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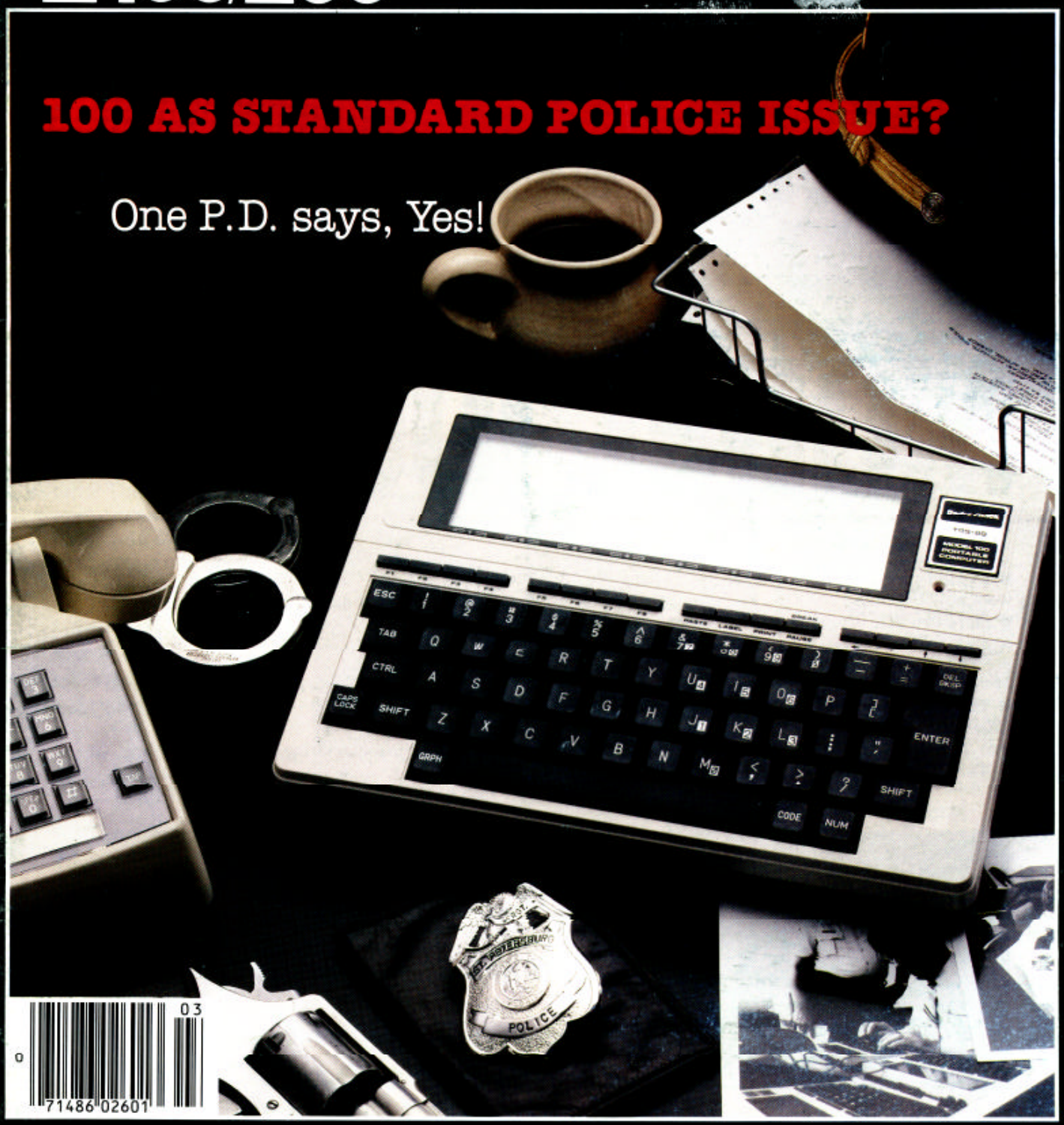

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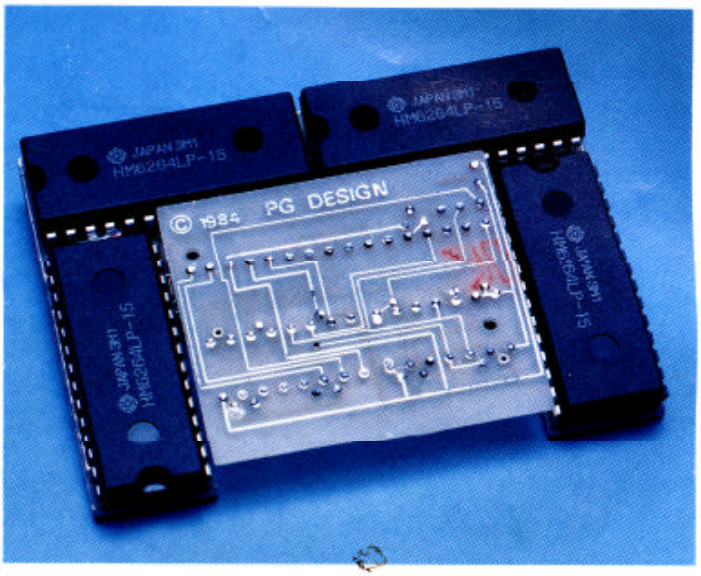

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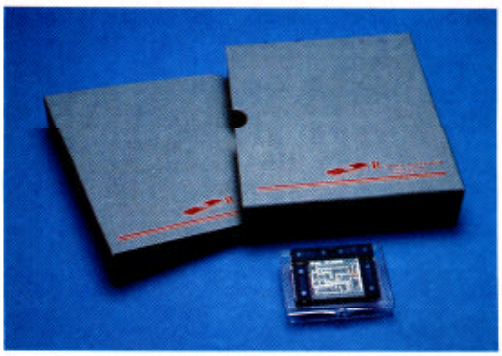

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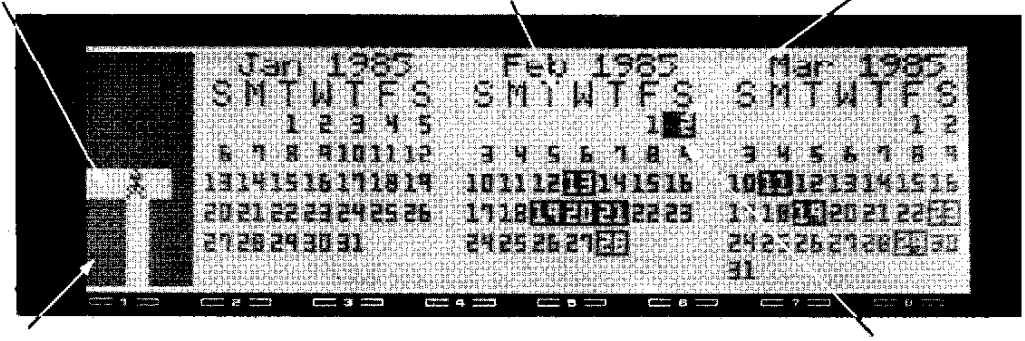

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AUTO LOG-ON PROGRAM FOR:

Free Sample

```
10 P$="16175575422"+
    "<==^D^D?1tmpc^M?s>"
20 M=VARPTR(P$)
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.

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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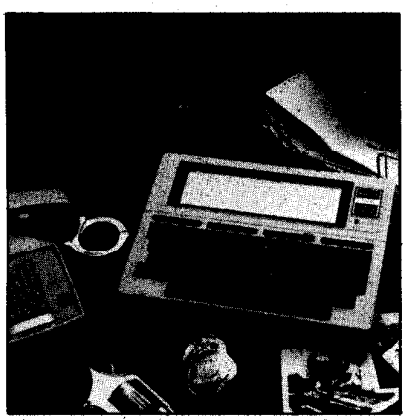
portable 100/200

VOLUME 2 NUMBER 6 MARCH 1985



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By Jim Lamb
"A man on the beat who is jotting down notes or filling out a form is carrying . . . information that could be . . . vital . . ."

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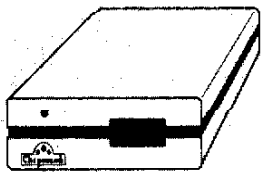

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DISK MEDIA:	3.5" SSDD 80-track micro floppy diskettes, 358.5K formatted;
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PREVIEW BY BRUCE A. TAYLOR

THE FIRST OF TWO SHOTS

An editor gets two chances for fatuous self-indulgence. One when he begins a new assignment. And again when he's given his last word before being hung from the masthead (most likely with a rope of his own mutinous making). This, then, is my first.

I come to this post via a circuitous (some would proffer a short-circuited or not nearly long enough) route. Newspapers, magazines, radio, television — all on newsside. Industrial and tourism marketing. Back to magazines, first in ad sales, then as group publisher. Now, editorial director for a group begun by longtime friend and associate, Jim Povec. Editing is probably my life's true love.

Both of my predecessors were true aficianados of not only the Model 100, but the whole TRS-80 family, including cousins. I, on the other hand, am an ex-cub reporter for a smalltown daily; auspiciously starting my career in journalism because I lacked the mechanical aptitude to do anything really useful on a newspaper. This fact followed me right into broadcasting, too.

Acquaintances guffawed at the sight of me approaching, left arm longer by inches than the right due to the ancient Underwood manual typewriter hanging like an appendage at the end of my arm. It was my idea of "portable." I swore I would never use anything as new-fangled as an electric typewriter. For one thing it would be too heavy to carry in one hand. For another, if it broke, it was too valuable to just throw away like the Underwoods or the Royals that could be picked up in secondhand shops for 10, maybe 15 bucks.

WELCOME TO THE 20TH CENTURY. But I've made the leap in one short decade. Everything I know about the Model 100, I learned from Kerry Leichtman. He taught it to me in 10 minutes — but that was only because I continue to be a slow learner. As I suspect it is for many users, the 100 is for me a most marvelous little portable typewriter. That's precisely how I have used it to date, along with an address file. Even as a little word processor, the value of the 100 has far exceeded its purchase price — though it was bought at high full-retail long before the price slashing began. I can say that two things changed my life: a half-semester of typing with Miss Richmond in 1961 and the Model 100 in 1984. Hours spent in boredom on airplanes have become productive. A desktop strewn with debris has become — well — less strewn.

> "Sometimes the job of editor is like being the conductor of a motley and unruly orchestra comprised of talented musicians, each of whom insists on playing his own music at his own tempo."

And the power to do my own work more or less competently no longer resides with an overworked/underpaid secretary, but safely within the ROM of my 100. Now, I suspect that I'll be learning a lot more about what I can do with my 100 and Tandy 200, as well.

If there's a good side to my dirth of technical knowledge, it's that it all amazes me so. My "Golly Gee, Mr. Wizard!" wonderment will probably creep onto the pages with nauseous regularity. Likewise, it will keep me sensitive to computerese. Portable 100/200 will use plain English — whatever that is — whenever possible, rather than jargon, and will amplify a point even when it's boringly self-evident to hackers.

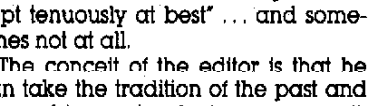
You'll notice, along with the name change this month, a redesign of the cover and the inside. It's a metamorphosis that will take several issues before we achieve what we're after: a contemporary feel and look, and greater readability. Art directors are wont to throw themselves in front of freight trains at the thought that lofty design ideals don't much matter. But the truth of it is that if the content doesn't merit the reader's time and attention, the design quality won't carry the day.

Portable 100 has led a merit-filled life from its first issues with Kerry Leichtman at the command keyboard, and then John Mello — both fine journalists who loved the 100 and made this magazine a lively, meaty journal. Their ghosts, I'm convinced, are hiding out in the hard disk of this Model 2000 watching me. So, substance and technical merit are still the object of this magazine.

LAPSING PHILOSOPHICAL. Two mandates will continue to guide Portable 100/200's editorial content: first, "there's more damn stuff you can do with this little machine than you can shake a stick at, and it's our job to tell that story." (That's about as close to a statement of publishing philosophy as you're apt to get around here.)

And, second, no one idea dominates this magazine. Recently, I had occasion to answer a reader's quarrel with Peter Stanwyck, over his December End User column (see Mail this issue), this way: "Sometimes the job of editor is like being the conductor of a motley and unruly orchestra comprised of talented musicians, each of whom insists on playing his own music at his own tempo. Even with the ensuing racket, I believe a magazine is at its best when it provides a forum for disparate points of view and engenders reader involvement. Sometimes the peace is kept tenuously at best" . . . and sometimes not at all.

The conceit of the editor is that he can take the tradition of the past and place his personal stamp upon it, thereby improving it. I am no exception, but I trust that you will teach me a monthly lesson in biblical humility.

BAT 

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WINTER CES: MUSIC, VIDEO COMPUTERS, GADGETS — AND THE ALL NEW 1985 TROJAN HORSE!

BY MIKE GREENLY

Winter Computer and Electronics Show (CES) seemed less garish this year. I don't think it's only because I'm getting used to it: this show really did convey more solid innovation, more interesting glimpses of a fast-arriving future, than any other CES I've been to.

Fewer actors were dressed as martians and giant fuzzballs and more upfront display of wonderful product seemed to me to set the tone this year. Sure, there were gimmicks and gadgets, both as props and products — lights inside of hoses you can cut with scissors, miniature hand-held vacuum cleaners, tin can robots with impractical, token serving trays, telephones shaped like swollen lips, etc., etc.

And there was the usual selection of empty scripts and visuals that did little more than display cute models. I always make a point of visiting Canon's booth, for example. For consistent, forced foolishness they cannot be beat. Sample:

Canon Lady #1: "(Gadget A) and (Gadget B) go together like me and Tom Jones."

Canon Lady #2: "Oh? I didn't know you go with Tom Jones!"

Canon Lady #1: "Yes. Get me together with Tom Jones, and I'm gone!" (music up)

Pretty wonderful, right? Well, maybe you had to be there. Nonetheless this show flowed over with genuine innovation, and the tangible experience of technology altering life's flavor.

THE VISUAL SOCIETY. Video is getting more and more spectacular. Digital TV for with lightweight cam-corders, like Panasonic's, in video formats that we're already used to. These improvements are helping create the most visual society in history.

The significance of the rapid video growth curve isn't just "entertainment." One of the most interesting exhibits at CES was Matushita's: a display of the home of the future. Video capability was shown as an intrinsic part of everyday living:

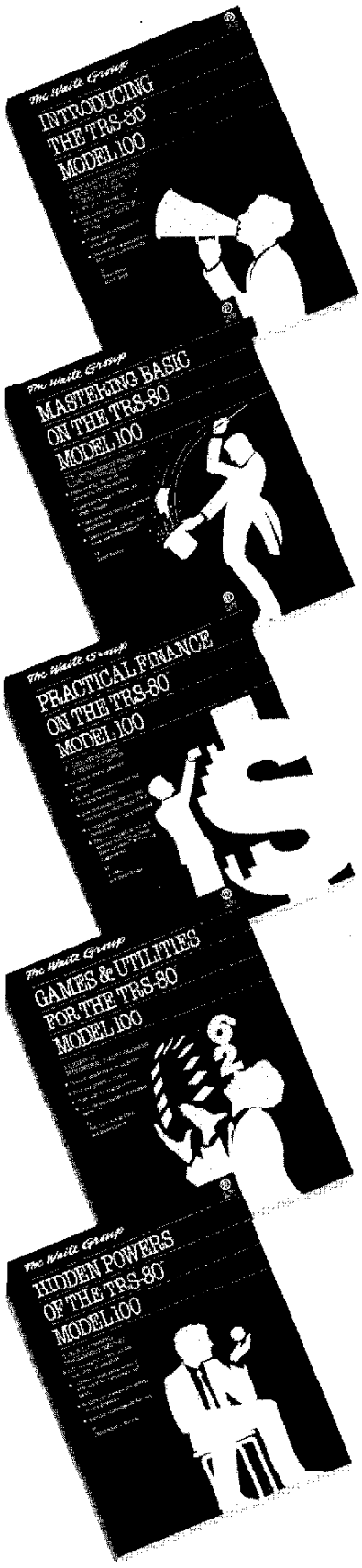
— a video doorbell, that takes a snapshot of every caller (even at night!) gives you a photo record of every visitor, with notation of time and date.

— a video writing tablet to grab a digitized picture from your television that you can draw/write/edit over it. No technical "decoders" to scare a simple consumer: just "write over" or alter your own home movie!

— a small, 4-color video camera you can hook onto your digital TV. Take a snapshot of the screen whenever you want. (Like that adorable video of little Hectorina setting the dog on fire. Now you can send a photo of your favorite frame to the ASPCA.)

AND FOR AUDIOPHILES. We'll be further seduced into various media as stereo sound joins video in 1985. To hear how "Star Wars" can sound in your home (if you want it to, that is).

The luscious Pioneer demonstration doesn't stop at CD stereo; their total home entertainment system has an option to turn your home into a "first run" theater. Why sound like merely the local multiplex moviehouse when you



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can sound like a Broadway Palace instead?

And what are the unforeseen applications in our society when — someday — people send fantastic quality (digitized) video plus audio to each other over the telephone? To walk the CES aisles and mull over questions like these is to be awed at how little we yet realize about life in the "Third Wave" and how it will feel.

THE INVISIBLE COMPUTER? The steps we'll take forward in 1985 bring us closer to "ripeness" for MicroSoft's MSX vision.

Many people don't agree with me. One software publisher said to me disparagingly, "how many of us have you really seen at the MSX booth? They're not getting any take." Well it's accurate, from what I can tell, that typical "computer people" remain unimpressed with Microsoft. "It's just an 8-bit system," they say.

In my view, they're unimpressed because they're judging with only "computer vision." If you already know what computers can do for you, if you already love to whiz through spreadsheets at 90 miles an hour, then maybe MSX isn't for you.

But if you're just a regular person — and there are a lot of us — if you'd enjoy really seeing Sue Ellen's freckles when J.R. unzips her blouse on Dallas...

If you'd like your mind tickled by the pure crystal keyboard of George Winston's piano in CD ...

If you'd like the convenience of the Matushita Home Control Center — with curtains that open and close when you're on vacation, with intercom linking one room to another, with an answering machine that can tell you all kinds of things when you phone home ...

THEN you're a likely candidate to welcome the Trojan Horse of MSX right into your home. You hardly have to know it's a computer. You hardly have to know about its NAPLPS compability, about the fact that it may ultimately link you into yet unborn information networks of all kinds.

<For those that missed what this is all about MSX is a joint venture among 14 major Japanese manufacturers, one American manufacturer, Spectrevideo, and software system developer Microsoft (see your Model 100 menu) to develop and market a low-end standardized computer primarily for the home market. The theory is that the bottom-end market — under $200, say — is so unattractive from a profit margin standpoint that the only way money can be made in it is if there is a true standardization of hardware and software. It's been much ballyhooed for some time now, and many observers believe that although the idea had merit, its time may have come and gone. Part of what buoyed it recently were reports of how well it has been doing in the Japanese market. However, recent analysis citings may gainsay that. — Ed.>

It will take the Japanese a long time, perhaps, to figure out the U.S. market.

They've been trying and failing for years to get Americans to sing Karaoke at parties, our own live vocals over pre-recorded music, as they do in Japanese bars. (If they made a waterproof version for singing in the shower they might have something at last.)

They've not been so adept at entering our lives through "productivity tools" but Lawsie, Lawsie, they DO know from pictures and sound!

Underestimate them at the risk of your own embarrassment later.

MEANWHILE BACK AT THE WAR. One showstopper and one also-ran caused the most comment.

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18 ON READER SERVICE CARD

In the non-MSX computer arena, it's obvious to all the ATARI stole the show. Whether Jack Tramiel can deliver or not is an open question, but my money is on him.

When he or his Software Honcho Sig Hartmann are questioned about Commodore's already fabled Amiga machine — another Macintosh Color Clone — the cautious ATARI reply is that there's plenty of room for everybody, and ATARI exists only to serve today's public.

Um-hmmmm. But don't you imagine it's been very satisfying for Tramiel and his team to have the so-called "Jackintosh" low-cost clone of Apple's Mac be the show-stopper, while what was trumpeted as "another breakthrough from Commodore" prompted a "So what?" from most show observers?

Commodore's 128K machine will probably be a sales success, but it's no harbinger of the future. And I can't believe their lap computer with the Ticky Toy Keyboard will become the portable of choice for many serious users, no matter how much better Commodore's LCD screen contrast and resolution genuinely is.

The June CES may see a rebound from Commodore, but this show will go down in industry history as the moment Jack Tramiel brought Atari back to center stage.

Personally, I'm going to find observing this struggle — with the parallel battles between Apple, IBM, and maybe (voice off stage) AT&T — as exciting and gripping as any television soap opera. When CBS is ready to write the pilot script for "JACK'S LANDING," I hope they'll give me a call!

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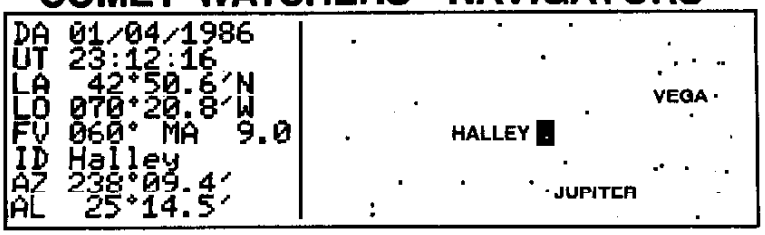
— The combination of digital, video, audio, computers, and portability has barely, barely begun!

I'm already drooling over what progress we may see at the next big CES show this June in Chicago.

Will I be there? Either me or my hologram will — you betcha!

Mike Greenly is a self-confessed pioneer in "interactive electronic journalism." Former Portable 100 editor John Mello accused Mike of rekindling his "wonder" at the technology when John's enthusiasm flagged. Mike's reportage is available on Parti on the Source via his Model 100. A former product manager at Lever Brothers, he went on to become the youngest vice president in the history of Avon Products. Now he is president of Mike Greenly Marketing, a consulting firm in New York City. You doubtless will be seeing much more of Mike's work on these pages in the future. We figure we should be helping to support interactive electronic journalism via the Model 100 — at least until we find out just what it means. — Ed. □

COMET WATCHERS – NAVIGATORS



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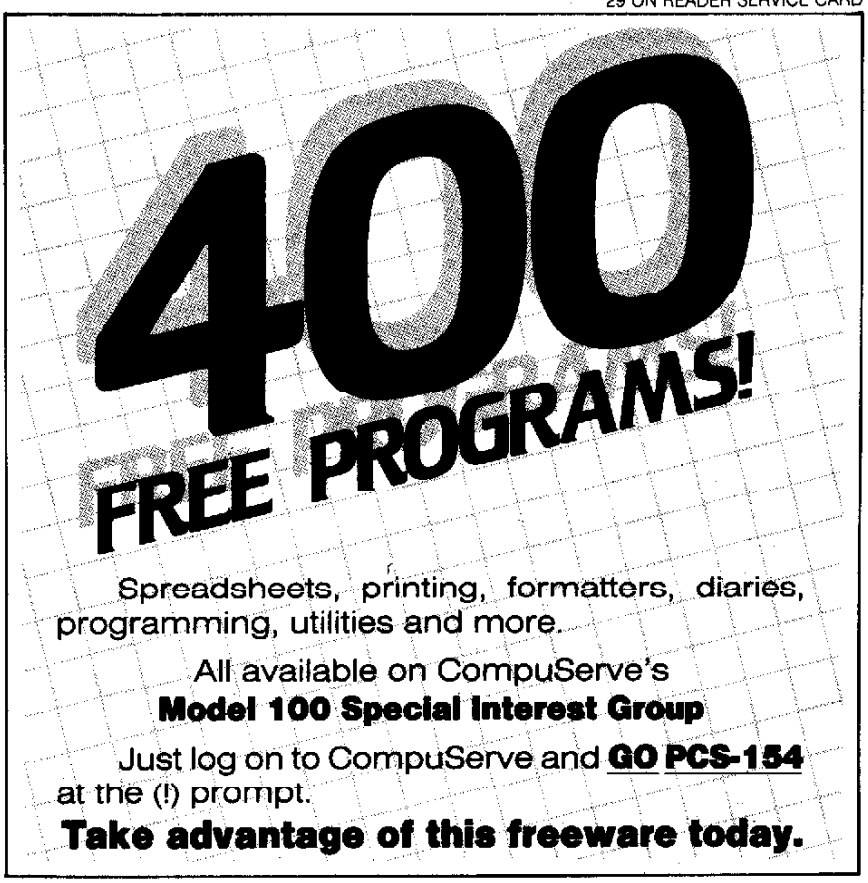

Introducing *SUPERA* and *TEX PRO*...
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SUPERA - Beyond PRO AID

SUPERA is a revolutionary concept in Model 100 software. Like PRO AID, SUPERA adds many new features to the Model 100 operating system, making your computer far more powerful. Unlike PRO AID, or any other machine language program, SUPERA loads and behaves like a BASIC program! Because of its unique format, you will not have to worry about memory conflicts between SUPERA and other machine language programs.

Essentially, SUPERA gives you all the features of TEX PRO and almost all those of PRO AID, and more, in a remarkably easy to use format. While in use, SUPERA must remain in the computer as a Basic file, and it must be the first Basic program loaded from cassette. But otherwise you can forget about it. SUPERA will constantly work in the background providing your Model 100 with numerous features otherwise not available. In addition to the TEXT and BASIC enhancements provided by PRO AID and TEX PRO, SUPERA also allows you to kill and rename files by control keys while at the main menu. Only a few of the lesser used features of PRO AID are missing from SUPERA. Registered PRO AID owners can purchase SUPERA at a reduced rate.

TEX PRO - Give Your Model 100 a Real TEXT Editor

TEX PRO enhances the text editing capabilities of the Model 100 in much the same way that TEL PRO enhances TELCOM. When you enter TEXT after running TEX PRO, you will discover that TEXT suddenly has several new features.

* You can turn on a 'type over mode' in which typed characters will replace the current text instead of being inserted.
* The F4 key will activate a powerful, multi-featured search and replace function.
* You can change the case of the character under the cursor by a control key.
* You can delete a word or line by pressing the appropriate control keys.
* The same 26-function key capability as PRO AID except that the keys can define longer strings (up to 28 characters)
* And More!

TEX PRO is an intelligent program that will turn itself off as soon as you exit the Model 100 TEXT mode, and thus will avoid conflicting with other machine language programs you may be using.

ASM - A Powerful 8085 Assembler

Only 3.6K bytes long, ASM is both compact and fast. In fact ASM can assemble a 14K source file version of itself in about 20 seconds. Input and output data can be either decimal or hex. Constants can be in either decimal, hex or binary. Output is automatically routed to the printer if the printer is connected and on.

ASM supports +, -, *, /, exponents, MOD, AND, OR, NOT, and the use of parenthesis in the data field.

While not a macro assembler, ASM contains a built-in library of useful macros which you can immediately add to your programs. Among these are a collection of relative branch instructions that make it possible to write relocateable routines for use with a BASIC program.

ASM checks for most common errors, and if one is detected, it displays the offending line with the error in inverse video.

As an end of assembly option, ASM will provide a table of addresses for all symbolic labels. This table includes the number of references to each label. ASM comes with full documentation, and a listing of useful ROM routines.

TEL PRO - A Telcom Enhancement

TEL PRO adds a whole new dimension to the TELCOM program. If you enter TELCOM via TEL PRO, you will discover a variety of new capabilities open to you. Without losing your connection, you can kill files, access the menu, check the time, perform BASIC calculations, upload BASIC programs, set alarms, access help screens, append data from the display to text files, read text files, and more.

PRO AID - Background Power

PRO AID is a machine language program that adds many powerful features to your Model 100. You get 26 new, easy to define, super function keys that can be used in TEXT and TELCOM as well as BASIC. You also get automatic line numbers, instantaneous deletion of any range of BASIC lines, a special calculator mode with new BASIC commands, immediate access to MENU programs, a program status key, and much more. PRO AID uses less than 1.8K of your memory, and can be located anywhere there is room. PRO AID comes with complete documentation.

DASM - Far Beyond a Mere Disassembler

DASM is for the serious ROM investigator. DASM does much more than simply disassemble the machine code inside your Model 100. It provides function key controls to easily follow the logical flow of the code, to access the contents of specific locations, to check the keywords corresponding to BASIC tokens, and more. DASM allows for input/output to be in either hex or decimal. You can interrogate any range of memory, and then return to the disassembly.

DASM also contains a remarkable split-screen effect that makes it possible to view the previous 8 lines of the disassembly.

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31 ON READER SERVICE CARD

LOST IN THE MARGIN

When I purchased my Model 100 one of the things I thought it'd be useful for would be to key in a letter from the office. I'd then take the unit home and print it out.

My first surprise was when I went to print it each line printed on top of the other. This problem was rectified by changing one of the dip swtiches on the Silver Reed.

I purchased this printer without a tractor feed; I later added one. This caused me problems when I used the shift print within the Text program. My paper couldn't be moved far enough to the left and the letter would print too far to the left on the paper. It was so bad that the first two leading characters of each line were to the left of the perforation.

This left me in a bind. Taking the challenge I decided to write a Basic program to read the text file and, by using the Tab feature of Basic, shift everything to the right as I printed it. After I got this working, I decided to add a few features to the program. The program works as follows:

1. Input the file to print.
2. Enter the options:
   a. left margin
   b. width of the letter (up to 80 characters)
   c. single or double space (small s is single, anything else is double)
   d. number of lines on a page before a page break
   e. number of lines to skip on a page break
3. Enter 1st line of who the letter is to.
4. Enter 2nd line of who the letter is to.
5. Enter 3rd line of who the letter is to.

Note: If the enter key is hit when the question "to-1" appears, it's assumed that this is a personal letter and (a) the other of these questions won't appear and (b) a comma will print after Dear ? . If an entry is made for "to-1", then one will be needed for "to-2", and "to-3". A business letter is then assumed and a colon will appear after Dear ?.

6. Enter month and day to appear in letter.
7. Enter year to appear in letter.
8. Enter the name to appear after "Dear".
9. Enter who the letter is from.

The version for the program (see listing) submitted has been tailored for

listing one

