PORTABLE 100

The magazine for Model 100 users

APRIL 1984

$2.95

WAR GAMES ON YOUR 100

0 71486 02601 04

*™ Tandy Corporation

Circle No. 1 on Reader Service Card

TRAVELING SOFTWARE.
FOR PEOPLE WHO ARE GOING PLACES.

TRAVELING SOFTWARE, INC. is a leader in providing innovative, efficient, easy-to-use software products for notebook-briefcase size computers.

If you are thinking of purchasing a notebook or briefcase size computer, ask your dealer if Traveling Software is available for it, or call our Consumer Support Division at: (206) 367-8090. Visa, Mastercard, COD orders only 1-800-227-3600, extension 200. 24 hrs., 7 days/wk.

THE BUSINESS MANAGER SERIES

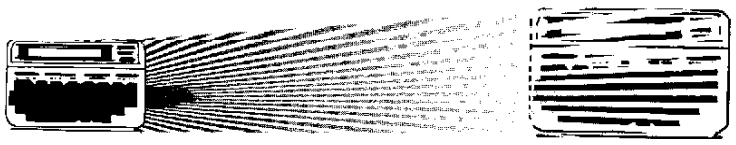
- The Traveling Appointment Manager™ $59.95
- The Traveling Expense Manager™ $59.95
- The Traveling Time Manager™ $59.95
- The Traveling Sales Manager™ $59.95
- The Traveling Project Manager™ $59.95
- The Traveling Accountant™ $59.95
- The Traveling Tax Manager™ $59.95
- The Traveling Communicator™ $59.95
- The Traveling Writer™ $49.95

TRAVELING SOFTWARE™

TRAVELING SOFTWARE, INC.
11050 FIFTH AVENUE NE
SEATTLE, WASHINGTON 98125
(206) 367-8090

"FOR PEOPLE WHO ARE GOING PLACES"™

© 1983 TRAVELING SOFTWARE, INC.



MODEL 100-32K CMOS EXPANSION RAM
ITS LIKE HAVING MORE THAN ONE 32K, MODEL 100 AT ONE KEYBOARD!

— EXPAND YOUR (8K, 16K, 24K, or 32K) MODEL 100 to an additional 32K.

— STORE TWO 32K PROGRAMS without having to reload.

— EACH 32K IS BANK SELECTABLE with a single line **BASIC** program (programs may not transfer information between banks).

— The APPLICATION PROGRAMS already in your Model 100 (BASIC, TEXT, TELECOM, ADDRSS, SCHEDL) may be used in either bank.

— THE EXPANSION RAM MAINTAINS ITS OWN MENU of the data stored in it.

— Self-contained BATTERY BACKUP POWER

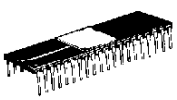
— LOW POWER **CMOS** DESIGN, enhances battery life.

— GO BEYOND THE MEMORY RANGE by installing additional 32K modules without losing the data on the first 32K module.

— EASY INSTALLATION! Installs into the expansion bus in the bottom of the Model 100 — Then concealed once the cover is reinstalled.

— HIGH QUALITY MANUFACTURING and WARRANTY.

— List 325.00 (Just one third the cost of an additional Model 100.)

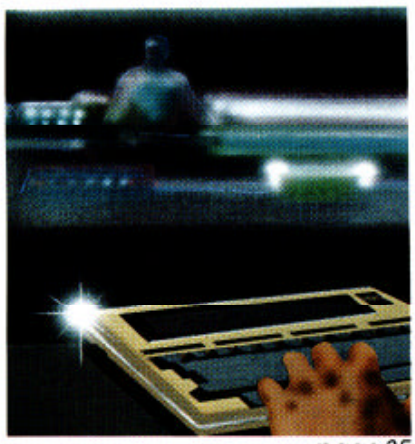


P.G.
DESIGN
ELECTRONICS

66040 GRATIOT, RICHMOND, MICH. 48062 (313) 727-2744

NO WARRENTY ON BATTERIES TRS-80 TRADE MARK RADIO SHACK
DEALER INQUIRIES INVITED

Circle No. 58 on Reader Service Card



page 35

PORTABLE 100

APRIL 1984
VOL. 2 NO. 4

FEATURES

35
WAR GAMES TECHNIQUE CAN BE A VALUABLE TOOL
By Jerry W. O'Dell
A persistent dialer can have more uses than just War Games.

38
BENDER'S BETTER WAY TO BETTER BASIC—PART 3
By J. Gary Bender
This month, Gary discusses subroutines that will make your programs friendlier.

46
OSBORNE AND WORDSTAR MEET THE 100
By Henry Kisor
When this Osborne owner set his mind on bridging the communications gap between his Ozzie and MEWS, he set a course for some heavy-duty interfacing.

52
THOUSANDS OF DATA BASES VIA ONE NETWORK
By Richard Butt
Canada is developing a network to make accessing thousands of public data bases easier than using a phone book.

DEPARTMENTS

4 PREVIEW
8 MAIL.100
14 THE WIRE
57 BOOKS
59 NEW PRODUCTS
62 REVIEWS
78 BLACK FLAG

COLUMNS

20 TELECOMPUTING
Get information edges with investment quotation data bases.
By Bill Louden

24 PORTABLE COMMANDER
How the 80C85 microprocessor handles its interrupts.
By Jake Commander

28 BUSCH LEAGUE
Judge for yourself this program for 100 users who frequent the science fair scene.
By David Busch

30 TANDYTALK
Tandy ready to pull wraps off ultimate computer.
By Bill Walters

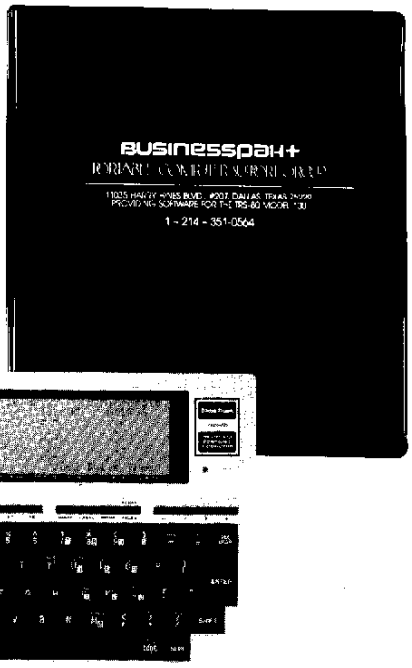
page 14

PORTABLE 100 is published monthly by Computer Communications Inc., 67 Elm St., Camden, ME 04843. James S. Povec–President, Carl Cramer–Vice President.

Subscriptions are $28 for twelve issues. User Group subscription rates available. Outside U.S.A.: write for further information. Dealer inquiries: Send to P100, 67 Elm St., Camden, ME 04843.

POSTMASTER: Please send changes of address to Portable 100, P.O. Box 250, Camden, ME 04843. Application for mailing at second class rates pending at Camden, Maine, and additional mailing offices.

From the people who brought you... BUSINESSPAK+



Five NEW programs designed for the businessperson.

Each on its own cassette with interesting manual.

First with software for the Model 100

You have made BUSINESSPAK+ an overwhelming success! Now, we are introducing **five new programs** for the Model 100.

PCSG continues to be first in innovative programming for the businessperson using the TRS-80 Model 100 Computer.

Look at these five new programs.

DATA+ $59.95

With DATA+ the Model 100 becomes virtually a true data base. You can input data rapidly from a 16 field screen that you make yourself like our PUT+. Here is the difference:

REVIEW / Using function key 1 you can recall any record, by searching any field.

EDIT / Change or update any record you select, instantly on the screen.

