

ANNUAL INDEX

PORTABLE 100

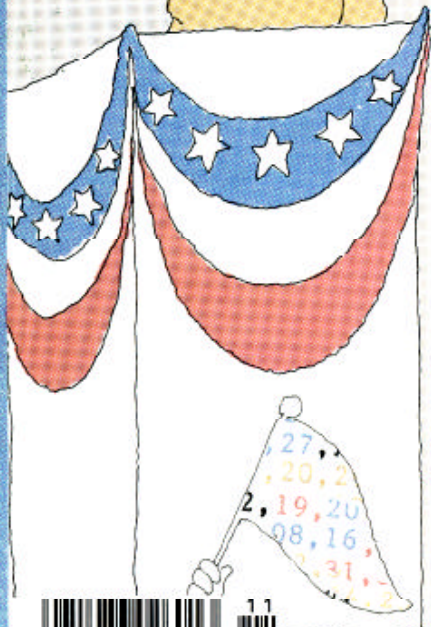
NOVEMBER
1984
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FOR 100 USERS



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100 to find out how often.



71486 02601
*Tandy Corporation



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 \$305.

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 charge 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 completely 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 \$349 (Part #SC32). User installable 32K banks are \$145 for bank 2 (Part #SCB2), and \$175 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 check take 3 weeks to clear. Call for purchase order information.

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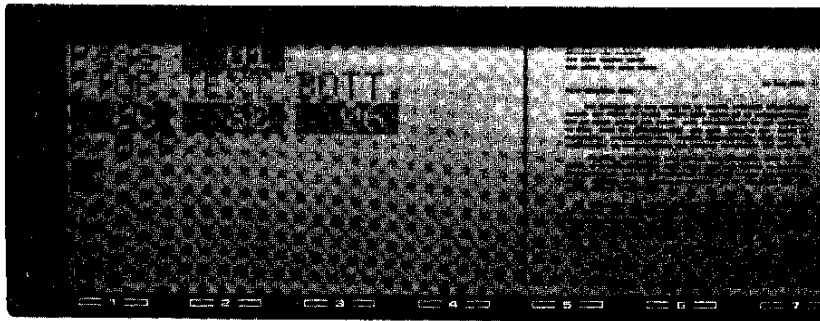
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Who says size doesn't count?

From the software ads around here, you might get the impression that your portable computer can store the knowledge of the universe. But it can't. That's why you need to know just how big the software is. Or how small.

Keep this in memory: *Text Power 100™* is 2,500 bytes long. *Eif-writer* (by Ceres Software) is 10,000 bytes long. *Write +* (by Portable Computer Support Group) is 3.5K. *The Traveling Writer™* (by Traveling Software) is 5000 bytes. When our competitors' ads don't tell you how big their programs are, they're trying to tell you something.

Size is just one advantage of our 100 percent machine language code. The other is speed. *Text Power 100™* formats faster than you can imagine. Faster than all of the competition's products working in parallel. Fast enough to format the Bible in 12 minutes. Right-justified.

Text Power 100™ features: *Page Plot.™* merge text, edit mode, label printing, page numbering, formatted preview mode, parameter/file memory, right justification, footers, headers, internal format controls, page length, top margin, bottom margin, left margin, right margin, double/single spacing, vertical center, horizontal center, page break display, new page command, full printer customization and more.

Text Power 100™ For the Mode 100 Olivetti M10 and NEC PC 9201A. \$49.95 plus \$2.00 shipping. Available exclusively from The Covington Group/310 Riverside Drive, Suite 916, New York City, NY 10025/212 678-0064, 864-1700.

TEXT POWER 100

When DATAPORT/CS introduced the first micro-size letter-quality computer printer, it was such a big hit even we wondered what we'd do for an encore.

Now we know.

And we are happy to present the enhanced version of this revolutionary letter-quality computer printer that we used to write the product announcement you're reading. The DataPort LQ retains the title of the lowest priced letter-quality printer in the world! You'll be happy to know the price remains a solid \$295.00.

Like the original printer, the DataPort LQ is still 8-1/2 by 11 inches in size and only two inches thick. As you'd expect, the enhanced model of the LQ is still made with industrial quality components. We give you a one-year unlimited warranty on every component inside the printer. The computer interface is Standard Parallel and Centronics Compatible. Maximum column width is 80 characters per line and printing speed is 15 characters-per-second. The printer uses standard 8-1/2 inch plain paper by any length.

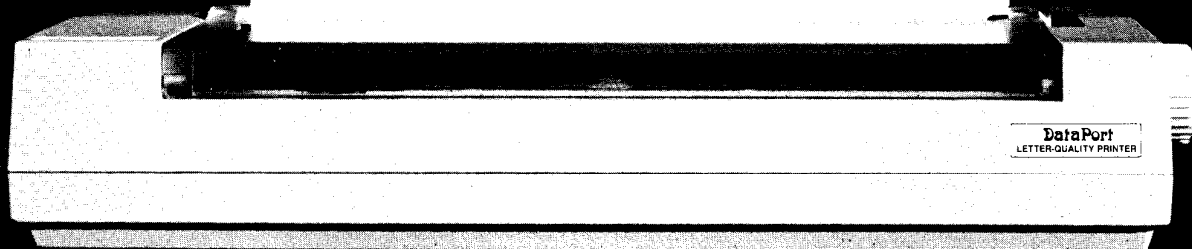
The DataPort LQ letter-quality printer is built with the same degree of performance and reliability found in much more expensive models. Printing is bidirectional, and the ASCII 96-character set is well suited for most personal or business needs. It can underline or BOLDFACE with ease --- and "understands" all other control codes sent from your computer. All this for just \$295.00.

There's even more to our encore. Now you can write in a taxi, correct it in a coffee shop, and print it on a plane. Here's the rest of the DATAPORT/CS collection for your consideration.

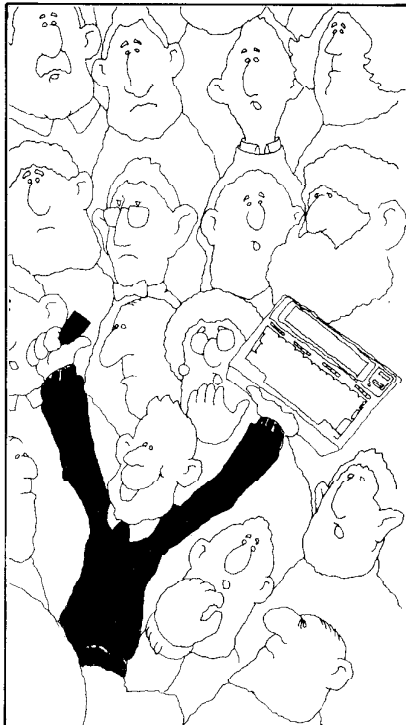
The DataPort DM is a full featured dot matrix battery-powered or 110 volt AC printer that can printout both bidirectionally and unidirectionally, on ordinary paper, and still fit into your briefcase, leaving room for your notebook-size computer. The DataPort DM can print out a full 80 column page of text, almost without a sound. The high quality printer head not only prints on ordinary paper with its ribbon cassette but it can print on thermal paper as well. The DataPort DM is notebook-size and zips through your text at 30 characters per second. The DataPort DM supports a Standard Parallel Centronics interface and is available for \$225.00.

The DataPort MG is a 40 column micro-size dot matrix printer with selectable column widths, upper and lower case characters and true bit mapping graphics capability. It can be battery powered and is supplied with a 110 volt AC adapter. The DataPort MG is truly pocket size---approximately 4 inches square---and of course, the interface is Standard Centronics Parallel. The DataPort MG uses plain paper and a standard ribbon and is offered at \$155.00.

DATAPORT/CS is the wholly-owned subsidiary of Central Stationers, Inc., founded thirty-four years ago in the San Francisco bay area. We invite you to call 415/ 233-2530 for ordering information, or write: DATAPORT/CS, 169 South First Street, Richmond, CA 94804 for a data packet on the products mentioned here. Shipping and insurance on all orders is an additional \$10.00 to any city in the United States.



(415) 233-2530



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By Ronald F. Balonis

Lotteries have become billion dollar revenue makers for states. With some number analysis from your 100, they might make some revenue for you, too.

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By Ronald F. Balonis

If you want a productive relationship with your Model 100, RAM management is a necessity. Here's a tool to make that job easier.

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56 SAVING DOOMED FILES AFTER A COLD START

By Richard J. Perry

When you're staring at a blank menu where once there was a treasury of RAM files, turn to Dumper.

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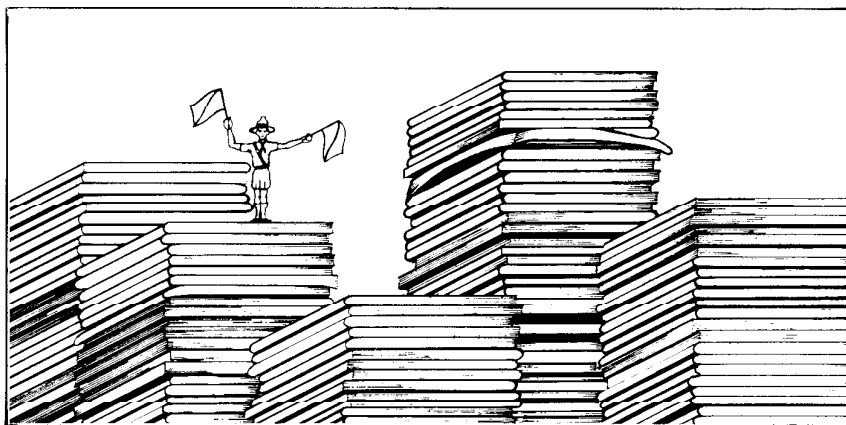
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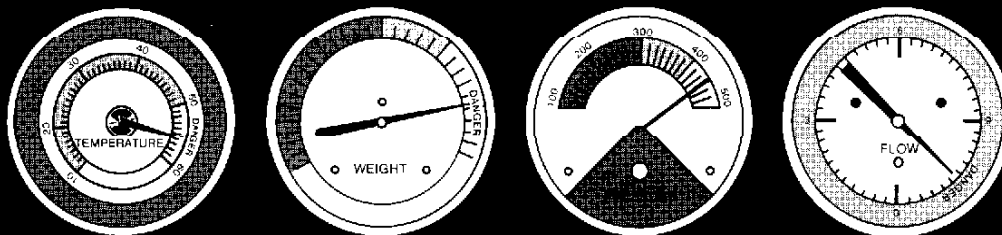
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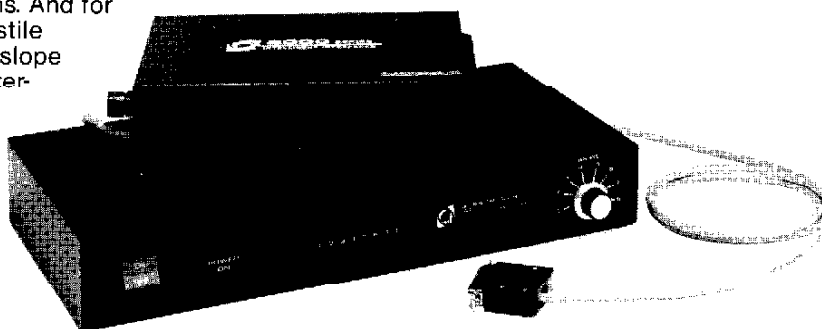
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PORTABLE 100

The magazine for
Model 100 users

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Stocking Stuffers For Your Portable 100

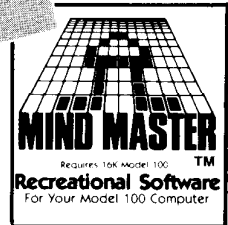
With you in mind,
Alpine Data Systems, Inc. presents three inspiring
Christmas gifts for the Model 100 owner.

Sky Raider



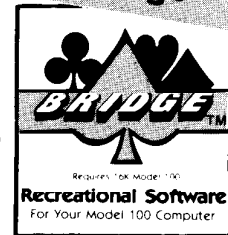
The red alert has sounded and the deadly Borons are closing in! Faster and faster, they seek your ship out — prepare or be eliminated! ASG-110 \$19.95

Mind Master



The Mind Master presents the ultimate test of your memory — but time is running out! Meet with the Master and prepare to have your wits challenged to the limit! ASG-115 \$19.95

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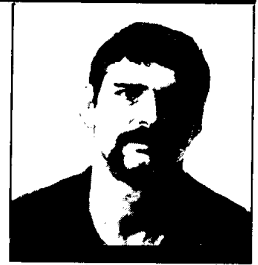
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PREVIEW

JOHN P. MELLO JR.



When I worked at another computer magazine, the technical editor responsible for titling articles did his best to make every head as cute as possible. I found the titles clever and couldn't understand the vociferous condemnation of them by our readers.

Then I tried to find something in the magazine's annual index. Ouch! Once amusing titles now made me grimace and curse. What I wanted was there but obscured behind wit thicker than industrial fog.

This month *Portable 100* publishes its index to its first year, September 1983 to August 1984. Cruising through the index, I found a few lapses into cuteness but for the most part, information value has been favored over entertainment value.

All input for the index — all 39K of it — was done on a Model 100. How? Let's start at the beginning.

I knew something like the index would gobble up hours of computer time and increase the pressure on people needing access to a desktop computer, so I was determined to divert pressure from the desktops. I devised a plan.

Using T-Base (reviewed last month in *Portable 100*), I set up a data base for the index in a 100. Then I enlisted our freelance viking, Bonnie "Born to Raise" Hellevig, to input information on year one's articles.

Not only did this remove a source of pressure on the office's desktop contingent, it allowed Bonnie to work on the project at home and at her leisure.

With the index data base, Bonnie found T-Base, in a 32K 100, stopped accepting input when the program's data file topped 16K. At that time, she'd bring in the Tandy pico, we'd dump its contents to a TRS-80 Model 4 using Disk+ (also reviewed last month in *Portable 100*) and off she'd go to fill up the 100 again.

When Bonnie finished her part of the project, I realized I had made two

errors in structuring the index.

First, I had made "month" an alpha field. This fouled up the order of the entries because T-Base automatically sorts them as they're entered. All the months were in alphabetical order! It seemed I would have to reenter all the months as numbers!

That wouldn't be the case, I thought, if I had a global search and replace. And I did have one — but not in the 100. I loaded the raw data files into a Tandy 2000 and used a program called Telecommuter from Sigea Systems to replace the alpha months with numeric ones.



A digression here about Telecommuter, made for the 2000 and IBM PC: It's a great program. It applies the elegance of the Model 100 to a larger system by using the 100's text and communication software as its kernel, then expanding on it. Essentially, it makes the 2000 a 100 with a 50K ROM.

Telecommuter solved only half the month problem. While the months had been changed to numbers, they were still out of order. And I discovered a second problem: The author field appeared before the year field in the data base.

Both problems were solved with T-Base's sort function. I loaded the index's data files back into the 100 and rearranged the fields with a sort. This automatically placed the months in the right order, killing two problems with one sort.

Now I faced two larger problems. How do I make the tripartite data base

one index? How do I edit a document exceeding 80 columns?

Using T-Base's report program, I created a report using only five of the index's six information fields. And instead of sending a report on each file to a printer, I sent the report out the 100's RS232 to the 2000. This gave me the files as they would have appeared on paper, only instead of on paper, they were on my 2000's CRT.

Once in the 2000, I appended the six reports together — three for the first five columns, three for the last one — and edited them.

That done, I printed two documents on 8.5-inch-by-11-inch paper — one document for the first five columns, one for the last column. I pasted the documents together to get a hard copy of the index.

The magentic form of the index was sent by modem to typesetting in two files and set like any other *Portable 100* article.

Was all this effort worth it? Couldn't dBase II have done the job easier? I don't know. I didn't have three days to learn dBase II and I didn't have a computer I could afford to tie up for two weeks with data-entry. All I know is the job got done and it wouldn't have without a 100.

With this issue, *Portable 100* is changing its lineup a bit. Professional demands on Bill Loudon, Jake Commander, and Bill Walters make them unable to continue writing for us. Jake and Bill Walters, however, have promised to pen an article for us occasionally.

We've also changed our approach to New Products. While still keeping you informed about the latest in the Model 100 world, we are making it a more lively forum, with more information about the personalities producing products for the 100 and tidbits about what's being developed for the 100. Let us know what you think of this new format. ◀



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Whether you're writing your novel in the hills of Texas, your memoirs while sailing to Antiqua or just plain tired of spending time under your desk looking for outlets, PRAIRIE POWER batteries make "Briefcase Computing" a reality.

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Left to Right: Prairie Power 5.5, 2.6, 8.
Front to Back: Tandy Model 100, Olivetti M10, NEC 8201A.

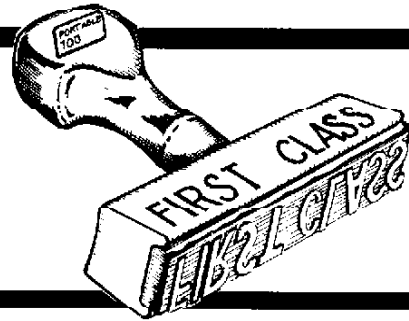
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MAIL 100



Editor's Note: In addition to letters from our readers, we also include in Mail.100 letters from CompuServe and The Source. Those message writers are identified by their CompuServe (CIS ID) and Source (STC ID) identification numbers.

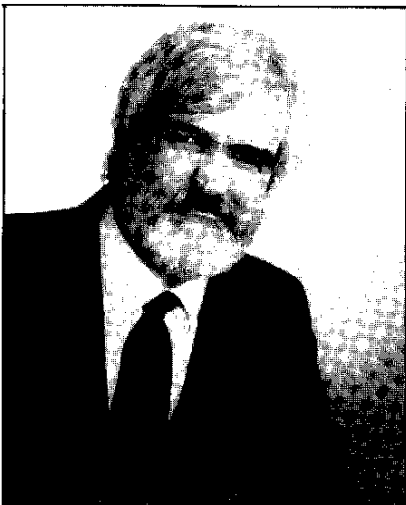
WHO'S BEHIND THE BEARD?

I was flipping through the July 1984 issue of *Portable 100* and came across your Mail.100 letter on Burl Ives. I did a double take. He looks exactly like Sam Redman from Portable Computer Support Group!

If the Model 100 fanatic from Raleigh was confused, then think about the confusion now. Could it be that Sam actually is Burl, or even (GASP!) moonlighting as Traveling Software's Traveling Professor? The possibilities of a trio boggle the mind.

Can't you see them getting together to sing the merits of the Model 100 in three-part harmony? I think that'd even be better than Box Car Willy. I don't know if they'd sell any records, but Model 100 sales might go up.

Another Model 100 Fanatic
College of Wooster
Wooster, OH



▶ As a service to our readers, we've published photos of Sam, Burl, and the Professor. We'd like to add that while our fanatical friend says he hails from Wooster, OH, his letter was postmarked Dallas, TX. The Portable Computer Support Group is located in Dallas.

—Eds.

TANDY BEEFED UP

Tandy has had a lot of attention from the press lately. There's been good news and bad news. Some of what has been written is true, but some is highly inaccurate. For purposes of background information, I'd like to give you our view of our activities, and our position in the computer marketplace.

Radio Shack built its reputation in consumer electronic goods . . . entertainment products. And that's still the primary business of our traditional full-line stores. That identity has overshadowed our strong presence in a very different arena.

For six years, we've been building a second marketing organization, geared to the distribution and support of business products: the Radio Shack Computer Centers and Telephone Centers. These outlets have their own product lines, business products management

team, computer merchandising group, dedicated technical support, customer service and repair functions.

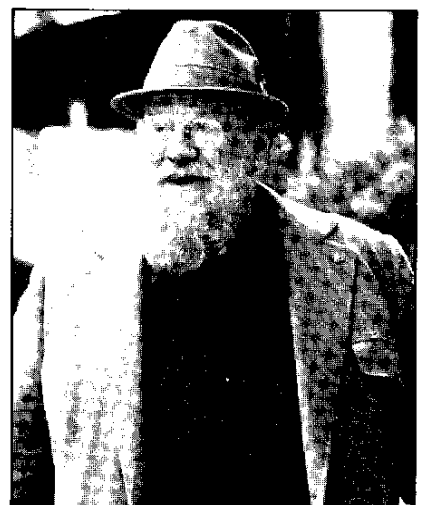
Also included is our Education Division which deals with the special needs of schools using computers. This separate distribution system is gaining visibility and building awareness that we're truly in the business of high technology.

And we know how to make that technology affordable, while maintaining high levels of quality.