```
3   CLEAR500:DEFINTK,J,W,M,L:DEFSTRB,P,F,C,X,T
5   DIMP(80),BU(15):CO=":":T1="Z":LN=0:B=" ":GOSUB286
35  FORJ=KTOW:X=INPUT$(1,1):IFEOF(1)THEN200
54  IFX=CHR$(13)THENX=B
55  P(J)=X:NEXT:IFP(W)=BTHEN72
68  X=INPUT$(1,1):IFX<>BTHEN100
72  FORKK=1TOW:PR=PR+P(KK):NEXT:GOSUB240:K=1:GOTO35
100 BU(1)=X:M2=2:FORM=WTO1STEP-1:IFP(M)=BTHEN130
108 BU(M2)=P(M):M2=M2+1:NEXT
130 M2=M2-1:J1=W-M2+1
132 FORJ2=WTOJ1STEP-1:P(J2)=B:NEXT
140 FORKK=1TOJ1:PR=PR+P(KK):NEXT
146 GOSUB240:J1=1:FORJ2=M2TO1STEP-1
152 P(J1)=BU(J2):J1=J1+1:NEXT:K=M2+1:GOTO35
200 FORKK=1TOJ-1:PR=PR+P(KK):NEXT:GOSUB240:GOTO290
240 LPRINTTAB(LM)PR:IFF1="s"THEN245
241 LPRINTB:LL=LL+1
245 PR=B:LL=LL+1:IFLL>LPTHEN250
252 RETURN
254 INPUT"to-1";T1:IFT1="Z"THEN258
255 INPUT"to-2";T2:INPUT"to-3";T3
258 IFT1="Z"THENCO=","
260 INPUT"month & day";X:INPUT"year";P:X=X+","+P
261 KK=W-10:INPUT"dear & from";T,FR:LPRINTTAB(KK)X:GOSUB281
262 LPRINTB:LPRINTTAB(LM)"Dear ";T;CO:LPRINTB:RETURN
280 FORJ3=1TOLB:LPRINTB:NEXT:LL=LL+4:GOTO252
281 IFT1="Z"THEN285
282 LPRINTTAB(LM)T1:LN=3
284 LPRINTTAB(LM)T2:LPRINTTAB(LM)T3
285 RETURN
286 INPUT"print file";F:PR=B:INPUT"options";LM,W,F1,LP,LB
287 GOSUB254:OPENFFORINPUTAS1:K=1:RETURN
290 K=W-
10:LPRINTTAB(K)"Sincerely,":LPRINTB:LPRINTB:LPRINTTAB(K)FR:END
```

speed and memory saving and not for readability.

Robert Sterling
Jenkintown, PA

NOT ENOUGH SUPPORT

I am employed by the National Institutes of Health in the capacity of a computer consultant. Recently I was asked to find, and then evaluate, hardware for gathering behavioral scoring data. I thought the new portable computers on the market would be able to tackle the job with flexibility. Due to Tandy's ability to service and stand behind its hardware, I chose the Model 100 over the NEC and other portables.

While evaluating this product, I've encountered some hurdles. The biggest one is Tandy. According to one of its technical support people, I should "feel free to disassemble the ROM." All other attempts at getting software technical information have been thwarted by similar remarks.

However, the amount of software published by Tandy is limited to 12 pages in the hardware technical manual, and is practically a reproduction of the 12 pages in Radio Shack's 700 Series manual. I was frustrated.

So, I searched the market for third-party vendors. To my surprise, I found quite a bit of information, although most vendors were unwilling to part with their fruits of labor.

I did, however, stumble upon Carl Oppedahl's article in the August 1984 issue of Portable 100. There it was noted his book, Advanced Programming for the Model 100, would soon be published. From the little information I gleaned it seems the book will be one of the most complete technical descriptions of Model 100 software.

R. Hannes Beinert
Madison, WI

Inside the TRS-80 Model 100. will be available June 1985 by Weber Systems, Cleveland, OH. — Ed.

TANDY THANKS STANWYCK

This is a copy of a letter sent from Ed Juge, Tandy's director of market planning, to Portable 100/200 End User columnist, Peter Stanwyck.

I read your November column on Tandy with great interest. I think you hit the nail pretty much on the head when you described the way we at Tandy see ourselves.

We don't claim to build equipment aimed solely at the corporate marketplace as does IBM. Nor do we feel that we have to use the latest jazziest features, unless they make sense to accomplish our major purpose.

That purpose is to provide cost-effective solutions to problems that users face in their daily lives. I guess that pretty well qualifies us as the Chevys of the computer industry.

The article was certainly done in a fair and straight forward fashion. I wanted to personally thank you for a good job.

OTHERS DON'T THANK STANWYCK

While I wouldn't dare to challenge Peter Stanwyck in the poison pen arena, I do disagree with his reasoning regarding the 100's word processing capabilities. (See End User, Portable 100, December 1984, page 72.)

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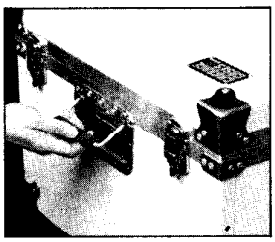

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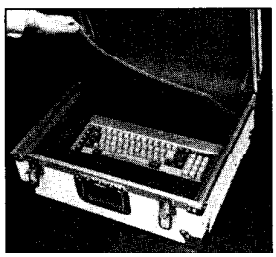

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8 ON READER SERVICE CARD

I have both a desk top with WordStar and the 100 with a slightly modified Write+. My position is that the finished product should communicate legible facts and opinions to the reader. Mr. Stanwyck takes the view that his finished product must exactly match his taste in apperance.

The 100 accompanies me to technical meetings and business conferences. Notes taken hastily get reworked on the plane homeward, but the information gets printed that evening and is in the hands of the people who need it by the next day. A friend of mine uses Text Power 100 with his 100, prefering it to Write+. But both of us are satisfied with the work we can do quickly and easily with the 100. Maybe it ain't pretty, but it works.

A.W. Goldman
Newton, MA

Why is it whenever I read one of Peter Stanwyck's columns I feel as though the glass is half-empty instead of half-full? I enjoy criticism when it's constructive. But I didn't pay that extra dollar on the cover price to read about Stanwyck's ultimate goals on right justification.

Stick to the desk-top computers, Stanwyck, if you want to talk about ultimate goals. We're talking portable here, and I bought the 100 for that reason.

I use Scripsit from Portable Computer Support Group and think it's about as close as you're going to get to a desk-top word processor. If you want to call this getting by, that's fine with me. There are features I'll never use but they're there in case I need them.

Stanley E. Yealowski
Virginia Beach, VA

IN THE BOUQUET

While reading the November issue of Portable 100, I came across the Editor's note, page 10, offering Briefcase Portable subscribers a subscription to Portable 100 at no cost.

Nice gesture, but also catching my eye was the fact your cover price increased a dollar and subscriptions increased to five dollars a year.

Perhaps the gentleman from Arkansas should be thanking the purchasers of Portable 100 rather than yourselves for we're obviously the purveyors of your act of generosity.

How about concentrating on serving your subscribers instead of patting yourself on the back and thusly broadening the subscription base. You guys have an excellent magazine. Why jeopardize it with slip-shody circulation.

Terry Loewenberg
Waterford, CT

There's no connection between the need for a price increase on Portable 100 and the fulfilling of paid subscriptions to Briefcase Portable, which ceased publication and whose names we acquired.

We appreciate your otherwise positive reaction to the magazine. Hopefully, the changes you see in coming months with Portable 100/200 are to your liking, and that you will see us fulfilling our end with a timely, high quality, and useful publication. — Ed.

In addition to letters from our readers, we also include in Mail 100/200 letters from CompuServe and The Source. Those message writers are identified by their CompuServe (CIS ID) and Source (STC ID) identification numbers. — Ed. □

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The Disk/Video Interface includes a built-in 5¼" double-density floppy disk drive for more than 184,000 characters of storage. At that rate, disks for a small business' inventory, mailing list and personnel files could fill less room than an office dictionary! And with high-speed disk operation, there's never a need to sort through endless boxes of paper or filing cabinets full of records. Information is available at the touch of a key.

The Disk/Video Interface also lets you use your Model 100 with a standard video monitor or television set for a larger display. Used with your television, the Disk/Video Interface generates a 40-character by 25-line display, perfect for writing programs in the Model 100's BASIC computer language or jotting down quick memos. Used with a video monitor, the interface generates an 80-character by 25-line display, great for word processing and other office uses.

There's no new operating system to learn with the Disk/Video Interface, and no complicated commands to memorize. Just connect the Model 100 to the interface (we include the cable) and you're ready to begin. And the interface doesn't require use of the Model 100's standard connectors, so you still have room to expand with a printer, bar code reader, telecommunications device or other accessory.

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Our new TRP-100 printer is the perfect complement to your Model 100 portable workstation. With an advanced thermal ribbon printing system and a choice of battery or AC power, it's perfect for busy professionals who need clear, fast printouts wherever they are.

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Get a hands-on demonstration of the Disk/Video Interface and the TRP-100 Printer at your nearest Radio Shack Computer Center or participating Radio Shack store or dealer. And if you don't have your Model 100 yet, make sure to stop by and take advantage of our new low prices. The 8K Model 100 is just $399 (26-3801, Was $599.00 in Cat. RSC-12), and the 24K Model 100 is just $599 (26-3802, Was $799 in Cat. RSC-12).

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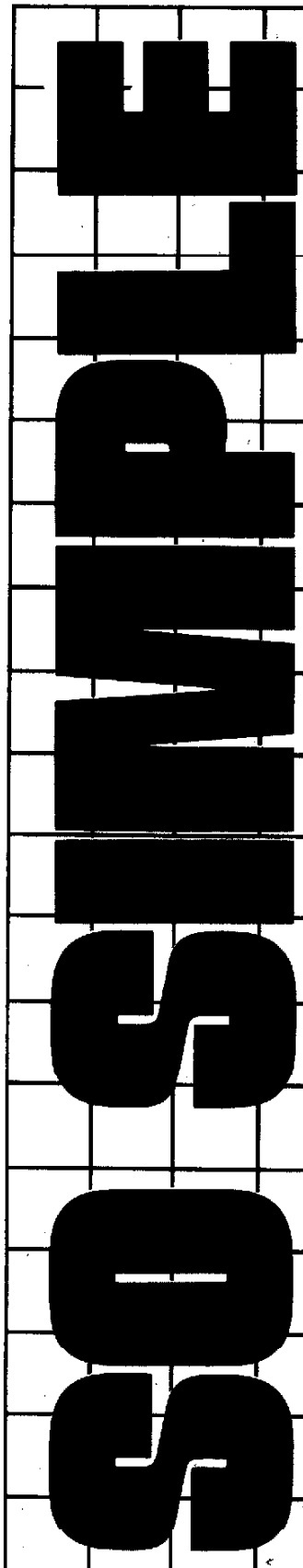

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47 ON READER SERVICE CARD

PLUG-IN ROM MAKES SPREADSHEETS A SNAP

©

With Lucid, the 100 becomes a master at integrated tricks; Lotus 1-2-3 and Multiplan have met their match.

By Carl Oppedahl

As recently as ten years ago, the only spreadsheet programs were on large mainframes; a custom program was written usually for each application.

The revolution began with VisiCalc, a program written orginally for the Apple II and later made available for other micros. More recently Lotus 1-2-3, offered for the IBM PC, has dominated the market for spreadsheet software.

Spreadsheet programs written in Basic for the Model 100 appeared soon after the machine hit the market. Although slow and memory eaters, they had the virtue of being inexpensive.

Interestingly, at about the same time the 100 was released, a lap computer dedicated to spreadsheet use was announced. Called WorkSlate and priced several thousand dollars above the 100, it was to be used for number crunching and was a commercial failure. And more recently, the Hewlett Packard Model 110 with Lotus 1-2-3 built-in was announced. It lists for about $3,000.

But the 100 with Lucid installed provides fine spreadsheet capabilities in a lap unit for a lot less. Both the computer and ROM can be bought for under $1,000.

SNAP IN. Lucid arrives as an option ROM. Once plugged into the option ROM socket on the underside of the 100, the user calls one subroutine from Basic to put the Lucid filename on the menu. Removal is just as easy.

An 8K EPROM, Lucid is mounted on a sturdy fiberglass printed circuit board. The 100's circuitry allows a ROM as big as 32K to fit into the socket; Lucid ignores two of the address lines. It may be said, then, that with Lucid, 24K of the option ROM space goes unused.

EASY LEARNING. When I received the first preproduction copy of Lucid, I discovered that previous training on VisiCalc, coupled with general familiarity with the 100, made it easy to use Lucid without documentation. Fortunate since at that stage the documentation hadn't been written.

For example, like Text, Lucid may be selected from the main menu, at which time the user is prompted to type in a filename. If the file exists, it's opened. Otherwise, a new file is created. The filename can later be seen on the main menu with extension .CA.

Again like Text, Lucid can select the data file itself from the menu, in which case the file will be opened for processing by the appropriate program. In other words, you can move the cursor to the .CA file, press enter, and see the spreadsheet on the screen.

From Basic the .CA file can be renamed or killed, just as with .BA, .CO, and .DO files.

Within Lucid, the cursor keys do more or less what one would expect. Up, down, left, and right arrow keys move in the indicated direction the distance of one cell. Control-up goes to the top of the spreadsheet, while shifted arrow keys go to the four edges of the LCD screen. It's too bad, however, that control-down doesn't go to the end of the spreadsheet; control-left and control-right also don't work.

As with Text, Lucid presents file contents on the screen literally in a what you see is what you get fashion.

DOCUMENTATION. The 130-page manual does a good job not only of explaining Lucid but also of introducing the new user to spreadsheets generally. It's well written, has a good index, and is attractively typeset and printed.

There are only two small points I'd have to grumble about: There should be more prominent warning about the necessity of frequent backups. Also, the writing style occasionally gets carried away.

While pleasant and conversational, the manual seems a bit self-congratulatory. Sixty times, once for the top of each even-numbered page, one finds the heading: Lucid Exceptional Spreadsheet.

Superlatives pop up every twenty paragraphs or so, reflecting understandable enthusiasm on the part of the authors. But one learns that delete row or column is an excellent function and four pages later is swept away with the happy knowledge that "Lucid has a wonderful print function . . . ."

BELLS AND WHISTLES. Lucid does lots of nice things that go beyond the usual spreadsheet program. Particularly, cells in one .CA file may contain references to the contents of selected cells in another .CA file in RAM.

Spreadsheet users are accustomed to a function allowing the sheet to select a value from a certain row and column of a chart, based on numerical values elsewhere in the chart.

Lucid does this with the table (TBL) function. Because the table contents may be filled in as formulas instead of mere values, it's very powerful.

The manual gives examples of charming guess-the-capitol-of-each-state sorts of input and output, illustrating the versatility of TBL.

Cells may be protected. A handy feature, this lets the sophisticated user prepare a spreadsheet and protect all but a few cells. Others may then fill in the varying program inputs, and print out the results, without the usual danger of overwriting one or more formulas.

Many transcendental functions, such as sin and log, are provided.

REPLICATION. Spreadsheet users are familiar with the idea of replication — that a formula typed in for a cell or group of cells may be appropriate for other cells, rows, or columns.

Replication demands more than literal copying. Suppose the formula in one cell (call it the source cell), refers to the cell on its left. If that formula is to be replicated elsewhere (the target cell), the intended result is often the formula reference at the target cell should be to the cell at its left, rather than to the cell at the left of the source cell. The former is called relative replication; the latter is absolute replication. VisiCalc's replication process asks item-by-item whether each reference is relative or absolute.

Lucid, on the other hand, assumes each cell reference in a formula to be

relative unless it's flagged with a dollar sign. The replication itself is accomplished with the familiar Sel, Cut, Copy, and Paste keys.

RECALCULATION. With Lucid, recalculation is always manual. One pushes F2. Since I was raised on VisiCalc, which allows manual or automatic recalculation, I found myself wishing I could switch Lucid to and from a mode of automatic recalculation.

Experience has taught me this. More than once I've printed a spreadsheet only to discover later the page was filled with incorrect numbers, all because I'd changed a single value and forgotten to push the function key for recalculation.

DVI. Lucid is compatible with Radio Shack's Disk/Video Interface in so far as its presense in the 100 doesn't interfere with using the DVI.

The Lucid display on the LCD screen is limited to six rows and a nominal four columns, depending on column widths. There's no way to get the Lucid display onto the DVI screen. Also, Lucid data files with extension .CA can't be put on disk.

I was told, however, that a utility may someday be provided by Portable Computer Support Group (PCSG) to allow transfers to and from disk. Owners of the DVI should call them for information.

OTHER PROGRAMS. Lucid stores its data in files with the extension .CA. Such files can't be opened from Basic, and so may be manipulated only through Peek and Poke . . . risky business. A Lucid .CA file can't receive information from any source other than the keyboard, and in particular can't take a data interchange format (DIF) file as input.

Lucid output is more versatile. The information destined for the printer may be sent instead to a .DO file. The user later may use Text to cut and paste the material into other documents. DIF output isn't supported. (PCSG says a utility module later may be released to handle DIF input and output.)

> "Lucid . . . files can't be opened from Basic, and so may be manipulated only through Peek and Poke . . . risky business."

BASIC SPREADSHEETS. Several Basic spreadsheet programs have been written for the 100. MINIVC, available for the cost of a download from the CompuServe Model 100 Sig, does a good job. You can't beat the price.

But a Basic spreadsheet program uses lots of RAM, both for the program and for the data file. Empty cells often take up as much space as cells with numerical values. It's easy to run out of memory with a sheet of just a few dozen cells.

Recalculation can take a long time — many tens of seconds for a sheet of any size. Compared with Basic, machine language is faster and more economical in its use of RAM.

Radio Shack has rereleased Spectaculator for the 100: (26-3828, $49.95), a Color Computer favorite. Written in machine language, it's fast. But it's a far cry from Lucid or any Basic spreadsheet program in versatility. For example, one can't enter a formula for each cell. Only an entire row or column may have a formula.

> "Lucid represents considerable value above the other spreadsheet choices for the Model 100."

And the Spectaculator program, though smaller and faster than its Basic equivalent, still consumes RAM. Depending on how it's used, it may occupy RAM twice — once in the .CO file and once between HIMEM and MAXRAM.

LEAN, FAST. Lucid, however, consumes no RAM for the program. It resides in option ROM space. Its use of RAM for data files is efficient. It's fast — faster than Basic — and, according to the advertisements, faster than Lotus 1-2-3. For these reasons, Lucid represents considerable value above the other spreadsheet choices for the Model 100.

DESKTOP COMPETITION. Most people do spreadsheet calculations on desktop machines like the Apple and IBM PC. Such machines have a much larger screen size than the 100, and offer the handy storage of disk drives.

But they also cost a lot more and don't calculate faster than Lucid. The 100 is conveniently portable, something that can't be said about any of the office desktops.

You may find Lucid and a Model 100 will do everything you need in a spreadsheet and at a far lower cost.

> ". . . desktop machines . . . cost a lot more (than a 100) and don't calculate faster than Lucid."

CUSTOMER SUPPORT. It bodes well for the user that the PCSG phone number appears on each page of the pocket reference card, and on the front page of the manual. In anonymous calls to the number I found the support personnel to be knowledgeable and courteous.

BUGS. If you don't make frequent back ups of your files, you'll suffer if your 100 undergoes a cold start, going back to January 1, 1900. Early versions of Lucid had bugs occasionally cold-starting the machine.

I've had no problem, however, with the current version 1.3. But users with the earlier versions 1.0, 1.1, and 1.2 should return them to PCSG for updating.

COMPATIBILITY. Most Model 100 machine language programs reside in high RAM (between HIMEM and MAXRAM) and often cause compatibility problems. When the loading areas for two such files overlap, they can't be used simultaneously, except by reassembling or relocating one of the two.

There's no such problem with Lucid because it lies in option ROM space (between 0000 hex and 7FFF hex). The only compatibility problem is physical. If something else uses the option ROM location then the Lucid ROM can't be plugged in. Obviously no two option ROMs can fit into the same socket, although it's easy to plug and unplug the ROM cartridges.

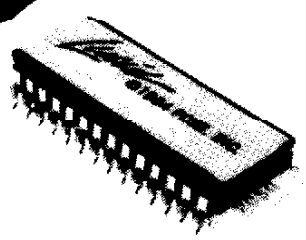
More subtly, some add-on RAM boards use the option ROM area as a handy place to put backup batteries, and are thus incompatible with any option ROM.

HEARTILY RECOMMENDED. There was a time when the first popular spreadsheet program, VisiCalc, was offered only for the Apple II. The result was lots of business managers bought Apple IIs even for offices using other machines.

The Model 100 is inexpensive, nonthreatening, and portable, while Lucid is handy, easy-to-learn, and powerful. The Model 100/Lucid combination is far less expensive than the usual desktop computer with software, yet comparable in versatility and speed. I recommend it. □

Not only a spreadsheet, but a program generator as well. So good we sell it on a satisfaction guaranteed 30 day trial.

Lucid©



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11035 Harry Hines Blvd., #207, Dallas, Tx. 75229
First with software for the Model 100. 1-214-351-0564

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Anyone who experiences LUCID© won't settle for anything else.

is an advanced spreadsheet that is a program generator as well.

on Snap-In™ ROM

Changes your Model 100 into a totally different computer with capability you never thought possible.

PCSG says "Satisfaction Guaranteed or your money back within 30 days!"

PCSG was the first to develop software for the Model 100. That was back in April of '83. We could have rushed out onto the market with an inferior spreadsheet, but we chose to undergo a significant development and produce a spreadsheet for the Model 100 that would truly be world class. A spreadsheet that would rival Lotus 1-2-3*.

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

LUCID® is amazing in so many ways. First of all, it is memory conserving. It will let you build a large spreadsheet--255 row by 126 column capacity. Where other spreadsheets actually consume 4 to 5 bytes for an unused cell, LUCID® uses no memory for empty cells. This lets you build huge spreadsheets in your Model 100's RAM that could consume 80 to 100K on a desktop computer.

Secondly, LUCID® is fast. Whenever you ask other spreadsheets to calculate a file of any size, you can get up and go get a cup of coffee before they are through. LUCID® is so rapid, a 36 column corporate financial statement took less than 4 seconds to calculate.

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

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

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

LUCID® supports all BASIC math functions as well as Log, sine, cosine, tangent, exponentiation and other sophisticated math funcions.

LUCID® has so many features that you will say "this is what I need in a spreadsheet", such as automatic prompting of an incorrectly typed-in formula showing just where the mistake was made.

LUCID® has expanded "go to" functions that remember and produce a windowing capability. It has a special block definition capacity that makes many other

*Trademark Lotus Corp. © PCSG 1984

features possible that refer to whatever section of the spreadsheet you designate. LUCID® has many enhancements that make it easy to use. Once anyone begins to use it they say "this is the way a spreadsheet ought to work".

In the same fashion as TEXT creates ".DO" or document files, LUCID creates ".CA" or calcsheet files. In the same way you can get into any document file just by putting the wide bar cursor on the filename from the main menu, when you put the cursor on any ".CA" file, you are immediately working on that sheet.

But perhaps most remarkable is that LUCID® is not only a spreadsheet but a program generator as well. First, LUCID® lets you protect all cells against entry or change, and then unprotect just the cells you want for someone else to use as input fields.

Combined with the spill-over length feature, you can design input questions such as "What is your name?, What is your age?, Choose which applies to you: a) TALL b) MEDIUM c), SHORT, Type in the state where you were born". You can provide complete on screen instructions for use. This lets you create a series of prompts so that you can have a person totally unfamiliar with computers, entering information that you want to process, to create a personalized report based on calculations made using the facts and numbers they put in.

You see, LUCID® will not only process values, but text input as well so that the facts other than numbers can be responded to. LUCID® has the ability for you to refer in a formula to cells containing words. This feature combines with the capacity of doing "if then" statements that work by doing table look-ups against even massive X/Y charts of text or numerical information. A simple example based on the inputs illustrated above would be to report the recommended calcium intake for tall people based on their age. You can make even more specific inquires and reports, such as recommended amount of Aerobic exercise based on age and weight. Answers can be values or words depending on the situation, eg. 150 lbs., 25 years might be "30 minutes" but 280 lbs., 50 yrs might be "Warning: Aerobic exercise could be dangerous". You can produce a program that responds to inputs with no programming knowledge whatsoever.

You can prepare a report section in your spreadsheet with instructions to your user for printout, and they can produce a personalized printout that responds to their input. All your formulas and tables that did the calculations and provided the facts are invisible to that user. LUCID® is useful for doctors for patient questionaires, trouble-shooting technicians, purchase clerks, people doing job quotes, stores for customer workups, insurance agents and anybody who needs to process specific facts and numbers to produce a report based on those responses.

LUCID® comes with a manual that explains not only the characteristics of LUCID®, but will train you how to use a spreadsheet even if you have never seen one before. You are shown how to do budgets, forecasts, breakeven analysis amortizations and many other types of personal and business reports and calculations.

User friendly is such an overused term in this industry, but we can tell you that everyone who uses LUCID®, who has experienced any other spreadsheet, says that LUCID® is amazingly easy to use. A typical comment has been "I have never seen a spreadsheet that does so much, and yet LUCID® is so much easier and faster to use."

LUCID® is a result of a most exhaustive developmental effort in which PCSG's objective was to develop a spreadsheet that was better than the state-of-the-art. We are so pleased because LUCID® provides for the Model 100 spreadsheet capability you cannot equal on a desktop computer. Plans are underway to offer LUCID® someday for larger computers, but for now TRS 80 Model 100 owners have the good fortune of having this powerful exciting ROM program exclusively.

LUCID® is the easiest to use, fastest and yet most feature-rich spreadsheet, with capability that takes it far beyond the definition of a mere spreadsheet. We are so excited about LUCID®, because it changes the Model 100 into a totally different computer with power and function most never dreamed possible.

LUCID® is, in our opinion and that of those who have examined it, a breakthrough. We sell it on a 30 day trial. If you are not completely satisfied, return it within 30 days for a full refund. Priced at $149.95, on snap-in ROM. Mastercard, Visa or COD.

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ADVERTISEMENT / Continued from page 21

Lucid© SPEC COMPARISON

	Lucid	1,2,3	Multiplan	Visicalc
Cut and paste into other spreadsheets or TEXT	Y	N	N	N
Individually variable column widths	Y	Y	Y	N
References to labels in formulas	Y	N	N	N
# Rows	254	2048	255	254
# Cols	126	255	63	63
References to cells in other spreadsheets	Y	Y	Y	N
Two dimensional table lookups	Y	N	N	N
Cell protection	Y	Y	Y	N
Redirectable output	Y	Y	—	N
Long labels spill over column boundaries	Y	Y	N	N
Insert row / col	Y	Y	Y	Y
Delete row / col	Y	Y	Y	Y
Replicate	Y	Y	Y	Y
Copy	Y	Y	Y	Y
Absolute and relative cell references	Y	Y	Y	N
Function to count cells occupied by a value	Y	N	Y	Y
SQR				
SIN				
COS				
TAN				
ATN				
LOG				
EXP				
INT				
TBL (Lookup, Choose, etc.)	Y	Y	Y	Y
RND				
SUM				
CNT				
MAX				
MIN				
★★				
Edit keys work on initial input	Y	N	N	N
Natural order of recalculation - with detection of circular references	Y	Y	Y	N
Automatic syntax checking of input - cursor stops at your mistake	Y	N	N	N
'Wander' mode on input of formulas to 'point' to cell references	Y	Y	Y	Y
'Wander' mode on edit of formulas	Y	N	N	N
'Go to' remembers where you 'came from'	Y	N	N	N
Sort by column and row	★	Y	Y	N
Graphing of selected ranges	★	Y	N	N
Automatic insertion of date into edit line with control-D	Y	N	N	N
Super compact - empty cells take no memory	Y	N	N	N
Table lookups can use labels as keys	Y	N	N	N
Available now on Model 100	Y	N	N	N
Automatically fits wide spreadsheets to narrow paper	Y	Y	Y	N
Ability to suppress zeros on printout	Y	N	N	N
Allows multiple printer fonts in same spreadsheet	Y	N	N	N

These Lucid functions operate on rectangular ranges as well as individual rows and columns.

★ Extensibility by optional personality modules, with function key access.
★★ Lucid is designed to perform by simple one time entry formulas all other functions not provided as built-in.

Speed and Precision Comparison All benchmarks performed on a spreadsheet occupied by 600 formulas. all times in seconds.	Lucid on Model 100	123 on IBM PC	Multiplan on IBM PC	Visicalc on IBM PC
Sum of 600 cells	2.0	1.4	11.5	7.0
Insert column	0.5	2.4	11.0	6.0
Square root 600 cells	133	12.0	112	298
Replicate 100 rows	20.0	1.5	20.0	12.0
Decimal precision	14 digits	11 digits	14 digits	12 digits

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41 ON READER SERVICE CARD

GETTING OVER THOSE GETTING-ON-COMPUSERVE BLUES

I have yet to get anywhere near my goal of logging onto the Model 100 SIG on Compuserve, locating a text processing program, downloading it to my CCR-81 cassette recorder, and happily thereafter formatting my text.

By the way, how do you contact the SYSOP on-line? I'm sure at least one column devoted to the special needs of those just joining the Model 100 family would benefit many.

I'd also like to find a Model 100 users group in the Queens, NY, area.

Irene Iwan
Briarwood, NY

⇨ Well, it is fairly easy to do what you want. After you get to the Compuserve prompt "!", type GO PCS154. The Model 100 SIG will give you its sign-on messages. If this is the first time you are on the SIG, you will be given the opportunity to join the SIG. Since the Model 100 SIG doesn't charge for membership, you might as well answer the prompt, Yes.

Because you are interested in downloading a program from the databases, type XA at the Function: prompt. The system will ask you which database you want; answer with 1. A brief menu of database options will appear. There are many options that aren't listed in this menu. The one you want to use is CAT, for catalog.

First, type KEY which will list all the keywords currently in use in this database. If you see the words TEXT or FORMATTER listed, type "CAT *."/DES/KEY:TEXT+FORMATTER or whatever the keywords are that you want to use. The command will list every filename, with its attendant description, which has the keywords used in the CAT command.

If the XA1 database doesn't have any formatting programs, type XA2 to switch to the next database and repeat the procedure. You can skip the XA6 database because it is reserved for new product descriptions only.

For a complete description of the database commands, type HELP at the database prompt.

Once you've found a program you want to download, push the F2 function key on the Model 100 and give it a filename. Then type "TYP filename.ext (PPN). TYP tells Compuserve that you want it to list the specified file. The filename must match exactly the name of the file, and the PPN number must also be listed (the PPN is the authors ID number, listed with the filename when you used the CAT command).

After the program finishes listing press the F2 button to stop downloading. When you are completely finished with the SIG and Compuserve, type OFF and the system will log you off, and you can hang up the phone.

Now go into the downloaded file in TEXT and remove the extraneous characters and make sure all the program lines are properly constructed (that is, that there aren't any lines that don't start with a line-number).

If you want to contact the SYSOP, go to the conference channel (option 9 on the SIG menu) and ask for the SYSOP. If he's there, he'll respond.

Finally, does anyone know of a Model 100 user group in Queens?

P/100 BACK ISSUES, WHERE ARE YOU?

How do I get back issues of Portable 100 magazine? Are they for sale; where can I get reprints if they aren't?

I use Scripsit for word processing, and it works just fine but takes up 5K of RAM. I find that often TEXT will do everything I want except double-spacing of the text. Is there any way to give a command to my printer (a DWP-210) to double-space the text while using TEXT?

Nicholas Ayo
Notre Dame, IN

⇨ You can order back issues for $6 (First class postage and handling included) from Computer Communications, Highland Mill, Camden, ME, 04843. At present all issues from September 1983 to present, except April 1984, are available.

As yet I don't know of any fix you can give to TEXT to get it to double-space text when printing. Similarly, the DWP-210 doesn't have a control-code to do automatic double-spacing. Sorry, but it looks like you're stuck with Scripsit for the fancy stuff.

If you can handle BASIC programming you might consider the program in listing one; it occupies only 807 bytes of RAM and needs only 800 bytes of free RAM to operate. All it does is double-space your output. If you want you can add a left margin by specifying a TAB in front of the LPRINT. It's disadvantage is that it is slow.

100 TO MAINFRAME, COME IN MAINFRAME.

I have had problems uploading from my Model 100 to my disk on an Amdahl 470 V8 mainframe. The uploading can be done via either the COLLECT command of the Wylbur editor or by the INPUT command of XEDIT in CMS. Both prompt for line-by-line entries of up to 133 characters.

M7I1E works fine for using the Model 100 as a dumb terminal and for downloading from the mainframe to the Model 100, but I haven't been able to get the files uploaded without losing the first three to twelve characters of each line after the first one.

I suspect this is because each line is sent to the mainframe immediately after the carriage return and before the computer can send the next-line prompt. The computing center says it can do nothing from its end.

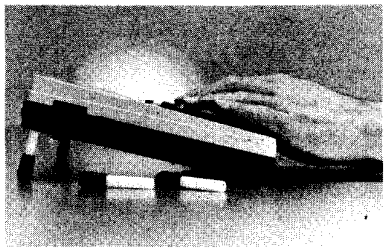
Is there an adjustment I can make with the Model 100 or the TELCOM program, or any communications software for the Model 100, that might solve my problem?

Paul Lachance
Ottawa, Ontario

⇨ You're right, the Model 100 is sending each line without waiting for the mainframe prompt; which means the mainframe is losing the first few characters of each subsequent line.

You have two possible solutions: use a BASIC program to send out your files one line at a time, or buy a communications program that has this ability.

PROP LEGS



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```
listing one

10 CLEAR 770: CLS: PRINTTAB(10)"Double-spacing formatter": MAXFILES=1:
FILES: INPUT"Filename";A$: INPUT"Line Length";A
30 OPEN A$ FOR INPUT AS 1
70 IF EOF(1) THEN CLOSE: CLS: PRINT "Finished": GOSUB 190: RUN
80 LINEINPUT#1,A$: B=A: C=LEN(A$)
90 IF C<=A THEN Z$=A$ :GOSUB 180: GOTO 70
100 IF MID$(A$,B,1)<>" " THEN IF B>1 THEN B=B-1: GOTO 100 ELSE
PRINT"Format Line error":END
110 Z$=LEFT$(A$,B-1): GOSUB 180: A$=MID$(A$,B+1): B=A
120 IF LEN(A$)>A THEN 100
130 IF C<255 THEN Z$=A$: GOSUB 180: GOTO 70
140 IF EOF(1) THEN CLOSE: Z$=A$: GOSUB 180: CLS: PRINT"Finished": GOSUB
190: RUN
145 LINEINPUT#1,C$: C=LEN(C$): IF LEN(A$)+C < B THEN Z$=A$+C$:
GOSUB180: GOTO70
150 A1=LEN(A$): A$=A$ + LEFT$(C$,B-A1)
160 IF MID$(A$,B,1)<>" " THEN IF B>1 THEN B=B-1: GOTO 160 ELSE
PRINT"Format Line error":END
170 Z$=LEFT$(A$,B-1): GOSUB 180: IF A1>B THEN A$=MID$(A$,B)+C$: B=A:
GOTO 120 ELSE A$=MID$(C$,B-A1+1): B=A: GOTO 120
180 LPRINTZ$: LPRINT: RETURN
190 PRINT@281,"Press <ENTER> to continue, M for MENU";
200 A$=INKEY$: IF A$="M" OR A$="m" THEN MAXFILES=0: MENU ELSE IF
A$<>CHR$(13)THEN 200 ELSE RETURN
```