LIST / Using function key 5 you can print address labels, list records or selected fields of records in columns or other configurations. You can even pause, and reset left margins.

MERGE / Function key 6 lets you merge. You can automatically print any fields of any records into forms or letters, wherever you designate. With all four of these functions you have full search and selection capability.

With **LIST** and **MERGE** DATA+ remembers your favorite formats, quickly defaulting to them by simply pressing the ENTER key. The added feature **BUILD** lets you build and print a file of unrelated records that could not be selected either alphabetically or numerically.

On cassette with excellent, easy to understand manual.

TYPE+ $59.95

The Model 100 now becomes, with the addition of any printer, the finest, most feature rich, electronic typewriter available today. You can type directly to the paper. (Some printers have a one line buffer.)

SCREEN BUFFER / To allow you to edit before printing, you can control the screen buffer from 1 character to the last line.

CENTER / Center on / center off controlled with function keys.

MARGINS / Set margins with function keys. Audible end of carriage, automatic carriage return and function key Tab Set.

DIRECT CONTROL / If your printer responds to backspace commands, you can backspace and overstrike. Paper advances with carriage return.

With TYPE+, everything you print is stored simultaneously in a RAM file, formatted as you composed it. You can reprint instantly, or edit it in the file. On cassette with excellent, easy to understand manual.

TUTOR+ $39.95

Learn keyboard skills by playing a delightfully exciting game. While experiencing the thrills of a space invaders type game you become proficient at manipulating the keyboard. A game that forces you to learn touch typing, utilizing all the keys. On cassette with excellent, easy to understand manual.

PCSG provides hotline software support for the Model 100. Give us a call at 1-214-351-0564.

SORT2+ $29.95

You can sort a file in place with SORT2+. It consumes only 1k free memory, while sorting file in RAM you entered with PUT+ or DATA+. Our original SORT+ allows you to sort from cassette, but requires more memory while sorting. SORT2+ is for those times when memory or cassette sorting is a problem. SORT2+ also has upper case fold, and true numeric field sort. On cassette with excellent, easy to understand manual.

TENKY+ $59.95

With TENKY+ the numeric keypad on your Model 100 emulates both a ten-key desk calculator, and a financial calculator. The right side of the screen represents the tape, which can also be directed to a file and/or a printer. Ten working registers are visible on the left of the screen, each one functioning independently as a calculator with functions including exponentiation and logarithims. Registers are accessible from each other, including the tape which stores up to 120 values, each associated with a note of up to 26 characters.

Financial functions available at the touch of a key include IRR, MIRR, and NPV on up to 120 cash flows, plus any of its five annuity variables (n, PV, FV, PMT, i). Function key F2 gives a printed amortization schedule, and businessmen will love the breakeven analysis they can receive simply by pressing function key F1.

Portable Computer Support Group is pleased to offer these program additions. We endeavor to continue as *The Leaders in Software for the Model 100.*

Circle No. 5 on Reader Service Card

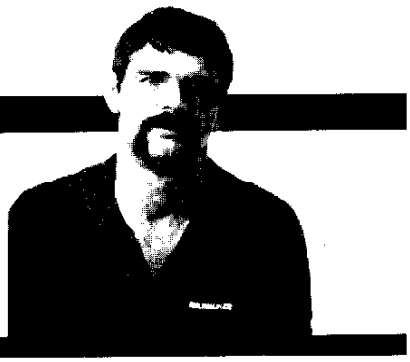
TRS-80 Model 100 is a trademark of Tandy Corporation
©1983 Portable Computer Support Group

PORTABLE COMPUTER SUPPORT GROUP

11035 Harry Hines Blvd. No. 207, Dallas, TX 75229

MASTERCARD / VISA / COD

JOHN P. MELLO JR.



PREVIEW

First there were three; now there's two. When Tandy introduced the 100, three magazines rallied to support MEWS. While two of the books got off the ground, the third, *Briefcase Portable*, never got out of the hangar.

Computer Communications Inc., the company owning *Portable 100*, has purchased *Briefcase Portable* and will be fulfilling the defunct magazine's subscriptions. *Briefcase* subscribers already subscribing to *Portable 100* can get a second year for free. If neither of those arrangements suit a *Briefcase* subscriber, he or she can get a refund.

To the Briefcasers accepting their subscription to *Portable 100*, we'd like to say welcome aboard.

Now let's get into this month's issue.

Mike Greenly has discovered the distinction between news on the Network Nation and news in other corners of the cosmos. Since COMDEX last December, Mike has been roving the microcomputer landscape filing stories to his readers on The Source's Participate. What's different about Mike's stories is his readers shape them before and during their writing.

At COMDEX, Mike says, "People appreciated the ability to have all of their questions answered in an electronic report which could be tailored to their specific interests. The success of that experiment led us to a more ambitious project at CES."

Source reporter Mike Greenly

Before a major computing event, Mike sets up a Participate conference. There readers tell him what information they want so when he gets to the event, he can ferret it out for them. Once on the frontline, Mike begins filing stories. As readers react to these stories, more questions are raised and more information sought.

Mike, formerly a product manager for Lever Brothers and vice president of Product Marketing for Avon Products Inc., delights in helping "non-technical people have more enthusiasm for and success with what technology has to offer" — even if it means running yourself ragged at a trade shows.

"I see myself as a personal reporter for the 49,000 members of The Source," Mike says, "with the ability to provide personalized news in great detail, combined with the immediacy and interactive qualities of the telephone. This new journalistic form brings a very personal 'high touch' feeling to a 'high tech' communications medium."

Mike's "high touch" approach is evident in his writing style. A computer show isn't just silicon and ether to him; it's people. This perspective gives a different slant to Mike's reporting, one we don't think you'll see in any other computer magazine. See if you agree with us starting on page 16.

After seeing *War Games*, Jerry O'Dell, a professor of psychology at Eastern Michigan University, had a mischievous thought: Why can't my 100 do that? Not only did Jerry discover his MEWS could roam the nation's phone lines searching for carrier tones, but the technique was valuable in some legitimate business applications. What applications? Find out on page 35.

Everyone these days is looking for "an edge." And if you're a small investor, the edge might be a little more information a little quicker than the next guy. Bill Louden looks at CompuServe's offerings to the investor starting on page 20.

User friendly. Go ahead. Admit it. Just looking at it makes you gag. But have you thought about what makes one program friendly and another churlish? In Gary Bender's third installment on programming technique (page 38), he touches on several aspects of "friendliness" and how you can build it into your programs.

With the list of Model 100 books growing, we're inaugurating a new department dedicated to that subject. Kicking off the department's debut (page 57) is a review of David Lien's opus on the 100 by the star sysop of the Model 100 SIG, Dave Thomas.

We have an expanded review section this month. Products reviewed: TPLAN/NPLAN by American Micro, Traveling Time Manager by Traveling Software, and two Portable Computer Support Group programs — Sort2+ and Data+.

And Bill Walters fulfills the promise he made last month about announcing something exciting: The Ultimate One Computer featuring a proprietary operating system that "makes provision for any problem or task in either single-user or multi-user environment." Too good to be true? Probably. But if the thought intrigues you take a look at Bill Walters' bit of April foolery starting on page 30.

Tired of waiting for slow cassettes?