We're always moving forward. We're into new markets, like cellular radio, digital audio, beta Hi-Fi. We've initiated an "Advanced Technology Series" to showcase the cream of our product crop. We've completed the structuring of our business products management group. You've seen some distinct changes in computer advertising . . . look for more.

Future computers will carry the Tandy brand name. We've about doubled our computer customer service staff. We've been beefing up repair services and marketing representative training. New products are in the chute, which will establish new standards of price-performance.

While the folks at Apple are producing extravaganzas and jazzy features, and IBM is protecting its Fortune 500



Will the real Burl Ives please stand up?

From left to right, Sam Redman, Traveling Professor, Burl Ives.

Micro Demon brought you three sensational programs...

Here's four more!



PRO AID, DASM & Music

PRO AID - Still our number one product. 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 - A full featured disassembler. You can easily follow the logic of a program that contains many jumps and calls. During the disassembly process, you can inquire about such things as contents of memory, and the keyword for a given token. The latest version has a split-screen feature that allows you to review the previous 8 lines of disassembly.

Music - Using a modified SOUND routine, it becomes possible to hold a tone as long as a key is held down. This makes it possible to turn the model 100 into a musical instrument.

1 ASM - A Powerful 8085 assembler. ASM contains all the features you expect in an assembler as well as several features that are specific to the model 100. For instance, there is a built-in macro library that will simplify writing code. Among these macros are relative branch instructions for programs intended to be called from BASIC. ASM comes with extensive documentation, including lots of information on the ROM. Example programs will help the novice get started with machine language programming. The perfect way to learn about machine language.

2 TEL PRO - A TELCOM enhancement. With TEL PRO you can remain connected to the phone line and still read the menu, kill files, read text files, upload BASIC programs (with .BA extension), download the screen, access the time, set an alarm, delete unwanted carriage returns from downloaded BASIC programs, and more. An excellent companion program for PRO AID.

3 Questn - Artificial Intelligence with a sense of humor. Ask this program any question, and it will respond with a relevant, often humorous reply. Philosophical and personal questions are the best. A nice program to show off your computer. Requires at least 24K memory. Questn comes with a list of questions for those who have trouble thinking of something to ask.

4 Napoleon - It's you against the computer. In this card game from England, each player gets a bid and the high bidder tries to make his contract. The computer makes a worthy opponent. You can choose the computer's style of play.

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Ed Juge
Director of Market Planning
Tandy Corporation

FUNKEY WRONG KEY

In reference to Jesse Bob Overholt's article, "Funkey Stuff", July 1984

issue of *Portable 100*, in line 51050, the PRINT@280 should read PRINT@315 to label "Menu" over the [8] on the screen.

Also, to allow the space bar to have the same effect as the right-arrow key, change two lines as follows:

```
140  CC$=CHR$(29)+CHR$(28)+
CHR$(32)+CHR$(30)+CHR$(31)+
CHR$(13)
330 PRINT@240,CL$;:ON CCGOSUB
400,500,500,600,700,800
```

The variable CC\$ now will contain the ASCII values of the four arrow keys, the enter key, and the space bar. The space bar now functions identically to the right-arrow key, just as in the normal menu.

Michael Shrout
Greeley, CO

DEFUNCT MAG SUBS MADE GOOD

Editor's Note: Many months ago, Portable 100 began negotiations with the publisher of Briefcase Portable. One of the terms on the table during those negotiations was Briefcase Portable subscribers would receive Portable 100 instead of BP. For a variety of reasons, those negotiations broke down. However, the publisher of Portable 100, James S. Povec, has offered to fulfill Briefcase Portable's subscription liability at no cost to the magazine's subscribers.

Your statesmanship in providing Briefcase Portable subscribers with a free subscription to your own magazine is commendable. As a businessman I also applaud your acumen. I hope it pays off for you.

Ed Scholz
Sitka, AK

TWO IDEAS TO CHAT OVERSEAS

Neither Western Union nor Radio Shack appears to realize what a powerful combination they have in the form of the Easylink service when used with the Model 100. The advertising for Easylink makes it sound like just another electronic mail service, but I'm finding it has a unique advantage — the interconnection to telex worldwide.

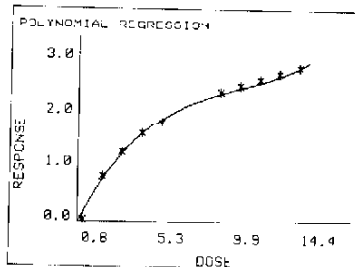
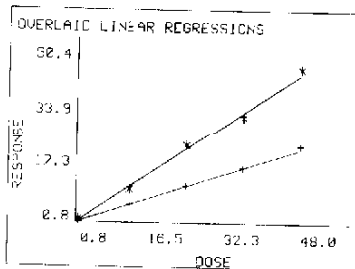
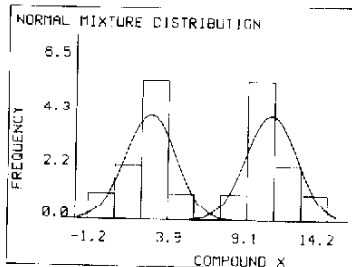
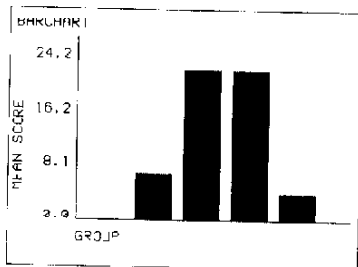
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Electronic mail makes sense for close-knit groups of people sending and receiving messages among themselves with similar equipment and within the United States. But for sending and receiving from differing pieces of equipment sent to different communications protocols it isn't worth the trouble. And because of different standards (Bell vs. CCITT) in telephone modems overseas, and poor quality phone lines outside the United States, most electronic mail won't work internationally.

Western Union's Easylink has the enormous advantage of compatibility with the long established and standardized worldwide telex system. It gives you a telex number (in addition to a mailbox number) so that people anywhere in the world can send you messages using their equipment. And you can send messages out to people who have telex equipment to receive on. This overcomes the problem of having to ensure you have the compatible protocols and communications. You simply use the old familiar telex number.

The Model 100 with its built-in modem is an ideal machine to use with Easylink. On the move you can dial in from anywhere there's a phone and pickup messages sent to you. There's no need to give people an itinerary of where you'll be. They can get you through the 100 plus Easylink.

It should be said, however, that Western Union people aren't well-informed or helpful to 100 owners. For starters, I was given the wrong terminal type coding for my identification code (the right code is "17").

I haven't received my first month's bill yet, so I don't know how expensive the service is... but it's easy.

Peter Samuel
Washington, DC

We operate a small import business and occasionally need to communicate with our suppliers overseas. In the past we'd send telex messages by Western Union. To own our own telex machine was too expensive for our low volume. Then we discovered that ITT offers a telex service to owners of personal computers and word processors. This is why we bought the Model 100. But it wasn't as easy as we thought.

The main problem was the 100 wouldn't do a line feed. After several calls to Radio Shack, nobody could offer a solution, so we gave up. The only way to get a line feed was to write our message immediately after the auto log-on procedure. This was a hassle!

We called the folks at Portable Computer Support Group and they were able to offer a simple solution. If you PEEK 63066 you'll find this value is 0. The solution is to POKE 63066,255. Now we can compose our message in

the Text file and upload from RAM. We get a line feed automatically every time we hit the enter key. It sure would have been a lot easier if Radio Shack had designed it like that in the beginning.

Anyway, I'm sure somewhere there's someone else in the same situation. A thank you to the people at Portable Computer Support Group.

Robert C. Kizer
Houston, TX

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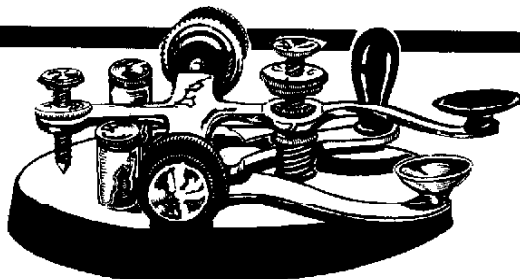
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THE WIRE



ON THE SOAPS

COMPUTER LITERACY COMES TO THE SOAPS

By Connie Passalacqua

The stereotype of a soap opera character is a middle-aged woman who cries incessantly to her neighbors in seemingly endless scenes about the philanderings of: her husband, son, daughter, dentist, or all of the above, using only a coffee mug as her prop to catch the tears.

No longer.

The Model 100 is the new *star* of a daytime soap, and not as a mere prop either.

The 100 is a working member of the cast of CBS' *Guiding Light*, and belongs to the newest member of the series, Jonathan Brooks. A 12-year-old college graduate, Jonathan has arrived in the town of Springfield armed with four microcomputers to help him search for his real parents.

His hacker vocabulary is a bit of a mystery to *Guiding Light's* largely computer illiterate audience, but those behind the scenes at the soap are computer enthusiasts who are determined to educate their viewers.

Says Producer Steve Evans, whose personal interest in the subject most directly led to Jonathan's storyline: "We knew Damion (Scheller, the actor who plays Jonathan). We were inspired by many of the computer stories we'd seen in movies lately. And we loved the notion of kids using computers to solve problems."

Evans said that starting a year ago, the show had used computers to "dress" several office sets. "I thought they would look more authentic if we had computers on display. Then we asked ourselves if we have them, why don't we use them? So we did, as parts of small storylines."

When the Jonathan storyline came along, Evans wrote to several companies seeking a promotional agreement. Apple responded. Jonathan's main computer, dubbed Herman, is two interconnected Apple IIIs, with a voice synthesizer. (The voice actually is supplied by an off-camera actor.) Jonathan's larger computer, Charlie, really is a Lisa. But his Model 100, named Gussie, will be the computer most prominent in his parental quest.

"We chose the Model 100 because it fits easily into several situations Jonathan will find himself. All of his work can't necessarily be done at home in his lab."

Gussie made her debut on *Guiding Light* rather humorously. Jonathan is a persnickety 12-year-old, given to lecturing on the necessity of a vegetarian diet and reading books only someone with his genius IQ can understand. In her first

scene, Gussie's display was shown in a camera close-up: "No junk food. No comic books. No baseball playing." Gussie, we're led to suspect, knows Jonathan quite well.

In reality, Gussie and the other computers are programmed by Roy Coons, a 17-year-old whiz kid who was hired especially by the shop for this storyline. The son of a staffer for *Guiding Light*, Evans says Coons was chosen because "I wanted someone who had the time to work with us and answer Damion's questions."

Damion, whose freckled nose crinkles when he's referred to in his publicity as a computer whiz, is actually more into acting than computers. Having just entered the ninth grade at a prestigious New York private school, this is his third soap role. He already is a veteran of Broadway, two movies, and dozens of commercials.

He does, however, like computers. "Usually when I play a role the character's interest becomes mine," he says. Hence, Damion's current leisure reading is the Apple III manual, the computer he's determined to learn to use first.

Considering the actor's quick learning abilities, which enable him to memorize many of Jonathan's lines, about which he says "some . . . are so technical I don't know what I'm saying," learning the technicalities of a Model 100 should be a snap. ◀

IN THE NEWSROOM

100 BECOMES CUB REPORTER FOR DAILY

By Jennifer Petkus

The city editor took a wild guess and pressed a button on the Radio Shack Model 100. Nothing happened. After several minutes he called the newspaper.

"No, we didn't get your story," he was told.

Undaunted, he tried again. He found, however, that the column he'd written at home on his day off had disappeared from the main menu. He was . . . annoyed.

He'd had no way of knowing, short of reading the instructions, that pressing down instead of up would not send his story and worse, would erase it from memory.

The *Colorado Springs Sun* is a 42,000-circulation daily paper in one of the fastest growing high-technology areas in the country. It was not only inevitable but necessary we enter the microcomputer revolution.

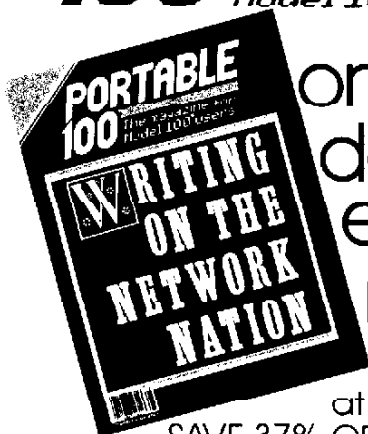
The *Sun* bought six 100s in January 1984, five with 16K and one with 24K. Of those, one is used by the associate editor to write columns, two by the sports department, two by the news staff, and the 24K machine is for general use.

continued on page 18

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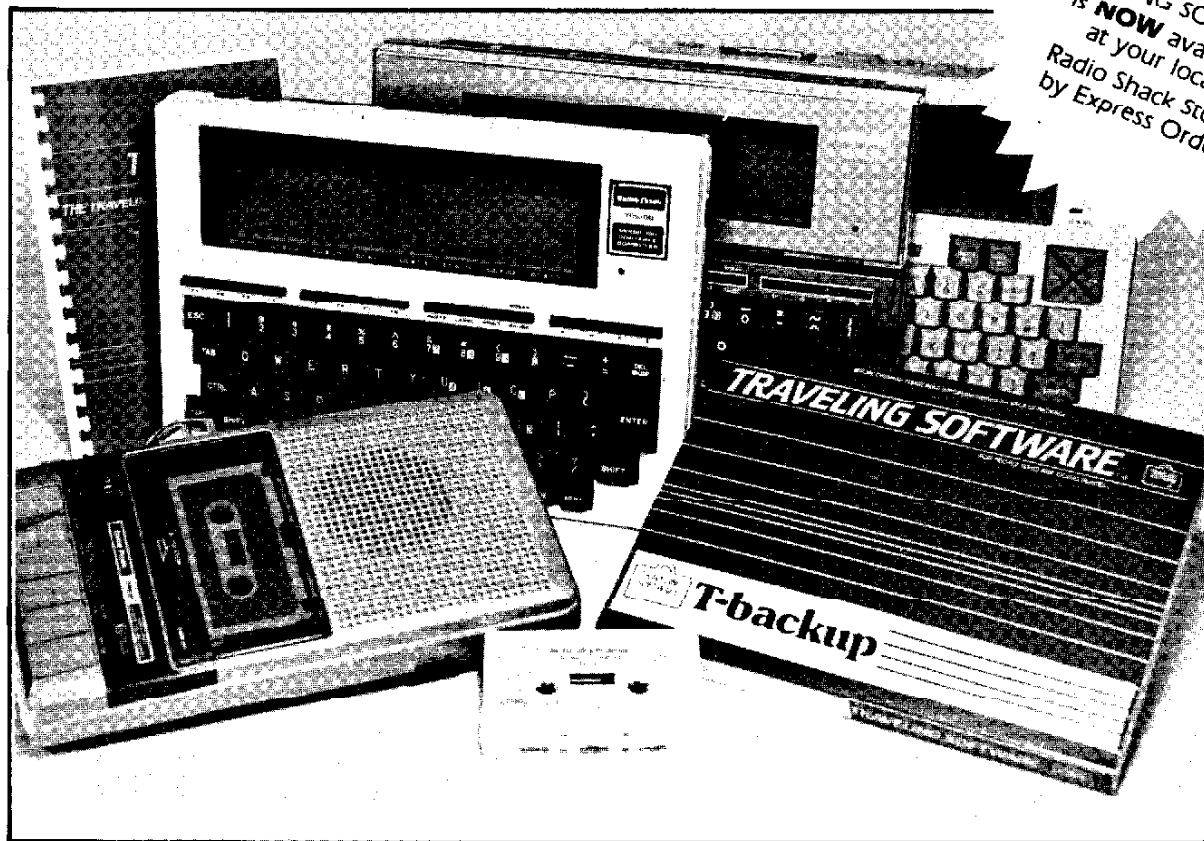
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NEW PRODUCTS



Sam Redman of the **Portable Computer Support Group** is always ready to gab about his company's new products. Lately, he's been talking up a storm about **Lucid**, PCSG's machine-language spreadsheet for the Model 100.

Hailing from the East as we do, it's not always easy to tell when a Texan like Sam is crossing over the line between metaphor and hyperbole. He says Lucid is better than **Microsoft's Multiplan** and has features even **Lotus 1-2-3** doesn't have.

Lucid is so exciting, Sam told us, his printer, after reading the galleys for the product's brochure, said he was going to buy a Model 100 just so he could buy the ROM-based spreadsheet.

Redman's firm also has been working at a breakneck pace to be the first in the market with a **portable disk drive** for the 100. Optimistic estimates pegged the drive's entry into the market in May; however, when we last spoke to Sam, he felt the drives wouldn't be rolling out PCSG's doors until October 1.

That date's right about the time **Holmes Engineering** of Salt Lake City, UT, expects to be shipping its portable disk drive, **The Chipmunk**.

A major difference between the drives is price. The Chipmunk sells for \$499.95, while the PCSG drive sells for \$599. Another difference is the Holmes' hardware hitches up to the 100 through its expansion bus, while the PCSG device enters MEWS through the RS232 port.

The bar code port is the target of software developed by **Optical Data Systems**. Optical's program, **Strype Byte 100**, allows you to print the three bar codes (UPC-A, 3 of 9, and Plessey) supported by Tandy's bar-code software.

The Escondido, CA, firm's offering allows variation in the code's size so it can be printed on labels or forms.

Only an 8K Model 100 is needed to run the \$49.95, machine-language

software. *Portable 100* has an evaluation copy of this bar code-generating program and will run a review of it in a future issue.

Move over **Prairie Power!** Another vendor has entered the MEWS power market. A company called **ARMS**, currently producing a product called **Workstation-100**, is offering a 12-hour power pack for MEWS dubbed **Power-100**.

According to ARMS' Louie Al Beverly, the \$29.95 power pack weighs about five ounces and attaches to the 100 with Velcro.

An obvious advantage this Midlothian, VA, firm's product has over its competitor is Power-100 uses the 100's standard AC adapter to recharge itself. With Prairie Power (reviewed in our June issue), a separate charger is needed.

Recently Mark Epley of **Traveling Software** swung by Camden while making an East Coast business jaunt. After a first-time bout with one of our Maine lobsters, he dropped off a copy of his latest product **T-backup**.

For 100 owners without the scratch for a disk drive or Holmes' **Bullet** wafer drive, this \$19.95 product provides an easy way to dump all their RAM files to cassette tape.

The RAM dump takes about 4 minutes and the machine-language program has its own verification routine to ensure what's stored to tape can be read back from it.

In keeping with its policy to support all **Kyocera** machines, Traveling also makes T-backup for the **Olivetti M 10** and **NEC 8201**. Backup time on the NEC is slower since its cassette interface works at 600 baud, while the M 10's and 100's works at 1500 baud.

Speaking of **NEC**, **TouchBase Design** in Los Angeles has developed an **internal modem** for the **8201** selling for \$129.

In a letter to us from Nancy Wolfe, TouchBase says, "We believe this product is both unusual and important,

standing out from hundreds of new products appearing weekly."

Readers should be aware, though, that while this modem solves a sore spot in the 8201's specs, be prepared for some hardware hacking. Here's a brief description, provided by TouchBase, on how to install its modem:

"[Y]ou must remove the four screws that hold the top and bottom of the case together.

"While the top and bottom parts lay apart, side by side, the modem, completely insulated and protected, is laid inside, and six small clips are attached to clearly visible and reachable points."

Also, installing the modem will void your 90-day NEC warranty.

Looking for some on-line business programs? Seven programs for the Model 100 are being offered by the **Real Estate Information Network** in Nyack, NY. It costs \$20 to join REIN and \$4.50 an hour once you're on the system. Sysop James Clyde (800-453-1879 ext.A358) can give you more information about the system.

With more and more journalists using computers, you'd expect someone to aim a "book" at reporters, many of whom are using 100s. In these trying times for computer magazines, it's highly appropriate the publisher of **News Computing** is an *intentional* non-profit organization.

The magazine is published by New Computing Inc., a student-faculty corporation founded by Clark Edwards, assistant professor of journalism at the **University of New Mexico** in Albuquerque.

Cryptogram addicts will love our final item this month. **Cryptease** stuffs a 16K Model 100 with more than 600 sayings to be jumbled and decoded by cypher buffs. That, according to **MAK Ltd.** in Spring City, PA, is equal to two years of daily newspaper puzzles. If 600 sayings aren't enough, more can be added to the \$29.95 program by typing them into a document file. ◀

As the night city editor and the "microcomputer expert" at *The Sun*, it was my job to choose the 100 and help the reporters and sports writers learn to use it.

At first there were the usual problems; many were solved by realizing no one was going to take the trouble to read owners manuals. Unfortunately, for well-educated, intelligent people, idiot-proof instructions often are necessary, as is endless repetition on how to kill stories and change communications stats. The biggest obstacle however, has been in getting reporters to use the computers.

