/4)-A
270 NEXT N
280 T=T(2)-T(1):T(1)=T(1)-694341
290 T(1)=INT((T(1)/7-INT(T(1)/7))*10)
300 FOR N=1 TO 7
310 IF DA$(T(1))=DB$(N) THEN 330
320 NEXT N
330 D=1:D1=N
340 PRINT " ";M$(M(1));" ";Y(1)
350 FOR N=1 TO 7:PRINT DB$(N);" ";:NEXT
360 PRINT
370 FOR N=1 TO 7
380 IF Z>0 OR N>=D1 THEN 400
390 PRINT " ";:GOTO 480
400 IF D<>CD THEN 460
410 PRINT CHR$(27)"p";
420 PRINT USING "##";D;
430 PRINT CHR$(27)"q";
440 PRINT " ";
450 GOTO 470
460 PRINT USING "## ";D;
470 D=D+1:IF D>T THEN 500
480 NEXT N
490 PRINT:Z=1:GOTO 370
500 PRINT@22,"KEY F1: NEXT MONTH"
510 PRINT@62,"KEY F2: PREV MONTH"
520 PRINT@102,"KEY F3: NEW MO/YR"
530 PRINT@142,"KEY F4: APPS TODAY"
540 PRINT@182,"KEY F5: APPS OTHER"
550 PRINT@222,"KEY F6: STOP PRGRM"
560 LINE (125,0)-(126,63),1,BF
570 KEY ON:Z=0
580 ON KEY GOSUB 600,630,660,780,720,1020
590 IF INKEY$="" THEN 590
600 IF M(1)+1>12 THEN 620
610 M(1)=M(1)+1:GOTO 210
620 M(1)=1:Y(1)=Y(1)+1:GOTO 210
630 IF M(1)-1=0 THEN 650
640 M(1)=M(1)-1:GOTO 210
650 M(1)=12:Y(1)=Y(1)-1:GOTO 210
660 CLS:PRINT:PRINT
670 INPUT "ENTER MONTH (1-12)";M(1)
680 IF M(1)<1 OR M(1)>12 THEN 660
690 INPUT "ENTER YEAR (1901-2099)";Y(1)
700 IF Y(1)<1901 OR Y(1)>2099 THEN 690
710 GOTO 210
720 PRINT@302," ";
730 PRINT@262," ";
740 PRINT CHR$(27)"p";
750 PRINT@262,"ENTER DATE";
760 INPUT CD
    
```

month and year to be shown within the 1901 through 2099 limits. The current month and day can be brought up quickly by using F6 (END PRGRM) and F4, which is returned to its RUN status after the program is stopped.

Because of the INKEY\$ statement in Line 590, Enter (or any other key) instead of F1 also can be used to run the calendar forward. The F2 key pages the calendar backward. The current day will remain in reverse characters for all calendar pages unless another day is selected using F5.

Interaction with the NOTE.DO file is controlled with F4 and F5. Section nine (Schedule/Organizer) of the 100 users' manual details this program and NOTE.DO. Entries in NOTE.DO usually are single lines of up to forty characters, preceded by a date:

```
02/15 MEETING WITH STAFF, 10 AM
```

The CALNDR program requires that the first five characters of the entry take the form of a two-digit month, followed by a delimiter such as the slash and the day written as two digits. The month and day are read using the MID\$ statements in Lines 810 and 820.

If characters such as asterisks or dollar signs begin the file entry then both MID\$ statements should be changed so that the appropriate date characters are read. Commas in the file entry can cause confusion since the entry will be read only to the comma, resulting in an incomplete description of the appointment. If a file other than NOTE.DO is used for interaction with the program, change Line 780 to reflect the new file name.

If no appointments are found, a message is printed in reverse on the lower right of the screen:

```
NO APPOINTMENTS (DATE)
```

The current calendar page is retained.

Should one or more appointments for the current day be in NOTE.DO, the screen will clear and the first appointment found will be displayed. Pressing Enter continues this process until all entries for the current day and month being displayed have been read. Hitting Enter a final time returns the display to the last calendar page accessed.

Key F5 permits input of any date for the current month. Other than this input, operation results are the same as for F4. The last date entered will be shown in reverse as other calendar pages are accessed.

FUNCTION KEYS TOE THE LINE

Program Lines 100-200 break the current date down to month, day and year.

(continued on page 56)

We've done it again!!!

More super software for your Model 100, Tandy 200 & NEC PC8201A!

MEN-U-TILITY

Men-u-tility is a powerful new utility for your Model 100. Once installed it is completely automatic and comes up when ever you would normally return to the main menu. As you move the cursor bar over the files, the length of each file is instantly displayed in the upper right corner. Men-u-tility adds 8 function keys to your main menu. You can kill files, rename files, make files invisible, set the day, date and time without ever leaving the menu.

Men-u-tility is also a print formatter. With F3, you can print any .DO file to your printer and you decide the right and left margins, top and bottom margins and page length! F8 sets an alarm that will go off no matter what mode you are in, BASIC, TEXT, TELCOM, etc.

If you have the Disk Video Interface (not required), the menu will appear on whatever screen you are using.

Men-u-tility only requires 1.8K of RAM and won't conflict with your other machine language programs. (100)

\$24.95

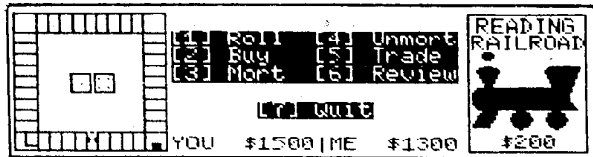
Feb 04, 1985 Mon 00:11:04 28006 2			
BASIC	TEXT	TELCOM	ADDRESS
SCHNL	---	---	---
---	---	---	---
---	---	---	---
---	---	---	---
---	---	---	---
---	---	---	---
Name Kill Prnt Invi Date Day Time Alm			

LET'S PLAY MONOPOLY*

It's you against the computer and the computer is a tough competitor. The computer makes all its own decisions. Super fast machine language graphics display the whole board at all times. You can tell at a glance who owns what property and the number of houses on each. It never takes more than 1 or 2 seconds for the computer to decide what to do. The computer is such a good player that you'll be lucky if you even win half of the time. (100,200,NEC)

*Monopoly is a trademark of Parker Brothers.

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ASSEMBLER

Our assembler is the answer to your assembly language programming needs. It has all the features you expect in an assembler and more! It requires less than 3K of your valuable RAM space and is relocatable to any convenient place in memory. There are several useful macros already built in. You can output all or any portion of the assembled listing to your screen or printer. An extensive 56 page manual covers the use of the assembler, the complete 8085 instruction set, useful sample programs and LOTS of information on the ROM and reserved RAM areas. (100,200,NEC)

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Melody Maker

Melody Maker is a musical program generator. Simple cursor controls are used to select a note and position it on the staff making it easy to enter in sheet music. You can even use Melody Maker to add musical routines to your own programs. (100,200,NEC)

\$19.95

BYTEFYTER

Now you can expand the memory capacity of your portable computer by reducing the size of the programs that you store in it. Bytefyter is a 100% machine language program that does just that. It is relocatable so that it won't conflict with any other machine language programs that you use now, or may use in the future.

Bytefyter works on your BASIC programs just as they are, IN PLACE. It strips unneeded spaces and remark lines. But that's not all! Bytefyter is smart! Bytefyter combines the lines of the BASIC program to whatever maximum length you specify. Each line of a BASIC program takes 5 bytes just for the line number and pointer information. By combining lines, Bytefyter saves a tremendous amount of space, space that could be used for another program or text file. Bytefyter actually checks the logic of your programs and doesn't combine lines that would cause the program to crash.

Bytefyter is amazingly fast. It will do its job on even the largest BASIC program in just seconds! You'll want to use Bytefyter on all your BASIC programs, whether you wrote them or bought them. (100,200,NEC)

\$24.95

RENUMBER

Renumber is a machine language program that lets you renumber the lines of your BASIC programs IN PLACE! Renumber adjusts all references to line numbers throughout the program. It is completely relocatable so it won't conflict with your other machine language programs.

Renumber is FAST! It will renumber even the largest BASIC program in just seconds. You can renumber all or just part of a program. You decide the starting line number and the increment to use. It couldn't be any simpler. This is one utility that the serious BASIC programmer just can't afford to be without! (100,200)

\$24.95

CBUG

CBUG is the ultimate debugging tool for your lap computer. It only requires 3K of your precious RAM space and is relocatable to any convenient place in memory. CBUG is not just fast, small and easy to use, it is POWERFUL! With CBUG you can step through an assembly language program or the ROM while it displays the registers, the status of the flags, and associated memory locations. You can set breakpoints and execute your code to that point. You can step through call instructions with a single keystroke and return to the point after the call. CBUG does number base conversion, hex addition and subtraction, search and display, search and replace and block moves of memory. CBUG allows you to alter the values contained in the registers, display memory and load values into memory like a monitor program. (100,200,NEC)

\$29.95

SORT

Our Sort utility lets you sort any TEXT file in place. You can sort the file by any field. Sort is 100% machine language and only requires .8K of RAM. (100,200,NEC)

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Please include \$1.00 per program for postage.
Be sure to specify Model 100, Tandy 200 or NEC PC-8201A.
For orders outside the U.S., include sufficient postage for airmail delivery. U.S. funds only.

RS14

PORTABLE PRINTERS ON PARADE

TRP-100

Portable, dot-matrix printer
\$300
Tandy Corp.
1700 One Tandy Ctr.
Fort Worth, TX 76102
(817) 390-3300
Circle No. 170

By WILLIAM T. WALTERS

Thermal Transfer

Tandy has responded to its public. A portable printer is now available for portable computing.

The 5.5 TRP-100 Thermal Ribbon printer measures 11.8 inches wide by 2.76 inches high by 6.93 inches. Its two-tone color scheme of off-white and black makes it a perfect match for either the Model 100 or Tandy 200.

The TRP's thermal transfer process offers two choices: the thermal print head by itself can be used to print on thermal paper or a special thermal ribbon cartridge can be used to print on plain paper. Both processes deliver clear, crisp letters — with descenders — in two intensities.

Although thermal printers aren't new, thermal transfer is the latest technology. During printing heat is applied to the ribbon, which deposits carbon ink on the plain paper.

JAM PACKED

This printer is jam packed with features. Not only does it print nicely formed characters in an eight by nine-dot matrix, it offers block graphics in a six by six matrix. A programable graphics mode produces lines that are seven dots high by 480 dots wide. Other programable features include subscript, superscript, repeating character, underlining and elongated characters.

The character-print density is unaffected when shifting from graphics to text. This plus simplifies calculations determining the number of dots per line.

The TRP-100 prints both Tandy and IBM character sets. There are two dual inline package (dip) switches for selecting fixed options such as IBM or Tandy codes, serial or parallel interface, plain

or thermal paper, 11-inch or 12-inch forms, and normal or high intensity.

Although the TRP-100 offers some surprising features, many aren't required by the average Model 100/Tandy 200 owner. While the capability of mixing graphics with normal print has merit, was it necessary to include a feature to automatically repeat printable characters up to 255 times?

The 5.5 pounds sounds light, but doesn't include the weight of batteries or AC power adapter. Figure in five C cell batteries and that's another .75 pound.

Tack on 1.5 pounds if the AC power adapter is to be lugged around.

The thermal paper recommended by Tandy consists of an 8.5 inch by 100 foot roll. Using roll paper increases printer depth another two inches. This is a valid consideration when deciding how much room to leave in a briefcase.

BUT EXPENSIVE

Thermal paper isn't cheap either. It works out to 3.8 cents per 8.5 inch by 11 inch page. The thermal transfer ribbon,
(continued on page 57)

Small, Light and Quiet

ThinWrite 80

Compact, dot-matrix printer
\$449.00
Axonix Corp.
417 Wakara Way
Salt Lake City, UT 84108
(801) 582-9271
Circle No. 171

By CARL OPPEDAHL

Weighing about six pounds, ThinWrite 80 measures 13 inches by 7.5 inches by 2.75 inches. The \$25 optional tractor feeder works well and is easy to remove and replace. When it's installed, the total unit with dust cover grows to 4.75 inches. Paper goes in and out through the rear.

This machine prints with ordinary ink on plain paper — rather unique in a world where most portable printers use expensive, hard-to-find thermal paper or thermal ribbons.

Like most modern dot-matrix printers, ThinWrite has many print modes including enlarged, condensed, doublestrike, emphasized and near-letter quality fonts. The regular print mode, available on power-up, offers 50 characters per second (cps) of good draft-quality characters with descenders. Compare, for example, this to a printer without descenders where *g* and *y* don't go below the line but instead are squeezed into the space of an *m*.

The near letter-quality mode pokes along at 12 cps, but yields a print style suitable for correspondence. Only if you

look closely at the printout are you able to see that the letters are composed of little dots.

Finding information in the users' manual is like embarking on a hunt. There's neither an index nor a table of contents. Things are scattered. The drawing to show numbering and on/off orientation of DIP switches, for instance, is 10 pages from the table explaining what the switches do. The acronym NLQ appears several places but is nowhere defined. (The definition was discovered by a process of elimination: It means *near letter quality*.)

There's an Axonix 800 number listed in the users' manual. A couple of calls to it confirmed it's answered by a helpful staff.

GRAPHICALLY DONE

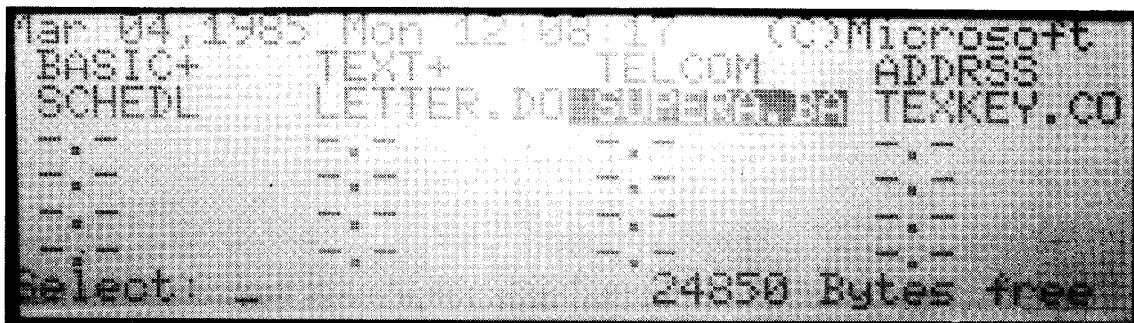
Don't look for a form-feed button on the ThinWrite 80. The printer handles form-feed characters properly if you send them from the computer. It does not respond to the BELL character (ASCII 7).

The bit-addressable graphics capability wasn't tested, but it should work with the 100 and 200. Just remember to use CALL 5232 (CALL 5520 on the 200) to prevent an ASCII value of nine, if sent to the printer, from expanding by the computer to spaces.

The 80 in ThinWrite 80 does not mean the printer is only for TRS-80 computers. As with all printers, ThinWrite doesn't reproduce the 100/200 CODE

(continued on page 61)

The Model 300 Is Here... You Already Own It!



SUPERA: Like Getting A Whole New Computer

In January 1983, Micro Demon introduced PRO AID. Suddenly Model 100 users found that their computer had capabilities far beyond their expectations. In his InfoWorld review of PRO AID, Reviewer Greg Springer, anticipating the announcement of the Model 200, wrote,

"PRO AID adds enough new capabilities to the current model that the wait for upgraded portability is made much easier and maybe even unnecessary."

Well, the Model 200 is here. But so is SUPERA! SUPERA takes a giant step past PRO AID, and adds a multitude of powerful new features to the Model 100, making it into the computer it was meant to be.

Once it is loaded, SUPERA works transparently to you and your programs. If it weren't for all the wonderful things it does, you would never even know it was there. If you want to remove it, SUPERA is as easy to take out as KILLing a BASIC program.

Unique Format

SUPERA loads and runs as if it were a BASIC program (it's really all machine language). Because of this unique format, SUPERA is compatible with most other software and hardware. It also only requires 4.3K of memory.

With SUPERA installed, every facet of your computer suddenly takes on an aura of new-found power.

In Text

While in TEXT you can

- Use a really fast and flexible search and replace function.
- Turn on a special type-over mode in which typed characters replace text instead of being inserted.
- Read a second file while editing a first.
- Use control keys to delete words and lines, to change the case of the character under the cursor, and to activate the paste key.
- Cause the display to scroll slowly up or down a line at a time.
- Redefine special keys to act as SHIFTeD keys, control keys, or graphics characters.
- Turn the computer off without losing your place.
- Access special HELP files.
- Use 26 new macro function keys.
and more!

All of Supera's editing features become available whenever you enter EDIT mode to edit a BASIC program.

Super Function Keys

A great deal of SUPERA's power comes from its 26 macro function keys. These easy to define keys can be used in TEXT, TELCOM and BASIC. Each key generally defines a string of 14 characters, but in both BASIC and TEXT several keys can be concatenated into one so as to provide longer keys. The power of these function keys is hard to imagine until you try them.

In TEXT they can provide you with much more than just easy entry of boiler-plate strings. They can also be defined to automati-

cally carry out complicated editing sequences.

In TELCOM these keys can save you money while accessing a data base such as Compuserve. They also save you the trouble of remembering such things as passwords, ID numbers, and special commands.

In BASIC use the keys to enter BASIC commands, and to facilitate typing in programs, to name just a few applications.

Moreover, SUPERA allows you to save and load entire sets of function keys by a single control key action. Thus you might keep a set of keys called TEXKEY.CO handy to use in TEXT, another keyset for BASIC, and yet another for TELCOM.

In BASIC

You get the 26 function keys, and also

- Single stroke access to the built-in software such as TEXT and TELCOM
- Automatic Line Numbers
- Control key activation of selected BASIC commands
- You can redefine special keys

In Menu

You can use control keys to kill and rename files.

Calculator Mode

From BASIC you can enter an entirely new mode called Calculator mode. While in this mode you can quickly and easily evaluate expressions. Calculator mode also provides several new BASIC functions.

Better Than PRO AID

It's true that PRO AID was a significant enhancement to the Model 100, but SUPERA goes far beyond it. In a message on the Compuserve Model 100 SIG, system operator Dave Thomas said, ***"Now with SUPERA, the original PRO AID has been enhanced beyond belief... If there is a single, more useful utility on the market for the Model 100 than SUPERA, I haven't heard of it and t'would boggle my mind if t'was!!"***

TEX PRO For Word Processing

TEX PRO consists of ALL the TEXT editing features of SUPERA, uses only 2.8K of memory, and sells for just \$49.95. It may be the choice of those who seldom use their Model 100 except for word processing, and don't need all the additional power of SUPERA.

**MICRO
DEMON, INC.**

RS26

For more information or to order, write to Micro Demon, Inc., P.O. Box 50162, Columbia, SC 29250. Or call 803-733-0980 anytime. SUPERA \$79.95, TEX PRO \$49.95. Add \$3.00 for shipping. Visa and Mastercard are welcome.

Function Keys Unlock 100's Power

By Danny Goodman

Schizophrenic perhaps, but the multiple personalities of the Model 100's function keys are an invaluable feature. Going from TEXT to TELCOM to BASIC, these keys have different uses depending on which program the computer is running.

Press the top row key marked Label to see which function key represents what. Those used in BASIC are shortcuts for frequently used functions. Go into BASIC and press the Label key to see the legends of the operating function keys. If you haven't made any changes, the initial functions are:

F1 — File	F5 — List
F2 — Load	F6 isn't used
F3 — Save	F7 isn't used
F4 — Run	F8 — Menu

There's more to each of these functions than is revealed by the legend on the screen. F1 just says File, but the FILES command brings up a listing of all document and BASIC files in the directory.

To fit the legends of so many function keys across the bottom row of the 40-character wide LCD screen, only the first four characters can be displayed. To see the complete definition of each function key, use the KEY LIST command. Reading left to right the screen displays all characters comprising the function key command, as in the following:

Files	Load "
Save "	Run
List	Menu

Notice that Load and Save automatically include quotation marks. Pressing a function key essentially speed-types the characters defined for that key.

KEYLIST has another feature. If Files is typed, Enter must be pressed. Pressing F1 automatically executes the FILES command, eliminating the need to press Enter.

THE KEYSTONE

The power to redefine all function keys rests in the KEY command. Some situations call for such a procedure. For instance, if many programs are typed from printed program listings to save on cassette, direct commands such as

CLOAD, RUN, LIST, CSAVE, EDIT AND FRE(0) are used regularly. To save time and keystrokes, all of these commands can be assigned to function keys.

Another reason to redefine function keys is to make them consistent with those used on desk-top computers. If it's an IBM PC or a compatible computer, assign F1 to be LIST, F2 to be RUN and so on.

Tailor keys to the operations performed most regularly. Here's how to change your keys' functions.

The KEY command allows definition of one key at a time. For example, to make F2 perform a RUN command, enter KEY 2,"RUN"+CHR\$(13)

This command translates to "Assign to Key number 2 the word RUN plus Enter." The CHR\$ statement is the equivalent in BASIC language for pressing Enter. Without CHR\$(13) in the KEY command, Enter must be pressed.

Here's another useful shortcut. Recall that the command PRINT FRE(0) produces the amount of memory left in BASIC. That command is convenient to have as a function key, especially since it's awkward to type. But assigned to a function key, the legend would pick up only the first four letters — PRIN. It's easy to forget what that key prints, or to confuse it with another key that uses PRINT.

Fortunately BASIC uses the question mark to symbolize the PRINT com-

mand. Typing ?FRE(0) achieves the same as typing PRINT FRE(0). Don't forget to add Enter so the command is executed automatically when the key is pressed.

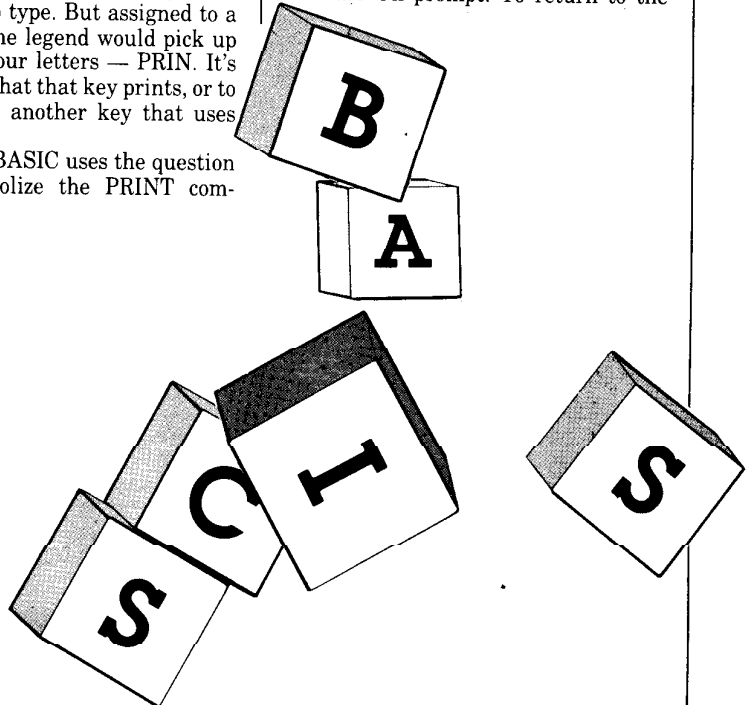
To assign this command to function key F5, enter KEY 5,"?FRE(0)" +CHR\$(13)

LIST and EDIT commands delay execution if a line needs to be changed. To LIST a single line, use the function key to produce the LIST command on the screen and have it wait for you to type in a line number. In this case assign F3 by entering KEY 3,"LIST"

CHR\$(13) isn't included because you'll execute Enter manually after a line number.

It's recommended that one key be reserved for the MENU command since that's used regularly to leave BASIC and return to the directory screen. And since other programs built into the computer use F8, it makes sense to continue that convention in BASIC.

Remember also that functions assigned to the function keys work only from the Ok prompt. To return to the



menu while a BASIC program is running, press Break-Shift to get the Ok prompt. Then press the appropriate function key for MENU.

If many document files are involved, here's a suggested sequence for keys F5 through F7:

- Make F5 the FILES command by entering **KEY 5, "FILES" + CHR\$(13)**

- Assign F6 the KILL command by entering **KEY 6, "KILL" + CHR\$(34)** (ASCII code 34 is for the quotation marks.)

- Use F7 as the key to define memory space. Enter **KEY 7, "?FRE(0)" + Chr\$(13)**

To free up space in RAM or the directory, work along the row of keys F5 through F8 in a logical sequence. See the files in RAM, erase those not needed, see how much memory is free and go back to the main menu.

SOUND OFF AND POWER DOWN

A few handy commands in Microsoft's briefcase BASIC control some of the system parameters. Two of them, POWER and IPL, are unique to this type.

There are two circumstances when the unit's sound features might become an annoyance: when loading cassette programs and when using TELCOM and the 100's internal modem. In both cases a built-in buzzer generates a high-pitched irritating squeal. There's no volume control.

While at first it may be instructional to listen to these tones to learn the machine's characteristic signals and responses, once or twice is enough. Possible exceptions are when trying a new cassette recorder or logging onto an unfamiliar telecommunications system.

The answer to this problem is the SOUND ON/OFF command, related to the SOUND command for musical tones. To turn off the sound in cassette loading and modem communications (but not shut off the musical tones that may be written into a program), type **SOUND OFF**.

If you change your mind and want to listen, type **SOUND ON**. If the machine is cold started the sound automatically

turns on.

The 100 has been programed to turn off if not used for 10 minutes. The ON/OFF switch can stay in the ON position under this condition, but the computer is off. The length of time the computer will stay on unattended can be changed from one minute to 22.5 minutes. Naturally the sooner the computer turns itself off, the longer batteries will last. But having too short a period can be frustrating.

The power command is unusual and requires close attention. Type both the POWER command and a number — anything between 10 and 225 — that represents a multiplier of 0.1. For example, to set the computer to go off in five minutes, the command is **POWER 50**.

There's also the option of preventing the computer from shutting itself off. Disable the automatic power-down function by issuing the command **POWER CONT**. This tells the computer to run the power continually or until the ON/OFF switch is turned OFF. Unless the computer is to be used only from AC power, keeping the automatic power-down function operative is recommended. The one time you wear out your batteries because you forgot to turn off the computer might be the time you

Why Handle Files One at a Time? Let XOUT/XIN from BKI do the work for you.

Eliminate tedious (and fault prone) load/save/kill and format procedures on your MODEL 100. XOUT/XIN programs automatically create/read and display RAM and external directories. Resulting free space is displayed as files are selected/deselected to aid in memory management. Menus and prompts provide a safe, easy-to-use file management utility — an amazing productivity tool.

Use XOUT.BA to send multiple copies of selected memory files to the tape (**Save**); or send them directly (**List**), or via a formatter (**4mat**), to either the printer or the screen. Selected files can simply be removed with the **Kill** command and confirmation. An external directory is automatically created for each copy of a file set that is saved (containing creation date and time, and an ordered list of names and file sizes). Files saved on tape, including the directory, may also be loaded one-by-one by **BASIC** or **TEXT**, in the usual way.

Use XIN.BA to automatically **Load** selected tape files back into memory; or send them directly (**List**), or via a formatter (**4mat**), to the printer or the screen.

Typical XOUT.BA Menu