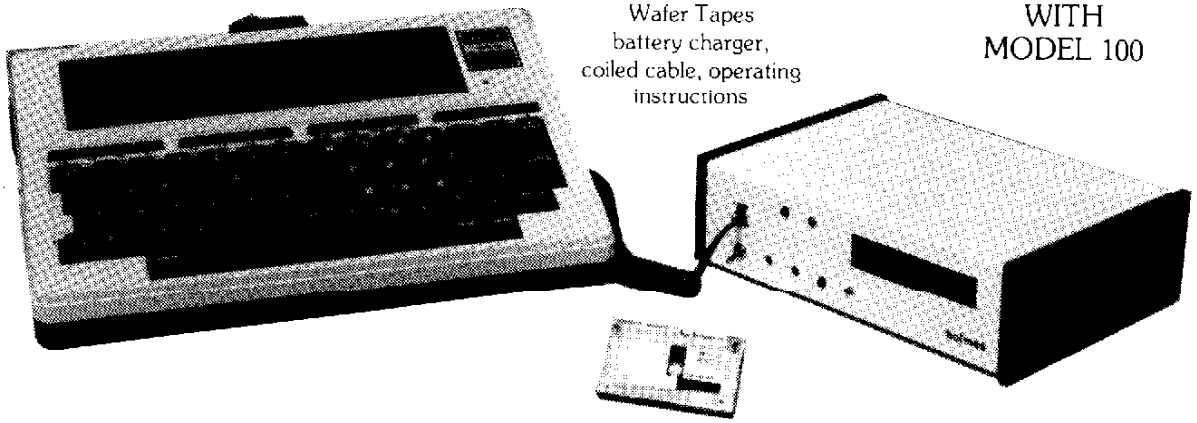
Holmes Engineering, Inc. has solved your problem with. . . the PMD 100™ Portable Micro Drive.

ONLY

$349.95

Drive Includes: Wafer Tapes battery charger, coiled cable, operating instructions

FITS IN A BRIEFCASE WITH MODEL 100



WHAT IS THE PMD-100?

The PMD-100 is a HIGH SPEED storage system for SAVING and LOADING programs and files on the model 100 microcomputer.

USER FRIENDLY, menu driven software and a ROM based operating system are incuded.

The PMD-100 is faster and easier to use than cassettes.

PMD-100 FEATURES:

- Up to 70K storage per wafer
- 16K RAM Buffer
- Fast Data storage/retrieval
- Portable and light weight
- ROM based operating system
- Connects to RS232 port
- Rechargable battery
- Replacable water tapes

CALL AND ORDER TODAY!

ALSO AVAILABLE FOR THE MODEL 100
IM-100™, 8K RAM Modules Only $69.50
up to 32K memory upgrade - Plugs into M100 sockets
Easy to install - No modifications required

Holmes has a complete line of TRS80 model I, III and IV upgrade products.
Call or write today for a FREE product brochure.

HOLMES
ENGINEERING, INC.

Bus. Hours: 8-5:30 (MST) Mon. - Fri.
10-2.00 (MST) Sat. (Sales only)

5175 Green Pine Drive Salt Lake City, Utah 84123
(801) 261-5652 or 24 Hr. BBS (801) 263-1103

master charge

VISA

Call For Dealer Nearest You
Dealer Inquiries Invited
Full warranty on all products
Add shipping/handling for U.S. and Canada. All others add 15%. Prices subject to change without notice.

Circle No. 6 on Reader Service Card

ANNOUNCING...

TWO OF THE HOTTEST NEW GAMES FOR THE MODEL 100

SKY-RAIDER

A fast-paced Action Game with Graphics and Sound that have to be seen to be believed!

Guide your ship across the planet's surface and seek out the deadly Borons, before they destroy you!

MIND MASTER

A challenging real-time game with superb Graphics and Sound.

Meet with the Master and prepare yourself for one of the most thought provoking games you've ever played!

BOTH OF THESE PROFESSIONALLY WRITTEN GAMES INCLUDE ALPINE'S EXCLUSIVE "HALL OF FAME" FEATURE.

SEND CHECK, MONEY ORDER, OR VISA/M.C. NUMBER. FOR IMMEDIATE DELIVERY CALL OUR 24-HOUR HOTLINE, OR USE OUR NEW COMPUSERVE® EMAIL NUMBER FOR INFORMATION OR CREDIT CARD ORDERS.

COMPUSERVE IS A REGISTERED TRADEMARK OF COMPUSERVE INC., AND H&R BLOCK COMPANY.

ALPINE

DATA SYSTEMS

DEPT. P1 P.O. BOX 1157
ELIZABETH CITY, N.C. 27909

PHONE: (919) 338-2027
EMAIL: 75735, 1440

Circle No. 7 on Reader Service Card

YES! I'M READY FOR A CHALLENGE!

☐ ASG-110 _____ @ $19.95
☐ ASG-115 _____ @ $19.95
☐ BOTH _____ @ $29.95
☐ CHECK/MO ☐ MC ☐ VISA

SIGNATURE _____
CARD # _____
EXP. DATE _____ INTERBANK # _____
NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

PLEASE ADD $2.00 SHIPPING & HANDLING
NC RESIDENTS ADD 4.5% SALES TAX

PORTABLE 100 The magazine for Model 100 users

Editor
John P. Mello Jr.

Assistant to the Editor
Nancy L. Laite

Contributing Editors
Jake Commander, David Busch
Terry Kepner, Bill Louden
Bill Walters

Art Director
Marjorie Strauss

Production Consultants
Paige Garland Parker
Lynn Rognsvoog

Publisher
James S. Povec

Associate Publisher
Carl Cramer

Advertising Director
Peter K.J. Montross
(207) 236-4365
P.O. Box 250, 67 Elm Street
Camden, Maine 04843

Office Manager
Kathi Colbert

©Computer Communications, Inc., 1984. All rights reserved. Contents of this magazine may not be reproduced in whole or in part unless expressly authorized in writing by the Publisher. TRS-80 and Model 100 are trademarks of the Radio Shack Division of Tandy Corporation.

This magazine is published by Computer Communications, Inc. who is solely responsible for its contents.

The Publisher assumes no responsibility for the return of unsolicited manuscripts, queries or artwork. Materials submitted to Portable 100 should be accompanied by a stamped, self-addressed envelope. Editorial offices located at 67 Elm St., Camden, ME 04843.

U.S.A. Newsstand distribution by Curtis Circulation Company.

Ask your dealer for the Porta™ series from Skyline—to help you work faster and better!

PortaCalc™ — Model 100 "electronic spreadsheet" with 14 column by 26 row workspace! Full use of the built-in function keys to save, load, screen print, report print, or to look behind the data at the formulas in use.

Full arithmetic operators including exponentiation, absolute value, integer, summation, and averaging. Calculations are done to 14 digits of precision and displayed up to 9 digits. User selectable decimal place from none through seven—not just one, two, or floating! Formula replication is included to allow fast creation of worksheets.

Worksheets may be saved, loaded, or merged using the computer's memory or cassette. Often used templates can be saved in memory for instant recall.

Two powerful utility programs are included with **PortaCalc** at no extra charge! **PortaDex**™ is a data exchange program that allows reformatting **PortaCalc** files into the DIF format used by ***VisiCalc***. ***PortaPrint***™ is an enhancement to the Model 100's text editor, adding the ability to adjust left, right, and top margins, and page length. Page numbering, headers, centered lines, flush right justification, new page control, and more.

Comes with extensive documentation in padded 3-ring binder. Includes tutorial, detailed reference section, and executive level sample templates. Fully illustrated with screen prints, examples, and hints.

PortaStat™ — Correlation, regression analysis, and descriptive statistics package, designed to be a working tool for today's businessman. Data can be input from cassette, memory, or keyboard. Interactive with **PortaCalc** data files! Thoroughly documented, includes tutorial.

PortaFin™ —Present value, net present value, future value, annuities, interest factors, loan constants, internal rate of return and more! This user-friendly package prompts you for the needed input data, then gives you the answer to your loan or investment problem! Interactive with **PortaCalc** files, allowing you to "read" cash flow data from memory. Keyboard or cassette input also available.