To date, the sports writers have gotten the most use out of the 100s. Jeff Metcalfe, sports editor at *The Sun*, said, "There's no question the Model 100s have made our job easier, both due to their ease of usage and portability. They fit easily into a briefcase or suitcase and make traveling that much simpler, something we're always looking to do."

The 100s find their heaviest use when the sports writers travel from Colorado Springs to Denver to cover a Broncos or Nuggets game. They also serve duty as extra terminals for the sports department when the regular terminals are being used.

Managing Editor Robert Franken agrees the 100s are very useful. Asked if the 100 is worth the money, he replied, "Labor is the largest expense category in any newsroom. If we can save a reporter's time, we are saving money, and it adds up in a hurry."

"Often, a reporter is stuck at the scene of a news event — at a four-hour city council meeting, for example, with a couple of 15-minute breaks here and there. That's not enough time to get back to the office and write a story, but it is enough

time to write one on the 100 and either feed it back by phone or bring it back all written once the meeting adjourns.

"It's also saving our court reporter several hours per week. Instead of returning to the newsroom at the end of the day and trying to find a free editing terminal at the busiest time of the shift, she can write the stories in her courtroom office during the day." (Interestingly, the court reporter only began using her 100 after the reporter for another newspaper got one.)

"So, given the tax depreciation benefits and the time savings, the 100s are well on their way to paying for themselves in reduced labor expenditures and increased productivity."

For the news staff, the 100s came in very handy covering President Reagan's address to the 1984 graduating class of the U.S. Air Force Academy. "The Model 100s were a god-send," Franken said. "We've always used portable terminals in sports to cover games, but the Model 100s are a great improvement because of their smaller size and weight and . . . use with batteries."

Stephen Bobbitt, city editor, said the 100s allowed him to use his small news staff to cover a very large event: "They made the writing and reporting of the graduation flow much smoother than if all my reporters had had to come back to the paper to write their stories."

"As it turned out, many of the reporters who began the day at 6 a.m. were able to leave work by 2 or 3 p.m. with their stories written and across to the city desk."

This is all good stuff so far. The managing editor, sports editor, and city editor, all support the 100. Everyone admits they've been useful. What remains as a problem, though, is

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the 100s aren't being used beyond their electronic notebook function. Most reporters will admit the 100 is good for entering and sending text to *The Sun's* computer — but not for editing functions such as moving blocks of text or search and replace.

Bobbitt said, "I personally find it difficult to find fault with the 100. The only drawback I can think of is the command functions to allow editing are difficult for me to use since I do most of my work on a full-size word processor with a different command keyboard."

(Bobbitt had told reporters to write their stories on the 100s, but not to attempt any heavy editing on them. His opinion on that seems to be changing, however.)

The reason for this dissatisfaction with the 100 might be the hype which has been promoted about microcomputers in general. Many expect computers to understand plain English commands (or, at least, one-key commands), without requiring annoying information such as baud rate, parity, 7- or 8-bit word, or needing a quote mark when you type KILL COM-ISH.DO.

The microcomputer has been touted as the greatest boon to writers since the pencil, but no one ever explains that using a micro requires memorizing seven function buttons and an A to Z of control codes. It's not surprising, then, people happy with the 100 are those ignorant of computers.

Explaining the move block function of the 100 to one person, I said, "See, this is just like on our computer." He said, "Oh, I never use that on our computer anyway." That explains a lot about his writing.

A corollary to the problem of not recognizing the 100's

possibilities is that many don't see it as a computer at all. For instance, one reporter asked if the 100 could be used as a calculator.

Other aspects wasted on the 100 are the ADRS and SCHDL functions. Those are never used except as a place to store the telephone number of *The Sun's* 300-baud port.

Another obstacle, sadly, has been the 100 itself. For us, they've had poor reliability. We bought six and returned one immediately because of a problem in TELCOM. A second machine was returned less than three months later. It wouldn't auto-dial and it took another month to repair.

Will this limited perception of the 100 change? Recently I bought a tape recorder for the 100 (which is quite picky). With a stock of programs lifted from the Model 100 Special Interest Group on CompuServe and other sources, I hope to show the newsroom what the computer is capable of.

Another assistant city editor is interested in using the 100 for a judicial sentencing series. He'd asked if I could write a program that could be used to tally sentencing records of judges (breakdown of convictions by ethnic groups and length of sentence), and then be able to update the information without recalculating each record. I told him about spreadsheets.

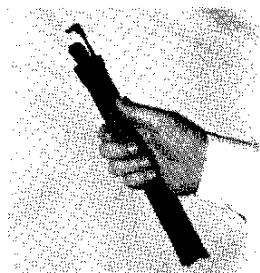
All things considered, the reputation of the 100 is changing. The quickest way to improve the situation would be if each person had a computer for his or her own use. That way each would have time to explore its possibilities.

To this, Bobbitt said: "I'd like to give one to each of my reporters and have him or her use the 100 on nearly every story, every day." ◀

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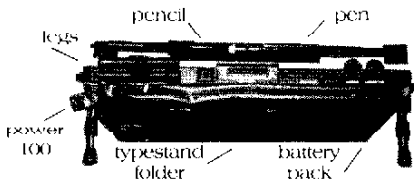
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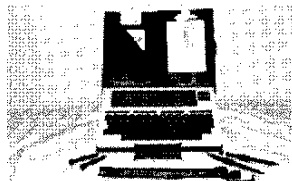


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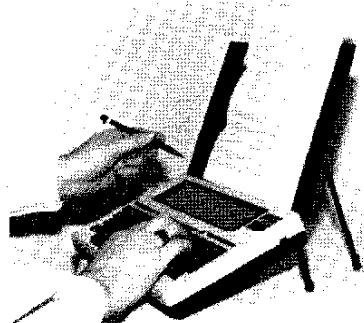


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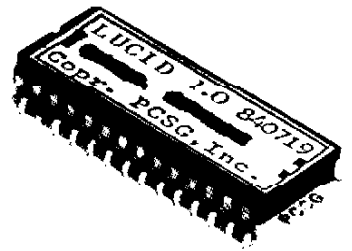
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FULL-DUPLEX

TERRY KEPNER



Editor's Note: Full-Duplex is dedicated to solving reader's Model 100 problems. Readers needing assistance should address their letters to Terry Kepner, P.O. Box 481, Peterborough, NH 03548. Readers are reminded to include a return address with all Full-Duplex correspondence.

DEF MODE

I have Radio Shack's "Horse Race Analyst 5-10" program which is for the PC-3 computer and it works in the DEF mode.

What is the DEF mode? Is there any way that I can load and run it in my Model 100?

My computer turns on the cassette recorder, but it displays code 51 Error, Bad File Number.

Antonio A. Carrasco
Sanderson, TX

► The Model 100 can't read tapes written by the PC-3; the methods used to encode the data are incompatible. To get the program into the Model 100, you'll have to get a printout of the program on the PC-3, then type it into the Model 100. You may have to re-write part of the program to get it to work right on the Model 100.

The DEF mode on the PC-3 refers to a special feature of the pocket computer that lets you assign parts of a program in memory to the various keys of the PC-3 keyboard (pressing shift-A invokes one section, pressing shift-B another). You can get the same result by typing "RUN line number", but the DEF key mode is quicker. If the program uses less than seven defined keys, you could implement the same type of feature using the Model 100 function keys and the Basic command ON KEY GOSUB.

If the program uses more than seven defined keys (you'll want to reserve the eighth for returning to the Model 100

Menu), you can use a brief on-screen menu and use GOSUB to invoke the various sections of the program.

MODEL I TO 100 PROBLEMS

I read the reply you wrote in the April 1984 issue of *Portable 100* addressing the problem of the Model 100 talking to the Model I.

Also, what is MEWS?

I bought Radio Shack's Videotex Plus, their cables and null-modem. The expansion interface for my Model I is an LNW built by me. The echo test you mentioned in your article works on both the Model 100 and Model I.

I've tried all kinds of combinations with baud, word length, parity and stop bit. The only combination that responds to anything is: 300 baud, 7-bit word, even parity, and one stop bit.

With this combination I can hold a key down and receive that character on the other unit. But if I touch-type, nothing but garbage appears on the other unit.

At other baud rates (faster), there is no response on the other unit.

I have a Model III and have hooked the Model I to Model III, and Model

III to Model 100 and they work great with the Videotex Plus. Help, please.

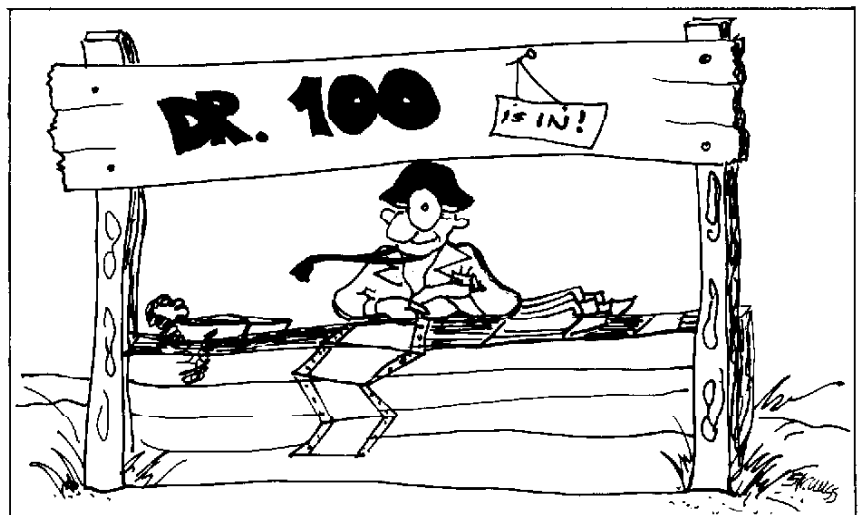
Tommy Walker
Marion, SC

► MEWS stands for Micro Executive Work Station, which is Radio Shack's advertising name for the Model 100.

The earlier LNW Expansion Interfaces for the Model I computer uses hard wired RS232 ports. If you want to alter the RS232 parameters, you have to take a soldering iron in hand to do it. That's why only 300, 7, 1, and even RS232 parameters work on your computer. When the unit was built that's what parameters were selected. The software can't change the hardware selection.

Since the Model 100 works fine with the Model III, the problem is obviously with your LNW interface. Get out your original construction instructions and documentation and double-check that the LNW is properly configured for what you want.

From your description (single letters work fine, touch-typing fails in both directions, but shorting the leads on the LNW end doesn't foul-up touch-typing), it sounds like the clock speed at



the LNW RS232 isn't right (of course the clock speed won't affect touch-typing when the LNW leads are shorted, the clock speed defines when it sends and receives, and it's always in time with itself), but you'll have to contact LNW for a more exact diagnosis.

This doesn't explain why the Model III and Model I work properly together, but then again you're using Videotex Plus on both computers and that's probably helping a lot.

TEXTHELPER UNCOOPERATIVE

My first problem is I have tried to get the Texthelper program that was published in the September 1983 issue to run. Unfortunately it will not work with my printer, which is an "Axonix Thin Print 80" made by Axonix Corporation of Salt Lake City. When I try to run it, I get the header and then nothing else will print.

My second problem is I cannot find a way to upload text from my Portable

100 to SuperScripsit on my Model 4. I have the procedure to upload from the Model 100 to regular Scripsit on the Model 4; however, since I do not use that any more, it is a terrible inconvenience to go that way and then convert the Scripsit to SuperScripsit.

G. Carlton Hill, Jr.
President
The Brookside Savings Bank
Kansas City, MO

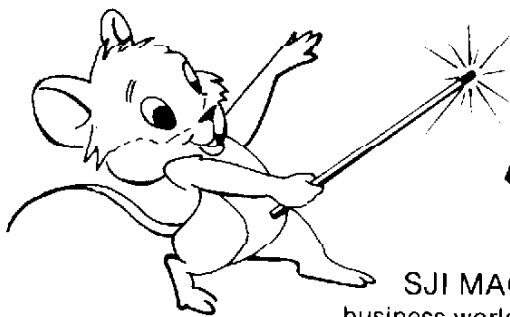
► Does the computer "lock up?" Or does it act as if the printer is working correctly and prints the "document is printed" message? If you're getting a Basic OK prompt after the heading is printed, then you're missing a RETURN in the program section that prints the heading. The program should work correctly, since it isn't using any special printer codes that might mess up your printer. I presume that LPRINT and LLIST work normally, and that just this program doesn't work.

The best I can offer is to suggest you carefully inspect the program for typ-

ing errors and perhaps ignore the heading at first (put a REM at the line that jumps to the header printing routine) and try to get just the body of the text to print. Any other suggestions from anyone?

According to my Model 4 SuperScripsit manual, you can easily convert ASCII text files to SuperScripsit files by just selecting the "A" option in the main menu, followed by another "A" option, then the destination SuperScripsit file name and the target ASCII filename. If you want the final SuperScripsit file to have a specific format (not the defaults, in other words), you must first open a dummy document and define the formats you want. Then, when converting from ASCII to SuperScripsit, use the dummy file name and the ASCII file will be copied to the dummy file.

Since you're operating in the TRSDOS 6 environment, you can use the built-in communications COMM program (with the *CI and RS232 driver) to talk with your Model 100. As long as you don't use any special codes, the file sent from the Model 100 will be an all-



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SCRIPTSIT TO 400 TAPE

I have a Model III with 2 disks, 48K, and Tape and Disk Scriptsit, and SuperScriptsit. My son, recently graduated from high school, is thinking about getting a Model 100.

We would prefer text put on tape from the Model 100 could be later loaded into my Model III, while using one of the Tandy Scriptsits whereupon he could then format it any way he wishes — for homework, notes, etc. We have not been able to do that.

We tried several times to load text from the Model 100 in ASCII format. For example, from the Model 100, onto its tape, F3 "cas:F", A was not able to be picked up on my Model III, in any of the Scriptsits. (F was the single letter file name, in uppercase, and A was for ASCII.)

Is there a way out of this?

Dale Stupfel
Dublin, CA

► Unfortunately, no one has developed a simple program to do what you want. While the two computers both store information on tape at 1500 and use the same technique to do it, the problem is that the Model 100 always puts a file-name header in front of its cassette files and the Model III doesn't. This is insurmountable without resorting to machine-language translation programs on both machines.

Since you have a full Model III with an RS232 board (I assume you have a standard Model III), why not just get a communications program such as Omniterm or MTFRM for the Model III, an RS232 cable, and a null modem, and use the Model 100 TELCOM to transfer files from one machine to another? This is the basic procedure I use when writing my columns, and it's much faster than fiddling around with cassette tapes and all their inherent problems.

CLOAD BUT NO RUN

I have a problem loading and running some cassette programs. I do the following steps:

lowing steps:

- Set up Basic;
- OK;
- CLOAD "PAYCHK", name program;
- Found "PAYCHK", displayed;
- ?IO ERROR, recorder and computer stop;
- OK is again displayed;
- CLOAD, Re-enter, for the rest of the program;
- Found "PAYCHK"; and
- OK.

Then the 21,446 bytes of 24K Model 100 is reduced to 18,483 after saving the program.

However, the program will not run. I sent the cassette for an exchange, and I have the same problem. What is wrong, and why does the computer and recorder stop when ?IO ERROR is found?

I loaded the ESS 22 electronic spreadsheet, and the RPA Calculator programs. They work fine.

If the number of bytes is reduced when loading a program, does this

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mean the loading is correct? I do not think my computer is bad.

Antonio A. Carrasco
Sanderson, TX

► First of all, you don't mention the specific programs giving you problems. Since standard Basic programs seem to work fine (ESS and RPA), I would guess that the difficulty is in the programs you're trying to use. Not that they're bad, but that you're doing something wrong when you use them.

Not knowing the programs, I can't

really say much more. The programs could be a mixture of machine-language and Basic, and you're not following the proper loading procedure or after loading, you're not doing something necessary to ensure the proper running of the programs.

The Model 100 is designed to turn off the cassette recorder and return to OK anytime an error occurs while loading a program. The error could be a bad tape or just using the wrong command to load a file (i.e., CLOAD for a machine-language or text file, or CLOADM for a Basic file).

NICAD LIFE EXPECTANCY

► I have recently been reading conflicting statements concerning the life expectancy of the internal nickel-cadmium batteries in the Model 100. Estimates of the nicads' lives have ranged from one to three years. Can you or perhaps Radio Shack shed any light on this?

And assuming that the nicads eventually need to be replaced, can anyone estimate what the cost is likely to be?

One further question: Radio Shack says the internal batteries will keep data in memory from 30 days (with the 8K model) to about eight days (with the 32 version). Is this irrespective of the amount of data being stored? In other words, if I have a 32K machine, but am only storing about 8K worth of files and programs, will the nicads allow retention of this data in memory for longer than eight days with the power turned off?

Steve Rosen
Federal Way, WA

► The life expectancy of the internal nicads depends on the amount of use they receive. Normally, they aren't used except when the standard batteries go dead (your battery LED comes on). At this point, information is a little sketchy.

Nicads last longer when they are periodically completely discharged.

In addition, they have a definite shelf-life (how long they can remain unused before requiring replacement), which is different from how long they can retain a charge.

Temperature also affects the useable lifespan, although to a lesser degree.

If you want to make your nicads last as long as possible, you should probably allow them to completely discharge every once in a while, but whether or not this will increase their lifespan more than a few months is debatable. Considering the amount of work and time involved in saving all your data and waiting for the batteries to give out, you might as well not even bother.

The batteries aren't that expensive, \$10.95 (#ACS-0100), and the service charge for replacing them is only \$15.

The time-limit the batteries can keep the memory alive depends entirely on the amount of RAM in the computer, not the amount of data stored in it. ◀

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AUTO-PROGRAM — PART 7 REDEFINE KEYS AND SAVE THEM WITH KEY DEFINER

Editor's Note: This is the seventh in a series of columns by Dave showing Portable 100 readers how to program the Model 100 to program itself. The columns are adapted from Dave's book Teach Your TRS-80 to Program Itself!, published by Tab Books Inc.

A long time ago, in a galaxy far, far away, microcomputers didn't have function keys. Some didn't even have cursor keys!

All users had available were the standard alphanumeric and if they were lucky, a control key, escape key, and a few others.

This lack of keys led to some interesting programming solutions. WordStar, which could be used on computers without cursor keys, required strange combinations of control-key plus another key to move the cursor around on the screen.

WordStar's interesting cursor-movement solution lives on in your Model 100 with the control-key movement available as an option in TEXT.

AT USED AS CONTROL. Even more interesting, one popular word processing program for the Tandy line (Hint: A program with this name recently became available for the Model 100) asked the user to think of the "@" key as a control key. Of course, that meant there was no way to print the "@" character — except that the programmer "moved" it to shift-zero.

One of the nicest features of the latest generation of microcomputers, like the Model 100, is they include lots of extra keys. In addition to eight programmable function keys, we have control, code, graph, paste, label, print, es-

cape, break-pause and others. These keys can be used to make our programming easier, and our programs easier to use.

Function keys are used in two ways.

First, you may write the program with an ON KEY GOSUB interrupt, so when the designated key is pressed, control goes to the desired subroutine.

Or, you may actually want the key to return a set of characters when it is pressed. The Model 100 powers-up set to return strings like LIST, LOAD, SAVE, MENU and so forth when a function key is hit.

CHANGE IT! If you don't like those power-up definitions — change them! Here is a short program that will write an even shorter program redefining all eight function keys for you automatically. There are even two ways to use Key Definer.

First, you can run the program from Basic and enter the new key definitions you'd like. When you're done, hit escape. As if by magic, Key Definer will be gone from memory, and your new key definitions will be implemented. What's more, there will be a new RAM file you can run anytime you like to summon those same key definitions. Once defined, your function keys will stay the same, even when power is off, until you redefine them.

That RAM file is the second way to use this program. It can compile a selection of *different* function key settings — as many as you want — which you can load at your command.

Key Definer always creates a new document file (which you can load from Basic just like a Basic file, and then store in compressed form as a Basic file).

That program is named KEYDEF.DO. You can store different versions under various names, such as KEY1.BA or KEY2.BA. The Basic files are stored in tokenized form using less of your Model 100's precious memory.

CHANGE FILE NAME. Don't forget that you may also change a file name by typing NAME "oldfile" AS "newfile" to provide any name you want. You cannot change a document file to a Basic file this way, however.

But, exactly how and why would you redefine the special function keys of your Model 100?

Those who think that special function keys are best applied as a kind of shorthand to eliminate typing in GOTO or other phrases suffer from a failure of imagination.