```

: XIN  B 3379:SECT02D 742:
: XOUT B 4130:SECT03D 1723:
: DO4MATB 4738:SECT04D 620:
: BA4MATB 1908:PRTCAPD 286:
: basic B 2:Paste D 1:
: SECT00D 4982:
: SECT01D 1434:
5653 Free 23867 Used 29520 Total
Save List 4mat Kill Abrt Menu
    
```

- XOUT.BA -

- Displays memory contents in memory address order.
- As files are highlighted memory statistics are changed to reflect values if **Kill** selected.
- BA files are stored on tape as standard tokenized files.

• Label line alternatives with statistics line by toggling the label key.

• Any combination of files can be highlighted by positioning the pointer and pressing space or enter. No action is taken until commanded by a function key, and then all highlighted files are affected.

• The **4mat** command invokes the BA4MAT.BA program to format BA files and the DO4MAT.BA program to format DO files.

Skeleton BA4MAT.BA and DO4MAT.BA programs are provided as examples for interfacing existing formatters. Full featured BA4MAT.BA and DO4MAT.BA programs, already interfaced with the XOUT/XIN programs, are offered as separately priced items. DO4MAT.BA and BA4MAT.BA format a single file if executed from the main menu or multiple files if executed via XOUT or XIN.

- DO4MAT.BA -

- Formats documents using embedded command descriptions for many features, including columns, underlining, bold print, filling and adjusting.
- Optional headers and footers may include the date, time and page number.
- Specify printer make and model. (Customizing directions given for printers not yet implemented.)

Typical XIN.BA Menu

```

: XIN  B 0:SECT03D 1725:
: XOUT B 0:SECT04D 620:
: DO4MATB 0:PRTCAPD 286:
: BA4MATB 0:
: SECT00D 4982:
: SECT01D 1434:
: SECT02D 742:
16862 Free 12658 Used 29520 Total
Load List 4mat Abrt Menu
    