PortaMax™ — The powerful 'simplex' method of linear programming. Find the optimum 'mix' for a given set of constraints. Interacts with **PortaCalc** files to avoid time-wasting repetitive data entry. Tutorial, examples, and bibliography included.

PortaFolio™ — Stock and bond valuation, betas, Macaulay's duration, yield to maturity, bond swap calculations, and much more. All in an easy to use program, interactive with **PortaCalc** data files. Supplied with comprehensive instructions and reference manual.

PortaCalc

All **Porta** series programs are supplied on cassette and require 24K RAM.
Pricing — PortaCalc is **$69.95,** all others are **$44.95** each.
If ordering direct, add $2.00 shipping and handling per order.
Dealer inquires invited.

VISA MasterCard

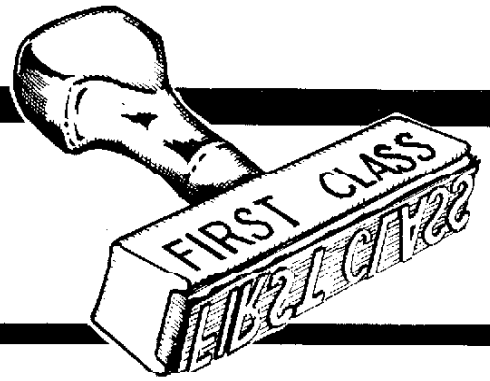
Model 100 is a trademark of Tandy Corp. VisiCalc is a trademark of VisiCorp. DIF is a trademark of Software Arts

Skyline MARKETING CORP

4510 W. Irving Park Rd. • Chicago, IL 60641 • (312) 286-0762

Circle No. 8 on Reader Service Card

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) or Source (STC ID) identification number.

A COMPLAINT ABOUT CODEKEEPER

This is in response to the review in your magazine for the password protection program for the Model 100. "Codekeeper" was written by Roby Sherman and sells for $25. It is a program that does everything it says it will, and from that point is flawless. However, one thing it will not do is protect the Model 100 menu from being accessed.

When I pointed this out to Mr. Sherman, he said words to the effect that someone would have to know quite a bit about computers to be able to come up with the sequence by which the menu can be accessed. This seemed to me to be an unsatisfactory answer. However, in all fairness, I should say that the flaw lies not in Sherman's program, but in the 100 itself.

For all practical purposes, "Codekeeper" is a fine program, but it is not worth $25. I downloaded a program from CompuServe which will afford an equal amount of protection, but lacks the little "bells and whistles."

For those considering the purchase of this program, I feel the following should be known: When the 100 is turned on, just prior to the running of the IPL program, the main menu flashes on the screen. If a "control-C" is executed at that moment, the program will break and you will enter Basic with the OK prompt. From there, a command of menu or a stroke of the F8 key will bring you directly to the main menu. Perhaps Tandy will find a way around this problem. But until then, the 100 is not inviolate.

R. Caley
Emerson Computer Services
Seattle, WA

GAMES ARE FUN KEEP 'EM COMING

The new printing method for Basic programs is much better. Thanks a lot.

Secondly, for the person who wrote in Mail.100 in the January issue, I would like to say that I am one who not only owns one computer, the Model 100, but has learned a lot from doing and revising the games. If you are not an engineer, like many readers, it is far from "wasting ... valuable space." Many of us are just learning and the games are an excellent way to teach us. I have been able to write a number of programs from what I've learned from doing the games. By the way, they also can be fun to play, if you like to play around a little.

I enjoy your magazine a lot; keep up the good work and the games.

Lee Steffens
Lihue, HI

ENOUGH GAMES, MORE HOW-TO'S

I see from your January letters that I am not alone in my consternation over faulty program listings and my general dismay with your editorial decisions.

Like Mr. England, I too have devoted many hours to typing in a program from your magazine, in my case, text word counts and formatting, only to find it didn't work. I'm sure after repeated checking, it was due to no fault of my own.

And like Mr. Forrester I trust you're going to publish "readable" versions of past progams, programs which I am sure induced many, if not most, to buy your magazine in the first place.

Certainly the big inducement couldn't have been Jake Commander. Like Mr. McBurnett, I have no use for games, but I can understand many readers wanting them for themselves or their kids. I cannot, however, understand anyone appreciating the utterly useless, sophomoric musings of Commander, and I strongly urge you to put the manpower and space to more useful ends.

More useful ends would include better "how-to" articles and far more thorough coverage of new products, bearing in mind that many readers are new to computing and so require fuller explanations of the workings of programs and that in any case, most products will be purchased unseen by mail.

A case in point: Had you not devoted four columns of the January issue to Mr. Commander's moronic ramblings you could have used more illustration to graphically support the preceeding article on how to alter recorder cables for use on mini-recorders.

You also might have told readers what amperage the 5.6 megaohm resistor should be. My "favorite over priced parts mart" dealer said he couldn't tell me which I needed. Maybe he should have known and I will probably find a dealer who does know, but it would have saved a lot of hassle if you had simply told me.

With doubts on my subscription renewal,

Don Worrall
Montreal, Quebec

AN EASIER WAY FOR FILE SENDING, SUGGESTS READER

There's a much easier method for sending files from the 100 without carriage returns embedded. From TEXT use the SAVE:COM (parameter) or SAVE:MDM (parameter) for-

FULL-FEATURE SPREADSHEET
Application Templates
For Your Radio Shack TRS-80 Model 100/NEC PC-8201A Portable Computers

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.

AMERICAN MICRO PRODUCTS, INC.
705 North Bowser
Richardson, Texas 75081
(214) 238-1815

© 1984 American Micro Products, Inc.

Circle No. 9 on Reader Service Card

mats. This will transmit the file exactly as typed.

Note also that from Basic these two formats are legal and save the step of converting the program to an ASCII (.DO) file first. One may also load from the modem or communications port directly into TEXT or Basic.

For use with SuperScript, I type the files on the 100 with carriage returns only at the end of a paragraph. When the file is transferred to the TRS-80 Model I and converted from ASCII to Scripsit format, it prints properly without further editing.

Mark W. Earle
Corpus Christi, TX

DOCTORATE STUDENT *SEES* WITH 100

Your magazine is terrific. Each month when it arrives, I reorder my priorities so I can read it cover to cover.

I am not a programming, telecommunications, or game type. I read all of the articles and only vaguely understand them. That doesn't really upset me because I am fascinated by the enormous versatility of the Model 100. For me, The Model 100 has paid for itself 10 times over with its word-processing capabilities.

I also am a doctorial student and with the Write+ program from the Portable Computer Support Group, I am writing and printing my dissertation. My 100 is in operation as many as 10 hours per day. Thus far, no problems.

Perhaps the major benefit of the Model 100 for me, other than its portability, is that as the wearer of half glasses (the lower half of bifocals) I can *see* the screen. When I use computers with CRT's, I cannot get far enough away from the screen and still reach the keyboard to look over the top of my glasses. If I crook my neck and push up my glasses all the way, then I can see the screen; however, after a short time I have neck aches. In fact, until the 100 became a part of my life, working at a computer meant either eye strain or neck aches. With the Model 100 propped up on my desk at work or on my lap as I sit in my recliner at home, I have stopped associating computers with pain. The slight inconvenience of cassette storage is nothing compared to the large inconvenience of feeling rotten after a short time at a machine.

Thanks again for such a great magazine to go with such a great computer!

Patricia Bramlett
Las Cruces, NM

FOR THE RADIO SHACK MODEL 100 & NEC 8201

8K MEMORY MODULES

50% OFF

We Make Expansion Easy!