The nice thing about general-purpose microcomputers like the Model 100 is they can be custom-configured to perform specialized tasks tailored to the exact needs of the end user. User-programmable special function keys can do a great deal more than printing out a lengthy Basic keyword. Consider these applications:

- Program a key so F1 produces "LIST 10-100", or "A\$=INKEY\$" or some other command you use frequently. Your function keys can store a string of up to 15 characters — so you can redefine them to include lines you frequently use in programs, such as A\$=INPUT\$(1) or OPEN F\$FOR.

- Set a key to "PRINT TIME\$." Then, hit that function key to see the correct time anytime you want. Your uses are limited only by the number of keys available for programming.

CHANGE KEY SYNTAX. The correct syntax for redefining the Model 100's function keys is KEY n,string. For example:

```
KEY 1,"? TIMES$"  
KEY 6,"? FRE(0)"
```

You do *not* need to activate these function keys with the KEY ON statement. Once defined, they are instantly

ready for your use while programming in command mode. To truly turn it off, you need to define the key as a null string:

```
KEY 1," "
KEY 6," "
```

Don't confuse the strings produced by pressing a special function key with the ON KEY GOSUB feature. That is entirely different. You can have redefined keys (useful from command mode) and ON KEY routines (useful in your programs) at the same time with different results.

You now know enough about the Model 100's function keys to know that Key Definer is a very simple program.

KEY DEFINER. A string array is set up in line 60 to hold eight key definitions, one for each of the eight special function keys. Then you are given the opportunity to restore the factory-set function-key definitions. You may use this if you want to write a key defining file that uses some of the stock definitions, such as F8=MENU.

Key definer shows you the current

key definitions, using KEY LIST, in line 170. You are next asked which key to define. The key to be defined, K, is given your desired string, D\$, in line 270.

Your definition is checked to make sure that it is 15 characters or less.

A carriage return can be added, if the definition, including the carriage return, is still less than 15 characters.

You can enter nothing, to cancel out a key completely, if you wish. The length of the string you are entering, and the remaining characters available is always displayed, as an aid for those who hate BEEP and error messages.

A counter, CU, keeps track of the number of keys defined. There is no particular reason for this, except I like to keep track of things.

The K element of the array D\$(n) is loaded with your chosen string. This process repeats as many times as you want until ESC is pressed. You may define any or all of the eight function keys, redefine some, skip some, or any combination.

OPEN KEYDEF. When ESC is pressed, the program branches to line 520,

where a file, KEYDEF.DO is opened. A For-Next loop from one to eight writes your definitions to RAM. If you have not defined a key, no definition is written. Note: This will not cancel out any default definitions for those keys.

Variable C corresponds to the line number in the new short program being created. The first line number will always be one. If you have defined eight keys, then eight line numbers will be used. The program line is built from the line number, C, plus "KEY" + STR\$(N) + "," + CHR\$(34) + D\$(N) + CHR\$(34). This produces a line like:

```
1 KEY 5,"PRINT TIMES"
```

The final step is to write one more line, containing the command "NEW". Then the new program, KEYDEF.DO, will be run. It will redefine your keys (although each is redefined by Key Definer anyway), and then erase itself from memory when it encounters the last, NEW command.

However, KEYDEF.DO still resides in RAM, and can be used later if you wish. Rename it so subsequent runs of Key Definer won't overwrite it with a new one. ◀

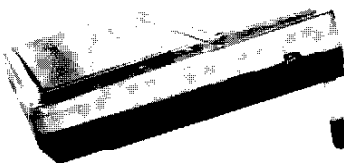
```

10 ' *****
20 ' * *
30 ' * KEY DEFINER *
40 ' * *
50 ' *****
60 DIM D$(15)
70 SP$=SPACE$(35)
80 S2$=SPACE$(20)
90 REV$=CHR$(27)+CHR$(112)
100 FF$=CHR$(27)+CHR$(113)
110 CLS
120 PRINT
    : PRINT "RESTORE DEFAULT KEY
    : VALUES? (Y/N)"
130 A$=INKEY$
    : IF A$=""GOTO 130
140 IF A$="Y" OR A$="y" THEN CALL
    23164,0,23366
    : CALL 27795
150 CLS
160 K$=""
170 PRINT @80,"";
    : KEY LIST
180 PRINT @2,"Which key to define
    (1-8)?"
190 PRINT @282,"Hit ESC to finish
    definitions.";
200 D$=""
210 PRINT @44," DEFINE KEY # ";
    : PRINT REV$;
220 K$=INKEY$
    : IF K$=""GOTO 220
230 IF K$=CHR$(27)GOTO 760
240 IF K$<"0" OR K$>"9"GOTO 250
    
```

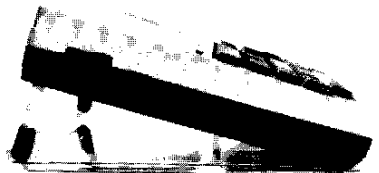
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```

ELSE GOTO 300
250 PRINT REV$;
    : PRINT @GO," Number 1-8
    Please!";
260 BEEP
    : PRINT FF$
270 FOR N=1 TO 1000
    : NEXT N
280 PRINT @60,S2$;
290 GOTO 160
300 PRINT K$;FF$;
310 K=VAL(K$)
320 FOR N=80 TO 200 STEP 40
330 PRINT @N.SP$:
340 NEXT N
350 IF K<1 OR K>8 THEN GOTO 150
360 PRINT @282,"Hit ESC to finish
    definitions.";
370 PRINT @2,SP$;
380 PRINT @42,"Type definition F";
    MID$(STR$(K),2);", then [ENTER]";
390 PRINT @122,"==>";
400 A$=INKEY$
    : IF A$=""GOTO 400
410 IF A$=CHR$(8) AND D$<>"" OR A$=
    CHR$(29) AND D$<>"" THEN D$=
    LEFT$(D$,LEN(D$)-1)
    : PRINT @125,S2$
    : GOTO 520
    ELSE IF A$=CHR$(8) AND D$=""
    THEN GOTO 520
420 D$=D$+A$
430 IF A$=CHR$(13)GOTO 570
440 IF LEN(D$)<16 THEN GOTO 520
450 BEEP
460 PRINT @282,SP$;
470 PRINT @282,"ONLY 15 CHARACTERS
    PLEASE!!";
480 FOR N=1 TO 1000
    : NEXT N
490 PRINT @125,S2$;
500 D$=""
510 GOTO 360
520 PRINT @125,D$;
530 PRINT @240," LENGTH : ";
540 PRINT LEN(D$);
550 PRINT TAB(20)"REMAINING : ";
    15-LEN(D$);
560 GOTO 400

```