```

- XIN.BA -

- Displays tape contents in tape position order.
- As files are highlighted memory statistics are changed to reflect values if **Load** selected.
- If the file name exists in both the tape and memory directories, the difference (+, -) in size is shown.

- BA4MAT.BA -

- Formats BA files so that the individual basic commands are listed one per line indented from the basic line number.
- Additional indentation occurs to diagram the IF-THEN-ELSE structures in the program.
- Pagination including the date, time and page number are provided.

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BA4MAT.BA (skeleton) 39.95
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RS11

need the machine most.

If a particular program is used regularly in either ROM or RAM, a couple of keystrokes can be saved when turning on the computer. For example, with the IPL command, in BASIC type *IPL "TELCOM"*.

Subsequently when the computer is turned on it automatically enters TELCOM, provided the main menu was not displayed when the computer was last turned off.

BASIC FAUX PAS

Let's take a look at the common error statements that may crop up while copying and running BASIC programs. This discussion is tailored especially for users who aren't BASIC programmers, but who may perform some of the BASIC program transfers discussed earlier in this series (see Parts one and two, May and June issues, Portable 100/200).

Although the word *error* may cause you to cringe, try not to think of your computer as being a snitch. BASIC language built-in error codes are invaluable. No human should be responsible for an error-free, one hundred-line program. Proper interpretation and use of the error codes helps smooth out any

rough edges that might have crept into a program.

Like any language, BASIC has a strict set of rules for constructing a sentence or phrase. Although most of us tolerate slips of the tongue, BASIC is intolerant of slips of the finger. Every command must be spelled correctly and every symbol or punctuation mark must be in the right sequence. If not, a program stops and SN error in 0000 appears on the screen, where 0000 is the line number of the error.

This error appears mostly in programs typed in from published listings. Note the line number in which the error occurs. Perform a LIST of that line number and compare character by character what's in the computer against what's printed in the listing. Almost always the problem will be an extra or missing character or misspelled command.

One time out of a hundred there'll be no difference between what's in your computer and what's on the paper. This is a rare error in the published listing. It does happen, especially in those listings typeset from an original LLISTING of the program by the author.

The only choices at this point are to either learn BASIC or consult with

someone well-versed in the language and tackle the problem, or write the publication for clarification. If you choose the last, be sure to indicate the precise error message, including line number. With any luck the author will be able to provide a *fix* for the built-in syntax error.

LAPSE OF MEMORY

Many kinds of programs that fit comfortably within the computer's RAM use up considerable memory when running. Typically they create tables of numbers or other information which will be used later in the program. If there isn't enough free memory for creating these tables (known to programmers as arrays), the Out of Memory (OM) error code appears.

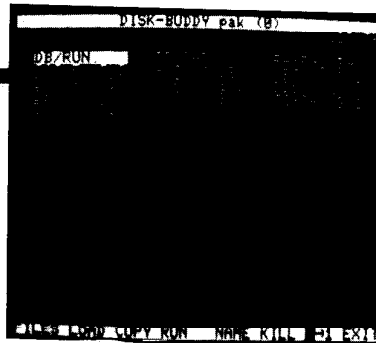
To run this program, KILL some other file to make room for the tables. To find out how much room is needed, issue the FILES command from BASIC to see the files directory.

KILL expendable files one at a time, trying the program after each KILL until the OM error no longer appears. If none of the files is expendable, the program won't run until more memory space is cleared or until the amount of

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WHAT NUMBER, PLEASE

Sometimes a faulty program will cause the Bad File Number (BN) statement to appear. This indicates the computer wants to perform simultaneously an operation involving two or more document files.

Normally only one file can be accessed at a time. But if the program calls for two or more, a special MAXFILES command must be present in the program. The solution is to issue a direct MAXFILES command in BASIC. At the Ok prompt, enter `MAXFILES = 2` and RUN the program.

If BN error reappears, try more MAXFILES commands increasing the digit by one until the program runs. If concerned about free memory space, manually reset the MAXFILES to one or zero when through with the program.

Every number added to the MAXFILES command takes up 267 bytes of overhead. MAXFILES of four ties up about one kilobyte (K) of text document space.

Ideally a program that must access document files should set the appropriate MAXFILES command at the beginning of the program, and reset MAXFILES to zero at the end of the program.

Occasionally programs downloaded from a data base have specific user instructions listed in the opening lines. They're easy to miss for the non-programmer. LIST the program, with a finger ready on the Pause key to stop the listing from scrolling off the screen. Look for the name of a file listed.

If there are no instructions, continue LISTing the program until an OPEN "FILENAME" FOR INPUT command is encountered. It'll display the filename available in the directory. Then it's a simple matter to go into the TEXT program, answer the prompt for a filename to edit with the name of the special document file and exit the TEXT program.

Even though nothing was put in the file it remains in the directory. Now the program should run without difficulty.

A File not Found (FF) error also can appear when direct commands are being executed. When KILLing a file an FF error may indicate that the extension wasn't specified. Or if a filename was misspelled on a direct command, the computer won't find a match for the misspelling and will return an FF error.

STATEMENT OF ERROR

It's common to get a Type Mismatch (TM) error. It indicates a missing quotation mark before the filename in a

KILL, CLOAD, SAVE or other direct command. Simply retype the command and be sure to include the quotation mark.

A Bad File Name (NM) error message won't appear too often once you're accustomed to the file naming system of the Model 100. It indicates illegal filenames — those with more than six characters or using a character not allowed by the rules of BASIC.

Again, no damage has been done. In a direct statement simply retype the command with the correct filename.

Downloaded programs are subject to the Direct Statement in File error (DS). This means there's something in the file the computer doesn't recognize as part of a BASIC program. Since BASIC will LOAD any program, provided it has line numbers running down the left margin of the listing, this error shows there's something other than a line number in the left margin.

The DS error shows up when LOADing a program from a document file (which is where the program is stored when first downloaded via the TELCOM program). The computer will load as much of the program it can until it reaches a direct statement, then it issues the error while in BASIC.

Save time by looking at the document file in the TEXT mode before LOADing it into BASIC. In a downloaded program the obvious place to look is at the begin-

ning and end of the file. It's most likely that some extra carriage returns (displayed as solid triangles on their sides) and other characters were stored in RAM along with the program at the beginning and end of the file. After that direct statements may not be so obvious. But there's an easy way to locate them, even in long programs.

Try LOADing the program into BASIC as detailed above. If a DS error appears immediately LIST as much of the program as BASIC accepted. When the listing ends, the last line of numbers accepted by BASIC will be displayed. Now go into the document and use F1 (FIND) to search for the last line number accepted in BASIC.

There must be a direct statement on the next line or two. It may not seem obvious on the 40-character wide screen. Look for extra carriage return symbols before the one that ends the logical line. The next characters should be for the line number in the next logical line. Place the cursor over the extraneous carriage return and perform a Shift-Delete to remove it.

How did those extra carriage returns get there in the first place? In preparing the program for uploading to the data base, the author or his uploading program mistakenly added them. They're a nuisance. Several attempts at LOADing and subsequent editing may be necessary. As more programmers gain experience with uploading programs, this problem should diminish.

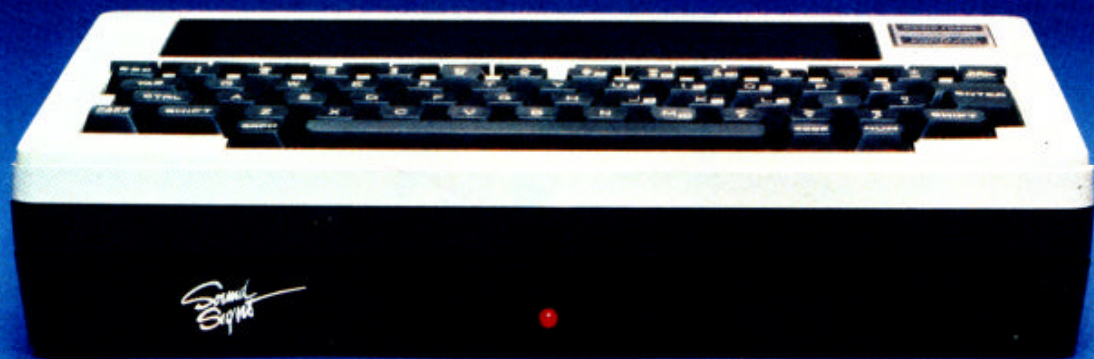
The Input Past End of File (EF) error is a frustrating one. Fortunately it occurs rarely on prepared software. It means that the main BASIC program was trying to read information from another file and found fewer pieces of information than it expected to find. There's not much a non-programmer can do with this error.

In a downloaded program and associated data files, something could have gone wrong in the transmission process and one or more items were left out. There's no way to reconstruct the file without the original file listing. A professional programmer should design programs to prevent this possibility. □

This concludes the three-part series on BASIC. It was adapted from Danny Goodman's The Simon and Schuster Guide to the TRS-80 Model 100. — Ed.

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Illustration one: Daily List
TMPC warns of impending deadlines.



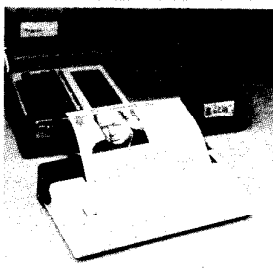
Illustration two: Process To-Do Screen
The software forces the user to prioritize his/her time.



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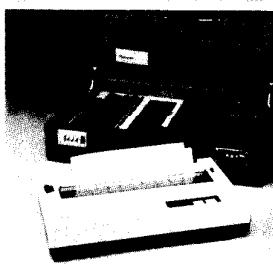
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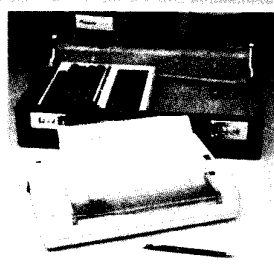
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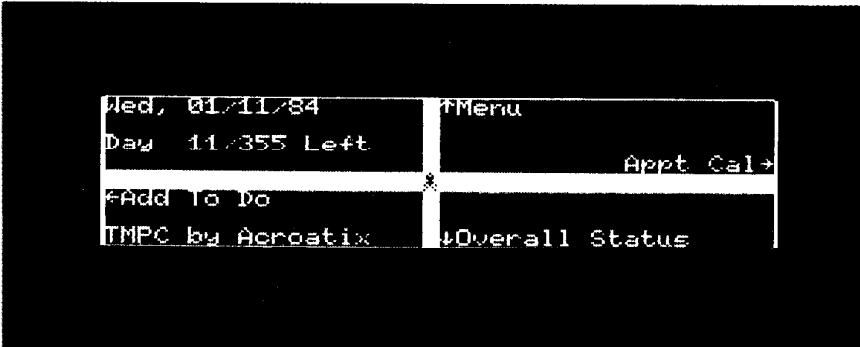


Illustration three: Today's Date
The screen displays three pieces of information: today's date and the weekday, business holidays and the Julian date.

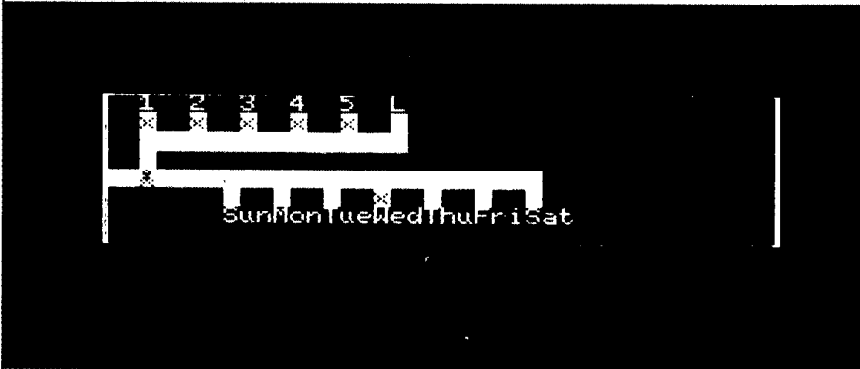



Illustration four: Weekly Repeating Data
Repeating events can be noted whether they occur regularly or infrequently.

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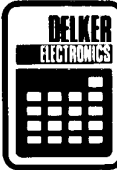
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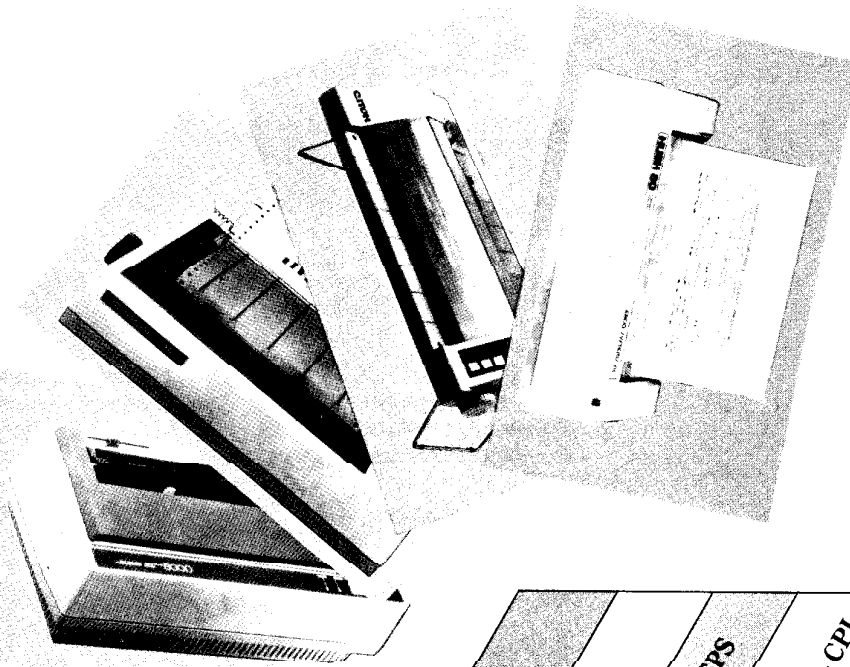
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	Alphapro 101	\$400	LQ	20	10-15,PS	NA	13	18	AC
Axiom 818-365-9521 <i>Circle No. 101</i>	DX-1500	\$299	LQ	14	10,12,PS	OPT	9.5	14	AC
	DX-2000	\$399	LQ	20	10-15,PS	OPT	14	20	AC
	DX-2500	\$449	LQ	20	10-15,PS	OPT	16	25	AC
Axonix 800-821-7093 <i>Circle No. 102</i>	ThinPrint 80	\$399	DM	40	10,16.5	NA	T8.5	4	AC,BAT
	ThinType 80	\$429	LQ	15	12	NA	8.5	7	AC,BAT
	ThinWrite 80	\$449	DM	50	10,16.5	OPT	9.5	6	AC,BAT
Brother Int'l 201-981-0300 <i>Circle No. 103</i>	M1009	\$249	DM	50	5-17	STD	13.5	6	AC
	HR 10	\$349	LQ	12	5-17	OPT	12.5	13	AC
Centronics 603-883-0111 <i>Circle No. 104</i>	GLP	\$299	DM	50	5-17	NA	10	6.6	AC
C. Itoh 800-423-0300 <i>Circle No. 105</i>	ProWriter Jr.	\$299	DM	105	10,17,PS	STD	10	8.6	AC
	Y10-20	\$489	LQ	22	12	OPT	13	20	AC
Computer Peripherals 818-710-1717 <i>Circle No. 106</i>	TH-40-160	\$158	DM	160	10	NA	T4.3	1.5	AC
Diablo 415-498-7000 <i>Circle No. 107</i>	Series 101	\$499	DM	80	5-16.6	STD	10	21	AC

AC Alternating current. BAT Battery. CPI Characters per inch. CPS Characters per second. DM Dot matrix.
 DMC Dot matrix color. IJ Ink jet. IJC Ink jet color. LQ Letter quality. NA Not available. OPT Optional.
 PS Proportional spacing. STD Standard. T Thermal.

Buyer's Guide

By Deborah L. Davis

It's like singing in the shower. The lyrics are catchy and you're even on key, but nobody can hear you.

So it is when using a Model 100 or Tandy 200 without a printer. The need for one is obvious, but the choices are many. The printer field is inordinately wide, with hundreds to choose from.

Portable 100/200 narrowed the field using two criteria: off-the-shelf compatibility with the Model 100 and Tandy 200 — each printer comes standard with a parallel interface — and a price under \$2,500.

Even with those limitations, our Guide grew to a dazzling 145 printers available on today's market. We think this is the most comprehensive list of printers you'll find anywhere. It includes some new machines just announced at COMDEX in early May.

The printers are grouped by price — under \$500, \$500 to \$999, and \$1,000 to \$2,500 — so you can see at a glance the variety available within your price range. A key at the bottom of each page explains any unfamiliar abbreviations. We hope this Buyers' Guide is both informative and useful in your printer search. □

MANUFACTURER	MODEL	PRICE	TYPE	SPEED — CPS	SPACING — CPI	TRACTOR FEED	PAPER	WEIGHT — LBS.	POWER
Epson America 213-539-9140 Circle No. 108	LX-80	\$299	DM	100	10-15	OPT	10	12	AC
	RX-80FT +	\$369	DM	100	5-20	STD	8.5	NA	AC
	DX10	\$399	LQ	10	10,12,PS	OPT	10	15	AC
	FX-80 +	\$499	DM	160	10-15,PS	STD	10	17	AC
	DX20	\$499	LQ	20	10-15,PS	OPT	15	18	AC
	HS-80	\$449	IJ	160	10-15	NA	10	4	AC,BAT
Ergo Systems 415-786-3746 Circle No. 109	Hush 80P	\$160	DM	80	5-20	NA	T8.5	1.8	AC
	Hush 80PR	\$190	DM	80	5-20	NA	T8.5	3	AC,BAT
Fujitsu 408-946-8777 Circle No. 110	DotMax 9	\$499	DM	180	10-17,PS	STD	10.5	19	AC
Hewlett-Packard 415-857-1501 Circle No. 111	ThinkJet	\$495	IJ	150	6-21	STD	8.5	5.5	AC
Juki 800-832-0590 Circle No. 112	6000	\$295	LQ	10	10-15	NA	12	13	AC
Legend 800-321-4484 Circle No. 113	880	\$279	DM	100	5-16.5	NA	10	11	AC
	1080	\$339	DM	140	5-16.5	STD	10	11	AC
	1380	\$379	DM	160	5-16.5	STD	10	11	AC
	1385	\$449	DM	160	5-16.5	STD	15	19	AC
NEC Home Electronics 312-228-5900 Circle No. 114	PC-PR103A	\$499	DM	110	10-17	STD	10	15	AC
	PC-8027A	\$499	DM	105	10-17	NA	10	13	AC

AC Alternating current. BAT Battery. CPI Characters per inch. CPS Characters per second. DM Dot matrix.
DMC Dot matrix color. IJ Ink jet. IJC Ink jet color. LQ Letter quality. NA Not available. OPT Optional.
PS Proportional spacing. STD Standard. T Thermal.

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19 Pelham Road, Weston, MA 02193 (617) 647-1099

BUYERS' GUIDE

MANUFACTURER	MODEL	PRICE	TYPE	SPEED - CPS	SPACING - CPI	TRACTOR FEED	PAPER	WEIGHT - LBS.	POWER
Okidata 609-235-2600 <i>Circle No. 115</i>	Okimate 20	\$268	DMC	80	5-17,PS	STD	10	NA	AC
	Microline 182	\$299	DM	120	5-17,PS	STD	10	8.8	AC
	Microline 192	\$499	DM	160	5-17,PS	STD	9.5	20	AC
Olympia USA 201-722-7000 <i>Circle No. 116</i>	Compact NP	\$499	DM	165	5-17	STD	10	15	AC
Panasonic 201-348-7000 <i>Circle No. 117</i>	KX-1090	\$349	DM	80	5-20.6	STD	10	15	AC
	KX-P1091	\$449	DM	120	5-17,PS	STD	10	14	AC
Purple Computing 800-732-5012 <i>Circle No. 118</i>	TTXpress	\$179	DM	50	5-20	NA	T8.5	2.3	AC,BAT
Smith Corona 607-753-6011 <i>Circle No. 119</i>	Fastext 80	\$259	DM	80	5-16.7	OPT	9.5	8	AC
	D100	\$295	DM	120	5-16.7	STD	11	19	AC
	L-1000	\$475	LQ	12	10-15	OPT	13	21	AC
Star Micronics 617-329-8560 <i>Circle No. 120</i>	SG 10	\$299	DM	120	5-17,PS	STD	10	15	AC
	SG 15	\$499	DM	120	5-17,PS	STD	15.5	22	AC
	SD 10	\$449	DM	160	5-17,PS	STD	10	20	AC
	PowerType	\$499	LQ	18	10-15,PS	NA	8.5	25	AC
Sumicom 714-730-6061 <i>Circle No. 121</i>	1120	\$495	LQ	18	10-15,PS	OPT	13	21	AC
Tandy 817-390-3700 <i>Circle No. 122</i>	TP-10	\$100	DM	30	5,10	NA	T4.2	3.3	AC,BAT
	DMP-105	\$200	DM	80	10-16.7	STD	9.5	8.8	AC
	TRP-100	\$300	DM	50	5,10	NA	T8.5	5.5	AC,BAT
	DMP-110	\$400	DM	50	10-17,PS	STD	10	12	AC
Texas Instruments 800-527-3500 <i>Circle No. 123</i>	Prolite	\$499	DM	45	5-16.7	NA	T8	4.7	AC,BAT
\$500 TO \$999									
Alphacom 408-559-8000 <i>Circle No. 124</i>	Alphapro 401	\$599	LQ	35	10-15,PS	STD	16	25	AC
Amdek 312-595-6890 <i>Circle No. 125</i>	5025	\$799	DM	25	10-15,PS	OPT	16	24	AC
Brother Int'l 201 981 0300 <i>Circle No. 126</i>	HR15XL	\$599	LQ	17	5-17,PS	OPT	13.5	20	AC
	IIR25	\$895	LQ	23	5-17,PS	OPT	16.5	30	AC
Centronics 603-883-0111 <i>Circle No. 127</i>	H80	\$699	DM	160	5-17,PS	STD	10	18	AC
	H136	\$899	DM	160	5-17,PS	STD	17	26	AC

AC Alternating current. BAT Battery. CPI Characters per inch. CPS Characters per second. DM Dot matrix.
DMC Dot matrix color. IJ Ink jet. IJC Ink jet color. LQ Letter quality. NA Not available. OPT Optional.
PS Proportional spacing. STD Standard. T Thermal.

BUYERS' GUIDE

MANUFACTURER	MODEL	PRICE	TYPE	SPEED — CPS	SPACING — CPI	TRACTOR FEED	PAPER	WEIGHT — LBS.	POWER
Canon 516-488-6728 <i>Circle No. 128</i>	BJ-80	\$599	IJ	220	5-16.3	STD	9.5	13	AC
C. Itoh 800-423-0300 <i>Circle No. 129</i>	8510S	\$549	DM	180	5-17,PS	STD	10	20	AC
	1550EP	\$619	DM	120	5-17,PS	STD	15	24	AC
	A10-30	\$669	LQ	29	12	OPT	13	35	AC
	1550S	\$769	DM	180	5-17,PS	STD	15.5	23	AC
Diablo 415-498-7000 <i>Circle No. 130</i>	Series 12CQI	\$699	DM	150	5-16.6	STD	10	21	AC
	Series 32CQI	\$899	DM	150	5-16.6	STD	15	28	AC
	Advantage D25	\$745	LQ	25	10-15,PS	OPT	15	37	AC
Epson America 213-539-9140 <i>Circle No. 131</i>	JX80	\$699	DMC	160	10-15,PS	STD	10	17	AC
	FX-100+	\$699	DM	160	10-15,PS	STD	15	18	AC
Integrex 215-568-9681 <i>Circle No. 132</i>	Colorjet 132	\$895	IJC	40	10,17	NA	8.5	13	AC
Juki 800-832-0590 <i>Circle No. 133</i>	6100	\$599	LQ	18	10-15,PS	OPT	13	31	AC
	6300	\$995	LQ	40	10-15,PS	OPT	16	32	AC
Micro Peripherals 800-821-8848 <i>Circle No. 134</i>	S Printer	\$595	DM	160	10-17	STD	8.5	16	AC
	X Printer	\$695	DM	180	10-17	STD	8.5	16	AC