- Each memory module offers you an additional 8K. Add 1, 2, or 3.
- You can increase your present memory capacity up to 32K in a matter of minutes.
- Easy installation, with just a screwdriver, and no electronic knowledge required.
- **Save time . . . your computer never leaves home!**
- **Save money . . . competitively priced & no installation charge!**

Purple Computing guarantees full satisfaction and ease of installation or return within 90 days for a prompt refund.

$59.95 8K x 8 CMOS/RAM

****Special Offer****
(with purchase of a memory module)
Centronics/Model 100 printer cable - $11.95
No frills direct connect Modem Cable - $9.95

PACK A PURPLE MODULE IN YOUR COMPUTER

Purple Computing • 4807 Calle Alto • Camarillo, CA 93010
(805) 987-4788

Product	Quantity	Cost
8K Memory Module	_____	$_____
Printer Cable	_____	$_____
Modem Cable	_____	$_____
CA. Residents only, 6% tax		$_____
Total Cost =		$_____

Price includes postage & handling. Shipped from stock.

☐ check
☐ money order ☐ VISA ☐ MasterCard Acc't. #_____ Exp._____
Signature _____

Name _____
Address _____
City _____ State _____ Zip _____

Circle No. 10 on Reader Service Card

TANDY SERVICE GOOD SAYS NUTMEG STATE PROF

(Editor's Note: The following is a reply to Leonard River's letter appearing in the February 1984 issue of Portable 100.*)*

My experience with Model 100 performance may interest you. I own eight 100s which I use in instruction; students get a Model 100 and a CGP-115 Color Printer. These sets have passed through 30 different hands and we have had no on-arrival problems and no damage to the computers.

But one student did though, dam-

age a printer. By violating a repeated warning, he broke a small plastic part on a CGP-115 printer. I took it to the local Radio Shack store. They *refused* to do the repair before giving me an estimate, even though I told them I had no choice and that it could't cost much. They even tried to fix it while I waited. It was done in the promised three days and that's good customer service which comes from good store management.

Some have it and some don't. Your people could have found out what was wrong, but they didn't want to bother. The responsibility for poor customer service lies with the goals set by the local store mangement.

You might get some recourse by going directly to Tandy headquarters, and don't buy from that store until it goes under new management. You can vote with your feet.

Herbert F. Spirer
The Unviersity of Connecticut
Stamford, CT

THE VALUE OF X MAKES A BYTE OF DIFFERENCE

A Basic program that sends output to the printer will cause the 100 to appear locked up if the printer is either not connected or turned on. This can cause you to abort the program using shift-break.

You can cause the program to test and see if the printer is available by testing the printer port before sending it output. The Basic statement INP(x) will return a value from port "x".

The Model 100 uses decimal 187 as the address for the parallel printer port. Since we are only interested in several of the bits in the byte returned, we will mask the remaining with an AND function. The following statement, X = INP(187) AND 6, will return a value for X that is as follows:

1. If X = 6, the printer is not connected.

2. If X = 0, the printer is not turned on.

3. If X = 4, the printer is on but not selected.

4. If X = 2, everything's okay so print away.

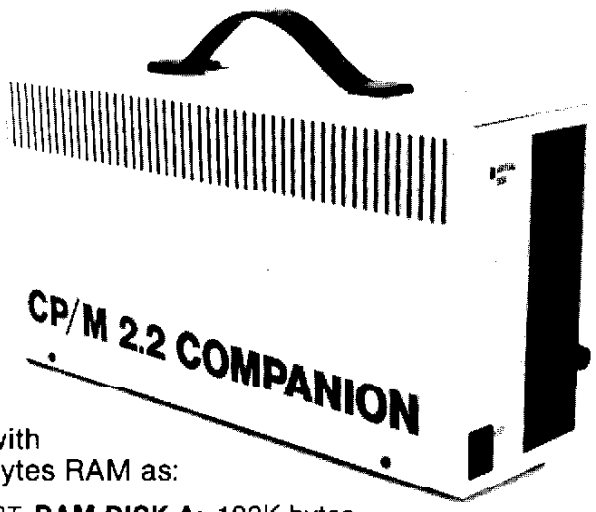
Don Griffith
Griffith Computer Consultants Inc.
Orlando, FL

HIT F8 TOO SOON AND YOU MAY BE OVERCHARGED

All instructions in Radio Shack manuals, other books, and magazines explain that the log-off procedure to exit TELCOM should be by pressing F8 (which presents the disconnect prompt) and then hit Y and enter. My experience shows this to be as effective as unplugging the telephone line connection.

The problem is most CBBS or Information Services expect a command — BYE, PBYE, OFF, or QUIT. This gives them an opportunity to sign off first with a thank you departure, then show your time online. In the case of CompuServe, if you use F8 as the doc-

SATISFY YOUR DRIVES



Z-80A with
256-K bytes RAM as:

VERY FAST **RAM DISK A:** 192K bytes
64k **USER RAM**
ROM DISK B: CP/M, COPY, DIR, LOG programs
DISK C: 192k byte 5¼" floppy disk
DISK D: optional external expansion
DISK E: optional external expansion

- Bundled with software included on 5¼" floppy disk.
- Reads/Writes IBM, KAYPRO, MORROW and OSBORNE disks.
- Transportable—7"h x 4"w x 14"d, 8 lbs., 120 VAC 40 WATTS
- (2) RS-232C serial ports (110-19,200 baud)
- (1) Bi-directional parallel port (incl. Centronics)
- (1) Expansion buss (up to 256K addl. RAM or ROM)

EXPAND YOUR (computer's) MIND ... INSTANTLY!
The **COMPANION** can add 256k byte storage, printer spooling, port expansion and CP/M programs to your portable computer or terminal.

PRICE $1095 Terms Min. 25% deposit. Balance COD MasterCard or VISA OK

COMPANION COMPUTERS
Drawer CC 192 Deerfield Rd. (919) 362-6655 Apex, NC 27502

Circle No. 11 on Reader Service Card

Avion Communications

Your Notebook Computer Software Source

***PORTABLE COMPUTER SUPPORT GROUP**

Business Pak +	$76.50
Data +	51.00
Type +	51.00
Sort 2 +	28.00
Tutor +	28.00
Tenky +	51.00

***AMERICAN MICRO PRODUCTS**

American Calc Spreadsheet	$55.00
RPN Calculator	25.00
Equation Solver	34.00

†TRAVELING SOFTWARE

Time Manager	$51.00
Appointment Manager	51.00
Sales Manager	51.00
Expense Manager	51.00
Project Manager	51.00
Accountant	51.00
Communicator	51.00
Tax Manager	51.00

***SKYLINE MARKETING**

Porta Calc (Incl. Porta Dex & Porta Print)	$59.50
Porta Stat	38.00
Porta Fin	38.00
Porta Max	38.00
Porta Folio	38.00

*TRS, NEC
†TRS

MasterCard VISA

Personal checks welcome.
Please add $2.50 for shipping.
NYC residents add 8.25% sales tax.

Call toll free
1-800-235-2115
In New York call (212) 532-6660
Avion
Communications, Inc.
Suite 2405
200 Madison Ave.
New York, N.Y. 10016

Circle No. 12 on Reader Service Card

umentation suggests, you may unwaringly have another 15 minutes of line time for which you will be charged. After it signs off, it is then proper to press F8, Y, and enter.

Rodney Gant
Plano, TX

ANDREASEN'S ARTICLE CONFUSING TO TWO READERS

I appreciated Paul Andreasen's article, *How to Interface with Small Recorders*, in January 1984. However, I could not get files to load reliably after an electrical engineer I work with installed the recommended 5.6 megaohm resistor. Using an oscilloscope, he found that the resistor reduced the input to my Minisette 9 to the minimum stated level of .05 volts or less. When the input dropped below .05 volts, parts of the file would not load.