```

570 CU=CU+1
580 D$=LEFT$(D$,LEN(D$)-1)
590 PRINT @280,SP$;
600 BEEP
610 PRINT @283,"End with carriage
    return? (Y/N)";
620 A$=INKEY$
    : IF A$="" THEN GOTO 620
630 IF A$="Y" OR A$="y" THEN GOTO 640
    ELSE M$=""
    : GOTO 730
640 IF LEN(D$)<>15 THEN GOTO 720
650 BEEP
    : PRINT @283,SP$;
660 PRINT @283,"Too long for C/R.
    Re-enter.";
670 FOR N=1 TO 1000
    : NEXT N
680 D$=""
690 PRINT @283,SP$;
700 PRINT @125,S2$;
710 GOTO 380
720 M$=CHR$(13)
730 D$(K)=D$+M$
740 KEY K,D$(K)
750 GOTO 150
760 CLS
770 PRINT @60,REV$;" Writing File ";
    FF$:
780 OPEN "KEYDEF.DO" FOR OUTPUT AS 1
790 C=C+1
800 FOR N=1 TO 10
810 IF D$(N)=""GOTO 890
820 C=C+1
830 M$=""
840 IF RIGHT$(D$(N),1)<>CHR$(13) THEN
    GOTO 870
850 M$="+CHR$(13)"
860 D$(N)=LEFT$(D$(N),LEN(D$(N))-1)
870 L$=STR$(C)+" KEY"+STR$(N)+"",
    "+CHR$(34)+D$(N)+CHR$(34)+M$
880 PRINT #1,L$
890 NEXT N
900 C=C+1
910 PRINT #1,STR$(C)+"NEW"
920 CLOSE #1
930 RUN "KEYDEF.DO"
940 END

```

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BOOKS



NOVICE AND PRO CAN LEARN FROM BOOK BY GOODMAN

The Simon & Shuster Guide to the TRS-80 Model 100

Danny Goodman
Simon & Shuster Computer Division
Rockefeller Center
1230 Avenue of the Americas
New York, NY 10020
221 pages
\$9.95, softcover

By SHELDON L. RICHMAN

This is the most readable computer book I've come across in some time. It is also one of the best buys a Model 100 owner can make. Considering its wonderful clarity, wealth of helpful tips, and the several nifty Basic programs, \$9.95 is a steal.

Danny Goodman has a real knack for continuously making you say to yourself, "Why didn't I think of that?" He does this by revealing great little ways of using your Model 100, managing files, and getting the most out of the built-in ROM programs. Even if you are an experienced Model 100 user, Goodman will probably raise your eyebrows with one of his tips.

BRIEFCASE GENIUS. He begins with a general appreciation of the "genius of the briefcase portable computer." He writes, "I find myself using the portable more and more, even in the office."

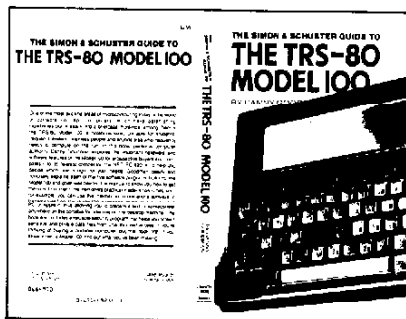
He takes it everywhere. "No place is sacred anymore," he writes. I found myself nodding with recognition.

Goodman's second chapter is for those who haven't bought a portable computer. [An article based on this chapter appeared in the January issue of *Portable 100*.] But Model 100 and NEC PC-8201 owners will find it just as interesting. It is a fair and decent comparison of the two machines, with good

photos highlighting some of the physical differences.

Goodman also lucidly discusses the differences between the two versions of Basic. In the end, he, like others who have made comparisons, finds it essentially a choice between the 100's built-in modem and the NEC's ingenious RAM expansion setup. For Goodman, it is a close call that only each buyer, with intimate knowledge of his own purposes, can make. The issue is well handled.

From there the book talks primarily to the Model 100 owner. I found the discussion of each topic delightfully thorough.



After analyzing the 100's physical characteristics, Goodman goes through the variety of peripherals the machine can be hooked up to.

He ably introduces the reader to cassette recorders (suitably warning the buyer to beware of recorders not built for computer data), mass storage devices, printers, and, of course, other computers. Several of these are discussed again in more detail at appropriate places.

BEST BASIC INTRO. Goodman knows the Model 100's built-in software well and so will his readers when they are through. After a valuable primer on file names, he provides the best little introduction to Basic I have come across. It is not intended to make the reader fluent in the language, but to teach Model 100 owners enough to enable them to intelligently use the computer.

He discusses such key commands as

LIST, RUN, and SAVE, and thoroughly covers saving to and loading from cassette. He also has a nice discussion about customizing the functions key for maximum convenience.

The chapter wraps up with an intelligent lesson on common Basic error statements. Any Basic novice who has keyed in a long program listing only to get an indecipherable error statement in line 10 will profusely thank Goodman for this.

INTEGRAL PROGRAMS. Goodman then proceeds through each of the integral software programs. In nearly every chapter he provides a good (and thankfully short) Basic program that performs a needed task. In the chapter on TEXT, there is a decent print formatter and a handy byte counter.

The formatter is as good and probably better than other public domain formatters — it even does envelopes. But it could be improved. When it gets to the end of a page, it sends too many line feeds to the printer, throwing off the page breaks. Someone better versed in Basic than I could probably fix that.

Also, the bold-face and underline commands did not work on my Silver Reed printer, but that is hardly Goodman's fault.

And I think I found a typo in the program. Every time I tried to print an envelope, the address was too far to the left. So in Line 1460 I added LM=30 (to set the left margin) just before RM=80 and it worked fine.

ADDRSS & SCHEDL. Goodman has brief chapters about ADDRSS and SCHEDL. I found useful, especially his ENTRY.BA program, which prompts the user to enter names into ADRS.DO in orderly fashion for use by ADDRSS.

He integrates that program with one that automatically logs on to CompuServe and other information services. The second part of this program is highly valuable because it prompts for

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each piece of information in the correct log-on sequence.

(I do have one beef — more typos. Lines 4470, 4480, and 4490 have the notation V3, V2, and V1, respectively; they should have been V=3, V=2, and V=1.)

In the TELCOM chapter, Goodman, once again, is the epitome of clarity when he gets to the arcane notions of baud rate, word length, parity, and stop bit. Goodman tells neither more than the nontechnical user would wish to know nor less than he needs to know. After reading this chapter, anyone can begin telecommunicating.

Don't skip the appendices because there is some good action there.

One of the programs is a veritable blessing. If you are like me, you keep a few utility programs in RAM nearly all the time, perhaps word and byte counters, a print formatter, perhaps a few other things. You may wind taking up RAM space, but what bugs you is all the directory spaces that are used. Goodman provides a great program called MENU.BA that lets you put all the utilities into one program taking up but one directory space. When you enter the program, you get a subdirectory of the utilities you put there. Great idea!

SECURITY. Finally, for the security minded, there is PASS.BA, a password program that defies even the most tenacious computer cracker. Anyone without the password who tries to turn on the computer will hear several alarming beeps before the Model 100 shuts down in a huff.

But beware, if you want to change the password from the one Goodman has chosen, you must be sure to enter the number of characters of your password in the next line. If you don't and its a different number from Goodman's, you'll be locked out of your own computer. (It happened to me; it's not a pleasant feeling. And you will have to cold start to get back in.)

I am unreservedly enthusiastic about this book. If all computer writers lived up to Goodman's standards, there would be fewer confused novices around. Read this book no matter how much you already know about that legend in our time, the Model 100. ◀

Sheldon L. Richman is a free-lance computer writer and director of publications for Citizens for a Sound Economy.

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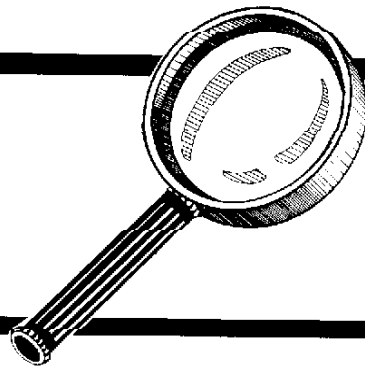
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REVIEWS



GRANDFATHER OF ALL BOARD GAMES GOES COMPUTER

Monopoly

Version 2.0
Custom Software
605 North C, #2
Wellington, KS 67152
316-326-6197
Written by Greg Susong
Minimum 16K required
\$29.95

By M. J. BATHAM

Let's Play Monopoly is a game for the Model 100 which follows the rules of Monopoly by Parker Brothers. The computer is your opponent, and manages to roll doubles frequently and land on the best property. I played a dozen games before I managed to beat the machine.

The software package comes with an instruction card. Loading the program is a bit tricky. The author suggests going into Basic and typing sound off before attempting to load. Since part of the program is in machine language, you have to clear memory from Basic, and load two programs: LPM.CO and LPM.BA. Make certain you don't have any other machine-language programs

in memory, or the game won't load properly.

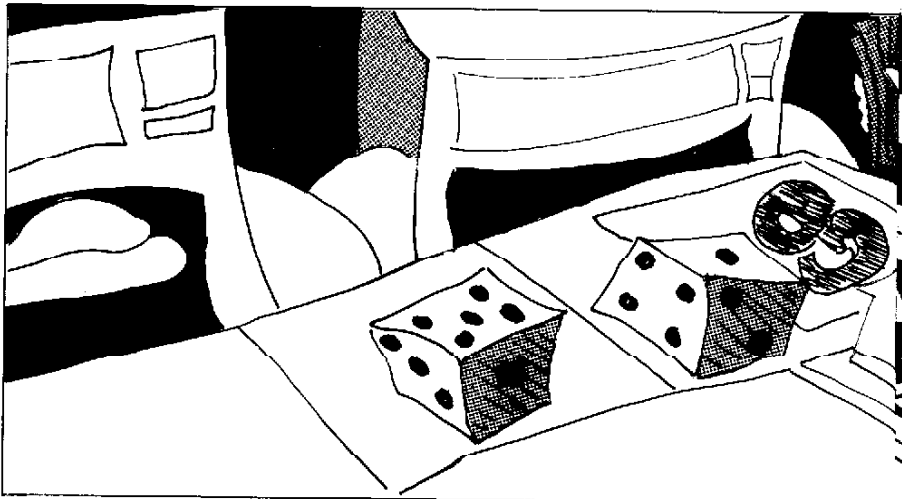
ROLL THE DICE. The program has a split screen. The left side is the monopoly board, and the right side shows the spot where you landed. The computer's playing piece is an inverted I and the player has a solid block. It's easy to tell the players apart.

When the game starts, dice are rolled. The graphics are really neat, and the dice spin on the screen. The players automatically advance to the proper square. As soon as the player finishes his turn, the computer automatically rolls the dice, so the game is speedy.

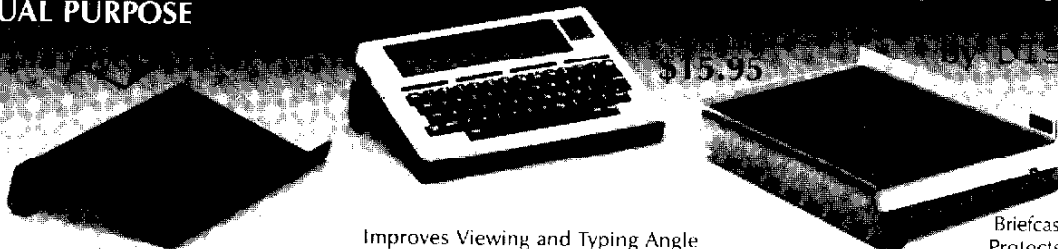
The game illustrates which lots are unowned, player owned, computer owned, and have hotels on them. The program has seven options:

1. Roll;
2. Buy;
3. Mortgage;
4. Unmortgage;
5. Trade;
6. Review; or
7. Quit.

The function card doesn't point out that numeric keys, rather than function keys, must be used to play Monopoly. If a function key is pressed inadvertently, the game does strange things.



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LIKE THE REAL THING. Whenever it's the player's turn, the menu appears. Before you chose roll, you have other options. Buy allows you to purchase the lot on which you've just landed and shows the purchase price.

Mort shows you which properties you own (one at a time), lists the mortgage value, and queries if you want to mortgage that lot. Anytime you're done, you hit Q to exit this section. If houses are owned, you're prompted as to how many houses you wish to mortgage.

A nifty feature is the program sends you to mortgage if you're out of money. You can't leave this field until you've borrowed enough money to pay your indebtedness.

Unmortgage is similar to mortgage, and each property is shown one-by-one.

Trade is a neat option. You must own all the property in a color group to attempt to trade with the computer, and can't have any liens on the property to be exchanged. The player choses the group to be traded, advises

the computer which property he wishes to have, and offers an amount of money. The computer accepts, or declines the trade until enough money is offered.

TOUGH OPPONENT. The computer is a hardnosed player. It wanted \$4000 plus Baltic and Mediterranean in exchange for Park Place and Broadway. After I hocked all my properties, the computer skipped over those lots time after time, and proceeded to beat me unmercifully.

Review allows the player to review property owned, the computer's lots, and lots unowned by either.

Quit allows you to return to the main menu, and asks if you want to save the game. This is very useful since monopoly games often take hours to play.

A WINNER. I was impressed by the excellent graphics used by the software author. The guy in jail has a mournful face, the railroad cards are in perfect detail with the board version of the

game, and the car in free parking has a real spare tire. The graphics for the utilities are especially good.

This program is terrific, and for those of us who want to play as well as work with our 100s, it's the game to buy at a very reasonable price. ◀

ON THE ROAD EXPENSE MANAGER CUTS PAPERWORK

Traveling Expense Manager
Version 2.1

Travelling Software Inc.
11050 Fifth Ave., NE
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206-367-8090

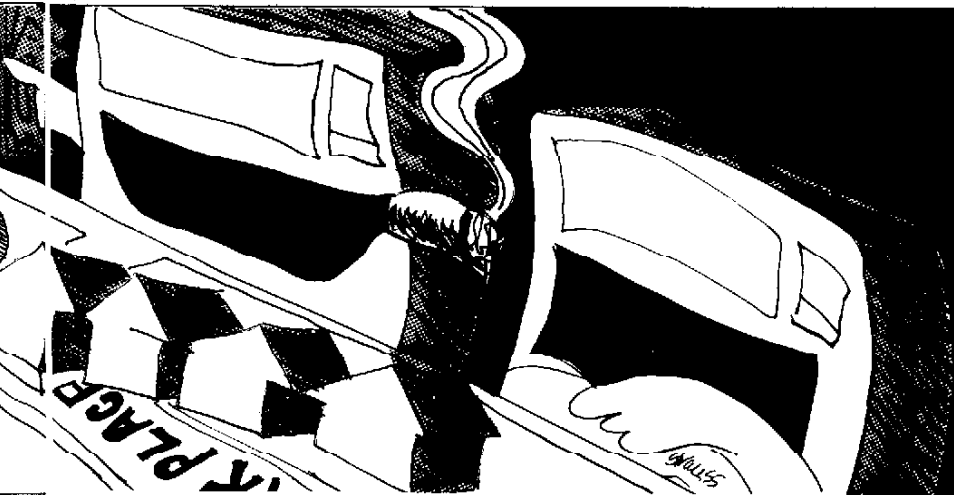
Written in Basic and
machine language
Minimum of 16K required
\$59.95

By M. J. BATHAM

The *Traveling Expense Manager* keeps track of expenses for business trips or sales calls, summarizes these expenses, sorts them by category or by client, and prompts a hard copy of the report. The software is compatible with the Model 100, Olivetti M 10, and NEC PC-8201 computers.

Besides the expense and report programs there are two other useful programs: a data-base management program and a memory manager that calculates length of files stored in the computer.

The manual is user friendly and written for someone with no experience. The flip side of the cassette tape has an audio tutorial by the company's



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Traveling Professor, who explains how to use the software.

EXPENSE ACCOUNT. The expense account program (EXPMGR.BA) has three separate data banks for organizing expenses:

The account log defines the type of expense such as auto, travel, entertainment, or meals.

The fund log defines the type of payment such as cash or credit card, and keeps a running balance by category.

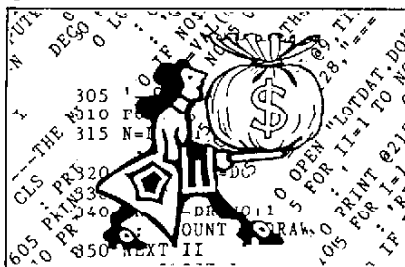
The expense log summarizes the expenses by account name, customer, date, billable/non-billable, and by amount. This is very useful for allocating costs if the expenses are for more than one customer.

The opening menu gives the user a choice:

- Add-update expense log;
- View summaries;
- Define expense accounts; or
- Manage funds.

You begin the program by selection three to set up accounts. The program allows up to three letters in the name of the account, although I'd have preferred a longer name field. The screen

prompt shows "Expense Account No.:", so I tried using a three-digit number rather than letters. It wouldn't accept my input. The authors could have used name instead of number. The description field allows up to 32 characters which is more than adequate.



CLOSER LOOK. After setting up the accounts, select 1. This option allows you to define a client name or project and to enter an account name, date, and amount.

You also have the choice of billable or non-billable, form or payment, and description. The description field prints letters in uppercase even though they're typed in lowercase.

If you forget the account codes, function key 6 will display a list of ac-

count names. I tried to enter an account name that I hadn't previously defined and the machine beeped until I corrected the name.

One excellent feature is comma treatment when inputting numbers. The manual warns users not to use commas, but I tried anyway. The cursor completely ignores the comma and waits until a number is typed. Another feature is that even dollar amounts can be input, and the program adds the two zeros to the right of the decimal point.

The view-summaries option allows a choice of project or client totals as well as expense account totals. The program sorts alphabetically by client name and also by account name. You can chose a beginning date of files (the default is January 1, 1984) or an ending date (defaulting to today's date). Function key 1 starts the summary and F8 returns to the main menu.

FUND MANAGER. Option 4, manage funds, was very useful. The program defaults to cash, check, Visa, MasterCard, or American Express. You can re-define the titles easily. This function keeps track of how much of a cash advance is left, the amounts paid by check, and totals of items charged on credit cards.

Three RAM files are created by the program EXPMGR.BA, EMFUND.DO, EMACCT.DO, and FMDATA.DO. When you're ready for a hard copy of the reports, select EM-RPT.BA from the menu, and a submenu appears with four choices:

- Print report by client or project;
- Print report by fund;
- Print expense-account summary; or
- Close out expenditures.

PRINT OPTIONS. When any of the three print options are selected, a prompt appears to chose beginning and ending date. Defaults are the first day of the year to begin, and today's date to end.

The program then reminds you to set up the printer and press F1 to start and asks you if you need a line feed. Using my 100 with a NEC Spinwriter 3550 or the Olivetti typewriter-printer model FT 121, I can't generate a line feed. With this print program, however, I was able to use any of these daisywheel printers.

When using the second option, to print expenses by fund, a sorting file

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AMPI's *AmericanCalc Spreadsheet*—designated TPlan for the Radio Shack TRS-80 Model 100, and NPlan for the NEC PC-8201A—is a full-feature spreadsheet program. It has the following features: handles up to a maximum of 90 rows or 26 columns; cursor movement is left, right, up, down, and go to any location; accepts data entries for numbers, labels, and formulas; formulas include addition, subtraction, multiplication, division, power, trigonometric, integer, absolute, natural logarithm, and exponentiation; replicate numbers or formulas; insert or delete rows or columns; copy, save, load, and screen dump; and built-in calculator. The program is shipped with bound instruction manual, pre-recorded audio tape, and vinyl album case.

This popular spreadsheet now has three new templates especially designed for busy people who do not have the time to set up their own spreadsheet applications. Once the TPlan or NPlan is loaded, simply select and load the application template that fits your particular need. The three new templates are:

Financial Management — Includes T Plan and N Plan application templates for: Stock Portfolio, Home Ownership, Home Budget, Life Insurance Requirement, and Personal Check Register.

Business Management — Includes T Plan and N Plan application templates for: Income Statements, Balance Sheets, Business Start-up, Break-even Quantity, and Expense Analysis.

Sales and Marketing Management — Includes T Plan and N Plan application templates for: Sales Forecast, Profit Mark Up, Sales Analysis, Project Cost Estimate, and Advertisement Efficiency Measurement.

AMPI also has available several additional new software programs for the Radio Shack TRS-80 Model 100 and NEC PC-8201A. These include: Income Property Analysis, Portfolio Analysis, Curve Fitting, Histogram and Plot, Equation Solver, RPN Calculator, and FORTH.

Write for free catalog listing additional Radio Shack TRS-80 Model 100 and NEC PC-8201A business and engineering programs.



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REVIEWS

message appears. The machine takes a while to sort the file and output to the printer. Then a second message, re-sorting file, appears and the menu reappears. The manual cautions you to be patient and not hit break or the file will be messed up.

Once a hard copy is generated, you can select the option to close out expenditures. The option purges the document files and frees your memory.

DATA MANAGER. Along with the expense account, report, and memory manager, there is a real bonus — data manager. But I had to go through the tutorial and try a couple of examples before figuring out how to use it efficiently.

The program prompts for an input file name, which it calls A, asks for the number of a data field, and if you want the input file deleted. If the file is long and your RAM memory is getting low, it's better to save the input file to tape or disk and chose the delete option.

The next prompt asks for an output file name, and number of data fields you want in the new file. The screen then shows the choices of select (F2), merge (F3), or menu (F8).

LIMITLESS. When select is chosen, the next options seem overwhelming. If you've picked EMDATA.DO as the beginning or input file, you're shown a listing of the data field numbers and description. When creating the new file, data from the beginning file can be rearranged in any order you prefer. For example, you might want expense account name first, then amount, client name, date, and fund.

After data-field order is created, you can select information within the field, such as client names from A to E only, or amounts between \$10 and \$100, or dates from the beginning of this month to today. You can rearrange none, some, or all of the field.

The enter key stops arrangement of the field and returns to the previous menu with F7 now added to the screen. When this is hit, "sorting..." appears on the screen, and extra periods are added to remind you the program is still thinking. When sorting is completed, the beginning menu is shown, and the new, sorted file appears as a document file.

MORE OPTIONS. The program also allows a summary function that selects information from any document and

produces a total. Another option is the merge function which combines two files into one file based on a field common to both. The summarize and merge options are operated exactly like the select program.

I experimented with the program using the select portion to alphabetize my ADRS.DO file and to separate CompuServe ID numbers. It worked very well. This data-manager program isn't dBase II in options, but I'm not certain it isn't easier to use and it sorts faster!

MINOR OBJECTIONS. A minor complaint is the slow screen-response time when the Traveling Software logo appeared. This is easily corrected by breaking into the program and shortening the time-delay loop.

One other irritation was the explanation of the data-base manager instructions. The authors spent many pages showing me how to connect the cables and set time and date. I'd have appreciated a more user-friendly explanation of the real meat-and-potatoes of this package.

GOOD OVERALL. The Traveling Expense Manager also can be interfaced with Traveling Writer to prepare standard report or letter forms, or billing formats. Traveling Writer isn't included with this software, but the authors tempt you with the possibilities of using both programs to create form letters and invoices.

All four programs chewed up a total of 22.5K of memory, but you needn't have all in memory at the same time. DATMGR occupied 4.5K, RPT 7K, EXPMGR 9K, and MEMMGR 2K.

I was impressed with the program's ability to track expenses by client and account as well as by cash or credit card, and to alert me when I'd spent the cash advance, overdrawn my checking account, or gone over my charge card limit.

I like the report function which generates line feeds, the memory manager which lets me see file length, rename files, and efficiently kill document files. I'll get a lot of practical use out of the data-base management program.

And the price is excellent. Four programs for \$60 breaks down to \$15 per program. Where can you get a good data-base manager these days for that? I'll get a lot of use out of the Traveling Expense Manager. ◀

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By RONALD F. BALONIS

The Model 100 is a natural for armchair analysis of things, like lottery numbers. Whether you follow a lottery game for the fun, excitement, or suspense of it, or just a desire to win, you probably do some type of analysis. Everyone has a need for order, and number analysis does away with some of the uncertainty in selecting lottery numbers.

Once upon a time, the way to become rich was to inherit it, or through hard work and a bit of luck. Now, all you need is a buck for a lottery ticket and the bit of luck; the odds are much the same, maybe better. State Lotteries are

billion dollar a year businesses with the noble purpose of making you rich and reducing your taxes.

HOW IT BEGAN. The lotteries started in 1964 in New Hampshire; and now, 16 states and the District of Columbia have some form of one; 70 percent of the adult population play them.

Pennsylvania has one of the richest and most productive lottery systems of all. Its Lotto has made over 130 millionaires in less than two years.

In Lotto, for a buck, you get two chances to pick the six numbers of 40 numbered ping pong balls in the drawing. The odds of winning are near two million to one.

The Pennsylvania Lotto game uses an on-line computer terminal. You fill out a bet slip, about the size of the old computer cards, by shading a block next to the selected numbers; then the terminal reads the slip and prints your ticket with the numbers selected, drawing date, amount bet, and a validation number.

Neat and easy. The computer only does record keeping; a lottery machine

with numbered ping pong balls is used for the actual drawings.

NO LOSERS. Pennsylvania's Lotto is a parimutuel system. That is: 50 percent of sales are used for the prize money, divided among the winners; and 50 percent for programs benefiting senior citizens. No losers in this one.

The odds are:

- First prize (all six numbers right) — 1,919,190 to 1.
- Alternate first prize (five plus an alternate number right) — 319,865 to 1.
- Second prize (five of six right) — 9,407 to 1.
- Third prize (four of six right) — 220 to 1.

With a choice between winning or losing, most people choose to win. It's natural to use any help you can. LOTTO.BA (Program Listing 1) performs analysis by methods which depend as much on visual acuity as numeric value.

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PREDICT RANDOMNESS? Can you compute the probable outcome of random events? Can you predict the outcome of a random event? The answer, of course, depends on the randomness of the event.

Lottery number machines are made to produce fair and random drawing numbers, but mechanical and physical differences are statistical facts of life. The numbers drawn only approach the expected uniform distribution. So, given that after the fact digit trends exist and occur, the key is to identify them before the fact to improve your chances.

The analysis starts with a Lotto data file, LOTDAT.DO (Exhibit 1), which you maintain with the 100's text editor. The file is set up as "last in, first out" with new numbers added to the top. For an analysis run, you select numbers from the last five drawings up to the last 99 drawings.

LOTTO.BA analyzes winning numbers in four ways:

Ranked Tabulation displays five numbers at a time with these statistics: frequency, percent of total, cumulative

total, and cumulative percent. This allows a numeric evaluation of the numbers of the analysis run. You can page through the list by pressing the spacebar. Use the Model 100 print key for hard copy of the data, one screen at a time. Press E and you exit to the menu.

Ranked Bar Plot displays a bar graph of the numbers ranked from most frequent to least frequent. This gives a graphical display of the shape of the distribution of numbers in the analysis run. Press E to exit to the menu.

Bar Plots shows the digit positions of the drawings. Here you can examine the shape of number distribution at each position or of all the numbers in the analysis run. If you press 1 to 6, a digit's frequency distribution will be displayed. Press 0 to display the total frequency distribution of the analysis. E will exit to the menu.

Simulated Drawing will simulate a drawing based on the cumulative frequency distribution of the drawings of the analysis run.

HAZARDOUS TO WEALTH. This type of analysis program makes the most of

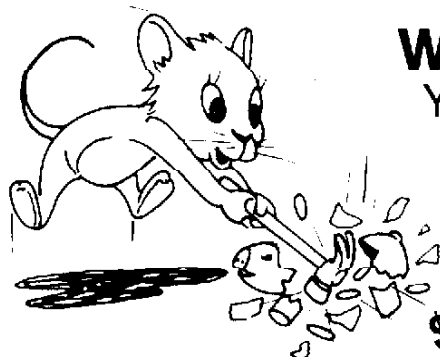
the 100's unique built-ins: graphics, RAM files, text editor, and a quick Basic code. Because of them, the program is a machine-dependent program.

Its basic algorithm is:

- Read the numbers of the drawing data file;
- Sort by position;
- Sum to a position array;
- Sum to a number array;
- Sort number array
- Compute the cumulative distribution for the drawing simulation; and
- Display the data with tabulations and graphics.

Refer to the remarks in the program listing for details of its workings.

To adapt the program to the Lotto-type game you follow, get a list of the numbers drawn. Pennsylvania's Lottery Commission prints listings of numbers drawn. That's where LOTDAT.DO came from. A word of warning though, "lotteries can be hazardous to your wealth." ◀



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Dot by dot transfer of whatever is on the screen. Versions for these printers: TRS-80 graphics Epson FX, RX or Mx models with Graf Trax Plus, NEC-8221A, serial printers without auto line feed but with optional hardware handshake (ready busy on pin 5). all parallel printers (using a "#" sign on a rotated screen). Specify printer.

SJi RTTY

Operates at all popular baud rates with 1 or 1 1/2 stop bits. All communications through RS-232 port. Optionally echo all received signals and keyboard strokes to a parallel printer.
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LOTTO

Program Listing 1. LOTTO.BA.

```

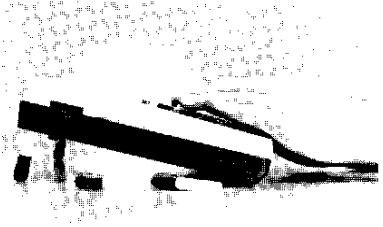
10 'LOTTO.BA 10/26/83 BY RON
    BALONIS
15 CLEAR 100
    : DIM NO(40)
    : ' NUMBER ARRAY
20 DIM INDX(40)
    : ' SORT INDEX ARRAY
25 DIM DOT(6,40)
    : ' POSITION ARRAY
35 DIM PRCNT(40)
    : ' CUME DISTRIB. ARRAY
39 DIM DOT(6)
    : ' DRAWING BUFFER ARRAY
40 CMD$=" "+CHR$(34)+" "+C
    HR$(34)+"/E "
45 TITLE$==" PA LOTTO ANALYST =="
55 '---RANDOMIZE---
60 II=VAL(RIGHT$(TIME$ ,2))
65 FOR I=1 TO 3.3*II
70 N=RND(1)
75 NEXT I
95 '---SIGN ON BILL BOARD---
100 CLS
    : PRINT @9,TITLE$ " RFB'83"
110 PRINT @290,"== ENTER TO EXIT ==";
120 PRINT @129,"NUMBER OF DRAWINGS? ";
130 LGTH=2
    : GOSUB 4020
    : 'GET # DRAWINGS
140 IF NO$="" THEN MENU
150 NO=VAL(NO$)
160 IF NO<5 OR NO>99 THEN 100
190 '
195 '---READ THE DRAWING FILE---
200 CLS
    : PRINT @9,TITLE$
205 PRINT @128,"=== COUNTING NUMBERS =
    =="
210 OPEN "LOTDAT.DO" FOR INPUT AS 1
215 FOR II=1 TO NO
    : ' GET DRAWINGS
220 PRINT @218,USING "###";II
225 FOR I=1 TO 6
    : 'READ DRAWING NUMBERS
230 IF EOF(1) THEN I=6
    : NEXT I
    : II=NO
    : GOTO 350
235 INPUT #1,N
240 NX=NX+1
    : DOT(I)=N
245 NO(N)=NO(N)+1
250 NEXT I
255 '---SORT FOR L-R DIGIT POSITION---
```

```

260 M=6
      : N=6
      : ' DO A SHELL-METZNER SORT
265 M=INT(M/2)
270 IF M=0 THEN 310
      ELSE I=1
      : L=N-M
275 J=I
280 K=J+M
285 IF DOT(J)<=DOT(K) THEN 300
290 R=DOT(J)
      : DOT(J)=DOT(K)
      : DOT(K)=R
295 J=J-M
      : IF J<1 THEN 300
      ELSE 280
300 I=I+1
      : IF I>L THEN 265
      ELSE 275
305 '---SUM THE DIGITS---
310 FOR I=1 TO 6
315 N=DOT(I)
      : DOT(I,N)=DOT(I,N)+1
320 DOT(O,N)=DOT(O,N)+1
330 NEXT I
340 DRWNO=DRWNO+1
      : 'COUNT # DRAWINGS
350 NEXT II
      : CLOSE 1
390 '
395 '---MAKE THE SORT INDEX---
400 FOR I=1 TO 40
405 INDX(I)=I
410 NEXT I
415 '
420 '---SORT THE 40 NUMBERS BY
      INDEX---
430 M=40
      : N=40
      : ' DO A SHELL-METZNER SORT
435 M=INT(M/2)
440 IF M=0 THEN 490
      ELSE I=1
      : L=N-M
445 J=I
450 K=J+M
      : JJ=INDX(J)
      : KK=INDX(K)
455 IF NO(JJ)>=NO(KK) THEN 470
460 R=INDX(J)
      : INDX(J)=INDX(K)
      : INDX(K)=R
465 J=J-M
      : IF J<1 THEN 470

```

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DEALERS INQUIRE

LOTTO

```

ELSE 450
470 I=I+1
      : IF I>L THEN 435
      ELSE 445
490 '
495 '---FORM THE CUME DISTRIBUTION---
500 TOT=NX
505 FOR I=1 TO 40
510 N=NO(INDX(I))
515 PRCNT(I)=TOT/NX
      : ' COMPUTE DIST %
520 TOT=TOT-N
      : ' DECREMENT TOTAL
525 NEXT I
530 '
590 '---THE MENU---
600 CLS
      : PRINT @9,TITLE$" RFB'83"
605 PRINT @90,"<T>ABULATION"
610 PRINT @130,"<R>ANKED BAR PLOT"
615 PRINT @170,"<D>IGIT BAR PLOTS"
620 PRINT @210,"<S>IMULATE DRAWING"
625 PRINT @250,"<E>XIT
      "
630 GOSUB 8000
      : ' GET THE COMMAND CHAR
635 ' FIND WHERE TO
      GO
640 KB=INSTR("TRDSE",KB$)+1
650 ON KBGOTO 630,1000,2000,3000,800,
      10
800 '-----SIMULATE A LOTTO DRAWING---
805 CLS
      : PRINT @9,TITLE$
810 PRINT @88,"== DRAWING SIMULATION =
      ="
815 FOR I=1 TO 6
      : DOT(I)=0
      : NEXT I
820 FOR I=1 TO 6
825 X=RND(1)+.01
      : ' X=A FREQ. DIST. %
830 FOR II=1 TO 40
      : ' TEST FOR MATCH
835 IF X>=PRCNT(II) THEN 840
      ELSE 870
840 FOR IO=1 TO 6
      : ' TEST FOR DUP
845 IF DOT(IO)<>INDX(II) THEN 855
850 I=I-1
      : IO=6
      : NEXT IO
      : GOTO 865
855 NEXT IO

```


LOTTO