	SX Printer	\$895	DM	300	10-17	STD	8.5	16	AC
NEC Information Systems 617-264-8000 <i>Circle No. 135</i>	Elf 360	\$595	LQ	19	10-15,PS	OPT	11	21	AC
	Pinwriter P-2	\$699	DM	180	5-12,PS	OPT	10	18	AC
	Pinwriter P-3	\$999	DM	180	5-12,PS	OPT	15	24	AC
	2030	\$895	LQ	21	10-15,PS	OPT	16	24	AC
Okidata 609-235-2600 <i>Circle No. 136</i>	Microline 193	\$799	DM	160	5-17,PS	STD	15	31	AC
	Microline 84	\$899	DM	200	5-17,PS	STD	15	31	AC
Olympia USA 201-722-7000 <i>Circle No. 137</i>	Compact RO	\$649	LQ	14	10-15	STD	14.4	17	AC
Panasonic 201-348-7000 <i>Circle No. 138</i>	KX-P1092	\$599	DM	180	5-17,PS	STD	10	20	AC
	KX-P3151	\$659	LQ	22	10-15,PS	OPT	15.5	29	AC
	KX-P1093	\$869	DM	160	5-16.7,PS	STD	15	37	AC
Ricoh 201-882-2000 <i>Circle No. 139</i>	RP 2200Q	\$750	LQ	20	10-15,PS	OPT	16.5	27	AC
Siemens 305-994-8800 <i>Circle No. 140</i>	PT-88	\$745	IJ	150	5-17,PS	STD	9.5	22	AC
	PT-89	\$895	IJ	150	5-17,PS	STD	16	22	AC

AC Alternating current. BAT Battery. CPI Characters per inch. CPS Characters per second. DM Dot matrix.
DMC Dot matrix color. IJ Ink jet. IJC Ink jet color. LQ Letter quality. NA Not available. OPT Optional.
PS Proportional spacing. STD Standard. T Thermal.

BUYERS' GUIDE

MANUFACTURER	MODEL	PRICE	TYPE	SPEED — CPS	SPACING — CPI	TRACTOR FEED	PAPER	WEIGHT — LBS.	POWER
Smith-Corona 607-753-6011 <i>Circle No. 141</i>	D200	\$545	DM	160	5-16.7,PS	STD	11	19	AC
	D300	\$745	DM	160	5-16.7,PS	STD	15	42	AC
Star Micronics 617-329-8560 <i>Circle No. 142</i>	SD 15	\$599	DM	160	5-17,PS	STD	15.5	25	AC
	SR 10	\$649	DM	200	5-17,PS	STD	10	20	AC
	SR 15	\$799	DM	200	5-17,PS	STD	15.5	25	AC
	SB 10	\$949	DM	144	5-16.7,PS	STD	10	24	AC
Tandy 817-390-3700 <i>Circle No. 143</i>	DMP-120	\$500	DM	120	5-16.7	STD	15	16	AC
	DWP-210	\$599	LQ	18	10,12,PS	OPT	13	38	AC
	CGP-220	\$699	IJC	37	12	NA	8.5	12	AC
	DMP-430	\$899	DM	180	10-16.7,PS	STD	15	28	AC
Texas Instruments 800-527-3500 <i>Circle No. 144</i>	850XL	\$599	DM	150	5-16.7,PS	NA	11	15	AC
	860XL	\$899	DM	150	5-16.7,PS	NA	16	20	AC
	855	\$935	DM	150	5-16.7,PS	OPT	11	15	AC
Toshiba America 714-730-5000 <i>Circle No. 145</i>	P1340	\$795	DM	144	5-16.7,PS	STD	11	22	AC
\$1,000 TO \$2,500									
Amdak 312-595-6890 <i>Circle No. 146</i>	5040	\$1,495	DM	40	10-15,PS	OPT	16	40	AC
	5055	\$1,995	DM	55	10-15,PS	OPT	16	53	AC
Brother Int'l 201-981-0300 <i>Circle No. 147</i>	HR 35	\$1,245	LQ	32	5-17,PS	OPT	16.5	33	AC
	Twinwriter 5	\$1,295	DM,LQ	140	10-15,PS	OPT	16.5	35	AC
	2024L	\$1,495	DM	160	5-17,PS	STD	16.5	29	AC
Centronics 603-883-0111 <i>Circle No. 148</i>	PS 250	\$1,295	DM	160	5-17,PS	OPT	9.5	17	AC
	PS 240	\$1,495	DM	160	5-17,PS	STD	15	27	AC
	351-PC	\$2,195	DM	200	5-16.5,PS	STD	15	47	AC
CIE Terminals 714-660-1421 <i>Circle No. 149</i>	CI3500-20	\$1,995	DM	350	5-16.5,PS	STD	16	36	AC
C. Itoh 800-423-0300 <i>Circle No. 150</i>	F10-40	\$1,199	LQ	40	10	OPT	15	31	AC
	F10-55	\$1,449	LQ	58	10	OPT	15	31	AC
	24LQ	\$1,295	DMC	200	5-17,PS	STD	15	35	AC
Diablo 415-498-7000 <i>Circle No. 151</i>	Series C	\$1,295	IJC	20	10	NA	8.5	24	AC
	Companion 34LQ	\$1,599	DM	270	10-17	STD	15	35	AC
	630 API	\$2,095	LQ	40	10-15,PS	STD	16	NA	AC
	Advantage D80	\$2,195	LQ	80	10-20,PS	OPT	15.3	NA	AC
	630 ECS Series	\$2,295	LQ	40	10-15,PS	OPT	16	NA	AC

AC Alternating current. BAT Battery. CPI Characters per inch. CPS Characters per second. DM Dot matrix.
DMC Dot matrix color. IJ Ink jet. IJC Ink jet color. LQ Letter quality. NA Not available. OPT Optional.
PS Proportional spacing. STD Standard. T Thermal.

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PCSG says "Send it back in 30 days for a full refund if you don't agree."

WRITE ROM is the definitive word processing extension for the Model 100. Less than two months after the Model 100 was announced Portable Computer Support Group introduced the very first text formatter for the Model 100. That program, called Write + was licensed to Tandy and is now in Radio Shack Computer Centers as Script-sit-100. Write + had many powerful features and most reviewers still say it is the best of the cassette based text formatters. But now eighteen months later PCSG has introduced WRITE ROM. Those who experience it have said "WRITE ROM literally doubles the text processing power of the Model 100."

WRITE ROM is what you would have expected PCSG, the software leader for the Model 100, to develop in the 18 months since Write + was brought to the market.

First of all WRITE ROM as its name implies is on a snap-in ROM. You simply take a quarter and open the little compartment on the back of your Model 100 and press in the ROM cartridge. It is as easy as an Atari game cartridge and can be snapped in and out instantly so that you can use other ROM programs whenever you wish.

WRITE ROM appears on the main menu just like one of your built in programs. It lets you do every formatting function you would expect like setting margins, centering, right justifying and having headers and footers. But it does them under function key control, with the clear and easy to learn and use techniques for which PCSG has become famous.

In keeping with PCSG's long standing reputation for superlatively simple yet comprehensive documentation, the manual is a model of lucidity.

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

WRITE ROM's 'pixel mapping' feature shows you an instant picture on the screen of how your printout will look on paper. Incidentally, PCSG introduced this feature on the Olivetti M-10 version of Write + over a year ago.

In all there are 44 separate features and functions that you can do with WRITE ROM, and some of these features are truly breakthroughs for the Model 100.

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

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

Third, WRITE ROM has a wonderful feature called 'Library' that gives your Model 100 power that you never thought it could have. Library lets you record favorite phrases, words, or commonly used expressions (sometimes called boilerplate). Any place you wish any library text to appear in your document you just type in a code. WRITE ROM automatically inserts the text just like a Xerox Memory Writer.

The library phrase is inserted as your document is being printed rather than as it is being typed, so this feature conserves memory in documents where a long phrase is used repetitively, since each occurrence of a library phrase in your document is indicated by a single code character.

This Library feature is so powerful these two pages could be devoted just to telling you about things it can do. For example, you can have names and addresses that you designate in one text file with a customer or supplier number. Or you can have inventory items with stock numbers.

In your document you simply type in the customer or stock number and that entry from the other file is automatically inserted in the document. Picture what you can do with that kind of capability.

Because WRITE ROM is written in machine code, it is blindingly fast. No one can claim faster operation.

Because it is on a ROM it uses virtually none of your precious RAM for its operation, and it does not interfere with other machine code programs in your RAM. It works with any printer, serial or parallel. At the touch of a function key you can find the size of a RAM file in bytes and in words (ideal for journalists and other writers who need to know how many words are in a piece). You can make a duplicate copy of a document file under a new name. You also can rename or delete (kill) any RAM file with function key ease.

This description only scratches the surface of this amazingly powerful piece of software. You can automatically insert the date or the time anywhere in your document; WRITE ROM senses when you are nearing the bottom of a page, and at your command will start a new paragraph on the next page.

Write + was the Model 100 pioneer in the use of 'dot commands' to allow control of such things as margins, centering, line spacing and other appearance related changes in the middle of a document. WRITE ROM goes a step further by making all the dot commands Wordstar compatible. This means that if you wish you can quite easily prepare a Wordstar compatible document. Then you can use features of WRITE ROM (such as pixel mapping) that Wordstar lacks, before uploading to your desktop.

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

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

Here's how it works: When you want to underline you don't have to remember

some complicated printer code. You just type Graph-U, and to end underline you just type Graph-U again. For boldface it's Graph-B and to end boldface it's Graph-B again. It's easy to remember and easy to do. WRITE ROM lets you record the codes from your printer's manual one time only and then just use these easy to remember signals any time you want to do a printer font feature.

WRITE ROM does so many things that other text formatters cannot do. For example you can not only double space but triple, quadruple or any other.

WRITE ROM allows you to use your TAB key in a document so that you can indent the first line for a paragraph easily or space rapidly over many tab stops.

WRITE ROM has another nice feature. It allows you to indent. This means that you can have paragraphs that have a first line that projects to the left of the remainder of the paragraph.

WRITE ROM allows you to not only center a word or phrase on a line but you can center copy vertically on a page as well.

WRITE ROM has a feature that is unique to any word processor on any computer. It is called FORM. FORM is an interactive mechanism that lets you create screen prompts so that you or someone else can answer them to fill out forms, or supply information like to a questionnaire or answer correspondence rapidly inserting personal answers into a form letter.

It works sort of backwards from Library or boilerplate. As you recall, with the Library feature you type a code into a document and when you print, that phrase or word or paragraph is picked up from the Library file and inserted into the printed document. With FORM when you print, anyplace where you had previously typed in a GRAPH T in a document, the printer will stop and you are shown a prompt on the screen. You can type in directly on the screen and when you press ESC, what you typed is sent to the printer formatted like the rest of the document.

What is really great is that you created those prompts that appeared on the screen. By the way, the prompts won't appear in the printed document unless you want them to, and you don't have to be connected to a printer. you can write your completed forms to RAM files if you wish.

Think of how you can use FORM. A doctor or nurse could use it for a patient's history with each question appearing on the screen. An insurance salesman could have

his entire questionnaire, or a police department could do a complete arrest report. You can construct a series of prompts to answer correspondence, automatically inserting the answers into a generalized letter format for a given type of correspondence, like customer service. This feature lets you answer letters in a rapid fire fashion each one with its personalized responses.

Before WRITE ROM you had to be a programmer to create a series of prompts to answer questions or record information. Now it is as simple as typing Graph T.

There are many other examples of excellent programming evident in WRITE ROM. The line feed problem of the Model 100 is dealt with by the simple use of a function key. Files are selected by moving the wide bar cursor over the WRITE ROM menu.

PCSG makes the claim that WRITE ROM is the easiest, fastest and most feature rich text formatter for the Model 100, as well as being the only one on a Snap-in ROM. You can do more with WRITE ROM than anyone thought possible for the Model 100. We at PCSG are happy to offer WRITE ROM because it expands the Model 100 to a dimension of text processing you cannot equal on even larger computers.

If you are already a PCSG customer you know the impressive quality of PCSG craftsmanship. We brashly state that WRITE ROM is the best you can buy. But don't take our word for it. It is sold on a thirty day trial. If you aren't as excited as we are, return it within 30 days for a full refund. Priced at \$149.95, on Snap-on ROM. Mastercard, Visa or COD.

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PCSG provides hotline software support for Model-100. Call 1-214-351-0564. Available now directly from Portable Computer Support Group. We endeavor to continue as The Leader in Software for the Model 100.

BUYERS' GUIDE

MANUFACTURER	MODEL	PRICE	TYPE	SPEED — CPS	SPACING — CPI	TRACTOR FEED	PAPER	WEIGHT — LBS.	POWER
Epson America 213-539-9140 <i>Circle No. 152</i>	LQ 1500	\$1,295	DM	200	10-15,PS	OPT	16	31	AC
	SQ 2000	\$2,295	IJ	176	10-15,PS	OPT	16	40	AC
Fujitsu 408-946-8777 <i>Circle No. 153</i>	DaisyMax 320	\$1,499	LQ	48	10-15,PS	OPT	16	37	AC
	DaisyMax 830	\$2,295	LQ	80	10-15,PS	OPT	16	39	AC
	DotMax 24	\$1,995	DM	240	10-18,PS	STD	16	44	AC
Genicom 703-949-1188 <i>Circle No. 154</i>	3014	\$1,199	DM	160	10-17,PS	STD	15.5	34	AC
	3024	\$1,499	DM	200	10-17,PS	STD	15.5	34	AC
	3310	\$1,995	DM	300	10-16.7,PS	STD	15.5	33	AC
	3310-Color	\$2,295	DMC	300	10-16.7,PS	STD	15.5	33	AC
	3320-Quiet	\$2,395	DM	300	10-16.7,PS	STD	15.5	38	AC
	3410	\$2,450	DM	400	10-16.7,PS	STD	15.5	33	AC
JDL 805-495-3451 <i>Circle No. 155</i>	JDL-750	\$1,990	DMC	216	10-20,PS	OPT	17	35	AC
Legend 800-321-4484 <i>Circle No. 156</i>	CPVII	\$1,195	DMC	180	5-16.5	STD	15.5	35	AC
NEC Information Systems 617-264-8000 <i>Circle No. 157</i>	3530	\$1,440	LQ	33	10-15,PS	OPT	16	38	AC
	8830	\$1,990	LQ	55	10-15,PS	OPT	16	39	AC
Okidata 609-235-2600 <i>Circle No. 158</i>	Pacemark 2410	\$2,395	DM	350	5-17,PS	STD	15	74	AC
Printek 616-925-3200 <i>Circle No. 159</i>	910	\$1,595	DM	200	10-16.7	STD	16	39	AC
	920	\$2,395	DM	340	10-16.7	STD	16	44	AC
Ricoh 201-882-2000 <i>Circle No. 160</i>	RP 1500 Q	\$1,595	LQ	40	10,12,PS	OPT	16	40	AC
	RP 1600 Q	\$1,695	LQ	50	10,12,PS	OPT	16	53	AC
Tandy 817-390-3700 <i>Circle No. 161</i>	DWP-510	\$1,495	LQ	43	10,12,PS	OPT	16	28	AC
	DMP-2100P	\$1,995	DM	160	10-16.7,PS	OPT	15	42	AC
Texas Instruments 800-527-3500 <i>Circle No. 162</i>	865	\$1,299	DM	150	5-16.7,PS	STD	16	20	AC
	880	\$2,195	DM	300	5-16.7,PS	STD	15	55	AC
	810 LQ	\$2,495	DM	150	5-16.7,PS	STD	15	55	AC
Toshiba 714-730-5000 <i>Circle No. 163</i>	P1351	\$1,895	DM	192	5-16.7,PS	OPT	15	42	AC
	P351	\$1,895	DM	288	5-16.7,PS	OPT	15	33	AC

AC Alternating current. BAT Battery. CPI Characters per inch. CPS Characters per second. DM Dot matrix.
DMC Dot matrix color. IJ Ink jet. IJC Ink jet color. LQ Letter quality. NA Not available. OPT Optional.
PS Proportional spacing. STD Standard. T Thermal.

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No Memory Lost with 200's RAM Map

Last month we became explorers of the 200's ROM. Embark on a second expedition. Here's a map for discovering the Tandy's RAM.

By Greg Susong

Last month we explored the 200's read-only memory (ROM) using Greg Susong's travelog. Below is Greg's follow up: A map for the 200's random-access memory (RAM).

The Tandy 200's RAM is used by the computer's ROM programs for storing operating variables: file directory, function key definitions and screen display image. Its location begins at EEB0 (61104 decimal) and extends to FFFF (65535 decimal).

The RAM file directory starts at location F252 (62034 decimal) and extends to F4AF (62639). Each entry takes 11 bytes, the first of which is the file's attribute byte. It tells the computer the file type. The next two bytes give the start address of the file's actual storage location in RAM, while the final eight bytes hold the file name.

To examine the table of function key definitions, look for location F074 (61556 decimal), extending to F0F4 (61684 decimal). There's a second set of function key definitions starting at F0F5 (61685 decimal) and going to F174 (61812 decimal). Whenever BASIC is exited and another program, such as TELCOM is accessed, a different set of function definitions is used. Table one is copied to table two to prevent the computer from losing track of each user's function key definitions.

The following RAM map illustrates some of the ways the 200's memory is utilized. □

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RS70

EEB4+	Holds HIMEM value
EEB9++	RST 5.5 Vector
EEBF++	RST 6.5 Vector
EEC2++	RST 7.5 Vector
EEF4	Dialing method. 0 = Tone dialing, 1 = 10 pps, 14 = 20 pps
EEFD	KEY ON/OFF FLAGS - 8 bytes, extends to EP04
EF05	Current screen in use
EF06	Current cursor row position
EF07	Current cursor column position
EF09	Maximum number of active lines on screen
EF09	Maximum screen width
EF0A	Holds 255 if label line is on, 0 if label line is off
EF34+	Error Trap. If 0 then normal BASIC error routines are used If another value, then that location is jumped to instead of the normal BASIC routine
EF38	Power setting. 0 means POWER CONT
EF3C	Telcom parameters. Extends to EP42
EF44	Holds 0 if in originate mode, non-zero if in answer mode
EF49+	CALL target address
EF52	Code for OUT command
EF55	Code for INP command
EF60	Output flag. 1 if to printer, 0 if to screen
EF65+	Holds line number currently being executed
EF67+	Holds start address of current BASIC program
EF6C	Holds tokenized BASIC line
EF70	Holds line entered from the line input routine at 54F6
F074	F1 - Table 1
F084	F2 - Table 1
F094	F3 - Table 1
F0A4	F4 - Table 1
F0B4	F5 - Table 1
F0C4	F6 - Table 1
F0D4	F7 - Table 1
F0E4	F8 - Table 1
F0F5	F1 - Table 2
F105	F2 - Table 2
F115	F3 - Table 2
F125	F4 - Table 2
F135	F5 - Table 2
F145	F6 - Table 2
F155	F7 - Table 2
F165	F8 - Table 2
F21F	Counter - Decrements from 150 to 1