He replaced the 5.6 megaohm resistor with a 4.7 megaohm resistor. This provided an input signal of approximately .07 volts. With tone set at 10 and the volume set at 6, the Minisette 9 has so far proven as reliable as the Radio Shack CCR-81 recorder.

Other readers may want to consider this change if they have load problems using the 5.6 megohm resistor.

Robert W. Judy
Canton, OH

This letter is in regard to Paul Andreasen's article in your great *Portable 100* January issue, regarding modifying the cable for the 100 to work with smaller recorders.

The modification works fine, even when I used a 10 megaohm resistor. I used it with my Sony TCM-600 with the volume on 10 and the microphone sensitivity level on L. However, there is another fact in using the small recorders which may cause trouble.

One's natural impulse is to insert all three plugs: AUX, REM, and EAR. Some of the small recorders, including my Sony TCM-600, reduce the ear output volume when a plug is inserted in the microphone jack. Thus, the unwary user who makes Paul's modification may find that they can not read files from their tapes no matter how it was placed on the tape.

The solution, a minor nuisance, is to remove the AUX plug from the microphone jack when trying to read a file. Of course, it is not necessary to remove the ear plug when writing a file.

Herbert F. Spirer
University of Connecticut

TEXT SEARCH HAS BUG IN IT

I have found and verified a bug in the Model 100 Text editor find function. When asked to find the string "AB" in the text "AAB", it will not find it. Instead, it sees the first "A" and then checks the next character to see if it is a "B". It is not, and the editor then starts searching again beginning with the "B" and never finds the match. The editor should have started searching again beginning with the second "A".

The same problem occurs with finding longer strings, such as "ABC" in "ABABC". In general, the editor starts searching again at the next character after the one that failed to match. It should start searching again at the next character (first "B") after the last character it stated with (first "A").

Robert E. Harold
Flat Rock, MI

COMMANDER SHOULD TALK COMPUTERS, NOT POLITICS

I received my first copy of *Portable 100* this week and was pleased with the overall content of the magazine. However, I must express my vehement objections to the *Portable Commander* column in the December issue.

The writing was inept, the tone condescending, the ideas naive, and the article itself completely out of place in a technically-oriented magazine. A time when our government has decided the American people do not have the right to receive news from a combat zone is no time to be crowing about our freedom of information.

Granted, we have the money and skills to use personal computers for an unprecedented exchange of ideas, but that ability is irrelevant to the dangerous aspect of United States-Soviet relations and The Arms Race. The latest evidence indicates that, in fact, the Soviets did not know they were downing a passenger plane, and in any case, the incident is far too complicated to be dealt with in Mr. Commander's simplistic manner. If I wanted to read

right-wing editorials I would buy a copy of *The American Spectator*. If it is your intention to use *Portable 100* as a forum for political ideas, I would be glad to contribute a few articles with a viewpoint different from Mr. Commander's. Otherwise, please stick to the computer.

Mark Turnbull
Sebastopol, CA

NEC HAS NICER KEYS, RADIO SHACK TAKE NOTICE

Congratulations on the standard attained by your magazine, which so far is very high. It is good to see you publishing some drawbacks to the Model 100 as well as praise, such as nominating it "Machine of the Year."

I am surprised I have not seen complaints about the 100's awful little function and cursor keys. As an otherwise satisfied purchaser and user of the 100, I constantly am annoyed by these awkward, badly designed keys. The cursor keys, which are in constant use in document writing, are especially bad. Radio Shack should discontinue manufacturing the Model 100 in its present form and adopt the sensible cursor control arrangement of its sister machine, the NEC PC-8200.

An additional feature which I, a journalist, would like to see is a word count system.

Peter Samuel
Washington, DC

BLUNT, BUT MY SENTIMENTS EXACTLY

While reading the December 1983 issue, I noted with special interest the letter from North Carolinian David Dalton on page 11. He's blunt, but expresses my sentiments exactly. Presently, I'm using your magazine for the new product ads and the few good articles it contains.

Instead of wasting valuable space offending half the population of the world with useless drivel about the imagined possibilities of CompuChurch, how about an article on how to connect the 100 with one of the many available stand alone disk drives complete with a DOS? That, admittedly, will require more effort than went into the aforementioned article, but would be well worth the price of admission.

Remember who your audience is: The 100 is a new professional computer, not a kiddie game machine.

Donald A. Gange
Milpitas, CA

ADVERTISING PRACTICE DISTURBS NEW YORK READER

I am writing because I see a practice in your advertisements which is disturbing. In the January 1984 issue there were at least five advertisements for software which did not give a phone number. Other magazines which I receive have made a phone number mandatory. I personally will not buy via mail order unless there is a phone number in the ad.

I hope you will require your advertisers in the future to give a phone number. For reference, those without numbers were: Costal Office Systems, Datamasters, Federal Hill Software, Pocket Programs, and Solitary Software.

Michael Neidich
Syosset, NY

In defense of the advertisers you listed and others who may not list phone numbers in their ads in future issues of *Portable 100*, let me explain. We have no requirement that advertisers list phone numbers in their ads because we do not see it as a danger to our readers.

You're right; they may be small or one-man operations and the additional cost of manning a phone may be too much for their budgets. But don't let that stop you from acquiring a product that may interest you. That's what the reader service numbers are for... further information. Or, when ordering a product, ask if they will send you their phone number in case you have a problem. I bet they will be glad to do that.

Keep in mind, many advertisers start small, often working another full-time job. They may not be available to answer when and if you call.

If these advertisers have a product you want, try them out. Listing a phone number is no guarantee that delivery, service, or quality will be any better.

Peter Montross
Advertising Director
Portable 100

continued on page 54

CHATTANOOGA CHOO CHOO SOFTWARE
Track 29
Your One Stop Station For Computer Programs

BUSINESS

*** Skyline Software**
PortaTax - *tax planning program*
(32K) ~~$99.95~~ **$94.95**

PortaCalc - *Electronic spreadsheet*
PortaPrint & PortaDex included
(24K) cassette ~~$69.95~~ **$66.45**

PortaStat - *statistical package*
*PortaMax - *linear programming*
*PortaFin - *loan & investment pkg.*
*PortaFolio
(24K) ~~$44.95~~ **$39.95 ea.**

*** Portable Computer Support Group**
Business Pak+ includes:
Write+, Graph+, Expns+, Telex+, Put+, Sort+, & a 120-page manual
6 cassettes (8K) ~~$119.95~~ **$85.45**

Data+, Tenky+ (8K)
~~$59.95~~ **$56.95 ea.**
Sort+, **Tutor+** (8K)
~~$29.95~~ **$28.45 ea.**

*** Chattanooga Systems Associates**
Book-*Bookeeping*,
Tfile-*Tape File Management*,
Check-*Checking Account Record*,
Index-*List Processor*,
Calc-*General Purpose Calculations*
(8K) ~~$29.50~~ **$28.00 ea.**

Scribe-Word Processor
Formats & prints from text files.
(8K) ~~$29.50~~ **$28.00**
Expanded Scribe (version 3.1),
Plus version 3.0
~~$39.50~~ **$37.50**

8K RAM MODULES
~~$64.95~~ **$59.95 ea.**

***NEC* PC8201A**
w/AC Adapter **$780.00**

Silverware
Games 1 - 4 games on cassette
Blockade, Frankenstein Adventure
Reversi, Alexis Adventure
(24K) ~~$24.95~~ **$23.70**