```

860 DOT(I)=INX(11)
      : ' OK-THE ONLY ONE
865 II=40
870 NEXT II
875 NEXT I
880 PRINT @168,"";
885 FOR I=1 TO 6
      : ' SHOW THE LOTTO #S
890 PRINT USING " ## ";DOT(I);
895 NEXT I
      : PRINT ""
900 PRINT @288,"== <SPACE> OR <E>XIT =
      =";
910 KB$=INKEY$
      : ' MORE? OR EXIT
915 IF KB$=" " THEN 800
920 IF KB$="E" THEN 600
      ELSE 910
985 '
990 '---DISPLAY THE TABULATION---
1000 T$=" <##> ### #.##### ##
      ###.#####"
1005 CLS
      : PRINT CMD$TITLE$" RFB'83"
      : TOT=NX
      : Z=37
1010 Z=Z+5
      : IF Z>36 THEN Z=1
      : TOT=NX
1015 PRINT @80,"RANK";
1020 PRINT " #   FREQ   %   CUME
      %"
1030 POS=80
1035 FOR I=Z TO Z+4
1040 POS=POS+40
1045 PRINT @POS,USING "##";I;
1050 N=NO(INDX(I))
1055 PRINT USING T$;INDX(I);N;N/NX;TOT;
      TOT*100/NX;
1060 TOT=TOT-N
      : ' DECREMENT TOTAL
1065 NEXT I
1070 '---MORE?---
1075 PRINT @0,"";
      : GOSUB 8000
      : ' COMMAND?
1080 IF KB$="E" THEN 600
1085 IF KB$=" " THEN 1010
      ELSE 1075
1090 '
1995 '---DISPLAY LOTTO BAR PLOT---
2000 CLS
      : PRINT TITLE$;
2005 PRINT USING " LAST ## DRAWINGS";

```

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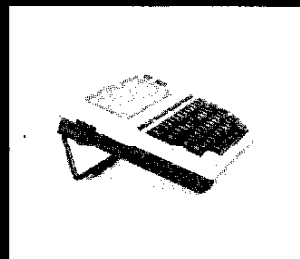
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LOTTO

```

DRWNO;
2010 '
2015 II=0
      : FOR I=0 TO 239 STEP 6
2020 II=II+1
      : XO=35-NO(INDX(II))

2025 YO=I
      : ' MAKE BAR PLOTS
2030 LINE (YO,XO)-(YO+4,35),1,BF
2035 N9$=RIGHT$(STR$(INDX(II)),2)
2040 IF INDX(II)<10 THEN N9$-
      "0"+RIGHT$(N9$,1)

2043 ' MAKE THE NUMBER
      LINE
2045 PRINT @199+II,LEFT$(N9$,1);
2050 PRINT @239+II,RIGHT$(N9$,1);
2055 FOR IO=0 TO 1
2060 PSET (2+I,37+IO)
2065 NEXT IO
2070 NEXT I
2080 PRINT @288,"==== PRESS <E> TO
      EXIT ==== ";
2085 GOSUB 8000
      : ' COMMAND?
2090 IF KB$="E" THEN 600
      ELSE 2085

2990 '
2995 '---DISPLAY DIGIT BAR PLOTS---
3000 '
3010 KB=0
3020 CLS
      : PRINT TITLE$;
      : II=0
3030 PRINT USING " LAST ## DRAWINGS";
      DRWNO;
3040 '
3050 FOR I=0 TO 239 STEP 6
3055 II=II+1
      : XO=35-DOT(KB,II)
3060 YO=I
      : ' MAKE BAR PLOTS
3065 LINE (YO,XO)-(YO+4,35),1,BF
3070 N9$=RIGHT$(STR$(II),2)
3075 IF II<10 THEN N9$="0"+RIGHT$(N9$,
      1)
3078 ' MAKE THE NUMBER LINE
3080 PRINT @199+II,LEFT$(N9$,1);
3085 PRINT @239+II,RIGHT$(N9$,1);
3090 FOR IO=0 TO 1

```

```

3095 PSET (2+I,37+IO)
3100 NEXT IO
3110 NEXT I
3115 PRINT @280,"== BAR PLOT == DIGIT";
3120 PRINT "      <E>XIT OR # ";

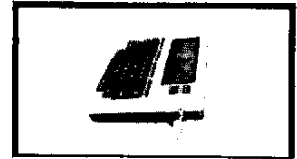
3125 PRINT @301,"#";KB;
3130 PRINT @318,"";
      : GOSUB 8000
      : 'COMMAND?

3135 ' SEARCH FOR DIGIT OR WHERE TO GO
3140 KB=INSTR("0123456E",KB$)-1
3150 IF KB=-1 THEN 3130
3160 IF KB=7 THEN 600
      ELSE 3020

3900 '
4000 '--- NUMBER OF DRAWINGS?---
4020 GOSUB 8000
      : ' CALL RON'S INKEY$
4025 IF KB$=CHR$(13) THEN RETURN
4030 IF KB$=BKUP$ THEN 4040
      ELSE 4060
4040 IF LEN(NO$)>0 THEN 4050
      ELSE 4060
4050 PRINT KB$;" ";KB$;
      : NO$=MID$(NO$$.1,LEN(NO$)-1)
4055 GOTO 4020
4060 IF KB$<" " OR KB$>CHR$(126) THEN
      4020
4070 IF LEN(NO$)=LGTH THEN 4020
4080 NO$=NO$+KB$
      : PRINT KB$;
      : GOTO 4020

7790 '
7795 '---RON'S INKEY---
8000 KR$(0)=CHR$(239)
      : KR$(1)=" "
      : CT=1
      : BKUP$=CHR$(8)
8005 CT=1
      : 'RON'S INKEY
8010 PRINT KR$(CT/10)BKUP$;
      : CT=CT+1
      : KB$=INKEY$
8015 IF KB$<>" " THEN PRINT " "BKUP$;
      : RETURN
8020 IF CT>19 THEN 8000
      ELSE 8010
9000 '---END OF PROGRAM--- ◀
    
```

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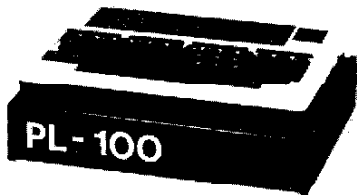
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Exhibit 1. LOTDAT.DO File.

37,26,40,18,22,30
 15,06,27,04,28,29
 03,25,27,11,06,04
 36,04,20,27,18,02
 12,38,34,05,13,07
 31,04,15,22,10,23
 28,26,33,16,20,35
 17,14,24,39,09,08
 14,25,12,33,39,24
 30,01,11,39,09,04
 27,29,10,33,14,25
 28,02,30,25,11,12
 40,38,20,09,12,29
 14,12,09,15,35,06
 33,04,37,15,39,27
 16,28,30,08,25,03
 09,40,11,10,37,26
 02,07,11,16,22,32
 04,08,19,20,21,38
 06,08,11,30,32,39
 11,12,15,19,22,32
 03,04,20,29,32,39
 01,08,20,23,26,34
 03,09,17,18,36,40
 07,18,20,28,31,39
 14,20,28,29,31,40
 05,08,10,26,32,39
 01,13,14,25,33,35
 03,15,27,28,34,35
 04,07,09,18,25,28
 09,14,22,27,34,35
 14,23,26,28,32,39
 07,09,23,24,28,36
 08,10,11,24,34,37
 05,06,09,20,21,37
 02,21,25,26,35,37
 01,22,29,30,36,37
 06,17,27,32,37,40
 08,14,20,29,33,40
 06,12,19,20,33,38
 02,06,08,16,25,37
 12,16,22,31,34,40
 03,11,12,24,25,34
 15,17,19,30,33,39
 03,09,17,18,22,24
 05,08,17,26,39,40
 05,06,14,21,31,39

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Street _____

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- 11, 16, 27, 31, 33, 40
- 01, 04, 14, 17, 27, 33
- 05, 14, 27, 34, 36, 39
- 08, 12, 22, 27, 30, 36
- 03, 16, 21, 26, 35, 38
- 13, 14, 19, 27, 31, 37
- 01, 08, 09, 22, 24, 26
- 05, 10, 14, 20, 22, 36
- 02, 15, 16, 18, 21, 27
- 08, 14, 26, 35, 37, 38
- 02, 10, 26, 29, 36, 40
- 21, 26, 34, 36, 38, 39
- 02, 04, 15, 20, 24, 33
- 08, 10, 27, 32, 34, 38
- 05, 07, 24, 27, 28, 32
- 04, 05, 08, 20, 27, 40
- 05, 06, 11, 23, 27, 36
- 02, 03, 08, 15, 16, 34
- 20, 21, 23, 30, 33, 34
- 03, 06, 07, 11, 26, 37
- 05, 09, 24, 26, 33, 38
- 07, 21, 24, 25, 37, 39
- 07, 10, 14, 21, 26, 38
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- 04, 06, 08, 14, 28, 37
- 01, 04, 22, 29, 37, 38
- 16, 18, 21, 24, 29, 35
- 03, 15, 22, 31, 32, 39
- 05, 07, 17, 19, 26, 29
- 07, 16, 17, 19, 21, 38
- 04, 11, 18, 19, 26, 28
- 01, 14, 18, 26, 30, 31
- 14, 16, 18, 24, 29, 40
- 06, 09, 19, 24, 25, 33
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- 04, 17, 20, 24, 33, 37
- 01, 05, 08, 19, 24, 39

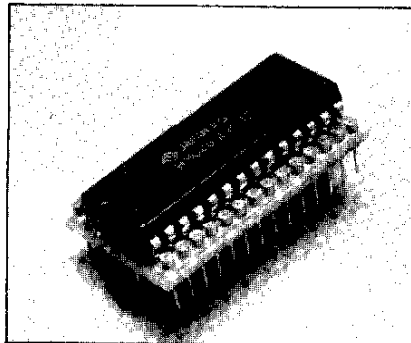
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TANDY SELLS CHEVIES OF COMPUTER INDUSTRY

This is about Radio Shack. For the vampires among us who were anticipating a blood letting, you may be disappointed. I like Radio Shack ... sort of. There's plenty about it which could be improved. But as a place to buy computer stuff, it's not that bad.

Among the majors in the marketplace, it's above the rest in attempting to address the actual needs of computer customers. Radio Shack doesn't fit my style, nor does it quite fit into the public's current perception of high-tech performance. Let's face it, Radio Shack is the Chevrolet of the computer industry, when others claim to sell Cadillacs or Porsches.

This nation always has needed a good Chevrolet, and eventually the media and the public will come to understand that the standard applies to

computers as well. The snazziest and the fastest are only exceeded by the newest as the dominant themes by which computers are sold. In those categories Radio Shack doesn't fare well.

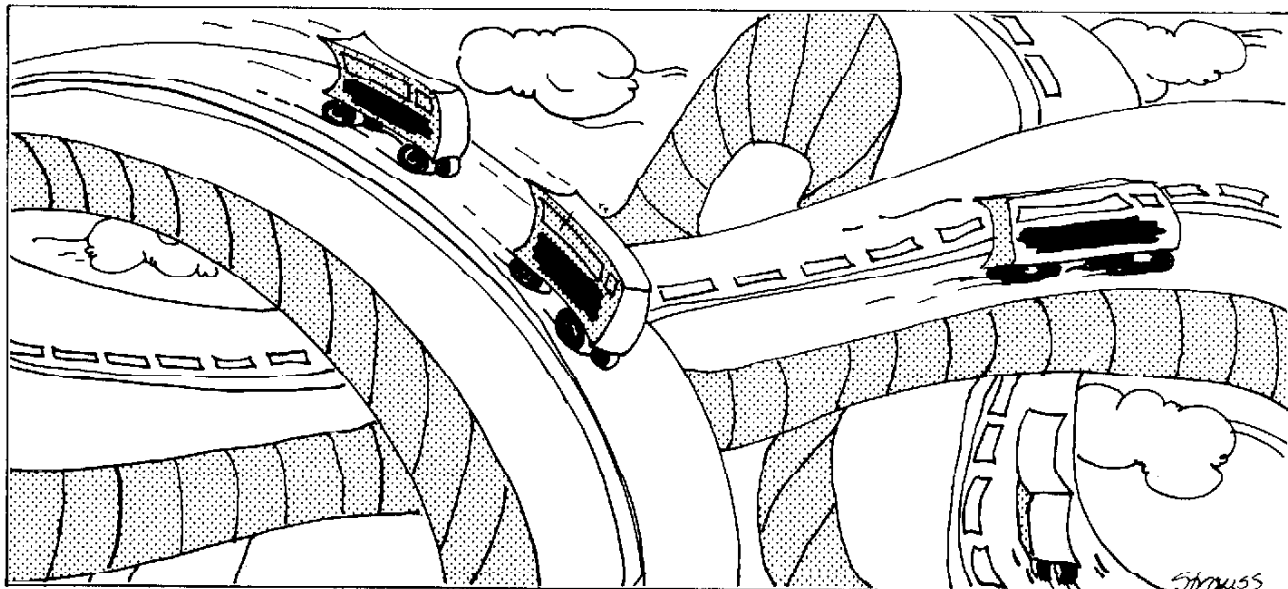
WORKABLE COMBO. There are four areas which attract me to Radio Shack. In absolute terms their documentation is good, and by comparison, it's superior. Generally it's written for the comprehension of the user and in plain English. Their computer, their documentation, and a human are a workable combination, and that's often not the case.

As a computer novice, with a liberal arts background, I was able to teach myself Basic programming using only the Model I and the Radio Shack-supplied Basic workbook. The fact that during that period I became reclusive

and hostile, was separated and divorced, shouldn't be blamed solely on Radio Shack.

In past columns I've referred to the end-user loop caused by separation of dealer, hardware, and software vendor. At Radio Shack, the three are combined into one which makes it more difficult to pass the buck, and the user has the added benefit of feeling oppressed by one corporate giant instead of three.

NO FRILLS. There's at least one knowledgeable individual at each of Radio Shack's dedicated computer outlets. So if you know what question to ask, you usually can get a reliable answer. Unfortunately, even for their computers, a Radio Shack transaction still has the aroma of cash and carry, and it's becoming obnoxious to have to report my name and address each time I buy an 89-cent battery.



Radio Shack's best user quality is its equipment tends to fulfill user need without the bells and whistles of excess capability. It makes their products seem less attractive when in fact they're better suited to the more mundane computer task of everyday use. I also use a 16-bit Victor 9000 with a 10 megabyte hard disk. In every category of computer comparison the Victor 9000 is a vastly superior product to the Model I.

However, there's no relational data base need of my small law office which couldn't be effectively performed in acceptable time by the Model I. Word processing is much better on more sophisticated equipment. But for all other functions the difference between the oldest technology, the Model I, and the newest technology, the Victor 9000, isn't one of necessity.

It's an oddity of the computer marketplace that new users, especially small businesses, are initiated at the front end where the sophistication, technology, and capability far exceed actual need. When you only have 250 records to sort, the difference between the fastest and slowest computer is still less time than a trip to the water fountain.

THE GOLD STAR. The final area of Radio Shack gold stars is the Model 100 itself. The 100 was bold, but wasn't overdone. It has triggered a dramatic shift in the application of computer power by giving it actual portability. The Osborne-type computer didn't deliver promised portability, but only made it a little easier to lug the sucker home.

The 100 has made the computer a personal tool by allowing it to go wherever a person is and not requiring a person to go to the computer. In my office, in court, on the beach, in bath tubs, on planes, in bed, in the elevator, at the grocery... the 100 can be and has been seen.

Even with a positive attitude toward Radio Shack there's still plenty to complain about. However, it's time for consumers to grow up when it comes to disapproval.

TWO TO TANGO. Radio Shack is a corporate Goliath and as such, it has its agenda and decision-making apparatus. Radio Shack doesn't want to get in

a hot tub with us; all they want is to sell computers and make a profit.

Every consumer transaction has at least two players, and each has the power to say no. If the consumer proceeds without being informed, that doesn't make the seller a villain, but instead makes the consumer stupid. The morality of Radio Shack's corporate policy isn't any more at issue than the morality of your purchasing decisions. They're both self-serving, as they should be.

I'm not condoning deceptive or predatory practices. In my experience in the computer marketplace and as a lawyer, far more problems result from ignorance than deception. As a lawyer I can do something about deception; as a consumer I can do something about ignorance.

What Radio Shack must understand is it's perfectly appropriate to expose consumers to the full consequences of their decisions, so like Radio Shack, the consumer can make a smart decision based on self-interest. Major User Rule: If you have to describe what you thought was the case by beginning with "I assumed," then you blew it. Remember: ASS-UM-E.

Gn-[]Bq_%r7ljmYY3@nxmh *

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HERE TODAY. Rumor has it a second generation Model 100 is around some corner. Radio Shack is mum on how distant in the future, not wanting to pull an Osborne. I can understand Radio Shack's point of view, as they don't want to stop sales of the 100 to those who might prefer to wait for the sequel. I also can understand the reluctance of consumers to pay \$800 for a fully-decked 100, only to find out a week later that a Model 200 costs a thousand dollars, is twice as good, and is forcing the 100 to be closed out at a huge discount. It's the classic conundrum of the computer marketplace.

The automobile industry is far more stable. Product and price changes are more moderate and predictable, to say nothing of traditional model years. It's much less likely the consumer is going to wake up the next morning to news that makes a buyer feel stupid and mad. Imagine how much better it'd be for the user if the computer industry had brand-name product consistency, together with predictable price fluctuation and model cycles, and a viable market for used equipment.

The other side is the auto industry has better customers. Most know how

to drive and have a better idea of what they need. For the present I've no solution except to say, "Seller be fair; buyer beware!"

SOME CONSIDERATIONS. There are some negative aspects of Radio Shack's 100 marketplace that consumers should consider. For the advertised purchase price the 100 comes with an impressive array of capabilities. However, many of these capabilities, even primary ones, aren't useable unless you obtain additional products at extra expense.

For example, you can't plug it in unless you pay extra: (AC adapter, \$5.95); you can't use the printer capability unless you pay extra (print cable, \$14.95); you can't use the direct-connect modem unless you pay extra (modem cable, \$19.95); you can't use tape storage without paying extra (cable and recorder, \$49.95).

Although Radio Shack characterizes these as options, in reality each is fundamental to the primary capabilities of the 100.

In making a decision as to what computer to own, like marriage, consider it's a commitment with long-range con-

sequences, where you'll be subject to much temptation and opportunity for infidelity. It's vital that you evaluate the overall expense and not just the expense of the centerpiece.

Also obvious but easily forgotten: Decide if you can afford it after you remember to include sales tax, not before. In Oakland, CA, "I guess I can afford \$1000," translates to \$1065. Whenever a price is quoted, ask the salesperson "what else will I need, and how much is that with tax." Hear it all before you make your decision!

Finally, Radio Shack hasn't been impressive with its support of the 100. Their Disk-Video interface (\$799) isn't super, and their software selection is meager, not very good, and expensive. There's a developing market for such products from other vendors but if you're use to Apple and IBM, you're going to find the pickings pretty sparse.

BUY SMART. So Tandy, alias Radio Shack, isn't perfect. The point is for the customer to shop wisely. Again, like marriage, don't be afraid to get into it, but do so with your eyes open. ◀

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BEFORE YOU MANAGE YOUR RAM, KNOW WHAT'S IN IT

If you want a productive relationship with your Model 100, RAM management is a necessity. Here's a tool to make that job easier.

By RONALD F. BALONIS

The Model 100. It will make you a better manager. If you want it to really work for you, you have to learn how to work with and manage its RAM. But, to efficiently manage its RAM, you need to know how long your files and programs are. Here's a utility program to measure your files.

RAMDIR.BA displays a directory of the document and Basic files and how many bytes each uses of the Model 100's RAM. It's short. Program listing 1 is 1332 bytes, and even less without spaces and remarks. And, it's easy to use, just run it and in a couple of seconds the files and their lengths are displayed, 10 at a time.