F220	Counter - Decrements from 12 to 1
F221	Counter - Power down
F234	ON COM GOSUB status
F235+	Address of line number to GOSUB for COM interrupt
F237	ON TIMES GOSUB status
F238+	Address of line number to GOSUB for TIMES interrupt
F23A	ON KEY 1 GOSUB status
F23B+	Address of line number to GOSUB for KEY 1 interrupt
F23D	ON KEY 2 GOSUB status
F23E+	Address of line number to GOSUB for KEY 2 interrupt
F240	ON KEY 3 GOSUB status
F241+	Address of line number to GOSUB for KEY 3 interrupt
F243	ON KEY 4 GOSUB status
F244+	Address of line number to GOSUB for KEY 4 interrupt
F246	ON KEY 5 GOSUB status
F247+	Address of line number to GOSUB for KEY 5 interrupt
F249	ON KEY 6 GOSUB status
F24A+	Address of line number to GOSUB for KEY 6 interrupt
F24C	ON KEY 7 GOSUB status
F24D+	Address of line number to GOSUB for KEY 7 interrupt
F24F	ON KEY 8 GOSUB status
F250+	Address of line number to GOSUB for KEY 0 interrupt
F2F2	START OF DIRECTORY OF FILE ENTRIES Each entry consist of 11 bytes. The first byte is the files attribute byte. It tells certain information about the file, e.g., Bit 7 1 if valid entry Bit 6 1 if ASCII text file. (.DO) Bit 5 1 if Machine language file. (.CO) Bit 4 1 if ROM file Bit 3 1 if invisible file The next two bytes of each directory entry tell the start address of the files actual storage area in standard

(continued on page 58)

PORTABLE**Disk Drive**

for the Model 100/200

\$599Includes a library of
six powerful programs**It's the Holmes Engineering/PCSG "chipmunk"**

Uses the main menu concept. You see the disk directory instantly, arranged on your M-100 screen like your main menu. Just move the wide-bar cursor and transfer files with a function key. You can run a file directly from the diskette with the ENTER key. Uses 3½" microfloppy diskettes that have a rigid plastic casing and a metal core. They're tough and nonflexible. You can carry several in a shirt pocket without damage. There's 358K on a diskette. Ten of these in your briefcase and you've got 3½ megabytes.

Drive weighs only three lbs. and it works directly from the 110 outlet and recharges at the same time. It recharges in six hours with thousands of pages transferred between charges. It's compact, with dimensions of 2¼" x 5½" x 7.5"; and fits easily into your briefcase along with your Model 100 or 200.

Machine code programs, BASIC programs, *Lucid* files and documents all are saved and retrieved with no protocol – instantly, ready to run.

Portability in a disk drive is an engineering feat. It's worth the investment to have the power and freedom that this Portable Disk Drive can bring you.

In a special association, Holmes Engineering and PCSG have worked together combining the hardware knowledge of Holmes and the soft-

ware expertise of PCSG. The result is a product that can only be regarded as excellent.

But what makes the drive so very special is that not only does it allow you to store and access files from RAM, but it has a wonderful feature like you would find only on a desktop computer.

You see the disk directory instantly; works just like the main menu

Here is what is really exciting. The portable disk drive has Random Access. Included as part of the operating system in the drive (ROM) is a very powerful disk BASIC. This BASIC interfaces with the BASIC in your Model 100 in such a way that when the drive is connected they act as one.

This means that you can have BASIC programs that will access the diskette and read and write records directly on the diskette. Your RAM is used for programs while they are running and the data is then stored on the diskette, and only brought up into RAM for viewing or editing.

This means that your Model 100 combined with the portable disk drive is a very powerful data processing system. We have included with the drive six very excellent programs that make that statement a reality.

Just imagine yourself with this kind of capability.

Database – The portable disk drive stores your mailing list including names, addresses, phone numbers and information relevant to those names. You can have over 1500 names and addresses on a single diskette. You can also store inventory items, part #s and descriptions or any other data that you need to recall. You can design your own input screen to fit your needs. You can search for any word and the record or records appears on the Model 100 screen for viewing or editing. You can print out mailing labels or print out in a columnar fashion if you wish. You can merge names and addresses into form letters and print out promotional mailings to all or selected parts of your list.

Invoice (purchase order) – The portable disk drive prints out perfectly prepared invoices or purchase orders. This is an excellent program made possible by the features of the portable drive's operating system. You can have all your customers' names and addresses filed on the diskette or on another diskette. You can have your inventory of items you sell filed on the same or a separate diskette. All you have to do to print an invoice is type in the customer number. Automatically, that name and address is found from the diskette and inserted in the invoice, or

PCSG offers a 30-day/money-back trial!

you can type in any name you don't have in your records. To bill out items you just type in a stock number and the quantity being shipped.

You designate whether an item is taxable or non-taxable. Automatically the item name, description and price per unit are retrieved from the diskette and inserted on the invoice and the extensions are calculated.

358K on a diskette

You can keep entering more item #s and quantities, and you can type in any items or prices that are not on the diskette or need changing. When you have entered the last item, the totals are automatically figured including tax where applicable.

The completed invoice is then stored on the diskette. When you have completed all your invoicing, at the touch of a button you can print out your sequentially numbered, professionally done invoices on easily obtained standard forms. This is truly professional invoicing capability.

Purchase orders are just as easy. Supplier #s retrieve the name and address. Inventory #s automatically bring up the item and the cost. You type in the quantity ordered. You have all the features described in invoice preparation including storing your P.O.s on diskette and printing out beautifully formatted purchase orders with your company name, address and phone number as the letterhead.

Sort - This excellent utility allows you rapid sorting of any records you have compiled using the disk drive database program. You can sort on any file, for example, by last name, or city or zip code. Also, you can sort lists alphabetically or numerically. You can write the newly sorted list back in the same file on the diskette or to a new file.

Telcom interface - If you are a user that likes to access other computers or databases (for example CompuServe) by telephone then this powerful facility alone is worth the price of the disk drive. You can automatically download information from the distant computer onto the diskette. Large files of information are accessed by the program in a way that enables you to bring segments up into RAM for viewing later.

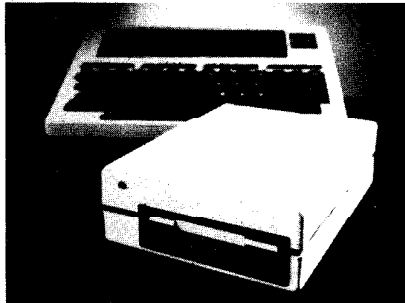
You can also automatically upload to your distant computer files that you have stored on your diskette.

Records or orders compiled on your Model 100 and stored on diskette can be sent over the phone at the touch of a function key.

Calendar - Everyone who has seen this program has said, "This is the first calendar/diary/scheduler on any computer anywhere that I can use. It is so functional."

The calendar program is usable for two reasons, first it is designed correctly, and second you have the memory (358K) on the diskette to log and access a tremendous amount of notes over a long period of time.

It works like this. On your Model 100 screen appears a month's calendar, for example June 1985, complete with all the dates arranged like a wall calendar. You can advance month by month with a function key or change to any month forward or backward any number of years with function key ease.



On any month, on the screen you move the cursor with the arrow keys (like the Main Menu) to the day you want to view or log and press ENTER.

From the diskette immediately is loaded that day's diary. You can review or type in just like text and when your entry is complete, a function key stores your entry on diskette.

By the way, you don't have to know the date of an entry to review it. You have F1 (find) search capability for any word or phrase.

Calendar prints out a nice 8½ x 11" sheet of the daily entries arranged in boxes over a two-week period. You can print these out over any time period you designate. These are great to carry with you or give to your secretary or co-workers for your schedule.

This is a calendar you can use. It is not only a planner and scheduler, but a diary as well. The 358K on a diskette means you can truly keep your activities in a way that you can access and utilize. For most people

one diskette will easily handle several years of appointments and notations.

Personal Finance Manager - You'll say, "Why hasn't someone done this before?" This wonderful program truly lets you keep track of your finances, and is excellent for your business as well as for personal use.

All your records are kept on the diskette. You can manage as many accounts as you want. Bank accounts (checking and savings) and charge accounts such as MasterCard and Visa.

Study your balance or review any previous transactions on the screen whenever you like. Prints out complete statements showing all account activity and balance.

Everyone who has experienced the portable drive with this powerful library of application software has been so impressed that the typical comment is, "This is a portable system that truly gives me the computer capability I always hoped a computer could give."

We at PCSC believe we have the ultimate Model 100 system. When you combine the Model 100 with the Portable Disk Drive along with its bundled software plus the *Lucid* spreadsheet on snap-in ROM, *Write ROM* word processing and the new 64K RAM expansion now available from PCSC, you have a computer with real functionality that you can use every day.

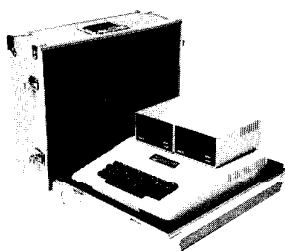
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RS42

SIG 100/200 (from page 9)

Each time a file is downloaded it makes the count available through the data library SCAN command.

Sixty-six files have been downloaded by SIG members more than 500 times. With over 1,100 files to choose from, that's quite a figure! Several have been downloaded over 1,000 times. Why not jump onto the SIG and check them out? Data Library 1:

XMODEM.312 (1,797 accesses) allows error-free file transfer with CompuServe, local bulletin boards or other users, and includes auto-dialing with a Novation modem. This is a revision of XMODEM.100 and the access count includes both versions. Documentation file XMODEM.DOC has been accessed 1,329 times.

Data Library 2:

SPREAD.WM3 (1,751 accesses) is the spreadsheet program featured in Portable 100, December 1984. Various versions of SPREAD have been accessed over 3,000 times. There are several support files, including documentation SPRDOC.WM3 accessed 1,049 times.

DBASE.100 (1,341) is a data-base manager for the Model 100. Read DBASE.DOC (1,220 accesses) for more information.

Data Library 3:

FENIX.SJS (1,030 accesses) and STARF.100 (1,106 accesses) are two arcade graphics game for the Model 100. Defend yourself!

STARWA.100 (1,136 accesses) plays the theme from Star Wars on the Model 100 — very well, too.

This month's most exciting new program, XMODEM.200, is an implementation of XMODEM.312 on the Tandy 200. Both XMODEM.200 and its documentation file XMODEM.201 are in the data library one. □

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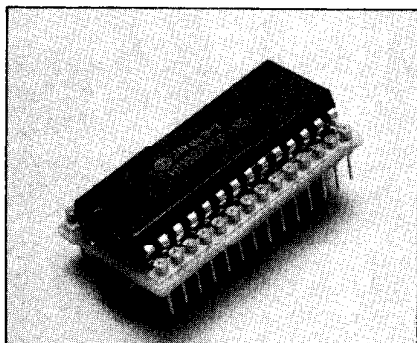
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GIGO (from page 7)

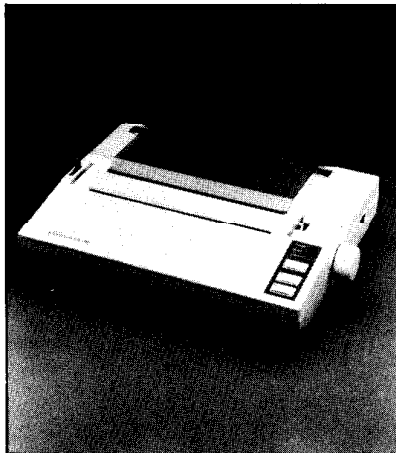
gram. This machine is Epson's Spectrum LX-80 and all the formatting capability lacking in the 100 is contained in this printer. You can select tabs, margins, justification and even typestyle.

The functions I use most are the NLQ mode with its justification features. They're worth the cost of the printer in software savings and memory conservation. And the printer cost is the best part. When I bought it a few weeks ago the price was \$349. Now it's selling (in the Seattle area) for \$289.

For correspondence, keeping lists of flat files at work, and preparing the newsletter and address list for my aviation club, this printer/computer combo can handle anything.

Send me an E-mail to request a handy table of control codes I've made up for this printer. I'd enjoy hearing from anyone else who's bought this printer.

Tony Brent
70076,141



We've requested a Spectrum LX-80 from Epson America for review. Meanwhile, take a look at our Buyers' Guide to Printers this issue. You can see how Spectrum measures up to other printers on the market. — Ed.

FREEZING DILEMMA

I have a problem with the ON ERROR GOTO statement. I had planned to use it to display an error message when attempting an LPRINT with the printer power off or off-line. This doesn't work. The computer simply freezes up. Is there any way to dump the buffer or cancel LPRINT? (The ERROR 18 command works perfectly.)

Also, I've heard there's a location in memory that can be PEEKed at to discover printer status. Any ideas where this may be?

Yan Seiner
Charleston, SC

- letter continued on page 62
(GIGO continued on page 59)

COMET WATCHERS - NAVIGATORS

DA 01/04/1986	
UT 23:12:16	
LA 42°50.6'N	VEGA
LO 070°20.8'W	
FV 060° MA 9.0	HALLEY
ID Halley	
AZ 238°09.4'	JUPITER
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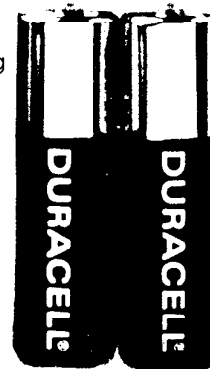
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For complex spreadsheet analysis and calculations, we put popular Multiplan software into the Tandy 200's permanent memory. It's easy to do sales forecasts, profit and loss projections, budgeting, pricing, engineering calculations and more.

Comes with Five More Powerful Programs

An improved version of the Model 100's easy-to-use word processing program makes the Tandy 200 especially useful for journalists, salespeople, students and anyone who needs to write letter-perfect memos, reports and correspondence in a hurry. Edit, delete and move blocks of text with the touch of a convenient function key.

Four other "instant-on" programs let you use the Tandy 200 as your personal appointment calendar, address and phone directory and telephone auto-dialer/directory (the Tandy 200 generates tone dialing pulses, so you can use it with long-distance services). A much more powerful built-in program for communications makes it easy to access other computers by phone, as well as national information networks. Resident BASIC language lets you write your own programs, too.

Why 40 Columns Are "Bigger" than 80

Take a look at the 80-column screens on other portables, and you'll see why we chose a 16×40 -character format. Characters on 80-column displays are tiny and difficult to read. Tandy 200's flip-up liquid crystal display has 240×128 resolution for big, clear graphics and easy-to-read characters. Tandy 200 is the perfect take-along tool for word processing and spreadsheets—without eyestrain.

We also increased the standard memory size to 24,000 characters, expandable to 72K.

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Whether you're a student, scientist, busy professional or home computer user, the Tandy 200 is a smart investment. The Tandy 200 even has parallel printer, RS-232C, cassette and bar code reader interfaces for added versatility. You can even add disk storage and a monitor for a complete desktop computer system.

Adopt One Today!

Step up to the powerful software and impressive capabilities of the Tandy 200 portable computer for just \$999 (26-3860). Best of all, the Advanced Technology Tandy 200 represents the state of the art in performance, quality and price breakthrough (because we've introduced the latest technology for over 60 years). Stop by your local Radio Shack Computer Center, or participating Radio Shack store or dealer and "size it up" today!

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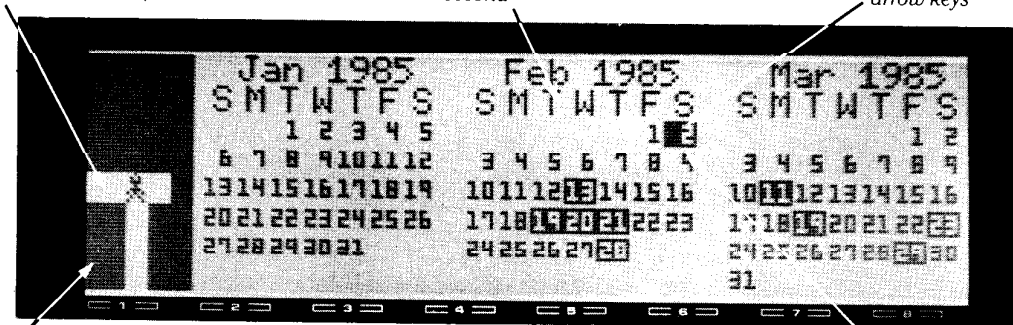
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Your TRS-80 Model 100 probably saves you time already. So why not use it to *manage* your time? The **TMPC** software from Acroatix transforms your Model 100 into a command center for appointments and projects.

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Your Model 100 deserves more than a simple-minded replacement of a date book. The **TMPC** is designed around principles from Stephanie Winston's *The Organized Executive*, a popular self-improvement guide for anyone who wants to be better organized. Every **TMPC** feature has been carefully designed and tested to work for you.

Interested? Ask for our free demonstration program today. If you have a modem cable, we will

send it over the phone (see the box); the call takes about five minutes. Otherwise, send us \$3.00 for handling and we'll send a cassette with the sample. Discover the old-fashioned value in **TMPC's** space age design, and you'll agree that, "It's about time someone wrote this software."

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AUTO LOG-ON PROGRAM FOR:

Free Sample