Any BASIC text formatting program (such as the simple one in listing one from the previous letter) can be adapted for the first option, just change the program to OPEN the RS-232 or modem channels (COM: or MDM:) and use PRINT# to send the file (with a built-in delay loop after each line to allow the mainframe to catch up with the Model 100). For the program in lisiting one, add the OPEN statement as line 20 and change the first LPRINT in line 180 to PRINT#1. Replace the second LPRINT with a simple FOR. . .NEXT loop to give WYLBUR time to prepare for the next line.

If you decide to try communication software, try any of these guys. All have telecommunications packages:

Traveling Software 800-343-8080
11050 Fifth Ave.
Seattle, WA, 98125

Software by Sigea 617-647-1098
19 Pelham Rd
Weston, MA, 02193

Micro Demon 803-733-0980
P.O. Box 50162
Columbia, SC, 29250

IT ALL FLASHES BEFORE YOUR EYES

I often turn off my Model 100 without having finished writing a document — to make a cup of coffee or answer a phone call. When I return to writing and switch on the machine again, the document file I have been working on momentarily flashes before my eyes on the display then reverts to the Menu.

It would be nice to be able to simply go back to where I left off. Is there any way to have it do this?

Peter Samuel
Washington, DC

⇨ Unfortunately, there isn't any way to change the power-up sequence of the Model 100 to get what you want. The closest you can come is to use the POWER command. This command automatically powers off the LCD display after the time you specify, but lets you power back up without going back to the MENU. POWER 10 turns off the display if you haven't typed anything for 60 seconds.

So if you leave the computer for several minutes it will shut down to conserve power. When you return, slide the power switch off and back on again to restore the display without losing your place in the TEXT file.

NEITHER SNOW NOR SLEET NOR BUGS...

I downloaded "EMAIL6.MMM" from Compuserve, but I have some questions. First, is there any documentation for this program? Second, the last line says "10009 REM If using an IPL change line 360 to 360 RUN LOCK.BA"; where do I find this program?

I went after this EMAIL program in the first place because of the attractive description of such a program in the book The Model 100 Companion by the editors of Osborne/McGraw-Hill.

Finally, when I tried the program it would log-in about half the time, but every once-in-a-while it would wait for

the main menu to go past and then at the Compuserve prompt "!" it would print R SNDMAL. The menu would repeat and at the now prompt, and it would print nothing. After waiting for a couple of minutes, I would give a Control C and start over again.

Ralph Winter
South Pasadena, CA, 91030

⇨ First, there is supposed to be documentation for the EMAIL program somewhere in the XA databases, but everything changes so fast it is sometimes difficult to find. Search the different databases using the keyword "EMAIL." You should find what you need.

The LOCK.BA program is a security program developed for the Model 100 to prevent other people from snooping through your files. The program is constantly being updated, so you'll have to search the databases to get the latest version. Use the keyword Security.

Finally, the problem is that SNDMAL is a program you operate from your personal programming area on Compuserve. At the Compuserve prompt "!", your program should type EXI. At the OK prompt, type R SNDMAL.

CAN FONT-LESS WRITER FIND HAPPINESS WITH NEC?

I have a Transtar printer that I use successfully with a computer that runs Perfect Software, but when I try running various formatting programs on my NEC 8201 the printer won't bold, underline, superscript or subscript (which, as a writer, I need). The Transtar people said the programs need drivers to effect those fonts. As I am a novice programmer I can't do such things.

I've purchased four programs that promise to support special printer commands and none of them work. Do you have any suggestions? I've enclosed a copy of the demonstration program that Transtar prints in their manual.

Gary Litz
Oakland, CA

⇨ You don't really need drivers to use the special features of your printer, you can embed the controlling codes directly in your TEXT file. For example, typing "H [U2 [DO" and sending it to your printer will result in H20, with the 2 printing subscripted.

The actual keystrokes are: "H CTRL P ESC U 2 CTRL P ESC D O" (the ESC key puts character 27 in your file). With these in place in your TEXT file, any of the formatting programs will work with your printer. The advantages of the formatting programs are in left margin positioning, pagination, linespacing, and other page parameters you can't control with the built-in TEXT printing routine.

What you'll need to do is make a list of the various control codes and what they do, then embed them as you see fit in your files. □

Editor's Note: Full-Duplex is your column. It's dedicated to solving the problems of users of the Model 100. If Terry can help you, please address your letters to: Terry Kepner, P.O. Box 481, Peterborough, NH 03548. Please remember to include a return address with all Full-Duplex correspondence.

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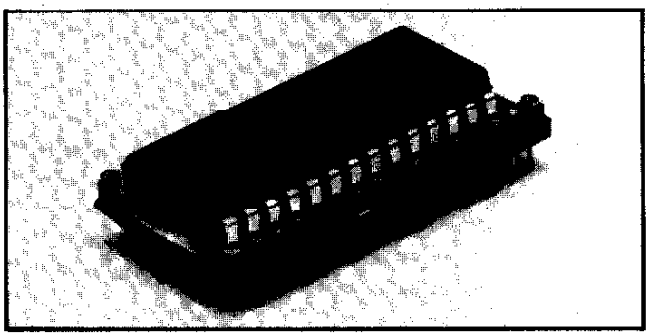

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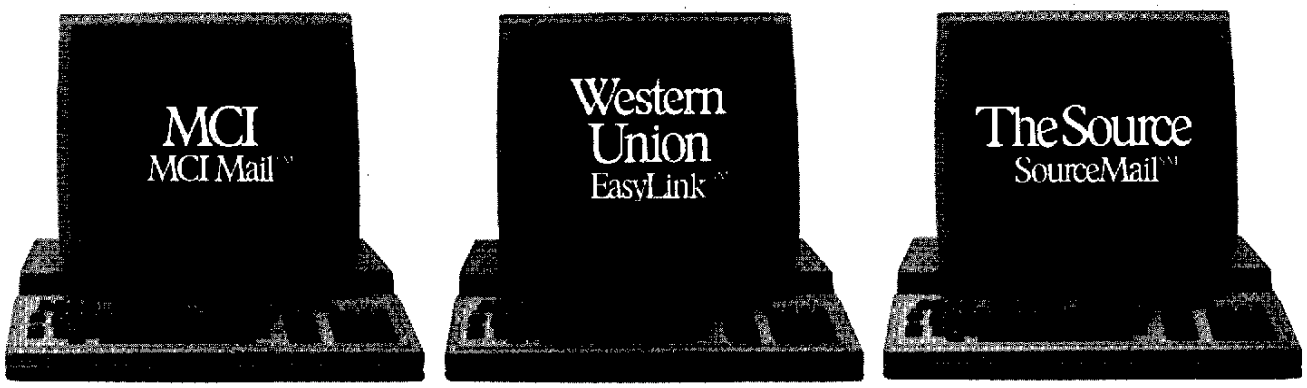

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USER GROUPS BY NANCY L. LAITE

ABACUS ONLINE IS APPLICATIONS ORIENTED

In Northern California, over the hill from Berkeley, lies Diablo Valley, a haven for Model 100 owners. Thanks to the Valley's TRS-80 Computer Society, over 80 people have a meeting spot.

Society secretary Richard Hanson reported at least 30 percent of the members are 100 owners. "We're applications oriented," he said, "and have the time to really delve into the machine. Most members are middle-aged or retired."

Besides working toward an MBA in information management at John F. Kennedy University, Hanson runs Abacus Computer Services, a local mail order computer supply company, and a local bulletin board (BBS).