Games 2 - 4 games on cassette
Maximum, Checkers
Amazing Chase
Williamsburg Adventure
(24K) ~~$23.95~~ **$23.70**

Prickly-Pear Software 10% OFF
Viking - (24K) *simulation game*
~~$19.95~~ **$17.95**
Football Quarterback Strategy
(16K) ~~$19.95~~ **$17.95**

***NEC & M100**

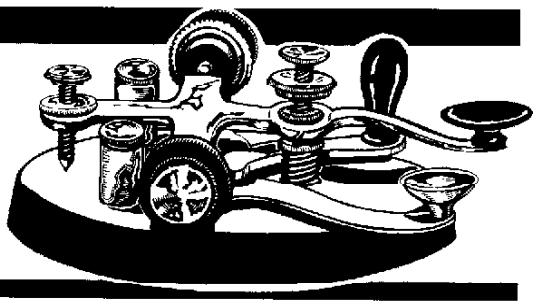
VISA

Personal checks and
PURCHASE ORDERS WELCOME.
Please add $2.00 for shipping in the U.S.A.
Tennessee residents add 6.25% sales tax.
C.O.D. orders add $2.00.
Overseas Airmail add $10.00
Send for FREE catalog!

(615) 875-8656
P.O. Box 15892
Chattanooga, TN 37415

Circle No. 13 on Reader Service Card.

THE WIRE



SUPER BOWL

MEWS DRAWS RAVES FROM DEMANDING KEYPUNCHERS

By Jim Lamb

The bookies haven't set the odds on who'll take the field at Super Bowl XIX in San Francisco, but you can bet on this: A platoon of Model 100s will be in the stands to cover the action — play by play.

The 100 made its Super Bowl debut at Tampa Stadium in edition No. XVIII of the National Football League's glittery championship. Radio Shack's lightweight drew generally good reviews from that demanding breed of keypuncher known as the sportswriter.

Before you can appreciate what these game-to-game gypsies have to say, know this: These guys travel long and much, eat fast, endure being shuffled, sidelined, and maligned by players, coaches, and fans. And if you think they've got an understanding editor back at the newsroom who'll take all the hassles into consideration when a deadline is approaching, forget it. They wanted it yesterday, or at least a half-hour ago.

So when one of these jock watchers is impressed by something, it can't be just average. Average players don't make it in the big leagues. On the other hand, they're not afraid to tell you where they think the warts are. Just ask any superstar who has had a bad game. Ask Joe Theismann. But more about that later.

First, what they like:

WEIGHING IN. While the 100 may be a heavyweight in performance, its light weight drew praise. It's a big improvement over the "monster" portables (12 to 30 pounds) they had been using.

A typical remark: "Lugging that thing around, you had to be a heavyweight," Brian Schmitz of *The Orlando* (FL) *Sentinel* said of the transportable he *used* to carry to games. "These things, 100s...you don't even know you're carrying one."

Schmitz, who has covered four Super Bowls, said there's no comparison to the computer he used to use. He predicts a solid future for the 100 in the world of sports: "You see more and more of them and I think you're going to see them more," he said. "I wish I could get one for Christmas."

SIZING IT UP. "The size is great," said Mitch Lawrence, sportswriter for *The Rochester* (NY) *Democrat and Chronicle*, who decribed NFL standard-issue press boxes as "typically crowded." The size might have been doubly appreciated in Tampa where a record crop of the national press showed up to watch the L.A. Raiders mug the favored Washington Redskins, 38-9.

"The 100 is small enough to have a notebook and other books around," Lawrence said.

EASY DOES IT. Lawrence faced a doubleheader in his coverage of the championship game. Not only was it his first Super Bowl, but his newspaper bought the 100s just before he went to Tampa, two challenges for the price of one.

He was given "a little lesson" one day, he said, and the next day "wrote a story and sent it."

Lawrence's co-author at the Super Bowl, the *Democrat and Chronicle's* sports columnist, Greg Boeck, agrees about the ease of use: "Mitch here showed me how to use it," said Boeck, whose Tampa trip marked the third time he has covered the Super Bowl. "It was like you owned it all your life...like being born with it."

Boeck's plaudits about Lawrence's tutorial ability went largely unnoticed. "Greg changes a light bulb and you have to fix the plaster," Lawrence said.

MR. POPULARITY. "I started seeing them at the World Series," Boeck said. "I saw tons of them at the Super Bowl."

The tons included this handful: *USA Today, The Washington Post, The Tampa Tribune, The Miami Herald, The St. Petersburg Times, The Jackson* (MS) *Daily News, The Morristown* (NJ) *Daily Record, Gannett West Chester* (White Plains, NY), and *The News-Record* in Willoughby, OH.

HOME TEAM. Don't get the idea every sports Model 100 was at the game. There were enough electronic goodies to go around. The 70,000 circulation *Daily Record* only could afford to send one person, John Harper, to Tampa. That left Greg Garber, a Super Bowl two-timer, to write local-angle stories for the Morristown, NJ-based paper. (Don't feel bad for him though; he's slated to cover Super Bowl XIX.)

Garber said he was the first Model 100 user in the fraternity of 12 that regularly covers the New York Giants. By season's end, seven of the 12 had made the switch to Radio Shack's Model 100. "They really have revolutionized the whole process," he said. "It's less than a thousand (dollars) ... that means even the 15,000 circulation papers can get into it."

DOES NOT COMPUTE. Sportswriters don't consider themselves computer people, let alone hackers. In their world, hack is a four-letter word. Little wonder, then, that

while they sometimes refer to those things they carry around as "computers" ... they also call them machines, terminals, and words I can't mention here. These guys do not compute!

Ask them if they use the 100, for example, to do statistics, sometimes called "stats," and they'll treat you like you're not a member of the brotherhood, like you don't have "The Write Stuff."

"I don't know that I would even know how to use it to calculate anything," was the way *USA Today's* Larry Weisman, a six-time Super Bowl veteran, put it. "I use it strictly as a word processor."

The general attitude toward computers is this: These things were made to bang out game stories on deadline, and therein lies the rub. They weren't.

THE WARTS. "What we're concerned about is getting good angles in stories and writing to the inch. Here (on the 100) you're talking about bytes so you're talking a foreign language. Sportswriter Mitch Lawrence said that, but it might have been said by any of the brotherhood of bowl watchers, super or otherwise.

Ask a ditchdigger what he wants; he'll tell you a shovel. Ask a sportswriter, like the *Sentinel's* Brian Schmitz, and he'll say something like this: "I just want a fast game and I hope my computer works."

What he didn't say was a sportswriter can live with a game that isn't fast. But a long-distance writer can't live with a computer that doesn't work. Lawrence tells the story of the writer on assignment in Cleveland, who, after trying to transmit a story and losing it, tossed his portable computer out a 12-story window. He then called the bellhop and reportedly said, "See that mess on the street? Clean it up and send it to *The New York Times*.

It must have been a great story.

While Lawrence said he'll never toss his 100 from a window, he admits to this tale of terror on his last night in Tampa: "It was on the last inch of the last story to write for the Super Bowl. I hit a couple of wrong buttons..."

Need we say more?

We will. These warts, from other Super Bowl users:

"The screen is so small. It's like looking at a rearview mirror."

"The keyboard is okay, nothing to get excited about."

"Early in the week, the battery went dead."

"If you do something wrong, you get a god-awful pitch."

"A couple of flaws ... the insert mode isn't good."

"Sometimes the cursor doesn't move as fast as you'd like."

And finally, this zinger from *USA Today's* Weisman: "They tell me it's user friendly, but we haven't gone out for a beer yet."

Oh well, even Jim Plunkett throws an interception, once in a while.