```
10 P$="16176575422"
15 P$=P$+"<= ^D^D?l tmpc ^M?s>"
20 M=VARPTR (P$)
30 A=PEEK (M+1) +256*PEEK (M+2)
40 CALL 21200
50 CALL 21293, 0, A
60 LOAD "MDM: 8N1D", R
```

Note: Before running this program, connect your Model 100 to a telephone with the Radio Shack modem cable (see page 76 of the owners manual).

Set TELCOM status to M8N1D.

Massachusetts residents must remove the area code in line 10.

Ac' rō·ă'tix Incorporated

P.O. Box 273 Wilmington, MA 01887

portable

100/200

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- A. Do you own a** 1. Model 100 2. Tandy 200
B. Do you own either a 1. NEC 8201 2. Olivetti M-10 3. Other "briefcase" computer?
C. Is this the first microcomputer you have owned/used?
 1. Yes 2. No
D. Do you use your Model 100/200 to communicate with other computers? 1. Yes 2. No
E. Is the primary use of your computer for 1. business or 2. personal applications?
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7/85

portable

100/200

NAME _____

COMPANY NAME _____

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B. Do you own either a 1. NEC 8201 2. Olivetti M-10 3. Other "briefcase" computer?
C. Is this the first microcomputer you have owned/used?
 1. Yes 2. No
D. Do you use your Model 100/200 to communicate with other computers? 1. Yes 2. No
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7/85

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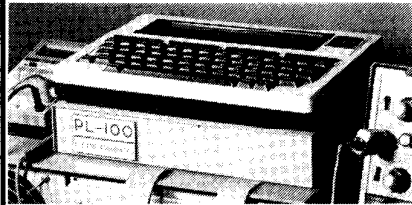
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Economy Computers	63	18
Elexor	53	19
FACS	59	22
Fort Worth Computers	61	20
InfoSoft	55	28
KJM Development	63	23
Kangaroo	31	24
Loquor	49	25
Merritt	55	27
Micro Demon	24	26
Micro Peripheral	61	29
Node	60	31
P.C.S.G.	8	35
P.C.S.G.	46	34
P.C.S.G.	47	34
P.C.S.G.	40	37
P.C.S.G.	41	37
P.C.S.G.	CII	33
PG Design	48	40
PG Design	53	38
PG Design	CIV	39
PIC	7	41
PORTAPRO	48	42
Personal Micro Comps.	56	43
Polar	1	44
Polar	43	44
Prairie Power	19	1
Purple Computing	5	48
Purple Computing	11	45
Purple Computing	54	46
Radio Shack	32	48
Radio Shack	33	48
Radio Shack	50	47
Radio Shack	51	47
SIGEA	36	51
Sesamc	49	50
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MS7

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TTXpress MODEL 1280 \$170

Portable Thermal Printer

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Half the size of a Model 100, battery operated (4 "C" cells, internal), 2.2 lbs., uses 8 1/2" wide white thermal paper, 40 cps unidirectional (50 cps with A/C adaptor), 80 or 160 chars./line, condensed, enlarged, emphasized, bit graphics, true descenders, underline, H/V tabs. . .

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The printer requires a cable unlike the normal printer cable.

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MS46

NEW PRODUCTS (from page 10)

Angel from The North

Polar Engineering and Consulting of Nikiski, Alaska is looking out for you with Guardian, their custom ROM service. It protects BASIC programs on the Model 100 and NEC PC-8201A, allowing up to 32K of BASIC software installed on a single custom ROM cartridge.

Programs placed in ROM execute exactly as they would from the 100 or NEC RAM, with certain advantages. BASIC, command and document files appear on the Main Menu and can't be erased, listed or copied.

Custom ROM cartridges with individual passwords, access codes or user I.D.s also can be produced by Guardian. Single-unit quantities of ROM modules are \$250 for 8K and \$295 for 32K.

ASSIGN THE INSPECTOR TO YOUR CASE

The Alaskan company also has released a text editor and BASIC inspector for the Model 100. Cleuseau, priced at \$95, combines TEXT enhancements with a BASIC language-program debugger. The software ROM requires no RAM space.

TEXT enhancements provide full global and local search-and-replace, text appending to the paste buffer, search for control characters, local case changing, file verification, overwrite editing and command replication. The ROM also provides byte, word and line counts of text files.

The BASIC inspector adds unique program-debugging features. Stop and print points can be set and variables and system registers checked at various stages. Execution trace is more useful than the built-in TRON/TROFF function. Line renumbering and BASIC block moves, copies and deletions are also handled by Cleuseau.

File-compression functions of the BASIC inspector include deleting comments and removing unneeded blanks, and quotes and semicolons. Cleuseau also packs multiple line statements while ensuring that the program logic remains unchanged.

Program development is simplified with Cleuseau's ability to list or print Model 100 file names and lengths in bytes. Cleuseau also supports automatic line numbering during program input, a feature commonly found in more ad-

NEW PRODUCTS

vanced BASIC implementations.

For details on either Guardian or Cleuseau, contact Polar Engineering and Consulting, P.O. Box 7188, Nikiski, AL 99635, (907) 776-5529.

Circle No. 175

New Life on Track

Life Track, a software product by Just Jane's Consultants, assists small medical services with evaluating fetal progress during pregnancy.

The program calculates gestational age utilizing measurements derived from obstetric ultrasound examination. Complete reports are produced serving as legal medical records of fetal progress.

If abnormal result ratios exist, Life Track prints appropriate warnings. Mass storage of pertinent patient data on cassette provide for later printing of reports and maintaining of complete electronic files.

Life Track requires a 32K Model 100 or 48K Tandy 200, the DMP 110 printer and CCR-81 cassette recorder, or equivalents. The introductory price is \$495.

Contact Just Jane's Software, 2250 Alice Rd., Sarasota, FL 33581.

Circle No. 176

Ham It Up

Here's a software program for 100-using ham operators. Winner's Edge Software has come up with Contester, a paperwork manager for amateur radio contests. It logs and keeps track of 3000 contacts on up to six bands, alerting operators to avoid duplicate contacts through a fast, sophisticated search algorithm.

With a keystroke, Contester also sends either preprogrammed messages or ad-hoc texts in Morse code from five to over 50 words per minute.

For the Model 100 with 24K or 32K of memory, connection is made to any amateur transceiver through a solid-state interface.

Interested readers can get Contester for \$39.95 postpaid by writing Winner's Edge Software, 2003 Sarazen Pl., Reston, VA 22091.

Circle No. 177

JACKROBAT

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SOFTWARE SYSTEMS



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MS20

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NEC PC-8201

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MERRITT COMPUTER PRODUCTS, INC.

2925 LBJ Fwy., Suite 180 / Dallas, Texas 75234 / (214) 942-1142 **MS27**