Called Abacus Online, the BBS features a Model 100 SIG initiated by Hanson: "I'm still so excited about the usefulness of the Model 100 that I've started . . . Club 100 . . . available free to registered members of Abacus Online, also free to those who identify themselves as 100 callers."

Other Valley residents interested in joining this avid group may get membership details by contacting Hanson either via the BBS number, 415-939-1246, or by calling him directly, 415-932-8856.

BEANTOWN BEEPERS DILEMMA

The Boston Model 100 User Group reflects the heat of that New England town's computer energy . . . especially of the lap size market. In the throes of a healthy debate, the group is trying to expand. President Allan Trick explained the dilemma:

"The history of this group has been of a small nucleus of people. We're trying to expand and are debating now whether we're going to continue being a satellite of the TRS-80 group, or become a full group for all lap-top computers.

"The question is whether the Model 100 should be considered a Radio Shack computer, or a lap-top machine.

"Another issue is the short longevity of 40-column screened portables. There's a lot of third-party software support for the 100, but some people feel that Radio Shack is dragging its feet."

It's an interesting discussion and one that Trick has promised to keep us posted on.

TRULY GLOBAL. Recent meetings have been hosted by the Boston Globe. Very appropriate since the major daily has outfitted more than 20 staffers with the 100. Apparently accessing the Source via the 100 has made more than one news reporter's life easier.

Guest speaker, Globe religion editor Jim Franklin, offered attendees valuable time- and money-saving hints regarding the Model 100 and videotex services like The Source, CompuServe, and Delphi.

President Trick received an offer from author Steve Schwartz (75745,14471) open to all 100 users. Through Schwartz's publisher, Scott, Foresman, specials and free samples of Model 100 books and software will be available.

The next group meeting will feature another Boston Globe staffer, who will talk about the standard utilities offered by the paper to its reporters issued 100s. Sounds like a must for anyone using a 100 for writing on-the-run.

FRAGILE LUG-GAGE

Coined as being "very fragile," LUG.100 (Lap Users Group) may be small but "we're friendly," said president Sarah Stanbler. She hosts the meetings in her Manhatten apartment the third Tuesday of every month.

Stanbler said members have found featuring a speaker each meeting a real boost to membership. Model 100 SIG assistant SYSOP Dave Thomas was a recent guest, as was LUG member and author Carl Oppedahl (see the Lucid review, page 17, this issue).

Currently a two-part series is being presented that introduces LUG'ers to running their own BBS. Al Berg, of Bekro International, Ltd. leads the discussion.

DUES OR DIE. There's been talk of starting a yearly dues. Up until now, membership has been free, but "we'd like to get better organized," confided Stanbler, and with meeting notices to be mailed out, it all adds up.

"I've never met a computer person who wasn't high-energy," remarked Stanbler who fits the adage. A freelancer who writes computer documentation, her company, TechProse, has clients the likes of Time, Inc.

Lug.100 will be celebrating it's first birthday this Spring. New members always are welcomed. Interested readers in the LUG.100 area may contact Stanbler either through CompuServe, CIS ID 72236,3352 or by telephoning 212-222-1713.

OF PASSING NOTE

We've received word that there's a small group of law students at Oral Roberts Unviversity, Tulsa, OK, happily putting the 100 through its paces.

"There are seven of us in the law school using the 100 to take notes, make outlines, and write papers," contact Victor Smith wrote Portable 100/200. Others interested can write Smith at 1906-C E. 79th Place, Tulsa, OK, 74136.

SOUTHERN FRIENDS. To improve attendance, the Richmond, VA user group has started on a meet-every-other-month schedule. Leader Bob Ripley urges members to arrive a good hour before the 8 pm kick-off time, however, so they can swap questions and expertise.

Future plans for the Virginia group Ripley said he hopes to get a bi-monthly newsletter out to members. □

Editor's Note: We want to keep readers informed about Model 100 user groups. If you know of a group in your area, let us know about it. If you've some info about your user group that you'd like others to know about, let us share it with readers. Send user-group correspondence to Nancy Laite, Portable 100/200 Magazine, Highland Mill, Camden, ME 04843. Or call us at 207-236-4365.

AUTHORS SERVE UP AN ACE ABOUT COMPUSERVE

How to Get the Most Out of CompuServe
Charles Bowen and
David Peyton
Bantam Books Inc.
666 Fifth Avenue
New York, NY 10103
277 pages $12.95, softbound

By MADELINE P. DURHOLZ

CompuServe Information Service (CIS) is a comprehensive popular, and low-cost on-line network. But often it causes its members frustration and expense because of its size and complexity. A user-friendly tour guide through the variety of CIS offerings and the means to access them was needed to fill the void.

Charlie Bowen and Dave Peyton, both system operators (SYSOPS) of CIS Special Interest Groups (SIGS) as well as Model 100 owners, now give us such a guide. The authors begin by putting first-timers at ease with a tour of CompuServe's fun areas.

Both the neophyte and experienced user can profit from joining the on-line field trips to CB-land, the personal file area, news services, Access, EMAIL, SIGS, on-line shopping, financial services, games, time-and-cost-saving-advanced features, and a useful appendix.

THE ENVELOPE, PLEASE. After two short introductory chapters, the authors begin with the CIS starter kit snap pack's contents, selection of the phone link nodes, and log-on procedures. Suddenly the new user is accessing a CIS data base and composing EMAIL. The authors take a can-do attitude, never allowing the reader to feel incompetent.

They're quick to point out CIS strengths and weaknesses, and encourage the neophyte to hang on to menus as necessary. While recounting an anecdote or reflecting upon a just completed on-line excursion, Bowen and Peyton's timing for introducing an additional piece on housekeeping, cautions, tips, control codes, trouble-shooting, or cost saving is uncanny and effective. I conclude that potential CIS members and new users are well-advised to use their free sign-up time learning how to get the most out of CIS . . . start at square one with this book.

OLD HAT? Even some of us avid Model 100 SIGers avoid such options as the unique Sunday conference. Or never SEN/TALK from the fine message base. Or do not check out public ACCESS files. Or have never tried CB. Here's an opportunity for experienced users to review the necessary commands and special features in one shot and for very little cost. Some command features are slightly different from those on the SIG, but the basics aren't. Try them. You might like them.

Most inveterate SIGers rarely look at the Videotex area of CIS. I know I did an about face when my first bank as a kid, the conservative Shawmut of Boston, appeared on CIS offering electronic banking. Then there's the Official Airline Guide, IRS & Social Security data bases, also new to CIS. A tour through CIS as a whole by Bowen and Peyton would be worthwhile.

Each group of chapters or on-line tour ends with a summary of commands and features just learned. This is quite handy. There's also a chapter covering special default settings, personal menu creation, and file-transfer protocols. Even more useful is the On-Line Survival Kit appendix. Here the authors collect the most important procedures, commands, cautions, and problem-solving hints. To these they add lists of node symbols, a quick index to CIS offerings, and a short bibliography of publications on telecommunications. Unfortunately, the bibliography doesn't include a list of the CIS-published specialized manuals which may be ordered through Feedback, or articles relating to CIS which have appeared in journals such as Portable 100.

DOES IT OR DOESN'T IT? As indicated earlier, the new member should begin with this guide, putting all others aside. The authors expressed intent to prevent such folks from wasting free sign-up time, getting lost in an electronic maze, becoming frustrated and even giving up is certainly achieved. Their recommended on-line training time of six hours at a total of $36 is a small price to pay if the user's goal is to become expert at all CIS offerings.

There's almost as much useful material for experienced CIS users as for newcomers. I'd expect that many would start off just reading chapter-by-chapter only to come upon some CIS section worth trying field-trip style. If not, the guide is worth its price as a quick reference tool. It sure is for me.

I've found no one yet who has written the perfect book. But Charlie Bowen and Dave Peyton have put the Serve back in CompuServe, and thus have reached their objective.

TOO TECHNICAL FOR NOVICE, TOO SKIMPY FOR PROFESSIONAL

The Photographer's Computer Handbook
B. Nadine Orabona
Writer's Digest Books
9933 Alliance Rd.
Cincinnati, OH 45242
192 pages $14.95, softcover

By CHARLEY FREIBERG

There's a lot of information in this book. There's also a lot of information missing. A great deal of what is included seems useless for raw beginners and especially so for already too-busy photographers. Author Orabona takes us through the questions whether we need a computer for our business (insisting that we do), what types of computers, programs, and peripheral equipment are needed. She does a good job here. But instead of giving lists of computer companies, products, prices, availability, and compatibility she launches into a lecture about the binary system and 8- and 16-bit systems. Not necessary and confusing.

BEST PART. She suggests methods of setting up stock photo files, query letters, assignment sheets, and other forms required for a photo business. Her suggestions in these matters are the best part of the book. Take this information, go to a computer store, ask questions, and use some equipment. Then this book proves worthwhile.

The only operating system author

Orabona covers, and quite thoroughly, is CP/M-80. She calls it the standard. Some MS-DOS folks may take hearty exception to that. However, she does mention MS-DOS. I got a little twitchy when she described word processing, data bases, and spreadsheets as "generalized software." Whatever happened to application software?

NIX ON PHOTONET DETAILS. The Photographer's Computer Handbook also includes useful information on Photonet, a wonderful network for professional photographers. I've picked up work from Photonet and recommend it.

Unfortunately, Orabona doesn't tell us how much Photonet costs to join or to use, how much communications software costs, or, even any names of this kind of software, or names and prices of modems.

I've never heard of Photo-1, another network for photographers. The author informs us that the system wasn't running when her book was published.

LOTS LEFT OUT. She's good enough to give pages of possibly useful information on specific commands for certain brands of word processors, data bases, and spreadsheets. But she fails to mention the names of the programs, what systems they work on, availability, and price. You can be sure they work on Kaypro II since the book is dedicated to her computer. Little wonder that CP/M is covered so well.

Here's another area of information left out: computers for process control. In a studio, ceiling tracks with motors and telescoping arms with lights on the ends have been around for years. But to be able to control the movements with a joystick, memorize set ups, and monitor all aspects on the terminal with a simple graphics program ... that's a delight. And this feat can be performed by virtually any computer. None of this was mentioned in the book.

I must say to her credit that she does mention digitized images. Whimsically. Having done software and hardware development work on DEC-based equipment for extremely high-resolution image processing systems, I know how close we are to continuous tone computer-generated images.

GOOD LOST IN REDUNDANCY. Orabona covers a lot of territory. Taxes, inventory, bookkeeping, and all the other aspects of business life are given at least three different sections in the book. But I think close to 50 percent of the pages in the book could have been deleted — mostly the technical material and the redundance. Then she would have produced an excellent guide. □

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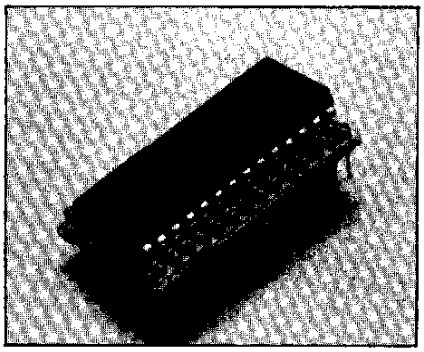

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- Establishes the product-planning parameters for future micro product offerings, and reviews probable adherence to these parameters by AT&T's future 32-bit micro, IBM's rumored "4301" and other upcoming products of significance.
- 237 pages; 42 exhibits; publishes September 1983; price $1,650.00.

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58 ON READER SERVICE CARD

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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 Scripsit-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 it's 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. Incidently, 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 it's 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 doument 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 undent. 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.

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-in ROM. Mastercard, Visa or COD.

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DISK-BUDDY manages your disk files with one keystroke!

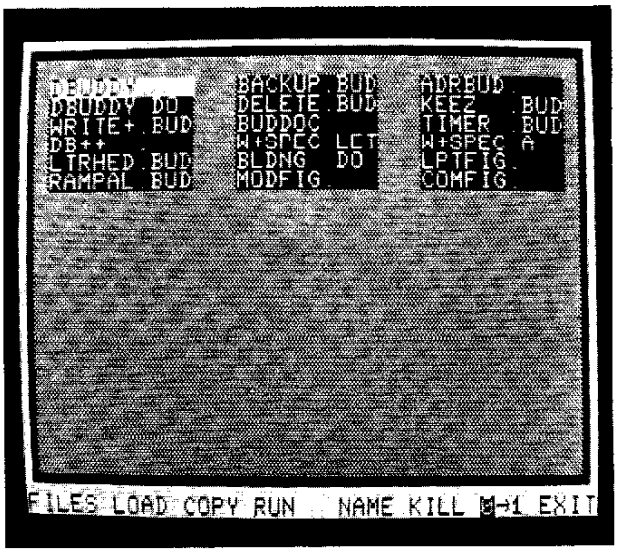
The DISK-BUDDY menu is like the M100 command menu except it works on disk files instead of RAM files.

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

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

With two keystrokes:

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



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

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

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7 ON READER SERVICE CARD

YOUR 100'S ONLY AS GOOD AS ITS

It may surprise you how the Model 100 divvies out its power supply. Presented here are some tips for getting the most out of your batteries.

By Larry Berg

Since I'm in the memory-expansion manufacturing business, I've had to know what effect our products have on the limited and precious battery power of the Model 100. In my quest, I've uncovered some interesting facts concerning the 100's use of this valued resource.

There's quite a dramatic difference in battery drain depending on the circumstances. Methods on how to avoid unnecessary battery drain, prolong battery life, what to worry about, and what not to worry about are covered in this article.

CURRENT BASICS. The electrical current a device uses can be measured with a meter called an amp meter. The electrical current required to run today's portable computers is so small it can't be measured in amps. It has to be measured in milliamps (1/1000 amp), and sometimes even microamps (1/1000000 amp). Fortunately you don't need a degree in electronics to understand your monthly electric bill, nor dead batteries in your Model 100.

The Model 100, Olivetti M10, or NEC 8201 contains two types of batteries. The primary source of power is from four AA-sized batteries, used to operate the machine. The other battery is a small internal nicad which handles memory backup when the main batteries are low or removed.

Some people believe the internal nicads extend the operaton of the computer when the AA batteries die.

continued on page 42

TEST RESULTS

BATTERY DRAIN	OPERATION
53 - 55	Normal operation, power switch is on, menu is being displayed, no other activity. Program execution has no effect (exceptions below).
approx. 60	As above with speaker operating. Beep or Tone or Basic command.
100 - 110	Normal operation with cassette operating via CLOAD/CSAVE or other operation that causes the cassette motor to run. This high current is probably due to the activation of a relay which controls the cassette motor (on off).
110 - 150	Normal operation with Telcom dialing active. Again probably due to the activation of a relay to pulse-dial the telephone. Higher than a continuous activation, like the tape motor, because a relay requires more current to pull closed than to stay closed.
0 - .5	Power off condition via the power switch. Some power is used even when the machine is off because the internal nicad battery is charged continually by the AA batteries. The current drain varies depending on the condition of the internal nicad.
1.3	Power off condition via program control. When the Model 100 is turned off by either a power off Basic command or the automatic power-off time-out, this is the reading. This one I can't explain. Perhaps something is kept active for some reason. Regardless, even while the machine is in this off condition, when the power switch is turned off, the current drain drops from 1.3 to the 0-0.5 range where it should be. If the power switch remains on, so does the 1.3 milliamp drain on the AA batteries.

Table 1. Test Results. The numbers on the left represent the electrical current drain on the four AA batteries during a particular mode of operation. The battery drain is measured in milliamps. To the right is a brief description of the operation being performed at the time of the measurement.

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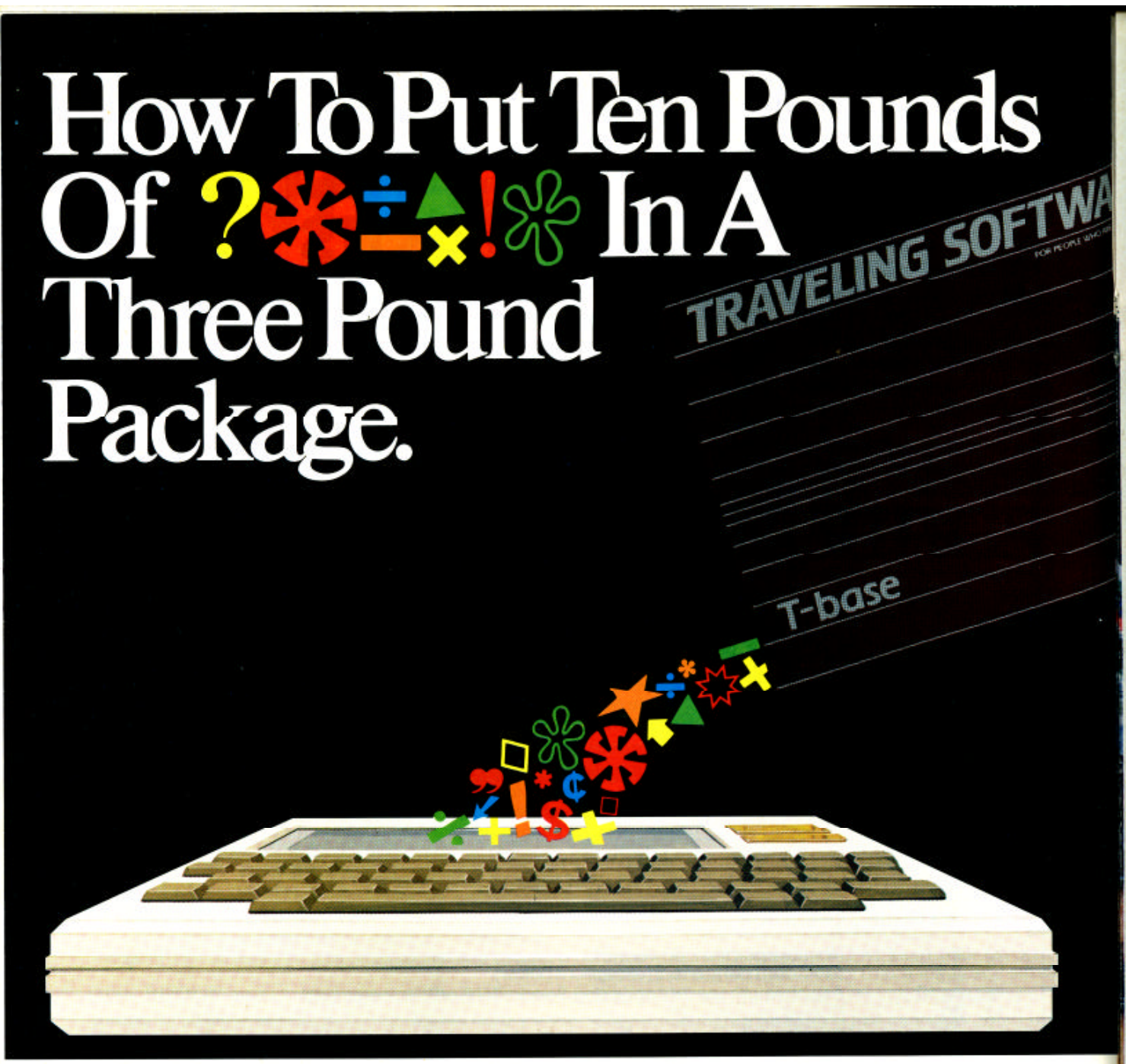

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55 ON READER SERVICE CARD

"A man on the beat who is jotting down notes or filling out a form is carrying . . . information that could be . . . vital . . ."

100 HELPS ST. PETE COPS BEAT THE PAPERWORK BLUES

By JIM LAMB

At the end of the long arm of the law in St. Petersburg, FL, is the Model 100. And if a pilot program in that suncoast city continues with the vigorous success it's maintained since April, 1984, it won't be long before cops on the beat across the country add new phrases to their vocabularies. Lingo like *modem, enter,* and *printout* will roll off their tongues with the ease of such classics as *book 'em, 10-4,* and *just the facts, ma'am.*

When they do, you can thank the St. Petersburg Police Department, Radio Shack's mighty mite, and a cleancut, neat dressing, softtalking law enforcement man by the name of Sgt. Maurice Q. McGough.

WITH CONSIDERABLE EFFORT. But before you do, there are some things you should realize to understand why and how a portable computer fits into the government-issue world of shield, sidearms, patrol cars, and uniforms.

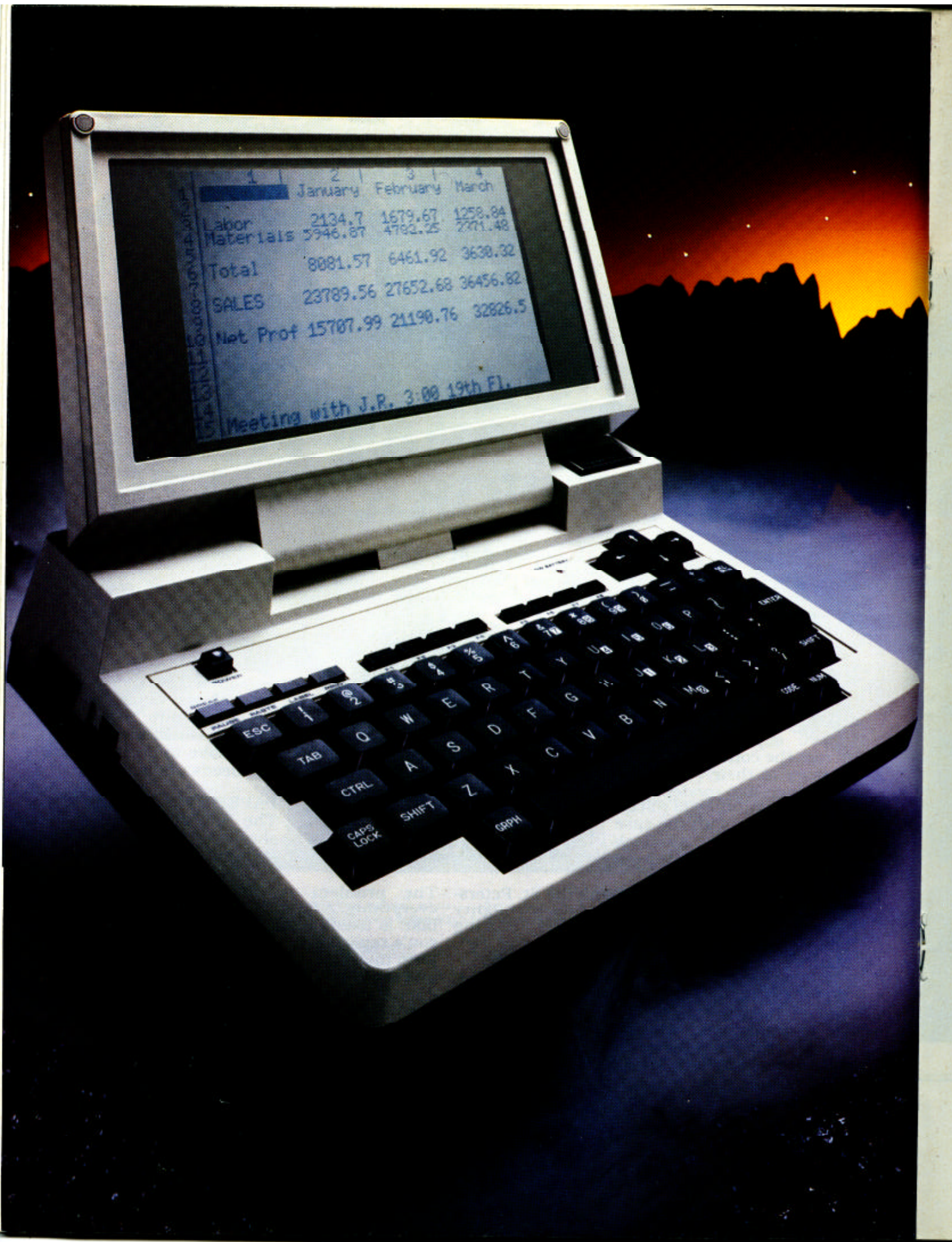
Television shoot 'em up, chase 'em 'round, men-in'blue shows depict policemen and policewomen as an on-the-run, occasionally having fun, catch-the-bad guys group. But ask the real world policeperson on the beat what's happening, and he or she will tell you that law enforcement is often a tedious, deliberate, time consuming routine of making rounds, answering calls, and following through . . . and don't forget the paperwork.

Every minute someone in law enforcement scrawls through the clipboard jungle is a minute away from the beat — a minute the bad guys have to do their devious deeds undisturbed.