```
10 'RAMDIR.BA RAM DIRECTORY
20 CLEAR 200
   : 'Ronald F. Balonis 7/21/84
30 DEFINITI-M
   : F$=""
   : DIM F$(20),F(20)
40 TLE$="+++ RAM File Directory +++"
50 NOS$="[ \ \.\\ ] = #### "
   : FO$=""
100 CLS
   : PRINT @7,TLE$
   : '--Sign on
105 FX$=CHR$(192)
   : FY$="DO"
110 X=VARPTR(FO$)
   : POKE X,240
115 POKE X+1,174
   : POKE X+2,249
   : I=0
120 I=INSTR(I+1,FO$,FX$)
125 IF I=0 THEN 160
130 F$=MID$(FO$,I+1,10)
135 IF MID$(F$,9,2)=FY$ THEN 140
   ELSE 120
140 II=II+1
   : F$(II)=F$
145 IL=ASC(MID$(F$(II),1,1))
150 IH=ASC(MID$(F$(II),2,1))
155 F(II)=256*IH+IL
   : GOTO 120
160 IF FX$=CHR$(128) THEN 200
165 FX$=CHR$(128)
   : FY$="BA"
   : GOTO 110
200 M=II
   : '--Rank Files
210 M=M/2
   : IF M<=0 THEN 300
220 FOR J=1 TO II-M
   : IJ=J
230 IM=IJ+M
240 IF F(IM)>=F(IJ) THEN 290
250 F=F(IJ)
   : F$=F$(IJ)
260 F(IJ)=F(IM)
   : F$(IJ)=F$(IM)
270 F(IM)=F
   : F$(IM)=F$
280 IJ=IJ-M
   : IF IJ>=1 THEN 230
290 NEXT J
   : GOTO 210
300 IL=ASC(MID$(F$(II),1,1))
   : 'Find end
310 IH=ASC(MID$(F$(II),2,1))
   : 'of last
320 FX$=CHR$(0)+CHR$(0)+CHR$(0)
330 IF MID$(F$(II),9,2)="DO" THEN FX$=
   CHR$(26)
400 FOR XI=IH*256+IL TO HIMEM STEP
   240
410 IH=XI/256
   : IL=XI-IH*256
420 X=VARPTR(FO$)
   : POKE X,240
430 POKE X+1,IL
   : POKE X+2,IH
440 I=INSTR(FO$,FX$)
   : IF I=0 THEN 460
450 F(II+1)=I+XI+LEN(FX$)-1
   : XI=HIMEM
460 NEXT XI
500 I1=1
   : I2=10
   : IF II<=10 THEN I2=II
505 CLS
   : PRINT @7,TLE$
   : '--Ram Dir
510 FOR I=I1 TO I2
515 F$=MID$(F$(I),3,6)
520 FY$=RIGHT$(F$(I),2)
525 PRINT USING NOS$,F$;FY$;F
   (I+1)-F(I);
530 NEXT I
   : PRINT
535 PRINT @288,"+++ Press Spacebar
   +++";
540 IF INKEY$="" THEN 540
545 IF I=I1+1 THEN MENU
550 I1=I
   : I2=II
   : GOTO 505
```

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HOW THEY'RE STORED. RAMDIR.BA takes advantage of the Model 100's dynamic file management routine. The Model 100's files are always arranged according to type, sequentially from the bottom of RAM: Basic, document, and then, machine-language files. To compute the lengths of the files in RAM, you only need to read the directory addresses for all the files, then subtract them to get each file's length. See "Tandytalk" in January's *Portable 100* for more information on how things are arranged in RAM.

Five sections make up RAMDIR.BA's program:

- Variable initialization, lines 10 to 60;
- Read the Model 100 directory, lines 100 to 190;
- Sort the directory start address, lines 200 to 290;
- Find the end of the last file in RAM routine, lines 300 to 470; and
- The RAM file display routine, lines 500 to 550.

Of these only the middle three need explaining.

The read the directory routine makes a string (F0\$) of the RAM directory area of RAM by poking the address into F0\$'s VARPTR. Then the INSTR function searches for all document files and then for all Basic files. Each time it finds a file; it puts the file's name and address in the F and F\$ arrays.

SHELL SORT. When all the files are found and counted, they are ranked using a version of D. H. Shell's sort algorithm.

Then a routine searches for the end of the last file in RAM. Again the routine makes a string of the last file (F0\$) and the INSTR function searches for its end (F\$). For document files the end is decimal 26, and for Basic files it is three decimal zeros. Then on to the display module.

RAMDIR won't eliminate OM errors for you, only unlimited RAM can do that. But it will save you time and by knowing the size of your files, you and your Model 100 will have a more productive relationship. ◀

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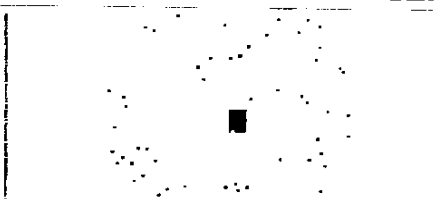
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```
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SAVING DOOMED FILES AFTER A COLD START

When you're staring at a blank menu where once there was a treasury of RAM files, turn to Dumper.

By RICHARD J. PERRY

After a cold start, the Model 100 returns to its virgin state and the directory of RAM files is lost (the directory in system RAM is filled with zeros, and only the built-in application-

program names appear listed on the main menu screen).

But the user's files are really still present in RAM!

Here's a listing to help you recover

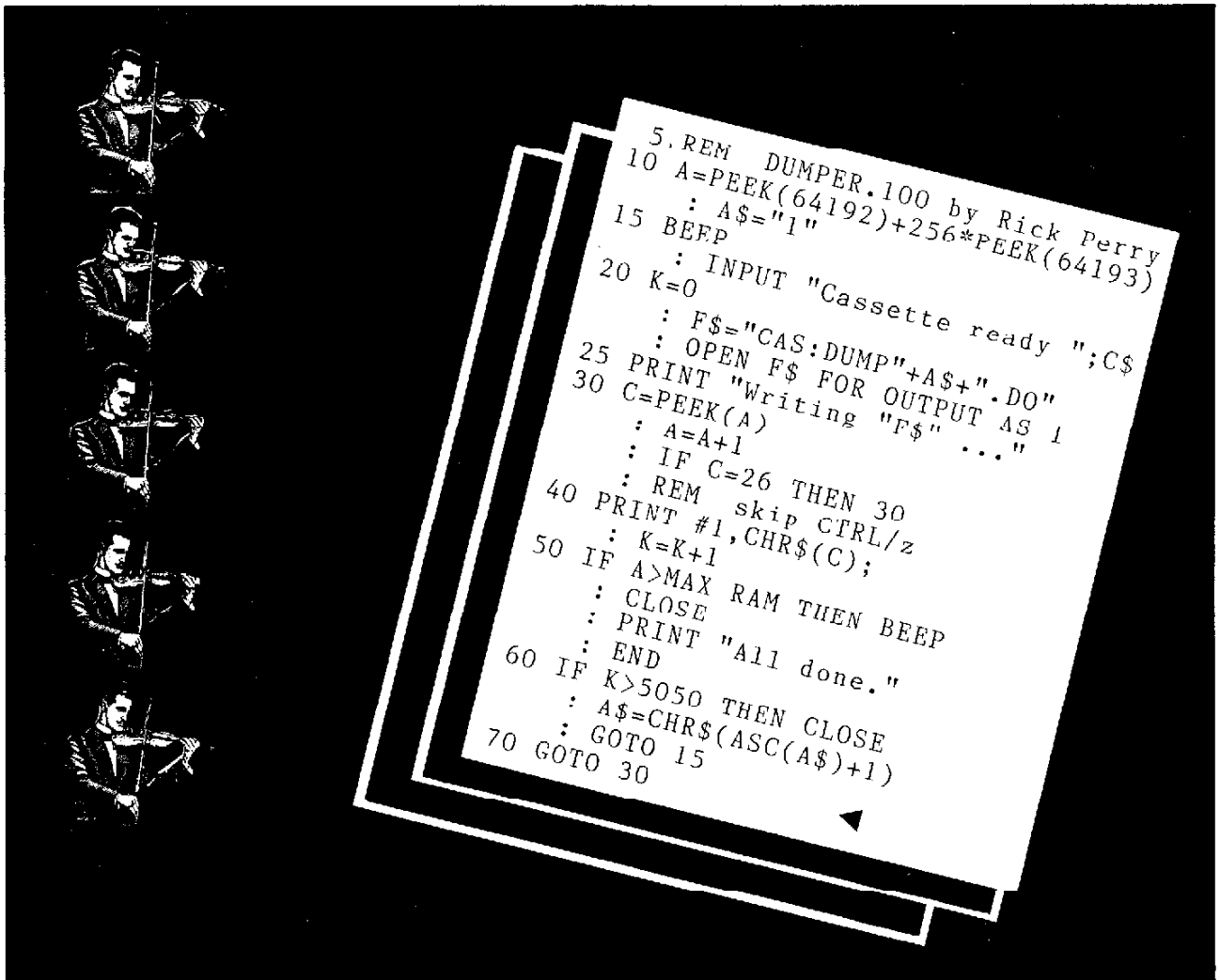
the so-called lost files.

To get your test files back after a cold start, type in program listing 1. Dumper will copy the RAM image into cassette files DUMP1.DO, DUMP2.DO...5050 bytes each.

After this is done, use TEXT to load the files back, one at a time, and edit out any garbage (data from tokenized Basic programs and machine-code files will appear as mostly graphics characters).

On a 32K machine, Dumper will create six cassette files and require about 12 minutes of tape. Note that the program pauses before starting to write each file to give you a chance to insert a new tape if necessary.

Hopefully, if you regularly back up your files and are careful when POKE-ing around in RAM, you'll never be bothered by the possibility of a cold start. But if you do happen to get a case of the "Jan 01, 1900" blues, Dumper can save you a lot of kilobytes of retyping. ◀



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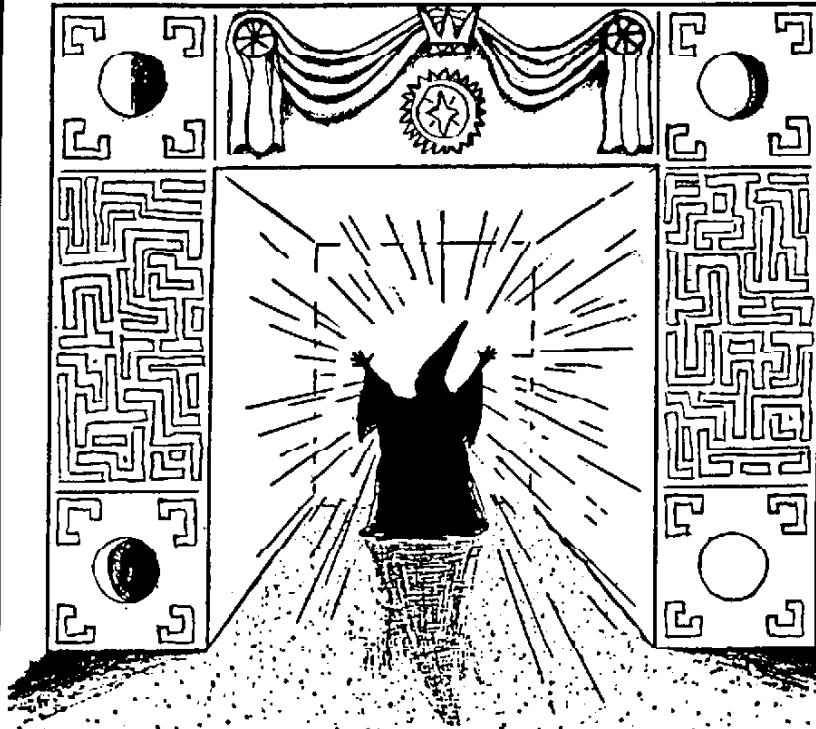
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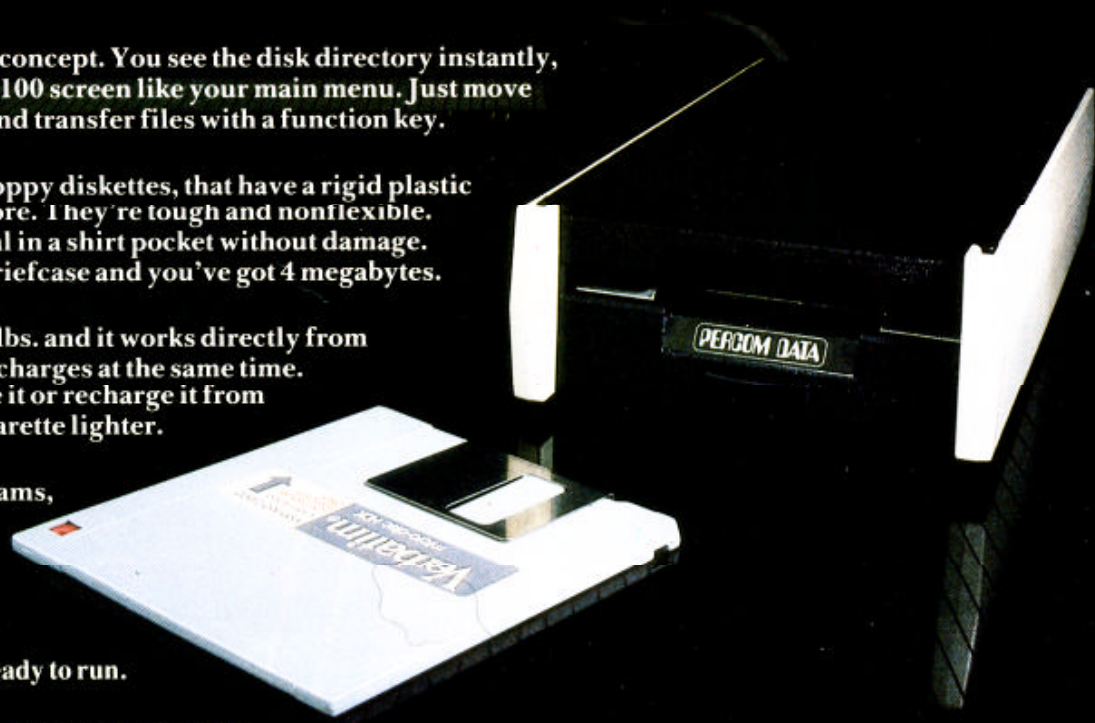
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PORTABLE 100



Illustration by Rod McCormick

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COMMUNICATIONS	1984	08	38	Sharon Lerch	A Writer's Colony Like No Other Is a Keystroke Away

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- Run a program directly from disk

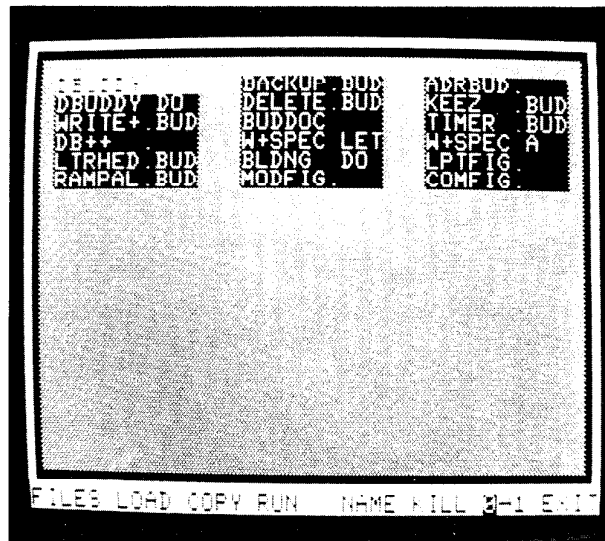
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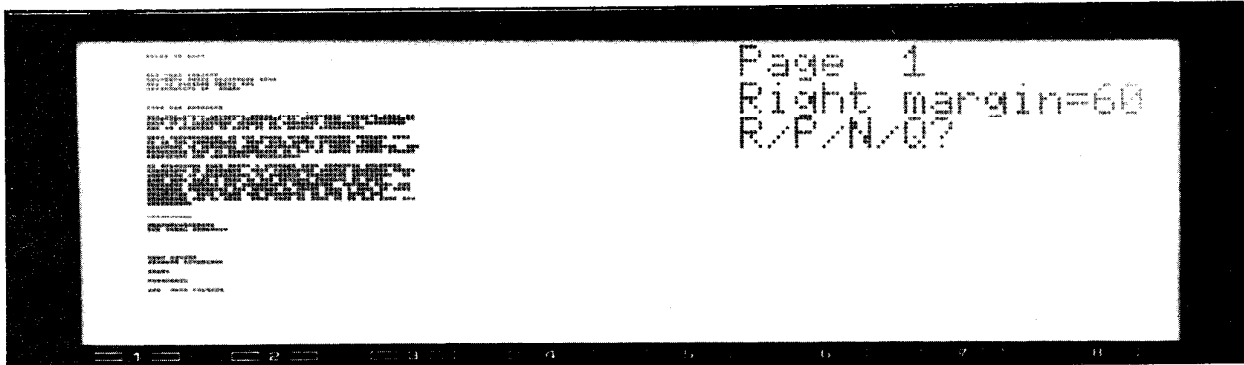
Category	Year	Mo.	Pg.	Author	Article Title
FULL-DUPLEX	1984	05	75	Terry Kepner	Wants Glossary
FULL-DUPLEX	1984	06	82	Terry Kepner	Chinese Word Processing
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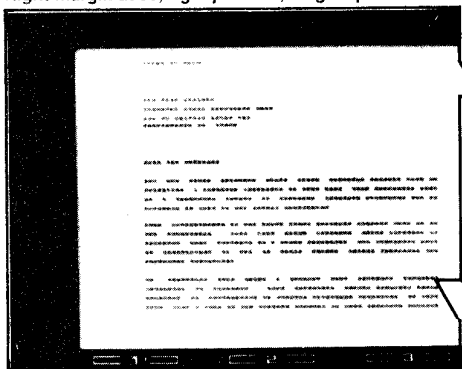
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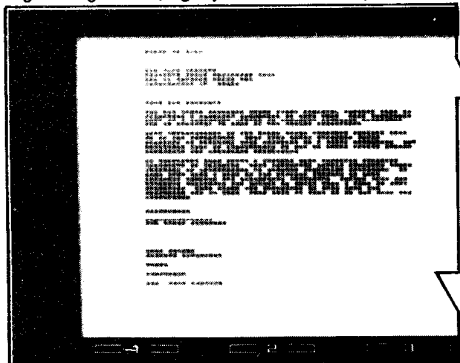
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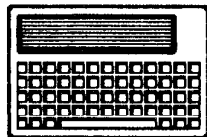
Category	Year	Mo.	Pg.	Author	Article Title
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MAIL.100	1984	01	8	N. D. McCarthy	Alkaline Battery Solution Reincarnated
MAIL.100	1984	01	8	R.L. Lawrence	Alkaline Battery Solution Reincarnated
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MAIL.100	1984	03	8	John C. Hudelson	Reader Lends Helpful Program for Text Printing
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Category	Year	Mo.	Pg.	Author	Article Title
MAIL.100	1984	08	6	Greg Bouffard	Two Thankful Readers
MAIL.100	1984	08	8	Fred W. Forrester	Reader Offers Products Help
MAIL.100	1984	08	9	Bruce Drake	Far East Entourage
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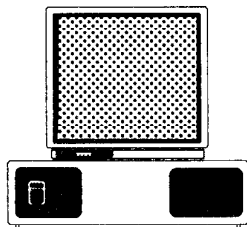
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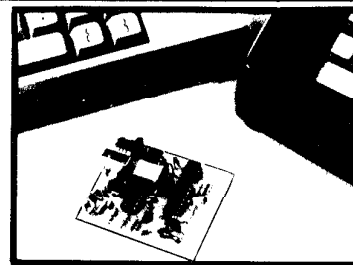
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Category	Year	Mo.	Pg.	Author	Article Title
NEW PRODUCTS	1983	12	63	No Author	Chip-Tote
NEW PRODUCTS	1984	01	62	No Author	Annotated Bibliography of Computer
NEW PRODUCTS	1984	01	62	No Author	Computer Publishers Publications
NEW PRODUCTS	1984	01	62	No Author	CompuServe To Offer Direct Marketing
NEW PRODUCTS	1984	01	62	No Author	Newsline Communicator
NEW PRODUCTS	1984	01	62	No Author	The Source
NEW PRODUCTS	1984	01	63	No Author	ComRiter CR-II Daisy Wheel
NEW PRODUCTS	1984	01	63	No Author	The Computer Dictionary
NEW PRODUCTS	1984	02	68	No Author	Code Keeper
NEW PRODUCTS	1984	02	68	No Author	Defense Industry Report
NEW PRODUCTS	1984	02	68	No Author	Smart Cable Solves I/O Serial Connection Hassles
NEW PRODUCTS	1984	02	70	No Author	Microcomputer Software Directory
NEW PRODUCTS	1984	02	70	No Author	Staticide Wipes
NEW PRODUCTS	1984	02	70	No Author	Trav-L-Case
NEW PRODUCTS	1984	02	71	No Author	Computer Media Directory
NEW PRODUCTS	1984	02	71	No Author	Ultrasonic III Typewriter
NEW PRODUCTS	1984	03	67	No Author	CP/M 2.2 Companion
NEW PRODUCTS	1984	03	67	No Author	Pigskin Carrying Cases
NEW PRODUCTS	1984	03	67	No Author	Prairie Power
NEW PRODUCTS	1984	03	68	No Author	Elf-Writer; Elf+1; Elf-Cop; Elf-Banker
NEW PRODUCTS	1984	03	68	No Author	External Expansion RAM
NEW PRODUCTS	1984	03	68	No Author	PL-100 System
NEW PRODUCTS	1984	03	68	No Author	T Plan/N Plan; Portfolio Analysis; Income Property Analysis
NEW PRODUCTS	1984	03	68	No Author	The Radio Shack Notebook Computer
NEW PRODUCTS	1984	03	69	No Author	LAPCOM
NEW PRODUCTS	1984	04	59	No Author	Disk-Video Interface
NEW PRODUCTS	1984	04	59	No Author	Pro Aid
NEW PRODUCTS	1984	04	59	No Author	Scribe 3.0
NEW PRODUCTS	1984	04	59	No Author	The Tax Manager
NEW PRODUCTS	1984	04	60	No Author	Microindex
NEW PRODUCTS	1984	04	60	No Author	The Executive Information Service
NEW PRODUCTS	1984	04	61	No Author	COMPMAIL.+
NEW PRODUCTS	1984	04	61	No Author	Electronic Quotebook

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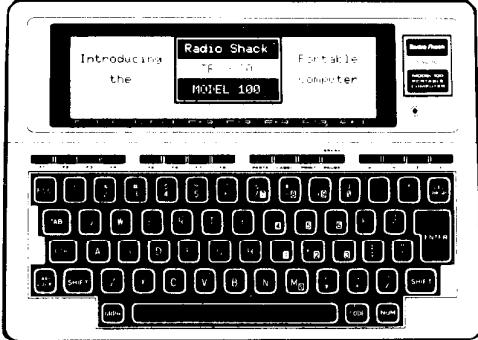
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Category	Year	Mo.	Pg.	Author	Article Title
NEW PRODUCTS	1984	04	61	No Author	The New Tech Times
NEW PRODUCTS	1984	05	67	No Author	Disk Drive for Model 100
NEW PRODUCTS	1984	05	67	No Author	ROM Chip
NEW PRODUCTS	1984	05	68	No Author	ThinPrint 80
NEW PRODUCTS	1984	05	68	No Author	Traveling Writer
NEW PRODUCTS	1984	05	69	No Author	Laplog
NEW PRODUCTS	1984	05	70	No Author	"Briefcase Boxes" for Paper
NEW PRODUCTS	1984	05	70	No Author	Magic Computer Input-Output Mug
NEW PRODUCTS	1984	05	70	No Author	Portable Secretary
NEW PRODUCTS	1984	05	71	No Author	American Tourister Case for Model 100
NEW PRODUCTS	1984	05	71	No Author	Commlock
NEW PRODUCTS	1984	05	71	No Author	Package of 13 Programs for \$24.95
NEW PRODUCTS	1984	06	76	No Author	MDT Communicator
NEW PRODUCTS	1984	06	76	No Author	Model 100 A/D
NEW PRODUCTS	1984	06	76	No Author	Portable RAM-Disk
NEW PRODUCTS	1984	06	76	No Author	Workstation-100
NEW PRODUCTS	1984	06	78	No Author	I-to-I Remote Control Software
NEW PRODUCTS	1984	06	78	No Author	Info Mate
NEW PRODUCTS	1984	06	78	No Author	Lone Writer
NEW PRODUCTS	1984	06	78	No Author	Power Prop
NEW PRODUCTS	1984	06	79	No Author	Black Box Catalog
NEW PRODUCTS	1984	06	79	No Author	Casino Games; Fun'n Games I; II; Board & Graphic Games
NEW PRODUCTS	1984	07	30	No Author	64K Upgrade Box
NEW PRODUCTS	1984	07	30	No Author	AOPA Forum
NEW PRODUCTS	1984	07	30	No Author	Computer Check Carrier