```

770 PRINT CHR$(27)"q";
780 OPEN "NOTE.DO" FOR INPUT AS 1
790 PRINT@302," ";
800 INPUT #1,A$
810 M2=VAL(MID$(A$,1,2))
820 D2=VAL(MID$(A$,4,2))
830 IF M2=M(1) AND D2=CD THEN 850
840 GOTO 910
850 IF H=1 THEN 870
860 CLS
870 PRINT A$
880 PRINT "      PRESS ENTER TO CONTINUE"
890 H=1
900 IF INKEY$="" THEN 900
910 IF EOF(1) THEN 930
920 GOTO 800
930 IF H=1 THEN 980
940 PRINT CHR$(27)"p";
950 PRINT@302,"NO APMNTS";M(1);CD;
960 PRINT CHR$(27)"q";
970 CLOSE:GOTO 570
980 PRINT "NO FURTHER APPOINTMENTS-PRESS ENTER"
990 H=0
1000 IF INKEY$="" THEN 1000
1010 CLOSE:GOTO 210
1020 CLS:END

```

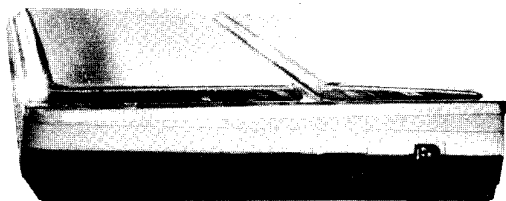
Lines 210 through 330 contain an algorithm to determine the number of days in the selected month, as well as the beginning day of the week for that month. Calendar page format and printing take place in Lines 340-490. Lines 500-590 format the function key instructions. New month and year selections (F1 through F3) are controlled in Lines 600-710. Interaction with NOTE.DO (F4 through F5) takes place in Lines 720-1010. Primary variables are defined at the beginning of the program and may be deleted to save space.

Once the program is up and running, maintain the NOTE.DO file. Keeping its contents down to a manageable level will minimize your memory overhead. □

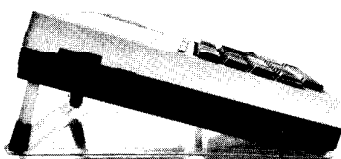
R.E. Mendenhall is a product engineer for Clark Equipment's manufacturing department in Georgetown, Kentucky. His experience includes consulting for a variety of businesses as well as teaching BASIC programing at the college level and operations research courses at the graduate level. — Ed.

Please help us rate this article's value. If you've found it very valuable, circle 198 on the reader service card. If it was moderately valuable, circle 199—and if it wasn't valuable to you, circle 200.


THIS HARD COVER:



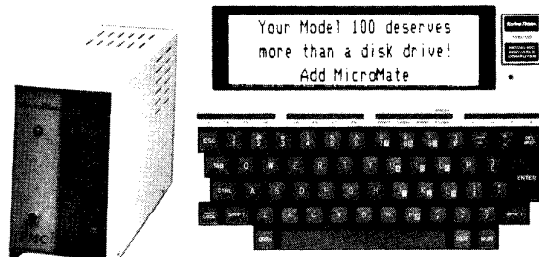
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Your Model 100 deserves more than a disk drive!

MicroMate adds a 400K disk and the CP/M 3.0 Operating System plus 128K of RAM and over \$1000 worth of valuable bundled software to turn your Model 100 into a power house! You can use your Model 100 as a terminal for the MicroMate or use any RS232 terminal for big screen convenience.

At only \$995, the MicroMate adds so much more than does the Model 100 Disk/Video Interface from Radio Shack. Transfer your files to the big MicroMate disk. Get thousands of free public domain CP/M programs from remote CP/M bulletin boards with your Model 100's modem and run them in the MicroMate. Small enough to carry with your 100!

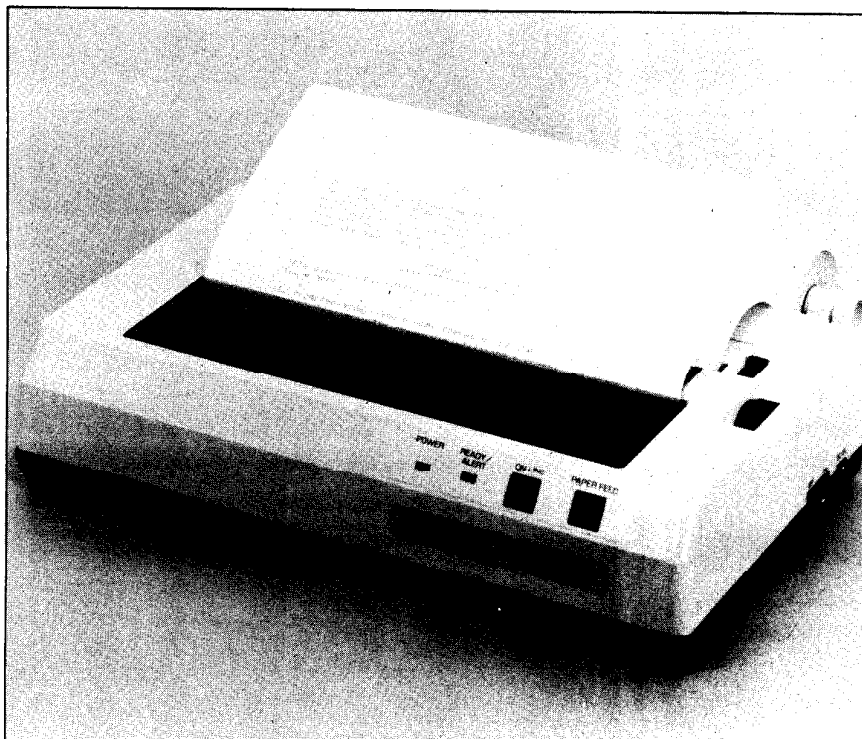
"We really enjoy writing on the Model 100 and transferring files to the MicroMate." User's Guide review article in Vol.1 no.5. 1984.



Personal Micro Computers, Inc.



275 Santa Ana Court
 Sunnyvale, CA 94086
 Phone 408-737-8444



a cartridge that guarantees 40,000 characters, is another \$3.95.

Some quick calculations show that's not as many as it sounds. If 66 lines of 80 characters per line gives 5,280 characters per page, 40,000 divided by 5,280 equals 7.5. That's 7.5 pages for \$3.95. Since most of us don't print at 80 characters wide, a more conservative figure would be 65 characters wide and 48 lines per page — or 13 pages. If \$3.95 is divided by 13 that's about 30 cents per page.

There's no reference in the manual to the fact that if ni-cad batteries are used, they can't be recharged while installed in the printer. That means a recharger must be purchased to renew rechargeable-type ni-cads.

If a battery-powered printer is your key to portability, then the TRP-100 makes sense. Otherwise the cumbersome roll-paper handling, expensive thermal ribbon use and lack of internal recharging capability for ni-cad batteries make this printer a second choice. The owners manual also could use some work. □

Please help us rate this article's value. If you've found it very valuable, circle 204 on the reader service card. If it was moderately valuable, circle 206—and if it wasn't valuable to you, circle 206.

Tandy's TRP-100 thermal ribbon printer is battery-operated and portable.

IT'S HERE!

Finally, an internal modem
for your NEC-8201A

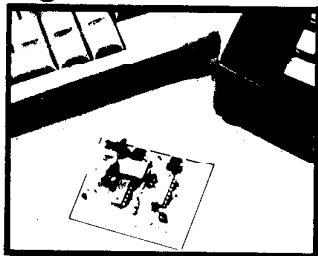
NEW Now, the TouchBase Modem comes with Auto Dial and Auto Log On software!!

TouchBase Design is proud to announce production of the TouchBase Modem—the only internal, direct connect modem designed for installation inside the NEC-8201A portable computer.

When using the TouchBase Modem, the phone line loops directly into the computer via an RJ 11 jack; dial the number, and you are on line! No extra batteries—the TouchBase Modem is powered by the computer, and virtually turns off (25 micro amps) when not in use. This unique design also allows the RS 232 port to be used with any other peripheral when the TouchBase Modem is not in use.

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RS55

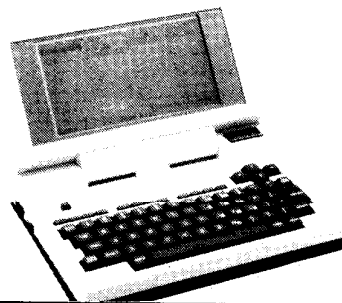
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RS15

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RAM MAP (from page 45)

Model 100 - NEC PC 8201A
Olivetti M10



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AutoPack SPECIAL (Model 100 & NEC only) \$89.50 - About all you need on one tape. Includes: **AutoPen, AutoPad, AutoBase, AutoSort, TFILE, TRIP, CALC** and **AutoPen N&A**. Over 50% off separate prices.

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AutoPen, N&A (3.7K) \$39.50 - Merges names, addresses and salutations into letters, prints labels and addresses envelopes. N&A data management system. Includes AutoPen.

AutoPad (5.4K) \$39.50 - 26 by 99 spreadsheet. Variable column width and format. Math, statistical and financial functions. Sort, replicate, calculator and other features. Printer output with titles and footnotes.

AutoBase (2K) \$29.50 - Database management for limited RAM. Design input forms using up to 16 fields. Use up to 9 keyword or relational field criteria to select records for display or printing. Print forms or specific fields in a list or label format.

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DEALERS INQUIRE



LSB/MSB format. The next 8 bytes are the filename. The extension is included, but the period (.) that separates the extension from the filename is not

F252	BASIC's file slot
F25D	TEXT's file slot
F268	TELCOM's file slot
F273	ADDRSS's file slot
F27E	SCHEDL's file slot
F289	MSPLAN's file slot
F294	UNSAVED BASIC PROGRAM's file slot
F29F	PASTE BUFFER's file slot
F2AA	BASIC FILE BEING EDITED file slot
F2B5	User slot 1
F2C0	User slot 2
F2CB	User slot 3
F2D6	User slot 4
F2E1	User slot 5
F2EC	User slot 6
F2F7	User slot 7
F302	User slot 8
F30D	User slot 9
F318	User slot 10
F323	User slot 11
F32E	User slot 12
F339	User slot 13
F344	User slot 14
F3F4	User slot 15
F35A	User slot 16
F365	User slot 17
F370	User slot 18
F37B	User slot 19
F386	User slot 20
F391	User slot 21
F39C	User slot 22
F3A7	User slot 23
F3B2	User slot 24
F3BD	User slot 25
F3C8	User slot 26
F3D3	User slot 27
F3DE	User slot 28
F3E9	User slot 29
F3F4	User slot 30
F3FF	User slot 31
F40A	User slot 32
F415	User slot 33
F420	User slot 34
F42B	User slot 35
F436	User slot 36
F441	User slot 37
F44C	User slot 38
F457	User slot 39
F462	User slot 40
F46D	User slot 41
F478	User slot 42
F483	User slot 43
F48E	User slot 44
F499	User slot 45
F4A4	User slot 46
F4AF	End of directory flag
F4BB+	Hold address of directory entry for current BASIC program
F4DD	IPL string. Extends to F4E7
F4EC+	Holds stack pointer when a power off occurs
F4F7	Holds offset into jump table during RST 7 routine
F507	Branch table for RST 7 routine. Extends to F566
F652+	Line number where error occurred
F654+	Line number of most recently listed/entered line
F656+	Memory address where error occurred
F658+	Address of "ON ERROR GOTO" line
F65D+	Line number where BREAK occurred
F665+	Points to start of variable storage
F667+	Points to location to store next variable information
F669+	Holds location of first free byte in RAM
F735	Holds MAXFILES value
F7B0	Holds day, date and time for main menu display. Extends to F7C8
F7C9	Visible file address table. 104 bytes long
F831+	Holds the address of the location in the Visible File Address Table where the next address is to be stored
F833	Holds the filename being searched for by the Find a File routine at 6E4F. Filenames are stored here by various other routines also. Extends to F93C
F848	Holds the number of the file that is under the cursor bar
F849	Holds the number of visible directory entries 0 counts as one
F854	Holds the screen that was in use before returning to the main menu
FA30	LCD screen image. 640 bytes, extends to PCAF
FCF4	SOUND ON/OFF flag. ON = 0, OFF = 175
FD1E	Has # of characters which are pending in keyboard queue
FD1F	Keyboard queue (64 bytes) <input type="checkbox"/>

THE OTHER SIGS

CompuServe's Model 100 Special Interest Group (SIG) is often touted as the most valuable resource for 100/200 owners. But there are others. CompuServe's Consumer Information Service runs the gamut with topics ranging from science to sports to sex.

Many of these SIGs, like the Model 100 SIG, host weekly conferences with question-and-answer sessions, discussions of new issues and guest "speakers." And the best way to get to know these special interest groups is by meeting their members. To help you find CompuServe subscribers with your interests, we've compiled a list of "the other" SIG conferences.

All of these conferences are public forums. Feel free to drop by and join in.

Page	Title	Time
PCS-154	TRS-80 Model 100	11:00 AM Sun.
HOM-12	WITSIG	2:00 PM Sun.
HSX-18	Human Sexuality Forum (teens)	3:00 PM Sun.
HSX-18	Human Sexuality Forum (gay adults)	7:30 PM Sun.
FAM-200	Family Computing Forum	8:00 PM Sun. (1st & 3rd)
PCS-129	IBM Novice SIG	8:00 PM Sun.
PCS-131	IBM PC Forum	8:00 PM Sun.
HOM-145	Good Earth SIG	9:00 PM Sun.
PCS-47	CP/M SIG (full group)	9:00 PM Sun.
HSX-18	Human Sexuality Forum (women)	9:30 PM Sun.
PCS-16	VAXSIG (VAX and VMS users)	9:30 PM Sun.
HOM-38	Outdoor SIG	10:00 PM Sun.
HOM-132	Issues SIG (women's issues)	9:30 PM Mon.
HOM-150	General Music Forum	9:00 PM Tues.
HOM-132	Issues SIG (the Roundtable)	9:30 PM Tues.
PCS-27	TI Forum (questions and answers)	9:30 PM Tues.
SFP-5	MEDSIG	9:30 PM Tues.
HOM-136	Literary SIG	10:00 PM Tues.
PCS-27	TI Forum (general and TI-99/4A)	10:00 PM Tues.
SFP-35	Communications Industry Forum	10:00 PM Tues.
HOM-110	Sports Sig (football)	10:30 PM Tues.
PCS-47	CP/M SIG (full group)	10:30 PM Tues.
PCS-117	Writers and Editors SIG	10:30 PM Tues.
PCS-27	TI Forum (TI Professionals)	11:00 AM Wed.
PCS-129	IBM Novice SIG (questions & answers)	8:00 PM Wed.
HOM-29	Science Fiction/Fantasy Forum	9:00 PM Wed.
HOM-132	Issues SIG (handicapped issues)	9:30 PM Wed.
PCS-16	VAXSIG (DEC PC users)	9:30 PM Wed.
PCS-47	CP/M SIG (Osborne only)	9:30 PM Wed.
SFP-40	Legal Forum	9:30 PM Wed.
CEM-450	CEMSIG	10:00 PM Wed.
PCS-27	TI Forum (TI Forth)	10:00 PM Wed.
HOM-110	Sports Sig (baseball)	10:30 PM Wed.
PCS-13	Digital Research SIG	8:00 PM Thurs.
PCS-27	TI Forum (TI professionals)	9:00 PM Thurs.
SFP-6	Aviation SIG	9:00 PM Thurs.
HOM-132	Issues SIG (men/women issues)	9:30 PM Thurs. (1st)
HSX-18	Human Sexuality Forum (gay youth)	9:30 PM Thurs.
PCS-47	CP/M SIG (Kaypro only)	9:30 PM Thurs.
HOM-110	Sports Sig (basketball)	10:30 PM Thurs.
SFP-48	Public Relations SIG	10:30 PM Thurs.
SFP-6	Aviation SIG	9:00 PM Fri.
PCS-47	CP/M SIG (Morrow only)	10:00 PM Fri.
HOM-110	Sports Sig (hockey)	10:30 PM Fri.
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PCS-48	Heath Users Group	9:00 PM Sat.

(continued on page 62)

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RS22

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Exp. Date _____

ROM EXPANSION (from page 12)

could be put onto a chip and plugged into the back of the computer.

ANTIDOTE

For those thinking they could better handle tasks via the expansion ROM socket, what are the options?

Obstacles:

- No direct communications possible with main 40K ROM; undocumented bank-switching scheme required.
- No chips programed with the code when it is developed and plugged directly into the expansion ROM socket (expansion ROM socket, not pin-compatible with CMOS EPROMs).
- Requires an 8085 assembler, not provided by Tandy.

Remedies:

- A diehard do-it-yourselfer? Check the Model 100 Special Interest Group (SIG) on CompuServe by typing GO PCS-154 at any prompt. Free software includes assemblers. To get around undocumented bank switching, buy a technical reference manual. Open your 200, find integrated circuit (IC) M13 (the 8K ROM that occupies addresses in the range of 32-40K) and make a small cut in the trace to pin 22. Then jumper pin

22 to pin 26. This permanently enables the 8K ROM. It also gets you the I/O but you can't directly address routines in the 0 to 32K address range.

- Need CMOS EPROMs? Buy an 8K CMOS EPROM (27C64) or a 32K CMOS EPROM and make a very small circuit board to accomplish the appropriate pin cross-connections. An EPROM programmer will be needed.
- If you're a software vendor, call Stu Weinstock. He'll direct you to the proper people.
- Circumvent three obstacles: Call Polar and pay for their expertise. □

Pin Designations

200 Bus Signal Socket (32K)	Option ROM Socket	Internal ROM
D0	11	11
D1	12	12
D2	13	13
D3	15	15
D4	16	16
D5	17	17

D6	18	18
D7	19	19
A0	10	10
A1	9	9
A2	8	8
A3	7	7
A4	6	6
A5	5	5
A6	4	4
A7	3	3
A8	26	25
A9	25	24
A10	2	21
A11	20	23
A12	24	2
A13	22	26
A14	28	27
ALE	23	NOT USED
RD	21	22
BANK	27	20
GROUND	14	26
+ 5	1	28

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RS31

REVIEWS (from page 23)

and GRPH characters (ASCII values 128 to 255). It has its own graphics, math and foreign language symbols above ASCII 127.

There are two ways to underscore, only one of which is mentioned in the manual. It's the unmentioned way that works with 100/200 document files. To start underlining you have to send an escape sequence CHR\$(27) + "." + CHR\$(1) or CHR\$(27) + "-". The latter is easier to embed in a document file. Just type Ctrl-P Esc -1.

To stop underlining, embed in the document file the sequence CHR\$(27) + "." + CHR\$(0) or CHR\$(27) + "-". Only the first sequence is disclosed in the manual, but it isn't possible to insert a CHR\$(0) into a 100/200 document file. Thus the second, undocumented sequence must be used. Type Ctrl-P Esc -0.

If escape sequences are in a document file, SHIFT-PRINT won't work right. Use *Save to:LPT:* or a text-formatter program like *Write+*.

ThinWrite comes with the standard Centronics parallel interface. Radio Shack's 26-1409 cable (\$15) works fine so there is no need to get the \$40 Ax-onix cable. The printer also has an RS-232 serial interface that is useless to

100/200 owners. It should have been left out to save weight, power and cost.

POWER PLAY

Fully charged, the printer can last through two dozen double-spaced pages. Because the battery cannot be removed or replaced, spare batteries aren't much help. A recharge takes between three to four hours. For indoor use, the provided AC recharger can stretch printing to about thirty pages. But for all-day use on AC power, an optional \$30 high-current adapter is required. For all-day use in a 12-volt car or boat, a \$70 inverter may be used.

The printer automatically powers down after two minutes without use. Though it saves scarce battery power, this feature can be annoying if you take too long to get your text-formatting program going, or if you are running a BASIC program which prints its results after a few moments of calculation. The printer will have turned itself off, and the computer will have hung up trying repeatedly to send a character. If you turn the printer back on it will lose a character or two.

The power-off feature is tenacious. If the time limit runs out while the line-

feed button is depressed (as a substitute for the missing form-feed button, for example) the machine will shut off. The same is true if you've ignored the printer for ten minutes.

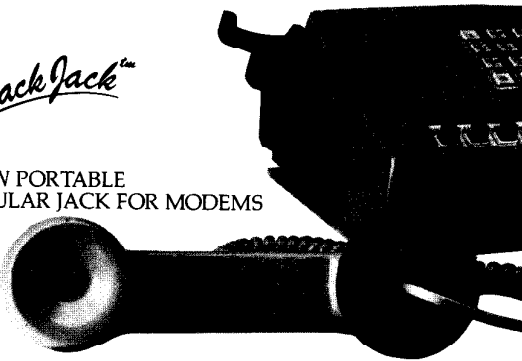
ThinType, ThinWrite's predecessor, was designed to power itself back up when a character was received after the auto power down. ThinWrite, though, stays off after an auto power down. Nothing short of manually switching it off and on again will revive it. It's possible to completely defeat the auto power down by jumpering a relay inside the printer.

The clear plastic cover for the DIP switches was missing, as were two trim pieces which keep out dust when the tractor feeder is not in use. The serial number plate in the bottom of the printer identified it as a ThinPrint 80 rather than a ThinWrite 80. Despite these cosmetic problems, the printer has worked fine since its initial charging.

For the desk-bound, an AC-powered printer is the answer. A \$400 investment buys a printer that zips along at 160 cps or faster. But for the traveler, or anyone away from AC power, the ThinWrite with its 40 cps draft mode and correspondence mode is a fine choice. □

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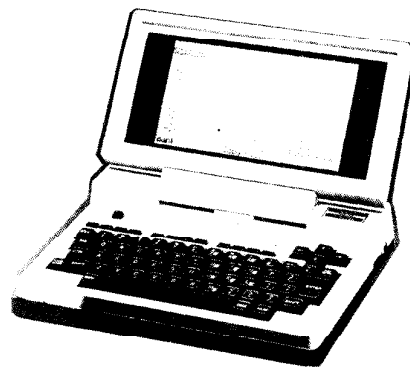
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GIGO (from page 59)

The printer status can be checked easily from BASIC without using the ON ERROR GOTO statement and without causing a system lockup. Test the value of the expression INP(187)AND6. Any value other than two indicates that the printer isn't ready.

Using this test to precede the first print statement will allow the 100 to escape from the printing sequence before damage is done. — Ed.

100 WON'T HEX PRINTER

How can I get full use of Model 100 "Scriptit" with my IBM printer? Neither my local Radio Shack dealer nor the people at Fort Worth seem to be able

to tell me how to generate a Hex 00 (a character used in many of the IBM printer control codes) from the keyboard of the 100. The 100 manual says that a <CONTROL><0> or a <PAUSE> key input will provide the desired character.

Did Tandy goof? Is their machine incompatible with the IBM printer control codes?

Dale Putnam
Kent, WA

Regardless of printer make, ASCII 0 can't be imbedded in the Model 100 TEXT file. However it can be sent to the printer from BASIC on the 100 using LPRINT CHR\$(0). — Ed.

SPEED KEYS

Enclosed is a short program to speed things up. It reprograms the 100 function keys according to three general categories. The *normal* set of keys promotes running and modifying of my own programs. The *program writing* set loads

commands faster. The *operating* set turns off the disk drive program, loads a cassette word-processing program and uses the Model 100 as a desk calculator.

Charles B. Tichenor
111th Postal Detachment
APO 09069-0006

1 REM Function Keys

3 CLS

4 PRINT

5 PRINT "

6 PRINT

7 PRINT "

8 PRINT "

9 PRINT "

10 PRINT

11 INPUT "Which Keys Do You Want Programmed";A

15 IF A=1 THEN 20

16 IF A=2 THEN 100

17 IF A>3 THEN 10

18 IF A<1 THEN 10

19 IF A=3 THEN 300

20 KEY 1, "Kill"

30 KEY 2, "Load"

40 KEY 3, "Save"

50 KEY 4, "Run"

60 KEY 5, "List"

70 KEY 6, "Edit"

80 KEY 7, "Print"

90 KEY 8, "Menu"

99 GOTO 900

100 KEY 1, "Print FRE(0)"

110 KEY 2, "Lprint"

120 KEY 3, "Print"

FUNCTION KEYS"

Normal Function Key Set = 1"

Program Writing Key Set = 2"

Operating Key Set = 3"