PAPER STRANGULATION. The avalanche of forms shuffled through law enforcement offices is often of the one-size-fits-all variety. The problem is, these forms don't fit everything. A form useful for reporting a stolen bike is usually lousy for filing a missing person's report. So a policeman filling out such a form might not find enough room in one block and too much room in another. It's hardly conducive to gathering in-depth information.

A man on the beat jotting down notes or filling out a form is carrying around information that could be statistically vital to other investigations. Often, though, it's hours before he can get that data back to the office and days before it can be passed along to other investigators and law enforcement agencies.

In the process of writing and rewriting, and filing and refiling, time isn't the only thing lost. Sometimes information — the key of any in-


1 2 3 4
January February March
Labor 2134.7 1679.67 1258.84
Materials 5946.87 4782.25 2201.48
Total 8081.57 6461.92 3638.32
SALES 23789.56 27652.68 36456.82
Net Prof 15707.99 21190.76 32826.5
Meeting with J.P. 3:00 19th Fl.
ESC
TAB
CTRL
SHIFT
CAPS LOCK
GRPH

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Our new Tandy 200 portable computer does what no other computer could.

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An improved version of the Model 100's easy-to-use word processing program makes the Tandy 200 especially useful for journalists, 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 function key. It's that easy. The portable Tandy 200 computer gives you the convenience of a personal word processor for use anytime, anywhere.

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46 ON READER SERVICE CARD

vestigation — is fumbled in the shuffle. Score one for the bad guys.

NOTHING BUT THE FACTS. These considerations, however, weren't lost on Sgt. Maurice Q. McGough, a 14-year veteran of the St. Petersburg Police Department. McGough knew there were problems with processing information from police reports, but he didn't have a solution until he discovered the Model 100.

McGough has had a long-time interest in computers. (He said it "seems like forever.") His first encounter was in college, but it wasn't pleasant. He left with a microchip on his shoulder because of what he called a negative "punch card experience" dealing with "tons of paper telling you how bad you were." Then about three years ago he bought a small computer system which he used for addressing and bookkeeping. He also started "fooling around with programs."

> "I think it was the first portable computer to have a large enough memory, built-in programs, and a big enough screen."

The it happened, the *it* he'd been looking for to bring the patrolman on the beat into the whiz-bang-zap computer age, the Model 100.

"I think it was the first portable computer to have a large enough memory, built-in programs, and a big enough screen," was the way he put it. And so the Police Portable Computer Project (PPCP) was born.

LOVE AT FIRST BYTE. "To appreciate (the Model 100) you have to understand how much we hate to do police reports," McGough said.

Why? Why indeed. Imagine Dirty Harry fiddling with whiteout and correction tape while saying, "Go ahead punk, make my day — right after I get this form filled out."

Paperwork was, in the pre-100 days "a tedious chore," McGough said. One problem, he explained, was the limitation of the generic police report: a four page, two-

Officer Jane Bellet demonstrates the Model 100 to Officer Donnie Williams. This cradled position is preferred by most patrol officers.

dimensional, Rubik's cube of squares, lines, and words that never seemed to have the needed space in the right place. No such problem with the copyrighted electronic-form software developed by McGough.

BIKE CAPER. For example, if an officer has to fill out a report about a sotlen bike, he simply chooses the stolen property caption and goes from there. The computer asks questions and the officer responds by punching in the information — there's virtually no space limitation.

"We're asking for considerably more information than on a paper report," McGough said. "We can put more information in less space and make it legible." Plus, the officer can juggle a number of reports at once.

> "Go ahead punk, make my day — right after I get this form filled out."

"The chief advantage is that you have the ability to go back into the report and edit, insert, delete, and reorganize." That opens up another advantage "because it's relatively easy to do and they are more likely to write a complete report," McGough analyzed.

> . . . officers whose reports used to end up on the skimpy side now are meatier while those who used to produce reports too wordy are now writing tighter and shorter.

EQUAL FOOTING. This ease of use has produced a paradox McGough has yet to fully explain. It seems that officers whose reports used to end up on the skimpy side now are meatier while those who used to produce reports too wordy are now writing tighter and shorter. He speculates that the structured report program, his electronic form, may be putting the officers on an equal footing.

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17 ON READER SERVICE CARD

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"The way the program is written can serve as an investigative aid," he said, ". . . informationally (you) ask for more but are able to put it on less paper . . ."

Another thing: If the powers that be want to add or delete a segment of the report, McGough simply changes the program. In the old days such a switch would have meant reordering new forms, plus the cost-loss of tossing out the old ones.

ISSUE ORIENTED. One key to the department's success so far, McGough remarked, is that each person gets his or her own unit. "One of the things we did right was issue the computer to the man, just like his sidearm. He's going to take care of it."

Each officer is issued a computer, a carrying case, a manual, and a direct-connect cable. He called the one-man, one-unit unique because it enables an officer to keep track of his court schedule, names and descriptions of suspects, and maintain a list of banks and convenience stores on his beat. It also gives a policeman time with the unit at home to experiment and thus become a more proficient operator.

WOUNDED IN ACTION. Of course, there might be one slight disadvantage. When something goes wrong there's nobody else to blame — like the time an officer in hot pursuit had to hit the brakes in a hurry and the Model 100 on the front seat of the patrol car went flying. The result: the space bar was loosened. (There's talk in the department of developing a Model 100 holster to keep the portable safe in the event of such accidents.)

The only other mishap involved a 100 that was dropped on the sidewalk. It suffered a scuffed case and a dent in the plastic, but it operated just fine.

Of the 56 units used by the St. Petersburg Police Department, only three have had to be replaced, but those weren't the result of operator error. They had faulty chips. "If it's not broken when we get it," explained McGough, "it's not likely to break."

RIGHT ON TARGET. The response from rookie and veteran officers has been positive. "It was very encouraging to see the older officers, those with close to a decade of experience and used to doing things 'the old way,' accept this thing the way they did." McGough said.

> "You're going to get more information more easily . . . in less time and on less paper."

McGough and his department already are getting calls from law enforcement agencies in other parts of the country, including MD, VA, TX, and CA. They want to know more about his Model 100 experience.

A PARTNER AGAINST CRIME. Here's essentially what McGough tells those interested in putting the Model 100 on the police beat:

- You're going to get more information, more easily prepared in less time and on less paper.
- The information is going to be more legible and it's also going to be machine readable. By virtue of its being machine readable, the opportunity is there to reduce redundant data entry (typing in information more than once) and the cost associated with this redundancy (having to pay a second or third person to type in that same information).
- Police officers are going to prefer to write police reports with a notebook-sized portable rather than with pen and paper.

Of course, there are other details, like the fact that McGough said his department maxed-out the Radio Shack Model 4 initially used to absorb all this information. Now patrol officers file reports — at the station and over the phone — into a Model 16.

MAKING CRIME PAY. The Police Portable Computer Project didn't set taxpayers back a bundle. It was a case where crime did pay. "We have a fund in which we put confiscated drug money," McGough explained. "The City Council can appropriate money from that fund for different police activities and did so with this project."

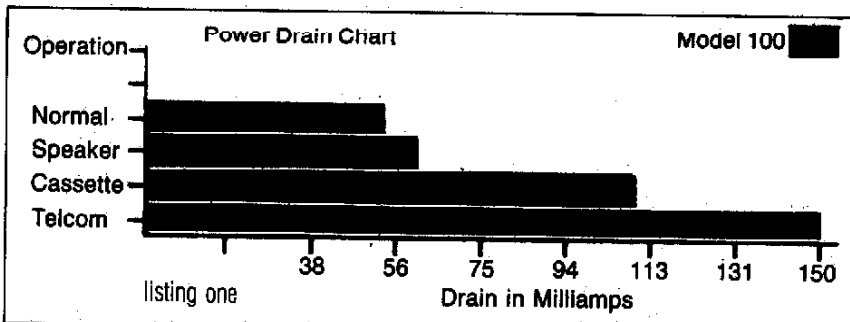
Using the confiscated money meant the police department didn't have to wait for the next fiscal year to receive money for the unbudgeted project. "It's difficult to budget breakthroughs in technology," McGough observed.

> "The bad guys don't have to write reports."

Is McGough worried that the bad guys might start using the Model 100 on the wrong side of the law? Hardly. "The bad guys don't have to write reports," he said wryly.

If you have to do reports, you can write McGough in care of the St. Petersburg Police Department, 1300 1st Ave. N., St. Petersburg, FL 33075. He says he'll be happy to answer any questions — but no bad guys, please.□

ENERGY SUPPLY (from page 35)



This is not true. The 3.6 volt nicad only provides standby power to the memory chips, and only when the AA batteries are low or removed.

TEST ENVIRONMENT. Only two Model 100s were tested. One was purchased mid-1983, the other early-1984. The meter used for measurements was a B+K Precision 2805 DMM. The room temperature was approximately 74 degrees Fahrenheit. (Temperature has a minimum effect on current requirements as does high humidity.)

The two test points were between the AA batteries and the main unit, and the nicad battery and the main unit. The tests performed, see chart, showed no significant variation between the two machines tested, enabling me to deduce this represents all Model 100s.

> A 1.3 milliamp power drain on the batteries when the 100 is supposedly off surprised me.

TRICKLE DRAIN. A 1.3 milliamp power drain on the batteries when the 100 is supposedly off surprised me. From now on, I'll be checking the switch more often to insure it's off.

There isn't much you can do about the other battery drainage. However, it's helpful to know the nicad battery is being charged and drawing power from the AAs all the time. If the nicad were to become discharged it'd affect the life of the AA batteries.

When the low-battery light comes on and the AAs are replaced, it might be a good idea to hook up the AC adaptor for the first hour or so to insure the nicad is charged up. Otherwise the AA batteries will have to do an initial charge of the nicad battery.

Almost twice the power is used during cassette operation and telephone dialing. The activation of small relays inside take as much current as the rest of the computer. Now I'll look for an AC outlet whenever I have lots of files to load or save.

MEMORY DRAIN INEFFECTUAL. I began testing, to discover all these neat things, but instead found out what impact our 8K memory modules have on battery life. Here again I was surprised and happy to learn the memory modules have no measureable effect.

With 3.5 digits of accuracy, on the milliamp scale I couldn't find any currency difference between the basic 8K Model 100 and one fully expanded to 32K. I not only tested my company's parts, but those of other manufacturers. No difference. There are, perhaps, differences in the microamp ranges, but who cares. A microamp is 1000 times smaller than a milliamp, unmeasurable on the milliamp scale.

CAD OF A BATTERY. What about the nicad? The current drain on the nicad for a basic 8K Model 100 is approximately 27 microamps. The nicad only is used when the Model 100 is switched off and the AAs are removed or low. With the AAs removed and the AC adaptor hooked up, there's no charging of the nicad unless the power switch is on.

The nicad is just for memory back up and only used when needed to keep the memory alive. The battery is rated at 50,000 microamp hours. At a 27 microamp load, I estimate 77 days of power in the nicad.

STANDBY. All the 8K memory modules we tested used less than 2 microamps each in standby mode. The standby mode is a feature of the CMOS RAM memory chip. Each memory chip can be put in standby condition and while in this mode, memory can't be accessed (read or write) by the computer. When the computer is turned off, standby mode is turned on.

> There are, perhaps, differences in the microamp ranges, but who cares. A microamp is 100 times smaller than a milliamp, unmeasurable on the milliamp scale.

Standby current is much less than operational current and the standby voltage can be as low as 2.5 volts. Operational voltage should be more than 4.5 volts for the RAM to read and write correctly.

WHEN EXPANDED. With the basic 8K machine expanded to 32K (three memory modules added) I measured less than 33 microamps which translates to more than 63 days of backed up power in the nicad battery. There are a lot of variables that enter into the battery life equation and this is just one test. However, even if the actual number of days varies, I find the numbers useful, if for nothing else than to help put things into perspective.

What's 2 microamps more when the rest of the system draws 27 microamps? I understand why Radio Shack says in the manual that the nicad will "retain all information for about 30 days . . . .", but I don't understand the next statement about 32K lasting for ". . . about 8 days."

The 30-days statement is all right, cut the number of days in half and play it safe. But 8 days for 32K? Radio Shack is either wrong, overly conservative, or someone wanted to leave the door open for a power hog RAM.

> How long to charge up the nicad? It depends on many things, but overnight wouldn't hurt.

FEELING LOW? If you think your nicad is low because your AA batteries have been dead for a week or have been removed, you have three choices:

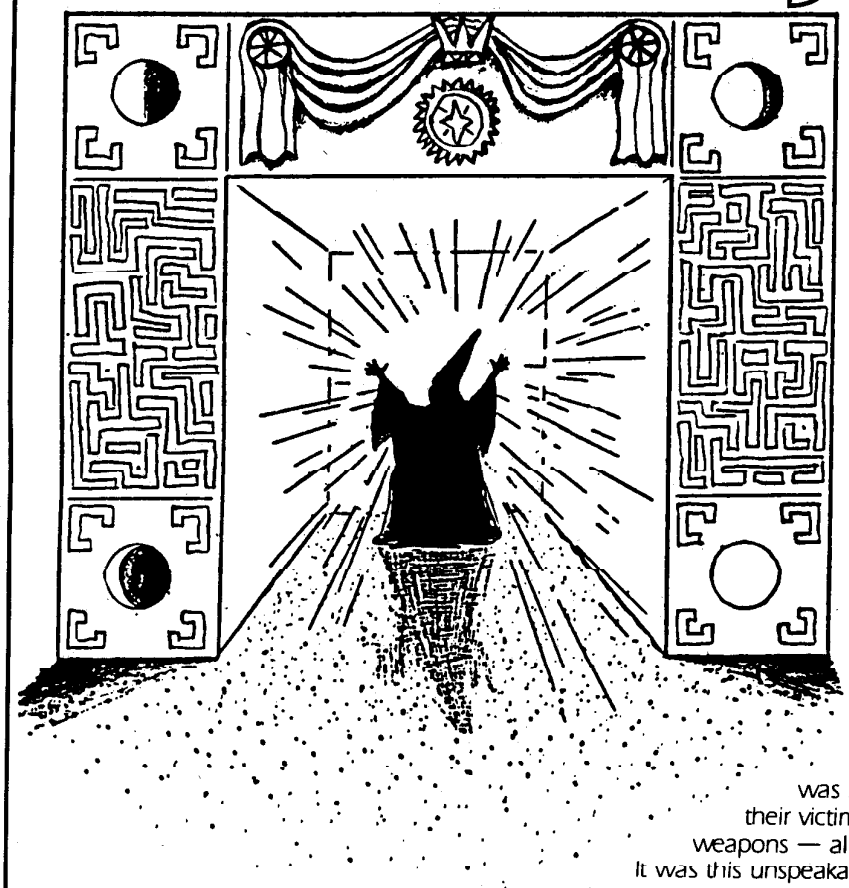
1. Install new AA batteries and let them charge up the nicad which may or may not drain much power;

2. Hook up the AC adaptor and turn the machine on. You also might want to disable the auto-power-off-time-out; or

3. Do both. Put new AA batteries in and hook up the AC adaptor, with or without the power switch on.

The power adaptor removes the load from the AA batteries which are charging the nicad. How long to charge up the nicad? It depends on many things, but overnight wouldn't hurt. □

PORTAL OF LIGHT



Long, long ago in a land far away, you were born (in a previous life) as the only child of King Gabrial, beloved ruler of Fortonnia. Your birth was viewed as a great threat to the forces of evil which lurked in the land.

The evil wizard Fondu personified these forces of evil, and he battled to undo the good works of King Gabrial, your father. During your childhood, you were watched by Fondu and his henchmen, who waited for their opportunity.

As you approached your thirteenth birthday, plans were laid by the evil ones to prevent you from ever assuming the throne. They could not kill you — your life force had already grown too strong ...

But they had at their disposal something far worse than death! The infamous and legendary mountain city of Labyrinthia was their domain. Hidden deep in the mountains of Fortonnia, no mortal had ever escaped from its walls.

Labyrinthia consisted of seemingly endless mazes, level upon level, going ever deeper into the mountain of evil. All but the first level of the city was inhabited by fearsome creatures who attacked mortals with no provocation.

The evil ones, with their warped sense of humor, found it amusing to give imprisoned mortals the impression there was some chance of escape. They provided their victims with sources of food, water, and weapons — all the time laughing.

It was this unspeakable fate which Fondu had in mind for you as he watched all of those years. And on your 13th birthday it happened ...

Step into the most unforgetable adventure you've ever played! Incredible 3-D viewport clearly shows the way, while your travels are meticulously mapped out on the left of your screen. Build your characters strength as he battles his way through the city, collecting treasures along the way with which you can buy food, water, and more powerful weapons. Each city has 250 levels, with no two cities the same. Save feature allows you to save the city you're in for continued play.

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SYSTEM REQUIREMENTS:
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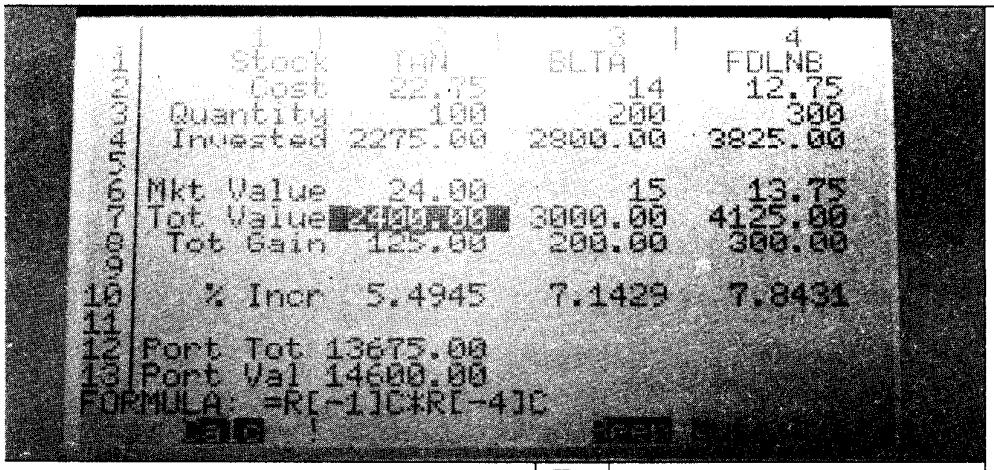
3 ON READER SERVICE CARD

MULTIPLAN PUTS PLENTY OF WHAT IF POWER INTO YOUR 100/200

By William T. Walters



Here the option command (F6) has been selected. The 15th line displays the formula. Line 16 lets you use the function keys to select automatic or manual recalculation and to beep or mute for errors.

Long, long ago, in a set of towers o'erlooking the vast domain of Tandy-land, a fair-haired, bespectacled young prince told a small band around him: "F'sure, pahdners, we can put Multiplan on the li'l ol' 100." Why, he said it as easily as if he were to merely slay another dragon!

And the people who lived in the high towers agreed that a true spreadsheet for the little computer would be a very big and very good idea. So they cheered, "Hooray, and please hurry!" Whereupon handsome Prince William the Gates flew, on Microsoft wings, back to his Pacific Northwest domain.

And the Great Wait began.

That was over two years ago, but patience is a virtue, and thankfully the wait is almost over. I have been using a sample of Microsoft's Multiplan on the Model 100 for over two months, and it is impressive.

For the 100, it consists of a separate 32K ROM which should be available from Radio Shack computer centers by March or April at a cost of $149.95.

The Tandy 200 comes with Multiplan already installed. Both versions are identical with the exception of the smaller display size on the 100.

Although, much has been written about Multiplan and various other spreadsheets, there isn't much that has been said about the powers and vitues of computerized spreadsheet planning for those who need it. Surprisingly enough, almost anyone can benefit by exploring various financial alternatives through a spreadsheet model. Granted, some exercises are trivial and could be solved faster with pencil, paper, and any four-function calculator. Others however, are more complex and to work through them more than one time is usually more than anyone can stand.

TAX FIGURING. Take income taxes for example. Which is best for you: filing jointly with two IRA's, filing singly with only one IRA, or both examples, with and without an IRA? I can't speak for anyone else, but I never worked through and examined various tax options before I had created a tax model in Multiplan. I also didn't keep up with my investments as thoroughly as I should have.

Now, with a model of my investments in a Multiplan spreadsheet, I have them with me wherever I go. And I keep the phone number of my broker handy too. No sense being unprepared.

The Model 100 version of Multiplan comes on a read only memory (ROM) circuit ready to be plugged into the bottom of your unit. Installation requires the user to insert the chip into the keyed socket (it will only fit one way) and enter a short BASIC program to cause Multiplan to execute:

```
10 CALL 63012
```

Stu Weinstock, Tandy buyer for the 100/200 says there are two more ways besides the above program: 1. use cursor at main menu to point to multiplan

It's a built-in feature on the Tandy 200 and a ROM snap-on for the Model 100. And it gives you lots of useful spreadsheet analysis capability.

file, and 2. perform a cold restart on the 100 to put MSPLAN on the menu as a built-in file.

The first worked like a charm. I was asked: File to Use?, and responded accordingly. I exited Multiplan back to my Multiplan file and pressed enter. Sure enough. Up came Multiplan with my spreadsheet ready to go.

Okay, time for full reset. Oops? Where is MSPLAN? Oh well, two out of three isn't bad. It's a shame it didn't work that way though, since the Portable Computer Support Group, and others, seems to have figured a way to do it. On the Tandy 200, Multiplan appears properly on the main menu as MSPLAN.

FIRING UP. When Multiplan is first executed, the screen blanks then displays a copyright notice and asks you to name a file in the lower left corner. You need to type in a name using up to six letters. The file type is automatically set to type CO which indicates that it is a machine language type file.

After answering with the filename, the screen will clear again and display four columns and seven rows (15 rows on the Tandy 200). Pressing LABEL will cause the commands that are associated with the function keys to overlay the last row of the display.

MULTIPLAN COMMANDS

Table One

Command key assignments:
BREAK — stops execution of current command.
LABEL — displays commands assigned to each function key.
PASTE — inserts one or more blank rows or columns.
PRINT — prints contents of LCD.
<SHIFT>+PRINT — allows printing of all or portion of worksheet.

function summary

```
ABS(n)                          AND(list)          ATAN(n)              AVERAGE(list)
COLUMN()                        COS(n)             COUNT(list)          EXP(n)
FALSE()                         IF(logical,Then value,Else value)
INDEX(area,subscripts)          INT(n)             ISERROR(value)       ISNA(value)
LN(n)                           LOG10(n)           LOOKUP(n,table)      MAX(list)
MIN(list)                       MOD(dividend,divisor)   NA()
NOT(logical)                    NPV(rate,list)     OR(list)             PI()
ROUND(n,digits)                 ROW()              SIGN(n)              SIN(n)
SQRT(n)                         STDEV(list)        SUM(list)            TAN(n)
TRUE()
```

Function key assignments:
<F1>EDIT — allows editing of the contents of current cell.
<F2>BLNK — replaces specified cells with blanks.
<F3>COPY — allows copying of cells, Right, Down and From.
<F4>FORM — alters width of all cells or formats cell or group of cells, Left, Right, Centered, Fixed number of decimals, General Format or Money (2 decimals with leading dollar sign).
<F5>NAME — named reference to cell or group of cells.
<F6>OPT — selects user options of automatic recalculate, manual recalculate, beep on errors, or no beep on errors.
<F7>TRAN — Transfer command to allow Loading or Saving of files to/from cassette or disk in normal or SYLK format.
<F8>MENU — saves worksheet in RAM and returns to main menu.

Table one has a complete listing of all commands with secondary options as well as all functions that are implemented.

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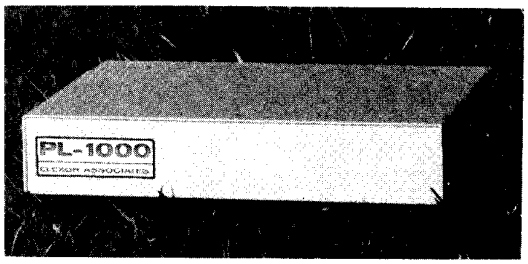

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MULTIPLAN

Since I had some Multiplan worksheets already built in my Model 4, I decided to test the capability of exchanging data between several machines.

On my Model 4 I executed Multiplan, loaded the worksheet, and saved it on disk as a special type of file called SYLK (SYmbolic LinK).

> Microsoft . . . lets unused elements occupy very little space.

This creates an ASCII file which can be sent or received over standard communications links, either directly thru the RS232 port with a null modem or by modem and the phone lines. As with any direct communications, it's extremely important that the same communications settings be used. Once you get over that the rest is fairly easy.