NEW PRODUCTS	1984	07	30	No Author	Lee's Guide to Published Computer Programs
NEW PRODUCTS	1984	07	30	No Author	Trip (Expense Account Recorder)
NEW PRODUCTS	1984	07	33	No Author	FullVu 100
NEW PRODUCTS	1984	07	33	No Author	Oak Carrying Case
NEW PRODUCTS	1984	07	33	No Author	Power Directors
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NEW PRODUCTS	1984	08	36	No Author	Black Jack
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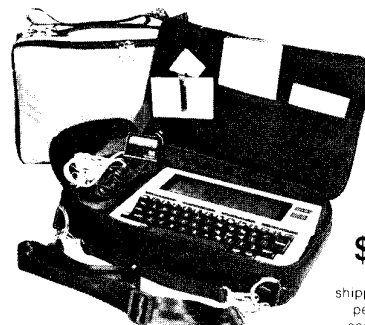
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NEW PRODUCTS	1984	08	36	No Author	Go-Anywhere Full-Function Printer and Buffer
NEW PRODUCTS	1984	08	36	No Author	Precassembled Bullet-Proof Cables
NEW PRODUCTS	1984	08	36	No Author	CALC
PORT. COMMANDER	1983	09	18	Jake Commander	Jake Is Seduced by Tandy's New Portable
PORT. COMMANDER	1983	10	18	Jake Commander	Jake Builds Another ROM cathedral to the Art of Reverse Engineering
PORT. COMMANDER	1983	11	20	Jake Commander	Jake Offers Some New Commands to Counter the Perils of Portability
PORT. COMMANDER	1983	12	24	Jake Commander	As Model 100 Converts Increase, Every Day CompuChurch Gets Nearer
PORT. COMMANDER	1984	01	24	Jake Commander	Will the Information Revolution Leave Our Nasty Neighbors Behind?
PORT. COMMANDER	1984	02	26	Jake Commander	Lock Up Those 8085 Mnemonic Writers and Throw Away the Key
PORT. COMMANDER	1984	03	26	Jake Commander	The Secret Lives of Microsilica, or Excuse Me, Sir, While I Interrupt
PORT. COMMANDER	1984	04	24	Jake Commander	How the 80C85 Microprocessor Handles Its Interrupts
PORT. COMMANDER	1984	05	20	Jake Commander	Interrupt Routine Faster than Bullet, More Complex than Mosaic
PORT. COMMANDER	1984	06	16	Jake Commander	A Look at How the 100's MPU Evolved Is a Study in Micro-Genetics
PORT. COMMANDER	1984	07	14	Jake Commander	The Difference Betwixt Basic Interpreters, Compilers, Translators
PORT. COMMANDER	1984	08	16	Jake Commander	There are Alternatives to Burning Midnight Oil When Creativity Strikes
PREVIEW	1983	09	4	John P. Mello Jr.	A Look at this Issue and A Eulogy of Sorts to the Stuff of Promise
PREVIEW	1983	10	4	John P. Mello Jr.	From Corrupting Power to Portable Power to Keyboard Power
PREVIEW	1983	11	4	John P. Mello Jr.	Can Hank Williams Deprogram the Damage of TI and Bill Cosby?
PREVIEW	1983	12	4	John P. Mello	Birth of a New Firm, Disassembly of a ROM, and a Rap of Shakeout
PREVIEW	1984	01	4	John P. Mello Jr.	It's Goodbye for the Grand Experiment
PREVIEW	1984	02	4	John P. Mello Jr.	We're Bigger but We Don't Have Enough Space Yet!
PREVIEW	1984	03	4	John P. Mello Jr.	On Apple-100 Communication and a Word About MEWS
PREVIEW	1984	04	4	John P. Mello Jr.	Briefcase Portable and Mike Greenly of The Source
PREVIEW	1984	05	4	John P. Mello Jr.	An Answer to the Query: When Will You Cover NEC and Other Topics?
PREVIEW	1984	06	5	John P. Mello Jr.	Model 100 Special Interest Group
PREVIEW	1984	07	5	John P. Mello Jr.	Everyone Wants to Know About the Life Expectancy of the 100
PREVIEW	1984	08	5	John P. Mello Jr.	The Perils of Portability Roost on an Owner
PROGRAMMING	1983	11	17	David Busch	Making Some Other Micros Speak Mews
PROGRAMMING	1984	01	47	J. Gary Bender	Bender's Better Way to Better Basic — Part 1
PROGRAMMING	1984	03	36	J. Gary Bender	Bender's Better Way to Better Basic — Part 2
PROGRAMMING	1984	04	38	J. Gary Bender	Bender's Better Way to Better Basic — Part 3
PROGRAMMING	1984	05	45	J. Gary Bender	Bender's Better Way to Better Basic — Part 4
REVIEWS	1983	09	56	Carl Cramer	The 5th Generation

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REVIEWS	1983	09	54	John P. Mello Jr.	Businesspak + Write +
REVIEWS	1983	10	17	Carl Cramer	PortaCalc
REVIEWS	1983	10	58	Charley Freiberg	Autoplot 3.0
REVIEWS	1983	10	60	Terry Dettman	Model 100 Acoustic Coupler
REVIEWS	1983	11	54	Kerry Leichtman	Put+
REVIEWS	1983	11	56	Woody Liswood	PortaPrint
REVIEWS	1983	11	59	Woody Liswood	Portadex
REVIEWS	1984	01	35	Danny Goodman	NEC vs the Model 100: Battle Royal in the Notebook Market
REVIEWS	1984	01	58	Woody Liswood	Telex+
REVIEWS	1984	01	59	Arlen P. Walker	Model 100 Games I
REVIEWS	1984	01	61	John P. Mello Jr.	The Gorilla Banana
REVIEWS	1984	02	62	Scott L. Norman	PortaStat and PortaMax
REVIEWS	1984	03	70	Dan Shafer	Comparison of Print, Write+, and Tortugawriter
REVIEWS	1984	04	62	John P. Mello Jr.	Traveling Time Manager
REVIEWS	1984	04	65	Woody Liswood	Data+
REVIEWS	1984	04	68	Scott L. Norman	TPLAN:NPLAN
REVIEWS	1984	04	72	Woody Liswood	Sort2+
REVIEWS	1984	05	54	David Dunn Thomas	Mind Master and Sky Raider
REVIEWS	1984	05	57	Mary Jeann Batham	Porta Fax
REVIEWS	1984	05	59	Mary Jeann Batham	The Traveling Appointment Manager
REVIEWS	1984	05	63	Mary Jeann Batham	Book
REVIEWS	1984	06	40	John P. Mello Jr.	The Italian Invasion
REVIEWS	1984	06	61	Glen C. Birbeck	Echo GP Speech Synthesizer
REVIEWS	1984	06	62	Stuart Hawkinson	Calculator
REVIEWS	1984	06	64	Stuart Hawkinson	P Form: Page Formatter for Text and Basic
REVIEWS	1984	06	69	Mary Jeann Batham	Executive Calendar 1.0
REVIEWS	1984	06	71	Robert K. Kawaratanii	Tenky+
REVIEWS	1984	06	72	Robert L. Green	Prairie Power
REVIEWS	1984	06	74	Charley Freiberg	Financial Analysis Packages
REVIEWS	1984	08	56	Carl Oppedahl	Pro Aid
REVIEWS	1984	08	65	John D. Perry Ph.D.	Portable Lab 100
REVIEWS	1984	08	65	John D. Perry Ph.D.	Model 100 A/D Converter
REVIEWS	1984	08	70	Debra M. Marshall	Bar Code Reader

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Category	Year	Mo.	Pg.	Author	Article Title
REVIEWS	1984	08	71	Terry Kepner	Disk+
SOCIETY	1983	09	34	John P. Mello Jr.	A Legend Before Its Time
SOCIETY	1983	12	60	David Hughes	The 100 Becomes a Silent Board Member
SOCIETY	1984	01	27	John P. Mello Jr.	As the Dust Subsides, 1983 Appears to be a MEWS Year
SOFTWARE	1983	09	24	Jake Commander	ROM Addresses: Getting BASIC to Do What You Want
SOFTWARE	1983	10	40	Thomas E. Graves	The Model 100 and the MX-80: A Powerful Duo
SOFTWARE	1983	10	55	Jake Commander	ROM Keyboard Tricks for Living Life Beyond INKEYS
SOFTWARE	1983	12	40	Jake Commander	Disassembling the Puzzle in Your 100's ROM
SOFTWARE	1984	02	45	Ronald F. Balonis	As Soon as a Micro Runs It Learns to Sort
SOFTWARE	1984	03	36	Jesse Bob Overholt	Tap into the Free Data Base Within Your ROM
SOFTWARE	1984	06	54	Jeffrey W. Levin	LDOS Gives Model 100 Mass Storage
SOFTWARE	1984	07	34	Jesse Bob Overholt	Funkey Stuff—1: Learn How to Program Your 100's F-Keys
SOFTWARE	1984	08	28	Jesse Bob Overholt	Funkey Stuff—2: Calculating File Size and More
TANDYTALK	1983	09	90	Bill Walters	Countless Trips and E-Letters Later Tandy Births the 100
TANDYTALK	1983	10	20	Bill Walters	Tandy Reorg Cleaves Computer Merchandising into Three New Parts
TANDYTALK	1983	11	14	Bill Walters	Of Meetings and Flights, Poundings and June Bugs
TANDYTALK	1983	12	22	Bill Walters	Nix Bothersome Carriage Returns and Talk to Your Mod 4
TANDYTALK	1984	01	16	Bill Walters	Delving into the Darkest Reaches of the Model 100's Memory
TANDYTALK	1984	02	22	Bill Walters	A Warning About Reset and a Four-Star CSAVE Tip
TANDYTALK	1984	03	20	Bill Walters	Some Lessons to be Learned from Kid Tamer and Fun-Key Stuff
TANDYTALK	1984	04	30	Bill Walters	Tandy Ready to Pull Wraps Off Ultimate Computer
TANDYTALK	1984	05	30	Bill Walters	What Will the Future Lap-Sized Portable Be Like?
TANDYTALK	1984	06	28	Bill Walters	Create a Data Base with Radio Shack's Disk-Video Interface
TANDYTALK	1984	07	25	Bill Walters	DVI Data Base — Part 2: Storing More Than Your Data Base on Your Disk
TELECOMPUTING	1983	09	22	Bill Loudon	Increase your 100's Storage with 128K from CompuServe
TELECOMPUTING	1983	10	24	Bill Loudon	Winging Across America Made Easier with CIS Electronic Airline Guide
TELECOMPUTING	1983	11	46	Bill Loudon	Turn Your Model 100 into an Automatic Mailman with this CIS Offering
TELECOMPUTING	1983	12	20	Bill Loudon	Beat the Christmas Crowds by Letting Your Micro Do Your Shopping
TELECOMPUTING	1984	01	24	Bill Loudon	Big Brother Isn't Watching Anyone — Yet
TELECOMPUTING	1984	02	24	Bill Loudon	How to Access Data Bases for CompuServe's Special Interest Groups
TELECOMPUTING	1984	03	24	Bill Loudon	New Electronic Mail Service Started by MCI Communications
TELECOMPUTING	1984	04	20	Bill Loudon	Get Information Edge with Investment Quotation Data Bases
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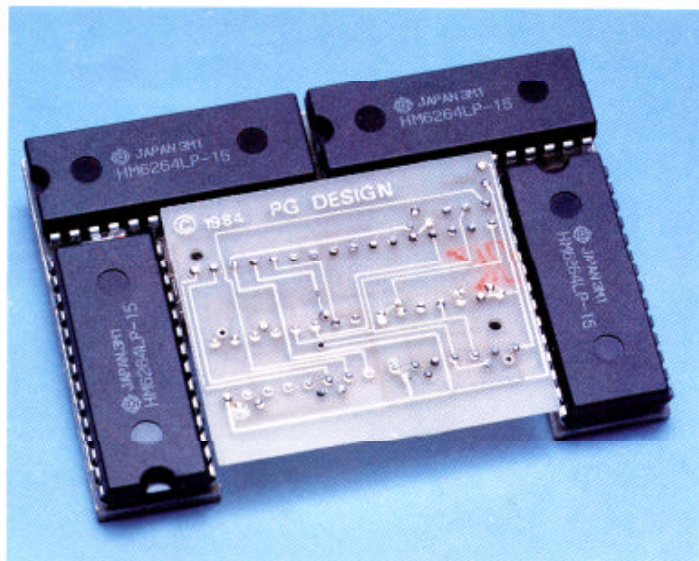
Category	Year	Mo.	Pg.	Author	Article Title
TELECOMPUTING	1984	06	25	Bill Loudon	Hear Your Interest Singing in the Pulses of the Network Nation
TELECOMPUTING	1984	07	22	Bill Loudon	NewsNet Costs More than Other Services, but Worthwhile
TELECOMPUTING	1984	08	21	Bill Loudon	Getting Tandy's Mighty Mite to Talk to Its MS-DOS Flagship
TEXTWARE	1983	09	26	Richard Ramella	Format Your Words with this Text Aid
TEXTWARE	1984	07	56	Richard Ramella	You Can Publish Newsletters with Your Model 100 and Printer
THE WIRE	1983	09	14	Scott L. Kaesar	Micro Visionary at Forum Gazes at Life Beyond Blinking Cursor
THE WIRE	1983	09	16	Chris Brown	Multitudes Gather at NCC Show, Ogle New Gavilan, Sharp Micros
THE WIRE	1983	10	14	John P. Mello Jr.	Shirley's Departure Boon for Microsoft
THE WIRE	1983	10	16	John P. Mello Jr.	Trade Mag Reports 100 Darling of Reporters
THE WIRE	1983	11	11	Tom Jurgens	First Timers Getting 100s at College Tandyland
THE WIRE	1983	11	12	No Author	Osborne Furloughs: Strikeout or Shakeout?
THE WIRE	1983	11	13	No Author	Home Micro Market Means Computer in Every Closet
THE WIRE	1983	12	12	John P. Mello Jr.	Micro Market Shook Up But Not Shook Out
THE WIRE	1984	01	13	John P. Mello Jr.	Test Results Show 100 Meets Emissions Benchmarks
THE WIRE	1984	02	14	No Author	Tandy's New 2K: The Key Word Is Leverage
THE WIRE	1984	02	17	Nancy L. Laite	View of Show of Shows Better from Sidelines
THE WIRE	1984	03	14	Nancy L. Laite	First Electronic Debate on Nuclear Arms Issue
THE WIRE	1984	03	17	John P. Mello Jr.	One Win, One Loss for the Model 100
THE WIRE	1984	03	18	No Author	Clone May Offer Solution to Paradox of IBM Dominance
THE WIRE	1984	03	18	No Author	Model 100 Picked as 1983 Standout — Again
THE WIRE	1984	04	14	Jim Lamb	Mews Draws Raves from Demanding Keypunchers
THE WIRE	1984	04	16	Mike Greenly	Flash Pizazz Evident at Vegas Electronics Bash
THE WIRE	1984	05	14	Cheryl Peterson	Airlines Still in Dark About Micros in Flight
THE WIRE	1984	05	16	Mike Greenly	Largest Software Show to Date Lacks Sizzle
THE WIRE	1984	06	11	Mike Greenly	Experts Predict 100 Outmoded by this Fall
THE WIRE	1984	07	10	John P. Mello Jr.	OEM Channels Offer Alternative for Japan
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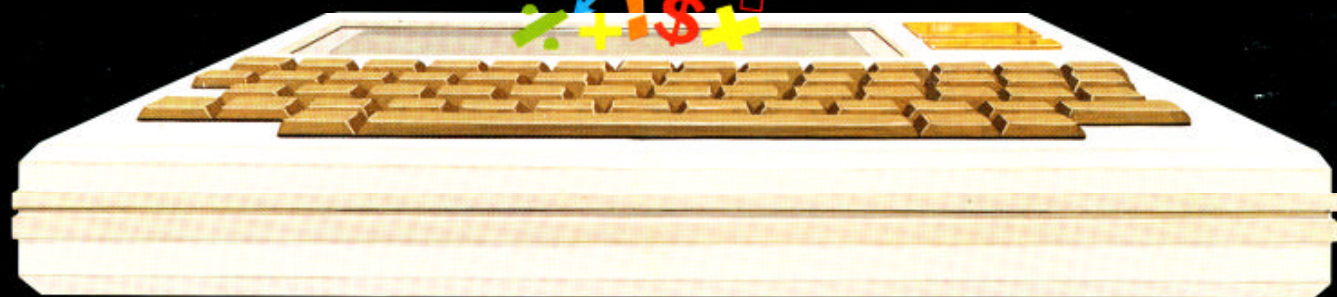
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