```

130 KEY 4, "Input"
140 KEY 5, "Tab("
150 KEY 6, "Edit"
160 KEY 7, " +"
170 KEY 8, "Menu"
199 GOTO 900
300 CLS
320 KEY 1, "Print FRE(0)"
330 KEY 2, "Lfiles off"
331 KEY 3, "Sound off"
332 KEY 4, "Cls"
333 KEY 5, "Print"
334 KEY 6, "*"
335 KEY 7, "+"
340 KEY 8, "Menu"
399 GOTO 900
900 MENU

```

WE BLUSH, WE BOW

Portable 100/200 was cited as a portable computer industry trend-watcher in the tax-day edition of USA Today.

The citation was part of an April 15 special supplement on executive travel. Author Kevin Maney contacted Portable 100/200 for an analysis of the controversy surrounding in-flight use of portables.

"After a two year scare . . . most restrictions on in-flight use have disappeared," Maney reported. The article included a list of current restrictions summarized from the May issue of Portable 100/200.

In a separate article, Maney also cited Portable 100/200's sister publication, Data General Micro World, as a source for information about high-end portable computers.

USA Today circulation analysts who cover small towns on the coast of Maine must be shaking their heads over the one-day jump in sales. We bought extra copies to send home to mom.

POST-MORTUM ERRATA: BLOOPIING WITH FRIENDS

I'm sure errors in fact, typos and misplaced captions are a blow to your pride but they don't bother us dedicated readers. In fact errors prove that editors and proofreaders are human and that Murphy's law still functions. It's the guts of a magazine that counts with the readers, not perfect copy.

The shorted transformer in the schematic figure two on page 29 of the

February issue probably brought little comment. Those of us that spotted it laughed and ignored it. It didn't matter to the others. I mention it only as an example for, having worked in the electronics industry for years, I know this sort of error is commonplace.

All readers are your proofreaders. We want to help. Make use of us. As with a computer program, the important thing is to get the program entered. Any errors can be easily taken care of later.

Nathaniel F. Ireland
Marlow, NH

Thank you for your offer. We'll take you up on it. And we appreciate the reminder that laughing is often better than cringing. The following are a couple of listing errors we want to correct. — Ed.

Robert Sterling's program for printing text files using the BASIC tab feature in the March 1985 issue, page 11, has two errors. Line 5 should read:
5 DIMP(80),BU(25):CO = "T1="Z":LN = 0:B="":GOSUB286

Line 108 should be:
108 BU(M2)=P(M):M2=M2+1:NEXT

In the April 1985, page 48, J. Omholt-Jensen short word counter contains a mistake in line 110. The correction is:
110 IF (X=32) THEN P=1:GOTO 100

A reader submitted another version to this program. Contributor David Satz of New York City claims it's four times faster.

```

10 INPUT "File name";F$: W=0
20 OPEN F$+"DO" FOR INPUT AS 1
30 IF EOF(1) THEN 60
40 LINE INPUT#1,L$: I=0
50 I=INSTR(1+1,L$,""): W=W+1: IF I
THEN 50 ELSE 30
60 PRINT W-1;"words":BEEP:PRINT
:BEEP □

```

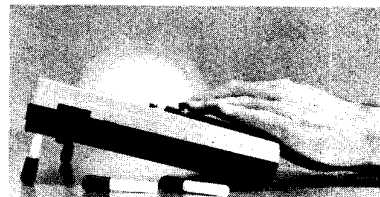
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RS18

TANDY TALKS

Tandy's Stu Weinstock was a featured speaker at the third annual conference of the Tandy Computer Business Users Group (TCBUG), held April 28 to May 1 in Fort Worth, Texas.

Weinstock, product manager for the Model 100 and Tandy 200, spoke of Radio Shack's plans for the products. "It's not true that we will do away with the 100," he said in response to a query from the audience. "There are separate market requirements (for the 100 and 200). Low-end users need the 100 as a training tool, while the high-end needs the 200's sophisticated capabilities."

A number of projects are currently in the works to enhance both of Tandy's briefcase computers. Weinstock reported. A read-only memory (ROM)-based program called Interactive Solutions will be available for the Model 100 early in the third quarter of 1985. The integrated program includes a spreadsheet, data-base manager and text formatter. A Tandy 200 version will follow in October, according to Weinstock.

Also coming for the 200 are cassette-based programs for data-base management, project management and text formatting. Scheduled for later release are a Model 100 machine-language editor and assembler, and a program that allows the 100's screen to scroll horizontally, displaying a 40-character window on 80-character lines.

Weinstock's biggest news was the announcement of a portable disk drive for the 100 and 200. "The unit will work mainly as a fast back-up (device), but it does have random-access I/O." The drive will be less expensive than the drives currently on the market, Weinstock promised.

In the rumors department, Weinstock addressed the speculation that Tandy would introduce a third, more-powerful laptop during 1985 or early 1986. "Half of the users wants MS-DOS (laptops) while the other half wants 100/200-type computers," he said. "Various research companies have indicated no defined market for the upper end. We are looking and may introduce one during the next six months or so."

TCBUG is not affiliated with Tandy. Full membership is \$100 per year and

associate membership is \$75. Contact TCBUG, Box 17580, Fort Worth, TX 76102.

A Choice Too Soon

No speculation about a high-end MS-DOS portable from Tandy would be complete without a discussion of the main factor limiting laptops' enthusiastic adoption in corporate climes: screen readability and the lack thereof.

The Tandy 200's 16-by-40 screen is quite simply the largest readable liquid-crystal display (LCD) on the market. The best efforts of Data General, Hewlett-Packard, NEC and other vendors have proved insufficient to clear the contrast and brightness hurdles between tiny computers and the user's eyes.

There is currently no indication that Tandy's rumored MS-DOS portable (we've heard it might be called the Tandy 600, but our sources have been wrong before and Tandy Corp. is quite firm about upholding its ban on pre-release press briefings) will contain anything but the most mundane and ordinary of LCDs. Still, the Fort Worth crew may surprise us and choose any of a half-dozen competing technologies, driving the new portable's price up but improving its functionality.

Among the strongest contenders is a seven by nine-inch smectic LCD recently introduced by ITT. According to

the debut issue of the company's ITT Technology newsletter, the new screen has improved contrast and a 180-degree viewing angle.

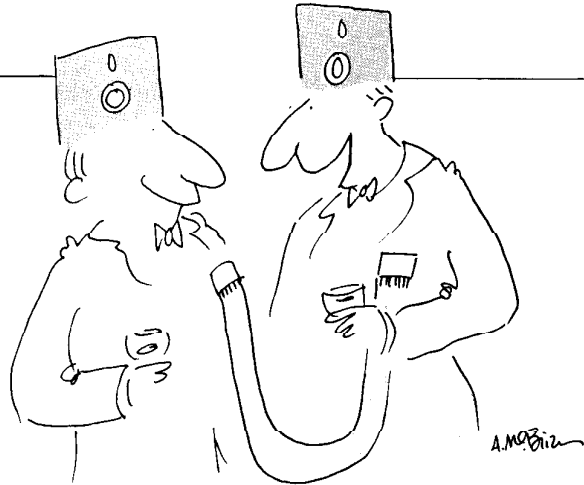
Another possibility is the inclusion of a luminescent panel behind the LCD. Such is the approach adopted by Morrow in its Pivot portable. The panel improves contrast and brightness at the expense of battery life.

Grid Systems is the traditional leader in flat-panel display utilization. Its Compass, introduced in 1980, was for nearly five years the only computer to include an electroluminescent display providing CRT-quality viewing specifications while consuming far too much current for realistic battery operation.

Grid's recently introduced GridCase portable is the industry's first glimpse of a plasma display. Plasma displays are ideal for graphics and extended use, but — like electroluminescent devices — consume too much power for portable (as opposed to transportable) use.

The display question puts Tandy in an awkward position. Users have vocally (if not abundantly) demanded a high-power computer with a 25 by 80 screen. Current technology renders the possible solutions unreadable, prohibitively expensive or too power-hungry for portable use.

So far, Tandy has made a decision not to decide. But users may pressure the company into making a choice too soon. Neither the company nor its customers will win unless the time is taken to develop new technology. □



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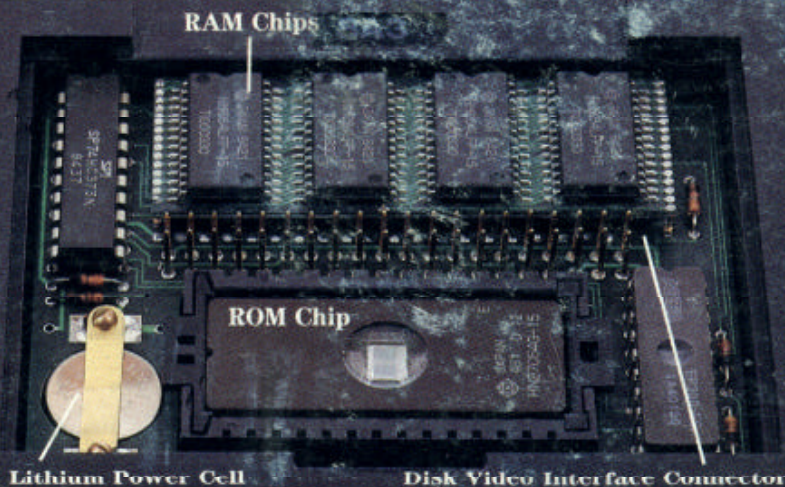
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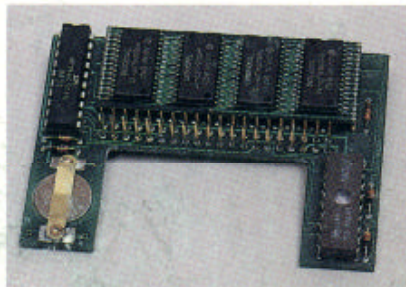


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