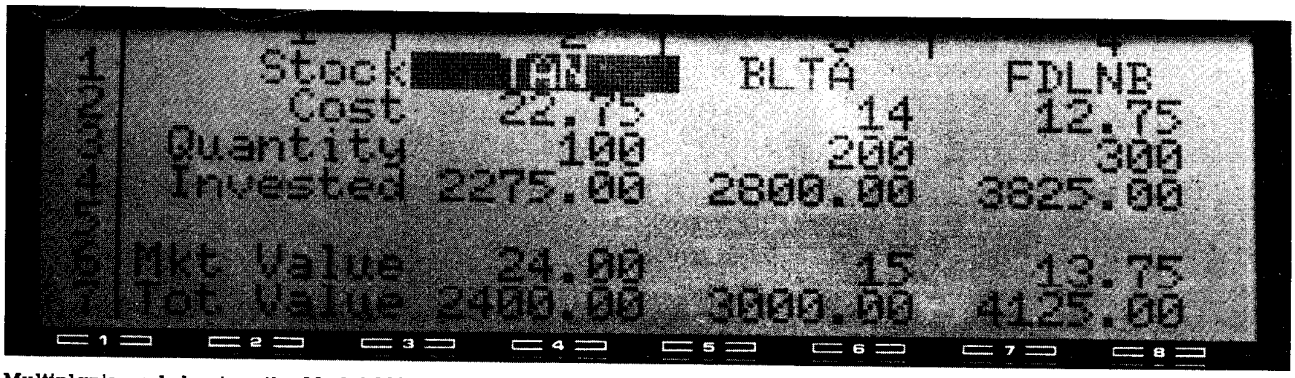
Table two has full instructions for linkage between Model II/12 or Model 4 and either the Tandy 200 or Model 100 computers.

> None of these omissions is critical, but it makes an otherwise excellent product simply a good one.

LIMITED SIZE. Both versions of Multiplan are restricted to 63 columns by 99 rows for an individual worksheet. But you'll never create a full 63-column by 99-line worksheet. There isn't enough memory in either machine to do it. In fact, 36-by-36 is about the practical limit in a Model 100 with no other files existing. If that worksheet has each element filled, there will be less than 500 bytes left.

The Tandy 200 will have even less capacity. Often though, each cell isn't used. We tend to spread the individual elements out to make the information more readable.

Microsoft has used that knowledge and lets unused elements occupy very little space. Just because you want to extend your worksheet to more than 36-by-36 (unless you are planning to fill every element) you probably won't be disappointed.



Multiplan's worksheet on the Model 100. The function key labels are not displayed.

Each version of Multiplan also provides a video capability through the optional Disk-Video interface (DVI). There are, however, some differences in the capability that is provided between the 100 and 200. As the photos illustrate, the Tandy 200 version of Multiplan will make full use of the video display.

If you are in 80-column mode, you will see a full 80 columns by 25 lines. Not so in the Model 100 version. It is restricted to 8 lines of 40 columns, no matter what the capability of the video display that is connected to it. That's a real disappointment but according to a spokesman at Microsoft, it's the best that could be done.

There are also elements of Multiplan that larger desktop machines take for granted. They don't make sense for a portable version so are not implemented. These are windows (pretty silly on an 8 x 40 LCD), reverse video borders, external linkage, sorting, and iterative solutions.

Some missing features which do matter are locking cells; capability to delete a cell, row, or column entirely; and the ability to print the worksheet formulas. None of these omissions is critical, but it makes an otherwise excellent product simply a good one.

SUBSTANTIAL VALUE. Multiplan, as implemented on the Model 100 and Tandy 200, provides a substantial value to the user who needs a good spreadsheet capability. There are shortcomings on both implementations. The Model 100 version is more restrictive due to its handling of the DVI.

It's impossible to load or save a worksheet to any device other than cassette or disk with the transfer command. One can't create a base worksheet, load it into Multiplan, modify it as needed, and cause it to be saved into working RAM under another name.

It is likewise impossible to load or save SYLK files to communications line. They only go to RAM. If a SYLK file can be saved to RAM, why not a standard worksheet file? And why can't SYLK files be saved to cassette or disk?

The capability to delete a cell or group of cells is the most glaring missing element. It can be worked around but it is inconvenient.

STRONG POINTS. The strong points lie in standard commands and functions that perform almost identically to the bigger Multiplans. If you have used Multiplan before, this will make you feel right at home. In fact, the only thing you will have to get used to is placing an equal sign before entering a formula. Otherwise, 100/200 Multiplan thinks you are entering text.

Table Two

Transmitting SYLK files between the Model 4 and Models 100/200 via RS232 port at 9600 baud.

MODEL 4	MODEL 100/200
1. Boot then load & execute Multiplan.	
2. Load in desired file: TL filename	
3. Set SYlk as transfer option: TOS	
4. Save file back to disk in SYLK format: TS filename/SLK (be sure to add /SLK for extension to avoid confusion)	
5. Exit Multiplan: QY	
6. At TRSDOS Ready type: SET *CL to COM/DVR ,<ENTER> SETCOM (BAUD=9600) <ENTER> COMM *CL <ENTER>	
	7 Connect 100/200 via RS 232 and null-modem cable
	8. Enter TELCOM and use STAT key to select proper baud rate: <F3>87E1E <ENTER>

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table two (continued)

9. Select TERM:
   <F4>
10. Select "Download" and enter filename desired to receive:
    <F2> filename <ENTER>

11. <CLEAR> <*>
    <CLEAR> <:>
    <CLEAR><5>
    <CLEAR><9>
    answer file to send question with filename/SLK that you had saved from Multiplan.
12. When sending is complete
    <CLEAR><5>
    <CLEAR><–>
    <CLEAR><5>
    <CLEAR><0>

13. Press <F2> to complete download
14. Exit TERM & TELCOM
15. Enter Multiplan
16. Load file with transfer load function, selecting SYLK for desired load format:
    <F7><F2><F3>filename <ENTER>

If an error occurs loading the file that was saved in the Model 100/200, exit Multiplan, enter the .DO file and remove any extra carriage returns at the beginning or end of the file. See sample SYLK file in listing 1.

For the Model II/12 user, simply follow the same general outline provided above, with the following steps replacing the appropriate Model 4 steps.

MODEL II/12

Steps 1-5 remain the same

6. At TRSDOS Ready:
   SETCOM A={9600,7,E,1}<ENTER>

Model II/12

7. Enter TERMINAL program (provided on original system diskette):
   TERMINAL <ENTER>
8. Load /SLK file previously saved:
   <G>filename /SLK

Now connect 100/200 per steps 7 thru 10

11. Transmit file from TERMINAL buffer to connected 100/200:
    <X><ENTER>

When transmission is complete close the Download on the 100/200 per step 13. You may ignore further instructions about closing the Model 4 file. The Model II/12 already accomplished it.

The documentation that comes with the package is very good and in the newer Microsoft style. Missing is information on how to get Multiplan to execute. But again, Stu Weinstock has said that it would be included in an addendum to the manual.

I'd rate the Multiplan option for the 100 and that built into the Tandy 200 a solid 8.5 on a 10-point scale. □

listing one

```
ID;PMP
F;DG4R9
B,Y14,X6
NN;NInvested;ER4
NN;NTot_Value;ER7
NN;NTot_Gain;ER8
NN;NPort_Tot;ER12
NN;NPort_Val;ER13
C;Y1;X1;K"Stock"
F;FG2R
C;X2;K"TAN"
F;FG2C
C;X3;K"BLTA"
F;FG2C
C;X4;K"FDLNB"
F;FG2C
C;X5;K"KRUE"
F;FG2C
C;X6;K"LG"
F;FG2C
C;Y2;X1;K"Cost"
F;FG2R
C;X2;K22.75
F;FG2R
C;X3;K14
C;X4;K12.75
C;X5;K13.125
C;X6;K21.5
C;Y3;X1;K"Quantity"
F;FG2R
C;X2;K100
F;FG2R
C;X3;K200
C;X4;K300
C;X5;K200
C;X6;K100
C;Y4;X1;K"Invested"
F;FG2R
C;X2;ER[-1]C*R[-2]C;D;K2275
F;FF2R
C;X3;S;R4;C2;K2800
F;FF2R
C;X4;S;K3825
F;FF2R
C;X5;S;K2625
F;FF2R
C;X6;S;K2150
F;FF2R
C;Y6;X1;K"Mkt Value"
F;FG2R
C;X2;K24
F;FF2R
C;X3;K15 C;X4;K13.75
C;X5;K13.625
C;X6;K23.5
C;Y7;X1;K"Tot Value"
F;FG2R
C;X2;ER[-1]C*R[-4]C;D;K2400
F;FF2R
C;X3;S;R7;K3000
F;FF2R
C;X4;S;K4125
F;FF2R
C;X5;S;K2725
F;FF2R
C;X6;S;K2350
F;FF2R
C,Y8,X1,K"Tot Gain"
F;FG2R
C;X2;ER[-1]C-R[-4]C;D;K125
F;FF2R
C,X3,S,R8,K200
F;FF2R
C;X4;S;K300
F;FF2R
C,X5,S,K100
F;FF2R
C;X6;S;K200
F;FF2R
C;Y10;X1;K"% Incr"
F;FG2R
C;X2;E((Tot_Gain)/Invested)*100;
  D;K5.4945054945055
F;FF4R
C;X3;S;R10;K7.1428571428571
F;FF4R
C;X4;S;K7.8431372549019
F;FF4R
C;X5;S;K3.8095238095238
F;FF4R
C;X6;S;K9.3023255813953
F;FF4R
C;Y12;X1;K"Port Tot"
F;FG2L
C;X2;ESUM(Invested);K13675
F;FF2R
C;Y13;X1;K"Port Val"
F;FG2L
C;X2;ESUM(Tot_Value);K14600
F;FF2R
C;Y14;X1;K"% Incr"
F;FG2L
C;X2;E((Port_Val-Port_Tot)/Port_Tot)*100;
  K6.7641681901279
F;FF4R
E
```

Currently an American Airlines pilot, Bill Walters was the buyer (project manager) at Tandy for the Model 100. As such he was closely involved with the development of the new Tandy 200 from conception to prototypical product. — Ed.

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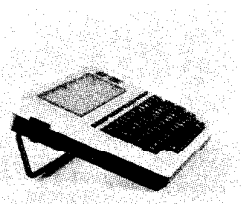

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COME ON, WANNA CUT SOME MACHINE LANGUAGE BYTES ON THE MODEL 100?

COBUG IS A SIMPLIFIED BASIC ASSEMBLER PROGRAM TO HELP YOU GET STARTED

BY RONALD F. BALONIS

Editor's Note: Due to space limitations, Cobug listing one has been cut. Portable 100/200 will make the listing available to its readers in two ways.

Readers can either obtain the listing by downloading the CompuServe public access file named COBUG.DO, or by sending a self-addressed stamped envelope to the magazine, attention COBUG Listing.

Do you remember when the only way to make your computer work was to toggle the program in, bit-by-bit and a byte at a time? When there was no ROM and very little RAM? I do, but only the memories of my successes remain. Machine language was all there was for many of us way back in 1976. Of course no one wants to go back to those days or ways, but machine language is still the root of all we do with computers.

Machine language programing is still the challenge it was. Now it's also a way to quench your desire for your computer to do old things faster and in new ways. It's a chance to experience that ultimate of programing highs, a working machine language program. And, as ever, to make small computers like the Model 100 act BIGGER.

Today's software makes software for us. With an assembler program, the task of machine language programing is easier and quicker. No longer do you have to toggle or poke hand-assembled and translated programs into memory. The machine can do it for you. And that's what the Cobug BASIC program is all about.

Cobug emulates the pencil, paper, and T-bug, debug, or toggle methods of translating and assembling of yesterday. It's not meant to be a "full-function" assembler, just a simple one for cutting machine-language bytes on the 100. It recognizes the 8085 microprocessor instructions listed in Cobug's instruction table, the assembler instructions (pseudo ops) of ORG, EXEC, BYTE, WORD, STRING, and decimal and ASCII constants.

The text editor is used to create a source program. Run Cobug to make the source program an object program in memory, then save it as a RAM or cassette file.

HOW IT WORKS. Cobug reads the source file, searches the opcode table for the object code and the symbol/label table for addresses. It then pokes the decimal code into the RAM to make the object code program. It is a two-pass assembler.

The first pass assigns values to the labels, tests for valid opcodes, and builds the symbol/label table. The second pass assembles the machine code to memory and tests the opcodes, labels, and constants. Syntax errors are flagged on both passes. And when both passes are error free, it tells you the START, END, and EXEC (execution) addresses for your program.

Cobug checks only for errors in syntax: opcode, operand, labels, constants, and pseudo ops. Logical errors are your responsibility. Lines with a syntax error are flagged by **ERR** during the assembly passes. But you must determine what the syntax error is. Use the text editor to fix it and run it through Cobug for another try. Proficiency comes with practice in this case. When you get through both passes without syntax errors the last screen tells you the program's addresses: START, END, and EXEC. Now either run it by calling the EXEC address, or save it as a RAM or CAS (cassette) file.

NOW TRY IT. Key in the program of listing one and make the DEMO.DO program (listing two) into a source text file, calling it DEMO.DO. Then assemble it, to see how Cobug works and also test it for errors at the same time.

First you must reserve memory for the object program that Cobug will make. Reserve memory by entering in BASIC: CLEAR 100, MAXRAM-960 (maximum memory available in RAM). That makes HIMEM (highest memory available) equal to 62,000. Run Cobug after a few seconds of initialization, it prompts for output on LCD, CRT, or LPT, and then, for the name of source file. With a source file on cassette, enter CAS:FILENAME or on disk, enter 0:FILENAME. If it's in RAM, enter just the filename. Or exit to the menu by pressing ENTER at the prompt.

The assembler will make the first pass and flag lines with a syntax error in them. If there are any errors, it will not go to the second pass. They must be found and fixed; then you are ready to try again. If the source is on cassette, be sure to rewind it for the second pass. When both passes are error free, the final screen tells you the START, END, and EXEC addresses for the object program. Save it with the SAVEM command or run it by entering CALL nnnn (where nnnn is the execution address).

If Cobug tells you the object program addresses, enter CALL nnnn, to see the DEMO program work. Otherwise check your program against listing one for an error. If DEMO doesn't work, check your object against listing three, the DEMO's object code.

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what you want. With high-level computer languages the terms and syntax are ours. With machine language you must tell the computer what to do using the terms and syntax of the language of its processor. If you want machine language to work for you, you have to work with it.

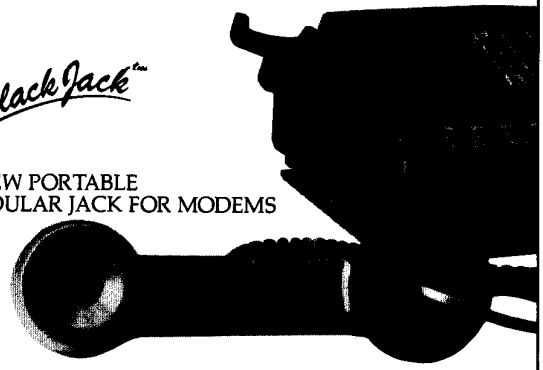
Model 100 machine language programers are lucky. The 100's processor is an 85C85 with an instruction set that is a subset of both the 8080 and the Z80. Software for reference to learn from is everywhere. Most all of the old software concepts and techniques are new again. You can learn from those that worked ... and those that didn't. For more on the 8085 instruction, read Mnemonic Powers, page 170, 80 Micro, January, 1984.

And the 100's ROM is a 32K library of subroutines just waiting for use. Here's a list of some sources of Model 100 ROM information: Model 100 ROM Functions, Radio Shack (RS) 700-2245; TRS-80 Microcomputer News, November, 1983; Inside the 100, 80 Micro, December, 1983; Tandy Talk, Portable 100, January, 1984; and the Model 100 Technical Reference Manual, RS 26-3810.

With machine language program-

listing two. demo.do program

```
:++MICROASSEMBLER DEMO++
        ORG   #62000
:MODEL 100 SUBROUTINES
CLS     EQUAL #16945
POSIT   EQUAL #17020
DISPLY  EQUAL #10161

: H=COL(1-40) & L=ROW(1-8)
BEEP    EQUAL #16937
CHGET   EQUAL #4811
:

START   CALL  CLS
        LD    HL,MSG1
        CALL  PRINT@
        LD    HL,MSG2
        CALL  PRINT@
        LD    HL,MSG3
        CALL  PRINT@

:SET CURSOR TO COL=11 ROW=7
KEYIN   LD    HL,#2823
        CALL  POSIT
        CALL  CHGET
        CP    $1
        CALL  Z,BEEP
        CP    $2
        RET   Z
        JP    KEYIN

PRINT@  LD    E,(HL)
        INC   HL
        LD    D,(HL)
        PUSH  HL
        EX    DE,HL
        CALL  POSIT
        POP   HL
        INC   HL
        CALL  DISPLY
        RET

:---MESSAGES & CURSOR POS.
: = COL(1-40)*256ROW(1-8)
: COL=5 ROW=1 .

MSG1    WORD    #2561
        STRING $!MICRO
        STRING $ASSEMBLER
        STRING $ DEMO+
```

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```
            BYTE    #0
: COL=4 ROW=3
MSG2        WORD    #1027

            STRING $ENTER
            STRING $<1> BEEP
            BYTE    #0
: COL=10 ROW=5

MSG3        WORD    #2565
            STRING $<2> GO BACK
            STRING $ TO BASIC

            BYTE    #0
            EXEC    START
```

listing three. document object code

```
62000                ORGNN    #62000
62000 CLS            EQUALNN  #16945
62000 POSIT          EQUALNN  #17020
62000 DISPLY         EQUALNN  #10161
62000 BEEP           EQUALNN  #16937
62000 CHGET          EQUALNN  #4811
62000 205  49  66 START  CALLNN
62003  33 103 242        LDHLNN
```

ing, bytes of data are manipulated with the processor's instructions: input, output, load, add or subtract, jump, call, and logical operations. You must, in effect, think like the processor. Cobug's instruction table uses the mnemonic notation of the dominant Z-80.

The instructions are read from right to left. For example, LD A,B means load register B into register A. Movement, when an instruction requires it, is always right to left. Machine language is all about moving and operating on bytes of data.

Along with the 80C85 processor instructions, there are assembler instructions in the source program to tell the assembler what to do where and when, and which is what. Cobug's instruction table lists the standard 8085 instructions in Z80 mnemonics, three undocumented 8085 instructions, and six assembler instructions (pseudo ops 255 in all).

There are ten known undocumented 8085 instructions (The Secret Life of the 8085, 80 Micro, September, 1980). But Cobug's instruction table includes only four of the more useful ones: LD HL,(DE) for "load memory pointed by DE into HL;" RHLR for "rotate HL right,

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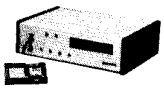

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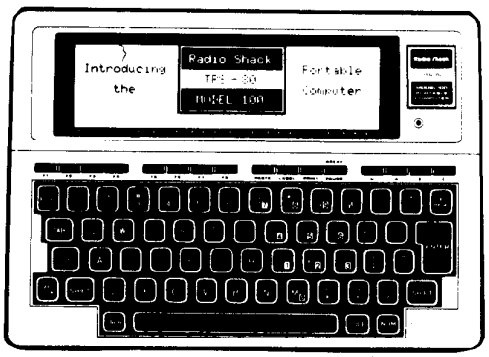

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through carry;" RDEL for "rotate DE left, through carry;" and SUB HL,BC for "subtract BC from HL."

FIRST INSTRUCTION. The assembler instructions (pseudo ops) recognized by Cobug are: ORG #nnnn — the first instruction in the source program — sets the memory location of the start of object program in memory. The decimal address in memory is #nnnnn. The value must be less than 63,960 for non-disk, less than 58,963 for disk, and the reserved RAM area of the machine. For machine language programs, RAM is reserved by entering in BASIC, CLEAR 100, MAXRAM-nnnn (nnnn is the number of bytes to reserve).

EXEC #nnnn or EXEC xxxxxx must be the last instruction of the source. It sets the execution address. Specify either a label or a decimal address. BYTE #nn lets you set the value of a memory location to a one-byte decimal value between zero and 255. It can be used to name a storage location or to set the value of a label to a constant.

WORD #nnnn lets you set the value of two consecutive bytes of memory to a decimal value between zero and 63,676. Use it for two-byte constants. STRING $xxxxxxx lets you set the byte

```
62006 205  89 242          CALLNN
62009  33 129 242          LDHLNN
62012 205  89 242          CALLNN
62015  33 146 242          LDHLNN
62018 205  89 242          CALLNN
62021  33   7  11 KEYIN    LDHLNN
62024 205 124  66          CALLNN
62027 205 203  18          CALLNN
62030 254  49              CPNN
62032 204  41  66          CALLZNN
62035 254  50              CPNN
62037 200                  RETZ
62038 195  69 242          JPNN
62041  94        PRINT@    LDE(HL)
62042  35                  INCHL
62043  86                  LDD(HL)
62044 229                  PUSHHL
62045 235                  EXDEHL
62046 205 124  66          CALLNN
62049 225                  POPHL
62050  35                  INCHL
62051 205 177  39          CALLNN'
62054 201                  RET
```


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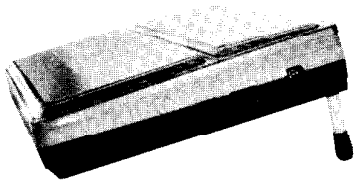

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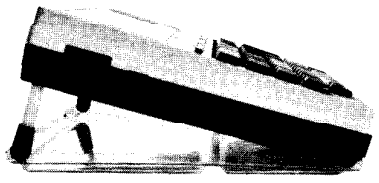

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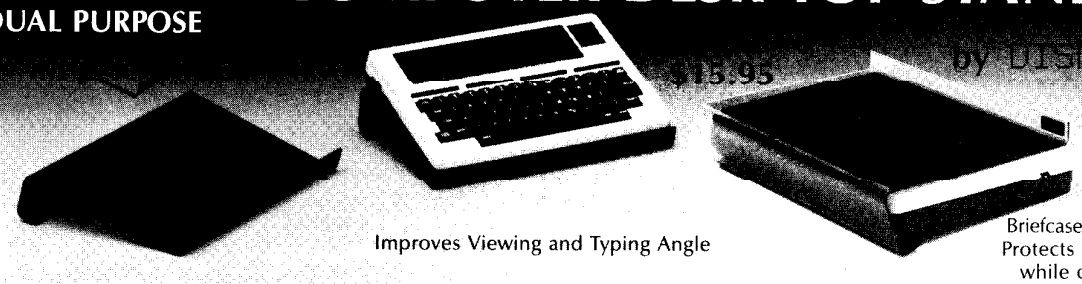

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```
62055    1   10        MSG1     WORDNN
62057   43       43      77 M     73 I
        67 C     82 R     79 O
62064   65 A     83 S     83 S     69 E
        77 M     66 B     76 L     69 E
        82 R
62073   32       68 D     69 E     77 M
        79 O     43       43

62080    0                          BYTENN
62081    3    4          MSG2      WORDNN
62083   69 E     78 N     84 T     69 E
        82 R     32
62089   60 <     49 1     62 >     32
        66 B     69 E     69 E     80 P

62097    0                          BYTENN
62098    5   10          MSG3      WORDNN
62100   60 <     50 2     62 >     32
        71 G     79 O     32       66 B
        65 A     67 C     75 K
62111   32       84 T     79 O     32
        66 B     65 A     83 S     73 I
        67 C
62120    0                          BYTENN
```

values of consecutive memory locations to the ASCII values of the text string. Use it to set up screen prompts, tables, or buffer areas in memory. EQU #nnnn lets you make a label equal to a value between 0 and 63,676 decimal. Use it to name the address for ROM subroutines, other machine language programs, or constants in your program.

A numeric constant is #nn. The decimal value is nn. A maximum value of 255 for a one-byte constant, and 65,535 for two-byte constants. $x is an ASCII constant with x being any of the ASCII characters. And a colon (:), as the first character of a source line, defines the line as a comment. Cobug skips it.

SOURCE PROGRAM. Cobug parses each line according to the position of the text in each line. Counting from left to right, the label field is from positions one to six. Any ASCII character other than a space in position one is a label.

The opcode/operand field extends from positions 8 to 30. The opcode spelling must exactly match that of table one, or a syntax error results. If the opcode requires an operand, it follows and can be a numeric constant

continued on page 62

Introducing ROM2 for the NEC 8201A

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Telecommuter 7.5
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By JOHN P. MELLO JR.

Marrying a Model 100 to a desktop computer is a common inclination of many owners of Tandy's dutiful lap portable. But such nuptials, rather than made in heaven, often seem concocted in hell. Recognizing this, Sigea Systems developed Telecommuter. The result: conjugal bliss between the 100 and 16-bit micros.

Telecommuter runs on the Tandy Models 2000, 1200, and 1000, and IBM and compatibles. It takes the critically acclaimed software in the 100, and builds on it to create a symbiotic delight.

The conceit behind Telecommuter doesn't originate with Sigea. It has been part of the informal theory of lap portables since they were conceived that they should be a subordinate extension of a micro.

PAID THE PRICE. Early portable makers ignored this approach and paid the price for it. The Epson HX-20 had no relationship to a micro and sold few units. The Kyocera machines (so named because they were manufactured by the Japanese firm working with software giant Microsoft) faced a similar problem. Sales of the NEC 8201A were dismal; the Olivetti M-10 never got out of the gate in the states; and while analysts like to pay homage to the success of the Model 100, the fact remains the computer hasn't sold the way Tandy expected it to sell.

The lessons of the past haven't been wasted on portable makers. A quick look at the current batch of lap computers shows the makers embracing the subordinate extension conceit by incorporating desktop operating systems into their portables.

The logic behind this approach is this: portables are bought as second computers; a user wants the operating system of his second computer to echo the system in his desktop.

However, the approach is an expedient solution to the problem. It's an approach assuming desktop operating systems are so good, they should be emulated. And it discourages a manufacturer from making a portable with innovative software in it.

INVISI-DOS. What Sigea Systems does with Telecommuter is recognize the importance of the "invisible operating system" incorporated into the Model 100 and creates an enhanced version to run on 16-bit machines. Instead of downsizing an arcane operating system to run on a portable, Sigea has upsized a friendly system to run on a micro.

Telecommuter's operating environment is the same as the 100's. The function keys have the same functions in Telecommuter (although new functions are added) as they do in the 100. Files are opened and closed the same way: move the cursor over to a file and press enter to enter the file; press function key eight (F8) to close the file and return to the main menu.

In text, cursor movements echo the 100's: left-right by single character and word; left-right to beginning or end of current line; up-down by line, screen, or to top or bottom of the file. An added move is up-down by paragraph.

> It has been part of the informal theory of lap portables since they were conceived that they should be a subordinate extension of a micro.

While you enter text in insert mode, in the Model 2000 version this feature can be toggled. As with the 100, characters can be deleted to the left and under the cursor, but you may also delete by word and to the end of a line.

BLOCK MOVES. Block moves are conducted by selecting text. However, once selected, text may also be saved as a separate file, appended to an existing file, or printed. Unlike the 100, though, text placed in the select buffer is lost once you exit from the current file.

All the search-and-replace features thirsted for by 100 owners are in Telecommuter: search for string, search for next occurrence of the string, replace string, global search-and-replace of string. And telecommutor will search for any ASCII character, including enter. (A spokesman at Sigea told me the program's latest version allows you to replace a search string with the contents of the paste buffer.)

Telecommuter uses dot commands to format documents, and supports multiple-line headers and footers; centering; left, right, top, and bottom margins; hanging indents; and file chaining. And a file may be previewed before it's printed. While in a text file, Telecommuter also offers some powerful file-handling commands including load another file at the current cursor position, extract text from another file and load it at the current cursor position, append current file to another file, and display a directory without leaving the current file.

TELCOM. Telecommuter's communications program also reflects the 100's. You may find a phone number at the press of a one function key and dial it at the press of another. (Records in Telecommuter's ADRS.DO file have the same syntax as the 100's, so auto-logon entries don't need to be rewritten.) Redialing a number is as easy as hitting enter.

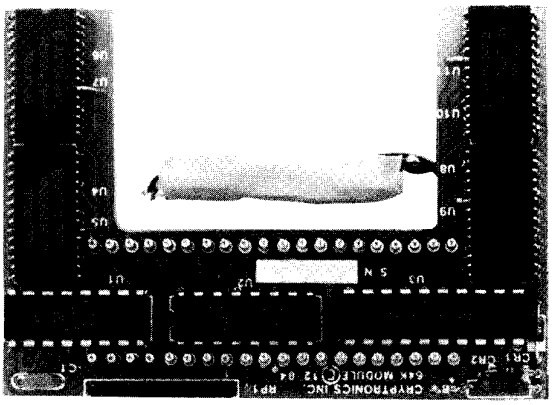
In terminal mode, you may break away from the system you're connected to, edit a file, and return to the system. (The latest version of Telecommuter displays the time, so you can track your time on line.)

A host mode lets you call up your micro from a remote location and upload and download files. When you return to your micro, you can use Telecommuter's fast file transfer utility to send or receive files at 9600 baud. (A null-

continued on page 68

64K Internal expansion RAM for Model 100

Expand your Model 100 up to 96K internal RAM



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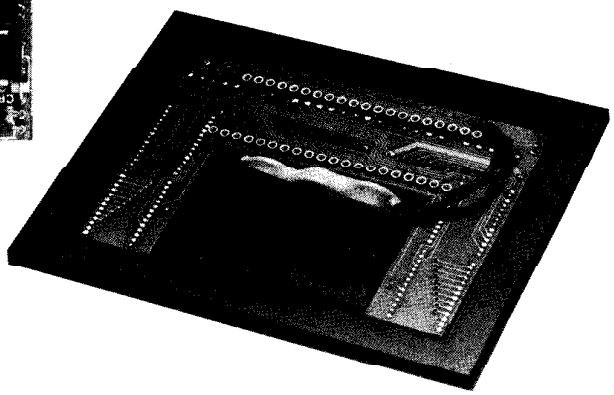

This expansion board uses low power CMOS static RAM to add 64K (or 32K) of internal memory to your Model 100. The board snaps into the compartment on the bottom of the Model 100 and is covered by the original cover. Since the ROM socket, located in the same compartment, is a valuable feature of your Model 100, the 64K board leaves it accessible. A disk/video interface can be connected without removing the board.

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CHIPMUNK AVAILABLE THROUGH PCSG

Holmes Engineering's Chipmunk now is available through Portable Computer Support Group (PCSG).

In a collaborative agreement that could happen only in this fast-paced industry, the two opposing teams have come together to bring 100 owners one disk drive. Apparently, PCSG has abandoned the development of its disk drive and will instead be marketing the Chipmunk, and designing software for it — two areas the group is better suited for than hardware design.

"The Chipmunk still will be manufactured by Holmes, which now is a subsidiary of American Technology Corporation (AMTEK) of Salt Lake City, UT," explained Mike Miller of AMTEX. Although AMTEK will finish up its pre-existing orders, he continued, new orders will be shipped out by PCSG.

To insure any rights to the foreign market, Miller told Portable 100/200: "AMTEK will hold onto rights for foreign sales. There's a reasonable market in Europe for the 100 and especially the Olivetti, so we can speculate sales (from there) will be coming in."

For background on the Holmes sale to AMTEK, former Holmes Engineering employee Bob Willard reported: "Holmes Engineering was purchased by AMTEK in September 1984 to allow AMTEK to expand from consumer electronics markets into the field of OEM (original equipment manufacturer) computer products. Holmes will contribute to the strength of AMTEK's engineering and manufacturing capabilities while achieving a significantly stronger financial position through a broader product and marketing base.

MACHINE LANGUAGE PROGRAMS EDIT & DEBUG

Tex Pro is almost like having a ROM chip," David Sumner, author of Micro Demon Inc's. newest software said.

Designed to enhance the 100's text editing capabilities, Sumner said Tex Pro's concept is new: "Although in machine language, it loads as if a BASIC program, interfacing itself with the operating system after the first run.... It allows you to scroll the display and redefine some of the (100's) keys."

Although Sumner was putting the final version of the documentation together when we talked, the software should be available from the Columbia, SC, company by the time this issue is published.

Here's another machine-language program for the 100... CBUG from Custom Software, Wellington, KS. Cited as being the "ultimate debugging utility for the 100," it requires less than 3K of RAM to operate and, promises the manufacturer, makes debugging assembly language programs a lot easier.

SIDECAR JOYRIDE FOR NEC 8401

Owners of the new NEC 8401 will be interested to hear that SideCar inventor, Larry Berg of Purple Computing, is being wooed by NEC.

According to Berg, officials from the Elk Grove, IL, company asked him if he'd like to work with their latest machine, adapting his original SideCar unit which was for the NEC 8201 to the NEC 8401: "I've signed a disclosure agreement and am now working up a 428K RAM disc for adaption. (They've) given me support equipment, schematics, and documentation..."

The new SideCar should be less expensive than the original, but also more sophisticated, Berg added.

Watch for SideCar 84 this Spring.

UP IN ARMS

For quick power and light portability, you can't beat A.R.M.S.' 5-ounced rechargeable battery for the Model 100.

"Attached to the 100 with velcro, the lightweight gives you portable power for nine hours. It fits right in the case the 100 comes in from Radio Shack," electrical designer Bob Ripley explained. The Power 100 Battery sells for $29.95 and payback, according to Ripley, is usually less than 6 months.

A.R.M.S. is located in Richmond, VA.

DATA-BASE MANAGMENT

Model 100 users no longer have to fool around with trying to devise their own data-base management systems, thanks to CBG Software, Livonia, MI. Their two-program system, said a CBG spokesman, is divided into two modules.

"The first module allows a 100 owner to define the elements of a data base and a screen through which data can be added, deleted, or changed. Under 5K, the module can be eliminated from the 100 once the data base is defined."

Module two, under 9K, is called the the Database Manager and is used to screen the data in module one.

If you find you frequently need data bases, but lack the time to create the programs, the CBG Database Management System will provide you with professional screens and reports with minimal effort. □

MASS STORAGE

PortaPac™ Z100

The PortaPac 100 is a solid state mass storage RAM disk for portable computers. Featuring its own operating system PortaPac 100 communicates through the RS232C. It is portable thanks to memory backed by an internal rechargeable battery. The unit will recharge or operate from an AC adapter (included), automobile cigarette lighter*, or extra external battery*.

The PortaPac 100 can transfer files or programs to micro computers including those using MSDOS or CP/M. Up to 32 files can be stored per 60K of RAM. The lesser memory models can be expanded to 240K.

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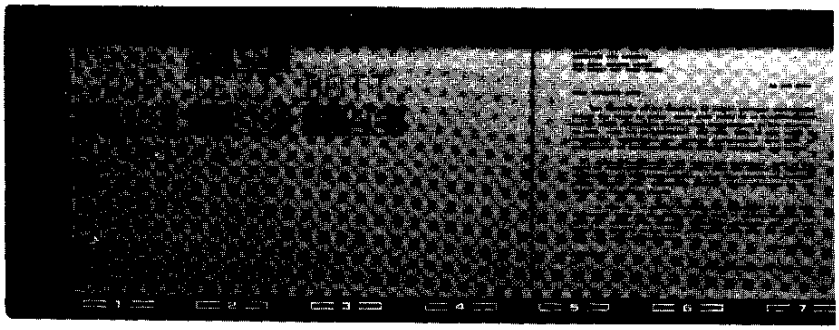

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(#nn), an ASCII constant ($x), or a label. A source line with a colon as its first character is considered a comment line and is skipped by the assembler.

The source file of a machine language program consists of combinations of labels, opcodes, and operands arranged sequentially. The general form of my programs is that of the DEMO. Listing two gives you the idea.

There are four sections. The first defines ROM subroutines, constants, and variables. Second is the mainline of the program. Third are the subroutines to make it go. Fourth are the program messages.

The 100's text editor and file operating system make the construction of source programs easy, just like writing. If you make a library file of the source routines that work for you, you need only to use edit and paste to put them into a new program.

This assembler is in BASIC, by nature a relatively slow but universal utility language. Time of course is the trade off when using BASIC for a high-level task such as this. So the assembler is slow by most measures, taking about one minute to assemble a 30-byte object program. That means over a half

instruction table

```
ADC   A,(HL)      CP    A       JP    M,NN
ADC   A,A         CP    B       JP    NC,NN
ADC   A,B         CP    C       JP    NN
ADC   A,C         CP    D       JP    NZ,NN
ADC   A,D         CP    E       JP    P,NN
ADC   A,E         CP    H       JP    PE,NN
ADC   A,H         CP    L       JP    PO,NN
ADC   A,L         CPL   A       JP    Z,NN
ADC   A,#10       CP    #11     LD    (BC),A
ADD   A,(HL)      DAA           LD    (DE),A
ADD   A,A         DEC   (HL)    LD    (DE),H
ADD   A,B         DEC   A       LD    (HL),A
ADD   A,C         DEC   B       LD    (HL),B
ADD   A,D         DEC   BC      LD    (HL),C
ADD   A,E         DEC   C       LD    (HL),D
ADD   A,H         DEC   D       LD    (HL),E
ADD   A,L         DEC   DE      LD    (HL),H
ADD   A,#20       DEC   E       LD    (HL),L
ADD   HL,BC       DEC   H       LD    (HL),N
ADD   HL,DE       DEC   HL      LD    (NN),A
ADD   HL,HL       DEC   L       LD    (NN),H
ADD   HL,SP       DEC   SP      LD    A,(BC)
AND   (HL)        DI            LD    A,(DE)
AND   A           EI            LD    A,(HL)
```

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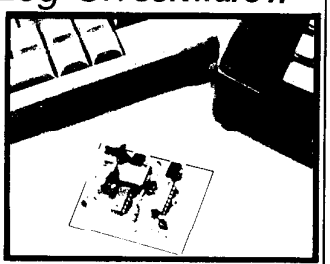

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```
  AND   B          * EQUAL  #0       LD    A,(NN)
  AND   C            EX     DE,HL    LD    A,A
  AND   D          * EXEC   #58000   LD    A,B

  AND   E            HALT            LD    A,C
  AND   H            IN     A,#230   LD    A,D
  AND   L            INC    (HL)     LD    A,E
  AND   #15          INC    A        LD    A,H
* BYTE  #0           INC    B        LD    A,L
  CALL  C,NN         INC    BC       LD    A,#200
  CALL  M,NN         INC    C        LD    B,(HL)
  CALL  NC,NN        INC    D        LD    B,A
  CALL  NN           INC    DE       LD    B,B
  CALL  NZ,NN        INC    E        LD    B,C
  CALL  P,NN         INC    H        LD    B,D
  CALL  PE,NN        INC    HL       LD    B,E
  CALL  PO,NN        INC    L        LD    B,H
  CALL  Z,NN         INC    SP       LD    B,L
  CCF                JP     (HL)     LD    B,#22
  CP    (HL)         JP     C,NN     LD    BC,NN

  NN= Symbol or label
  **= Undocumented Instructions
   *= Pseudo ops, Assembler Instructions
```

hour to assemble a 1K program.

A WALK THROUGH. Listing one has few comments. That's intentional so you won't have to skip over them when keying all 7,631 bytes of it. Follow the listing, and we'll walk through a description of how the program works.

The program consists of four sections. Initialization runs from lines zero to 90. The mainline of program uses lines 100 to 1,040. The subroutines are contained in lines 5,000 to 9,500. And the opcode table resides in lines 10,000 to 10,640. In the initialization, line 15 creates dimensions for the label/symbol table. The value of 150 was for a 1.3K program.

To minimize runtime memory requirements, adjust it to suit your program. Lines 40 to 55 make a table of the addresses of the opcode data statements. A binary search subroutine uses the table to find the opcode, the number of bytes in it, and its decimal value.

The program loops thru the mainline for each pass, with the variable PS doing the switching. The first pass just lists the assembly to the screen, tests the opcodes, and makes the label/symbol table, which sorts at the end of the first pass if there are no errors. The second pass lists to the screen, tests opcodes

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and labels, and pokes the object program into RAM.

In the mainline, for each pass the program loops on reading lines of the source file until the end-of-file (EOF) terminates it. Each source line gets tested: first for a comment line, a colon as the first character; next for a label, first character not a space; and then the right-hand portion, from the seventh position, for an instruction, assembler, or 80C85 opcode.

BINARY SEARCH. Basically this assembler normalizes the instruction to match the form in the opcode table. First it removes the operand labels and constants, replaces them with nn, and then removes the spaces and comma to compress it. A binary search of the opcode table retrieves the number of bytes for the instruction and its decimal code. If it finds no match, a syntax error flags the line on the assembly listing.

Lines 140 to 220 read a line of source, test for a comment line and a label, count, and put the labels in the label/symbol table. Lines 300 and 305 locate the positions of brackets and a comma in the instruction. Lines 310 to 330 steer the processing depending on its structure. In lines 350 to 460 the statement is

```
LD      C,(HL)          LD      L,C             RST     0
LD      C,A             LD      L,D             RST     16
LD      C,B             LD      L,E             RST     24
LD      C,C             LD      L,H             RST     32
LD      C,D             LD      L,L             RST     40
LD      C,E             LD      L,#10           RST     48
LD      C,H             LD      SP,HL           RST     56
LD      C,L             LD      SP,NN           RST     8
LD      C,#10           NOP                     SBC     A,(HL)
LD      D,(HL)          OR      A               SBC     A,A
LD      D,A             OR      B               SBC     A,B
LD      D,B             OR      C               SBC     A,C
LD      D,C             OR      D               SBC     A,D
LD      D,D             OR      E               SBC     A,E
LD      D,E           * ORG     #58000          SBC     A,H
LD      D,H             OR      H               SBC     A,L
LD      D,L             OR      L               SBC     A,#10
LD      D,#10           OR      #10             SCF
LD      DE,NN           OUT     A,#10           SIM
LD      E,(HL)          POP     AF            * STRING  $X
LD      E,A             POP     BC              SUB     (HL)
LD      E,B             POP     DE              SUB     A
LD      E,C             POP     HL              SUB     B
LD      E,D             PUSH    AF              SUB     C
```


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```
    LD      E,E             PUSH    BC              SUB     D
    LD      E,H             PUSH    DE              SUB     E
    LD      E,L             PUSH    HL              SUB     H

    LD      E,#13       **  RDEL                **  SUB     HL,BC
    LD      H,(HL)          RET                     SUB     L
    LD      H,A             RET     C               SUB     #10

    LD      H,B             RET     M           **  WORD    #1000
    LD      H,C             RET     NC              XOR     (HL)
    LD      H,D             RET     NZ              XOR     A

    LD      H,E             RET     P               XOR     B
    LD      H,H             RET     PE              XOR     C
    LD      H,L             RET     PO              XOR     D

**  LD      HL,(DE)         RET     Z               XOR     E
    LD      HL,(NN)     **  RHLR                    XOR     H
    LD      HL,NN           RIM                     XOR     L

    LD      H,#10           RLA                     XOR     #0
    LD      L,(HL)          RLCA
    LD      L,A             RRA     * Decimal Constant= #0
    LD      L,B             RRCA    * Ascii Constant  = $A

NN= Symbol or label
**= Undocumented Instructions
 *= Pseudo ops, Assembler Instructions
```

reassembled to match the form of the opcode table. Lines 500 to 520 remove the comma and spaces.

Lines 540 to 620 process the opcode. Lines 700 to 795 assemble the object code to memory on the second pass. Line 595 tests that the program counter (PC) is within MAXRAM and HIMEM. Lines 785 to 790 test that the EXEC address is within MAXRAM and HIMEM. And Lines 800 to 1,040 display the assembly listing for both passes.

The subroutines are: lines 5,000 to 5,100, the label/ symbol sort (sorting after the first pass if it was error free); lines 6,000 to 6,540, the label/symbol binary search routine; line 7,000 to 7,020 form an on error goto trap; and lines 9,000 to 9,500 are the opcode binary search routine.

It's a big program to type in. Errors will creep in, so to disable the on error goto trap, put an apostrophe after the colon in line 55. On error goto is a nice, useful command, but not when debugging a program.

HELP. If you need help or have a problem with Cobug, just drop me a line: Ronald F. Balonis, 118 Rice Street, Tuckville, PA 18708. I'd be pleased to assist. □

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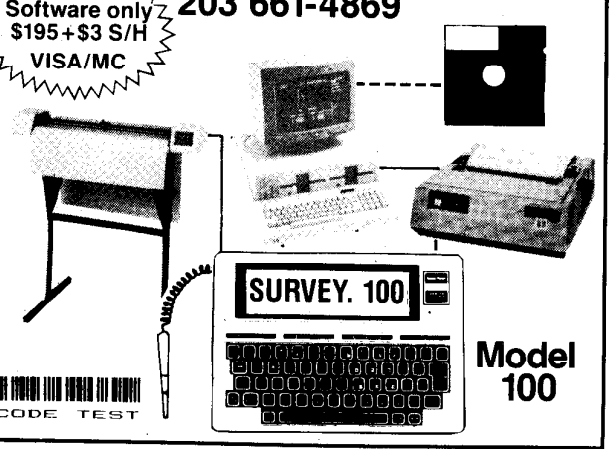

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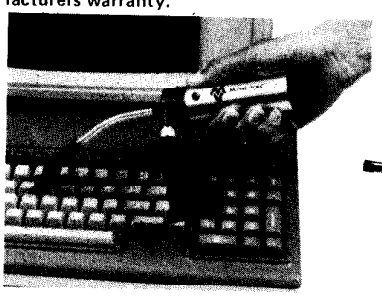

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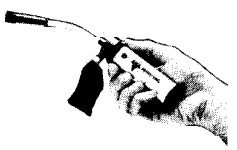

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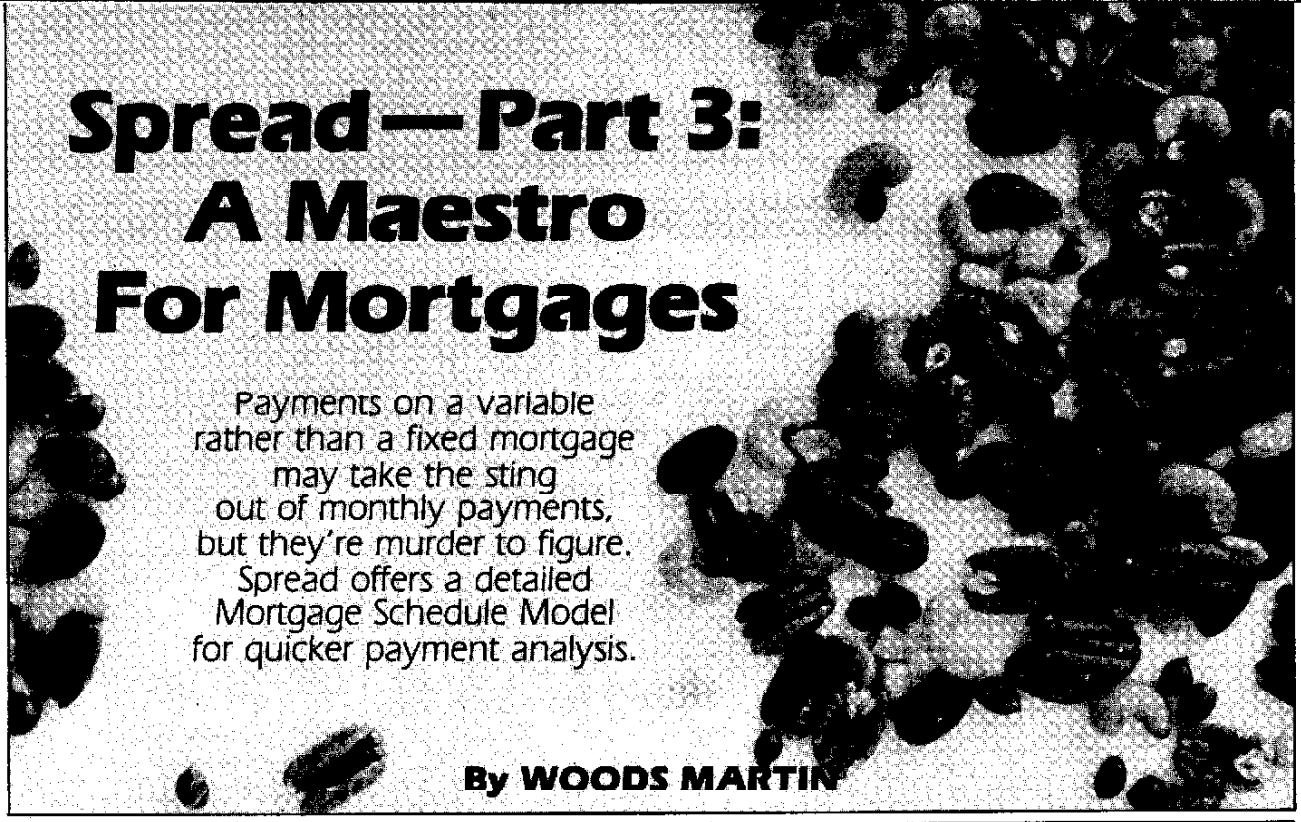
Spread—Part 3: A Maestro For Mortgages



Payments on a variable rather than a fixed mortgage may take the sting out of monthly payments, but they're murder to figure. Spread offers a detailed Mortgage Schedule Model for quicker payment analysis.

By WOODS MARTIN

Nuts to you! That's the slick new slogan of the Penurious Peanut Company (PPC). Last month we followed the company as it put the business into the care of the Model 100 and Spread. Since watching its pea nuts and cashews, PPC is rolling in the dough.

The money spent to have an ad agency develop this motto was added to Fixed G & A Expenses in the Profit and Loss Model we called >PNUT.DO. Profits were immediately reduced, but PPC expects the public relations blitz to more than make up for it.

I'm assuming you read about PPC in the December 1984 and February 1985 issues of Portable 100 and now are adept at manipulating data in Spread. If you're just joining us, you'll find the program listing in a copy of the December issue.

Another option is to download the program and files in Table 1 from one of the bulletin boards listed.

SPREADING OUT. As promised, this month we're going to push Spread close to its practical limits. Penurious Peanut in its newfound success is outgrowing its packing plant and needs to expand.

A lease or buy decision must be made. Having its own plant will look good on a balance sheet but the cash flow from selling mixed nuts must be able to support the mortgage payments. This is further complicated by today's market in which most lenders demand a variable interest rate.

What will the payments be at the current rate and how will they be affected if the rate changes next year? Let's design a Mortgage Schedule model which will answer those questions and print out a detailed payment analysis for each year of the loan — even if the interest rate changes.

SPEED PATCHES. Some practical matters. This model will run on a 24K machine using Spread unmodified but it'll be slow because of string garbage collection. With Spread saved in memory, MENU should show at least 7700 bytes free. There won't be room to save the model to memory so cassette or disk will have to be used.

To speed things up on 24K and a whole lot on 32K machines, I recommend merging of patch SPAT02.WM3 which was printed last month and is available on the bulletin boards. Transfer the patch into memory as a document file and then load Spread.

Type MERGE "SPAT02". When ready appears, type KILL "SPAT02.DO". You can leave your copy of Spread patched permanently because the options enabled may come in handy again.

RUN. Run Spread. If you did not install SPAT02, skip to the next paragraph, otherwise the folowing dialog will appear on the LCD screen:

Clear<3037>?

Type 4037 enter for 24K
Type 7037 enter for 32K

(Pressing enter alone would accept 3037 as default, these values can be increased if no DVI is used.)

cm<19>?

Type 7 enter for eight columns (H) including 0

(Enter alone would accept 19 or T as default.)

rm<20>?

Type 23 enter for 24 rows including 0

(Enter alone would accept 20 as default.)

Spread will display its column max, row max, and precision banner:

spr cm=H rm=23 p=D <ENTER or new cm?

Type H regardless of what is first displayed

precision: SorD p=

Type D to select double precision and then enter

VARIOUS DISPLAYS. If the Model 100 is connected to the Disk-Video Interface, an unpatched copy of Spread will now switch to the CRT monitor display. If patch SPAT01.WM3 (also printed last month) has been installed, CRT Y/N? will display to allow you to select the display mode.

The empty Spread model will display on the screen. (If the CRT is being used, change to 80-column display if needed with the /GW command.) If you don't need the practice in entering data and replicating, the model can be downloaded from one of the bulletin boards as SMMORT.DO. Readers also can obtain a copy of the listing by writing to Portable 100's Technical Editor, Alan Zeichick.

RELATIONAL OPERATORS. We specified a one year loan to start in April of 1985. Note that interest, principal, escrow and total payment amounts for January through March are all zero. The formulas use the relational operators to decide if a month is valid or not.

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SPREAD THREE

Column D at the top shows the results of the initial calculation with the monthly interest rate, term in months, months elapsed since loan inception, balance of principal, and the principal and interest monthly payment.

We have set up the model with an empty row so enter H22. The table will print at the top of the paper.

To calculate the next year, just press ! again and go for another cup of coffee. When complete, note that the last payment was in March 1986 and that all the values after that date are zero.

BY TWOS. Again, this model is set up to sense that the loan has been paid off and to stop making payments. Go to A0 and enter /PP to print. This time, enter H23 when lower right is displayed. An ASCII 140 will be sent to your printer at the end which, if it is set for seven bit input as most are, will be interpreted as a form feed. This method of first using H22 as lower right followed by H23 will allow long term schedules to be neatly printed, two years per page.

When you've finished there are two ways to zero the model in order to process another loan. One is to simply clear the model (/SCY) and then reload it. Another is to set the principal amount at B1 to zero and recalculate with !. A zero principal will force all other values to zero.

Why not try a longer term loan, either one for Penurious or maybe your own mortgage. Each recalculation will add one more year until the loan is finally paid off. The interest rate can be changed before recalculating any year so the effect of a variable rate change can be displayed.

CHEAP SERVANT. I've been working on techniques to speed things up by reducing trips to the garbage collector but that's another story. If you need a spreadsheet program to handle models this complex on a daily basis, you should look at one of the commercial machine-language offerings. However, if you're a patient person, Spread will serve you well and cheaply. □

Editor's Note: This is the third and final installment of Wood's series on Spread, a spreadsheet written in Basic and refined over several months by members of the Model 100 Special Interest Group on CompuServe. The original program was written by Terry Dettman and appeared in Basic Computing. *This version of the program incorporates ideas from SIG members Don Hergert, Gary Bender, Chris Young, and Joel Hassel.*

Model 100 - NEC PC 8201A
Olivetti M10

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DEALERS INQUIRE

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modem cable for these transfers are included in the Telecommuter package by Sigea.)

MINOR PROBLEMS. While Telecommuter is a first rate program, it has several minor annoying features.

Its copy-protection scheme requires the original disk be in drive A when entering the program. Since the program loads into RAM, the disk can be removed after entering the program. If something is going to happen to the disk, it'll happen to it at this point. And if something happens to it, you're stuck. You can't get into the system with a backup disk in drive A.

Most important functions are handled within Telecommuter, but killing files and creating directories is easier done from DOS. Once you enter DOS, though, you have to reinsert the original Telecommuter disk to return to the program. This is awkward at best.

The program is slow in accessing ADRS.DO entries. If an entry is at the top of the file, it's found fast, but the farther down in the file the record is, the longer it takes Telecommuter to find it. (According to Sigea officials, however, access speed has been improved in the latest version of the program.)

DOCUMENTATION. Telecommuter's 222-page manual is clear and easy to understand. It includes a helpful applications section showing how to use the program in several useful ways. The program also includes on-line help should you forget a command.

Portable computer manufacturers would be wise to take note of Telecommuter. The program offers the best chance for lap-top to desk-top marital bliss I've seen to date.

NEC USER REJOICES OVER INTERNAL MODEM

TouchBase Modem
TouchBase Design
1447 S. Crest Drive
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213-277-1208
$129

By BOB RYDEEN

At the time my company was faced with making a decision about lap computers, the selection was limited to Radio Shack, NEC, and Epson products. The choice was difficult.

Because our needs were primarily text oriented, we believed the NEC 8201A, with its 64K RAM memory and 32 virtual RAM cartridges, would be our best choice. We felt that while the exclusivity of software for the TRS-80 Model 100 wouldn't be a problem with the NEC, the lack of a built-in modem would be. Thus the bottom line: the need for extensive text storage took precedence over the occasional requirement for a modem. The NEC, along with an Anchor Automation Mark VII for telecommunicating would do the job.

Then along came MCI mail and our requirement to contact both our offices and various data bases when out of town. The NECs were working flawlessly but their lack of an internal modem would soon take its toll.

ENTER TOUCHBASE. Recent issues of Portable 100 had been carrying advertisements for TouchBase Design which offered a 300-baud full-duplex, Bell 103 compatible internally mounted-powered modem for $99.95. It sounded too good to be true.

Calling the Los Angeles-based company confirmed the advertised $99.95 model, but also introduced a newer

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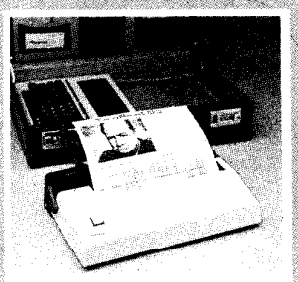

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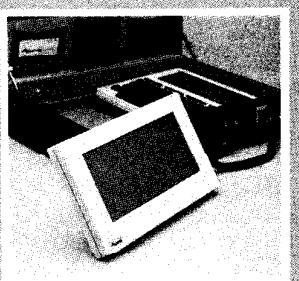

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one for $129.95. This was no bait-and-switch tactic. I still could choose the less expensive model, but opted for the improved version which included originate capabilities.

Because TouchBase Design doesn't accept plastic, a COD shipment was agreed upon. As promised my new TouchBase modem arrived several days later. Although the package lacked fancy wrappings, a quick perusal of the contents showed the only scrimping done was in marketing. The modem looked wonderful.

The board was compact and clean. Assembly quality was exceptional. The design of the color-coded miniconnectors was of particular note guaranteeing both ease of installation and electronic integrity. In addition, by making optional the use of a visual carrier detect-indication, the manufacturers had assured painless installation.

EASY INSTRUCTIONS. Documentation was the best I've seen and following it was a breeze. The many pictures and drawings in the text made foul ups almost impossible. For this review I was tempted to have my computer-hating, non-mechanical wife assemble it ... but I'm sure even she would have succeeded.

Installation took less than fifteen minutes. Hooking TouchBase to a modular phone and then to a data base was simple. Next step was to dial a number on the phone and, when you hear the tone, turn on the computer, hang up the handset, and accomplish whatever protocol the data base demands.

PROMPT SUPPORT. Experience dictates that the only fair way to ascertain how a company will treat a customer is to act like one. If you let on that you're calling because you're writing a review, obviously staff will bend over backwards to help you. (The reverse works too, if you ever get stuck.)

So in this case, I called TouchBase Design with a fictitious problem which enabled me to discover to what extent their knowledge and patience would stretch. My call was answered by the same person who had taken my original order. When I explained my problem, she told me the technicians weren't available, but she would have one get back to me. I was skeptical. cal.

My pessimism was shattered when Scott Stogel, a staff technician, returned my call at his company's expense only fifteen minutes later. He was courteous, knowledgeable, and patient. After unsuccessfully finishing a very thorough 20-minute trouble-shooting session, Scott suggested a couple more tests to try on my own.

He called me back within a half hour to see how I had made out, and to continue the session. At this point I called off the charade, feeling very satisfied by their support and a bit chagrined by my deception.

NEC HEAVEN. Unlike NEC's own unit, a renamed Anchor Automation Volksmodem, the TouchBase model fills a definite need with a high-quality product. As a plus TouchBase Design's policies make it easy to recommend them.

There's been a software package promised by them that'll be written in 100 percent Basic, feature an autodialer, and pulse dial system. There's been some question as to whether the program will be free, or cost a nominal $10 postpaid. No matter, by the time this review is published I will have received my software package which will turn my NEC into a machine able to emulate the Model 100's telecommunication capabilities. □

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I don't know when I've been so happy with a product and its manufacturer. Thanks to their efforts, NEC owners now have the best of all worlds. □

THINK TANK COMES TO THE MODEL 100

Idea 2.12
Traveling Software Inc.
11050 Fifth Avenue NE
Seattle, WA 98125
Size: 9K
$79.95

By JOHN P. MELLO JR.

Idea processors have been slapped with a bum rap lately, victims of their own hype. Product names like Think Tank suggest more than those programs deliver and writers have been quick to flagellate that point.

As many reviewers have observed, these programs make outlines, a simple task, but nonetheless a valuable one — something lost in the din of detraction.

Traveling Software's Idea gives the Model 100 outlining capability, a function I've found to be as valuable as the portable's built-in text program. It lets you have up to 250 ideas in 99 levels. For example, ideas in level one include What is it?, Numerology, and Function Keys; level two ideas include spreadsheet for ideas, 99 levels of ideas, key one and key two. You may elaborate on any idea on any level with up to six lines of text.

FUNCTION ACCESS. Idea lets you access 16 functions through the 100's function keys. In the first set of functions, you can edit an idea (F3), delete an idea (F4), find a string within a file or level (F6), go to the top of the file (F7), or return to the top of the program (F8).

To insert an idea, you place the cursor beside an existing idea and press function key (F2). Placing the cursor beside an idea numbered one and pressing F2, for example, will create a new idea one and make the old idea one idea two.

To expand an idea, you place the cursor beside the idea and press F1 or enter. This places you in a new level. The controlling idea (the idea in the previous level) is displayed in reverse video on line one of the 100's LCD. Move the cursor down one line and press F2. I found this awkward and felt the additional cursor move unnecessary. Once I entered the new level, pressing F2 should be sufficient to begin a new idea.

SECOND SET. You access the second set of functions by pressing F5. These functions let you select an idea (F2) for movement (F3) or copying (F4) of other parts of the outline; print (F6), with or without numbers, the entire file, a portion of the file, or the ideas without descriptive paragraphs; sort the file or a level of ideas (F7); or return to the first set of functions (F5) or to the top of the program (F8).

F1, expand-compress, remains the same in both sets of functions. When the key is labeled expand, pressing it will take you to the underlying level of ideas. When the key is labeled compress, pressing it will take you to the controlling level of ideas.

You can move the cursor in Idea by character (left or right arrow), idea (up and down arrow), beginning or ending of a line (shift plus left or right arrow), top or bottom of a screen (shift-up or down arrow), top or bottom of a level (control up or down arrow). I missed not being able to move the cursor left or right by word. And if an arrow key is held down, the cursor disappears until you remove your fingor.

SLOW BUT EASY. Like other Traveling Software programs, Idea is slow to update the LCD and unable to keep up with even a minimal typist like mysolf.

There's no word wrap when entering descriptive paragraphs. Initially, this is disconcerting, but I adjusted to it. The print function of the program, however, supports word wrap.

While I had a production version of the program for review, I didn't have a final version of the software's documentation. However, I found the program easy to use even with the preliminary user's guide.

LEFTOUT OPTIONS. One drawback of the program is its size. At 9K, it's a hefty item to have floating inside a 100.

Because Traveling tried to keep the program's size down, some options had to be left out. Traveling explains how to install these options — changing the output device, left-right margins, lines per page — by modifying the program. This came in handy, since I wanted my outlines in digital form, where I could upload them into a micro and flush them out in a word processor.

SECOND SKIN. While Idea suffers from the hardware constraints of the 100, I found it an invaluable tool. It has become as much a part of my 100 as Text and Telcom, like a second skin. □

LOTS OF YUKS, NO GUITARS

A New York City comic has decided that something needs to be done about the Information Age's lack of humor. As he says, "Man now has the power to become as bored as he wants to."

Comedy by Wire is an on-line newsletter created by Billiam Coronel that will cover "overlooked news, stupid product reviews, unknown industry trends, and superficial interviews with the seriously misinformed. But never any news about electric guitars."

The service (dubious as it may be) is available through the Source (public 153 direct at common level) and Delphi in the informania section under newsletter.

Take my computer — please...

PRODUCTION DELAYS KILL NEW LAP ENTRY

Kaypro cancelled at the tag end of last year its agreement with Mitsui and company to purchase that company's portable entry.

Down but not out, the Solana Beach manufacturer said it would go with its own in-house model that had been developed as a back-up to the Mitsui-developed product.

Problems with bundled software was the stated reason for the cancellation of the IBM-compatible lap computer. Delays would have pushed delivery from late summer of 1984 to the last quarter of 1985.

Rumors have it that Mitsui may also have signed an agreement to sell the same machine to Zenith Data Systems.

CLEAN INDUSTRY?

High-tech firms "discharge, dump and emit toxics" into the environment at an alarming rate, according to a recent study produced by the Task Force on High Tech Toxics and funded by the Clean Water Action Project, the AFL-CIO, and the Communications Workers of America.

Kenneth Geiser, an assistant professor of urban and environmental policy at Tufts University, released the report that cited ground water contamination in Burlington, MA, and a linkage to corrosion of town sewer lines as one example. "Unpermitted discharges and permit violations must be stopped. High-tech firms must be brought into compliance with ... regulations." □

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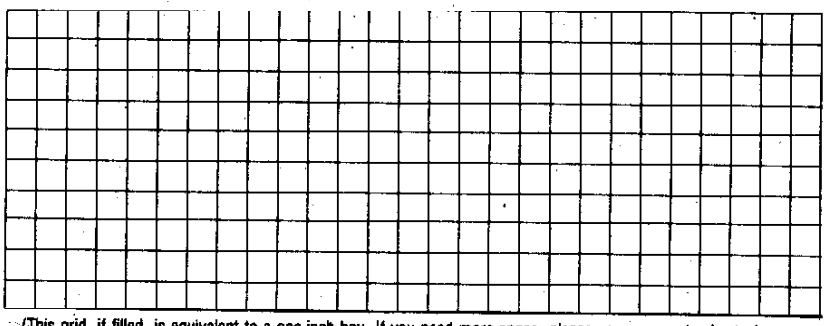

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"SKIP TH' CHAMPAGNE, MAC, JUS' GIMME THE 100"

We clipped an ad from a Wall Street Journal of a week ago that said: "Good things come to those who stay on The Hill. At the new Sheraton Grand, you'll be surrounded by good things. Marble from Italy. Silk from the Orient. And original works of art. But even more will come to you — personally. A welcoming glass of champagne. A robe as soft as lambs' wool. A cordial with your turndown service. Anything ... from barbells to a personal computer can be yours upon request. Now, all sorts of Grand things can come from a trip to Washington. For reservations call toll-free (800) 325-3535, the Sheraton Grand on Capitol Hill."

The art shows a Model 100 being served on a satin pillow by a guy in a black tie. For that, we give the Sheraton Grand four stars. We give you the toll-free res. number so you can try to stay there next time you're in town.

The basic room rate is $125 for two. The bottom add-on charge for your 100-in-the-room is $60 per day.

Land sakes, at those prices you could buy your own Model 100 in two days, and sleep on a park bench across from the White House — much closer to the action.

100s ASKING LOTS OF QUESTIONS

A University of Cincinnati planning professor uses Model 100s in the field surveying.

Sam Sherrill thinks his two-year experience should prove a boon to small businesses and non-profit organizations in inexpensive canvassing.

As assistant professor of planning, Sherrill has been involved with micro-based survey systems for hospitals, local Community Chest/United Appeal, and the Southwest Ohio Regional Transit Authority.

Sherrill says "eliminating the drudgery and errors in paper-based surveying and freeing interviewers from the mechanical part of the process so they can concentrate on getting a good interview" is the benefit.

The Model 100 was used in a ridership survey for a metropolitan transit company. Here the questionnaire was "filledout" on 100s in the field and the information fed back to a desktop micro via modem.

Results suggested the collection of data could be done far faster and cheaper with the 100s than with paper questionaires. Writing of reports was also easier.

Sherrill said that only shortcomings of taking a portable into the field were concerns expressed by interviewers: fear of damaging the computers, fear of losing the data, fear of being robbed, and discomfort in trying to use the lap-size computer on a moving city bus.

INFOWORLD GIVES P100/200 A PLUG

The People department in the December 24 issue of InfoWorld attributed a solution to that noisy key clatter:

"Hal Glatzer, a journalist who uses a NEC 8201 lap computer, thereby suffering the Heartbreak of Loud Key Clicks ... joined the ranks of writers who attended Comdex this year. He cornered us at a party to tell us that, thanks to an article by T. Allan Trick in the October issue of Portable 100 magazine, he had at long last found the solution to the nasty problem that irritated everyone sitting around him. At least the key click problem, that is."

He did. He did, indeed. Trick's solution was a neat trick at that: orthodontic rubber bands.

Thanks, InforWorld. Mankind does progress by littles, me thinks.

HOME COMPUTERS BIG X-MAS WINNERS

According to a study by Future Computing, "nearly half of all home computer purchases in 1984 (were made) during the Christmas shopping season."

FC's vice president Bill Ablondi says this upsurge resulted partly due to "dramatic changes in the home computer customer. (The) buyer is willing to spend more money. Sixty percent ... are willing to spend between $500 and $2,000 on a home computer."

This compares with 30% of pre-Christmas period purchases at a level of $500 or higher.

The change, opines Ablondi, is that more people are now perceiving the home computer as a "relevant item."

NEWSNET EXPANDS BUSINESS OFFERINGS

Reports covering 22 different industries are now available on NewsNet. Each week, the Investext series of electronic newsletters provides timely brokerage research reports on categories ranging from aerospace to utilities.

Reports include news bulletins, corporate analysis, and overviews prepared by professional analysts from leading brokerage houses.

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Business Research corporation publishes Investext each Monday in electronic form only.

DOT MATRIX SEX JUST ISN'T THE SAME SOMEHOW

There are — get this! — nearly 20 sexually explicit computer programs among 1984's 30-thousand titles. Up 30% from '83's totals.

Micro Information Publishing and Research, Inc. of Prior Lake, MN, makes the announcement. Dirty Old Man is an animated cartoon. Street Life is a program that lets you play pimp for several hookers while trying to avoid the police.

Thanks, but we'll pass.

continued on page 70

NEC 32K vs. SIDECAR 128K

Up To 192K Of Memory On-line For Your NEC PC-8201 Means Goodbye To Unreliable Cassettes, And Bulky Disk Drives.

The problem with most portables is utility gets sacrificed for portability. Only being able to take 32K of files with you is a real pain. Things like form letters, data bases, spreadsheet layouts, and other files have to either be left behind or you have to mess with external storage devices. The inconvenience of having to bring along cassette players, and disk drives (not to mention the hassle getting them to work) can make you wonder why you brought this "productivity tool" in the first place.

THE NEC SOLUTIONS

The NEC PC-8201 has two solutions for this problem. First it has the ability to house up to 64K of RAM inside the machine. Through a technique called "bank switching" you can access up to three different 32K "banks" of memory: two inside the computer and one in a plug-in cartridge. This is a big improvement. But the problem here is each additional 32K cartridge from NEC costs $395.

PURPLE'S SOLUTION

Many of you will remember us as the first company to manufacture an aftermarket 8K memory module for installation inside the computer. This product was so successful that other companies copied it. Our customers kept asking for more storage, and the result is our SideCar™. It uses a bank switching system similar to NEC's to let you access up to ***four additional banks of 32K, giving the NEC PC-8201 up to 192K of on-line memory!*** Now there really is a portable computer of amazing proportions.

THE PORTABLE SOLUTION

Now you can have gobs of data instantly available at the flick of a switch. The SideCar™ plugs into the NEC PC-8201 in the same slot the NEC 32K cartridge uses. The memory is powered by two standard size AA batteries when the computer is not in use. You can even change the batteries without losing the data. SideCar™ comes standard with 32K of memory, with up to three additional 32K modules available giving it a total capacity of 128K. They are simple plug-in options so you can buy a 32K version now and add memory as needed. The batteries will support the memory for up to one year.

NO RISK OFFER

We give you a 30 day satisfaction guarantee and a 1 year warranty on your SideCar™. If you are not completley satisfied for any reason, we will refund the entire amount of your purchase. If at any time during the one year warranty period your SideCar™ requires service, we will fix or replace it within 48 hours.

THE BOTTOM LINE

The basic 32K SideCar™ with 32K in bank 1, expandable to 128K, is $199 (Part #SC32). User installable 32K banks are $100 for bank 2 (Part #SCB2), and $110 each for bank 3 and 4 (Part #SCB34). If ordered together the banks are installed and tested at the factory.

Price includes shipping, and insurance in the continental USA. Your SideCar™ will be shipped the next business day via UPS surface freight. If you want 2nd day air service, just add $4. No extra charge for VISA/MasterCard, or American Express. For fastest delivery send certified checks or credit card. Calif. residents add 6% sales tax. Personal checks take 3 weeks to clear. Call for purchase order information.

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[1]Think Tank is a trademark of Living Videotext, Inc. [2]Framework is a trademark of Ashton-Tate, Inc.

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