EXTRA POINTS. What sportswriters would like is the perfect game, and the perfect machine with which to cover it. For a growing number, the Model 100 scores high and is a contender for their affection. For others, the decision is already in. Greg Boeck has this to say about his newfound friend: "These things are great. Awesome. They're the Raiders of the business. They're incredible."

Only a sportswriter could have put it quite like that.

Subscribe
1-800-225-5800

Enter your subscription TODAY...

12 Issues of PORTABLE 100 for only $24.97
($10.93 off Newsstand Price)

CALL US!
IT'S FAST & EASY!!
(or write)

PORTABLE 100 MAGAZINE
P.O. BOX 250, 67 ELM ST.
CAMDEN, MAINE 04843

CONSUMER ELECTRONICS SHOW

FLASH, PIZAZZ EVIDENT AT VEGAS ELECTRONICS BASH

By Mike Greenly

Editor's Note: During the Consumer Electronics Show in Las Vegas in January, Mike Greenly filed daily reports on The Source's Participate. Mike was a marketing executive for Lever Brothers and Avon before starting Mike Greenly marketing this year. This article is based on his reports to Source members.

Don't let anybody kid you. Attending a consumer electronics show is work... especially if you are reporting via your Model 100 to Source readers across the country. They are counting on you. They want news as it happens.

The show in Las Vegas is an intense experience. Not just the flashy sound and light. Not even (drum roll) The Equipment. It's the human "stories" that get you. The high-stakes struggles just behind the surface, hidden under the glitter of the electronic jungle. If you let yourself feel those stories, they will wear out your feelings.

You ready yourself for weeks. You set up a pre-show conference on The Source to gather advance questions and comments, to get a sense of what your readers want. You do your best ahead of time to get your thinking organized! You hope your reports will be on target.

Then you step onto Planet Vegas! You join the battle lines, forget the anticipation and preparation. You pulsate like the exhibit halls waiting for you.

The spectacle begins at the airport. Slot machines clacking and blinking as you exit the plane. Literature thrust at you (*CES Daily*) as you try to locate your baggage.

You see all the evidence that there's no better spot for an electronic show than right here in Vegas. It's the land of the 20-foot showgirl posters (maybe even 20-foot showgirls!), the City of Endless Light, a looney Star Trek set, "Planet Lightkitsch." Welcome, alien!

There is gambling in the restaurants, gambling by the check-in counter, gambling on your way into the exhibit hall. But what is CES but 17 miles of gambling?

Part of the show's intensity is from the pressure to get your attention. The competition awaits you in every booth. The "barkers" are the people who put these glitzy "kingdoms" together; the ones who unwrapped every carton. Sometimes they've left home those who wrote the scripts or designed the products, the people back home paying mortgages and waiting for the news: "*Did we have a good show?!*"

So you step out on the floor just as fast as you can get there and you enter the electronic mixmaster. If you've been to COMDEX, there's one thing you notice right away. There's a difference in the people who come to this show.

The Vegas COMDEX was filled with pinstripe suits. "It's the IBM influence," the oldtimers told me, "people think they'll strike it rich faster if they dress like "Big Blue."

Well, IBM didn't make it to this CES. And while there's plenty of designer execuwear, you get a different impression. There are noticeably more women at CES, more foreigners too, especially Japanese. You see a younger crowd,

couples in blue jeans. More "just folks," like the crowds at a circus.

Even between the exhibit halls, the world's fair aura pervades. On the way from cameras and music to the hall filled with computers, you pass an only at CES sight: Cars looking like beached flying fish line the courtyard, their doors open wide, music pouring out of them. Car audio speakers blare, "Do you wanna have a listen that'll send you down the road?" (You enter the computer hall bouncing.)

There's plenty of "hard news" to report. Portables are everywhere, as company after company tries to emulate Tandy's success. (You feel a little smug, let's confess. You know you're already there. On the way to Vegas, you filed a report from a pay phone at the St. Louis airport. Electronic Superman.)

At the show, I interviewed the president of Atari, James Morgan. We were just outside his display rooms, so I was able to report on his will-to-conquer. I asked him about the rumor that Atari would drop all its hardware. "Patently untrue!" he said. I found I believed him, and passed on the word to Source conference readers.

I got news from the Texas Instruments booth about TI's commitments to its "orphans" (Warranty and repair information, a hotline, third-party software development).

There is gambling in the restaurants, gambling by the check-in counter, gambling on your way into the exhibit hall. But what is CES but 17 miles of gambling?

In fact, there was lots of news to report on lots of companies and products: Apple, Commodore, cameras, telephones, and glorious digital sound to blow you away. But long-timers were quick to note, compared to other years, a breakthrough of any kind was lacking at CES. Most companies are inching along (with exceptions like Kodak's new video camera), waiting on the sidelines with the status quo, nervous to see where the next surprise is coming from.

By the end of the day, your feet are tired and your shoulders sag from carrying around too many pamphlets, brochures, and journals offered in the hallways from young men and women in shorts and t-shirts. (These pamphlet-kids get paid $50 a day, "off the books." You hope their shoulders hurt too.)

Back at your hotel room, you collapse on your bed, order room service, and pull out your 100 nestled among your shirts in the dresser drawer.

You ready the acoustic couplers as though they were James Bond spy equipment. Problems. Problems with getting a simple dial tone, delays in going through an operator, problems when the local telenet number is busy. Sometimes, in desperation, you phone New York to a Tymnet number you can always count on. Even that fails you in mid-transmission. There's a sudden scramble on the screen, and you realize 1984 has really arrived. The exasperation now is, what seems so "simple" to you, telecommunication, still is so finicky, so fragile.

EASIER COMMUNICATION
with your host computer

Lapcom™ lets you manage memory and view files while connected to your host computer. Copy one file to another, display files, kill files, and execute immediate BASIC commands without disconnecting. Also, convenient function key selection of XOFF, XON and CTRL C character transmission. Download, upload, echo-print and dial. (Does not access the ADRS.DO file.) **$39.95**

Laplog™ lets you store and view the communication dialog between computers. (This is not a download procedure.) Instead, 100's of lines of dialog are stored in unused memory. Scroll through the stored dialog using the arrow keys (like TEXT) while retaining host computer communication. The stored dialog can be printed at any time. Also included is the "snoopy" function. It displays control characters from the host as numeric values in reverse video. This is great for finding communication problems. Program has one-key selection of XON, XOF and CTRL C charactrs, echo-printing, dialing and access in BASIC. (Does not incorporate upload, download or ADRS.DO search.) **$39.95**

*Each program on convenient tape cassette, with **thorough user's manual and well documented source code listing.** (Use the listing for programming tips, and for adapting the program to your unique needs.)*

PROGRAMS FOR THE PC-2/1500

PocketCalc™ IV is a spreadsheet program. Capacity with 6K RAM is 140 cells; with 10K RAM is 640 cells. Financial and scientific format. Advanced user interface...4 auto repeat directional keys for scanning cells, instant recall menu and function keys. Prints bar and line graphs. **$29.95**

Developer does cross referencing, renumbering and block deleting of your BASIC program. Very powerful and simple to use. The best programmers' tool available for this computer. **$29.95**

Each program on convenient tape cassette with excellent user's manual.

Money back guarantee if not satisfied.

☐ Send programs as circled above. Check or charge. First class postage included.

☐ Send **FREE** catalog of 40 business and professional programs for the PC-1/1211, PC-2/1500 and Model 100.

My computer is _____

NAME _____

ADDRESS _____

CITY/STATE/ZIP _____

MC/VISA # _____ Exp. Date _____

Signature _____

PocketInfo Corp.

P.O. Box 152 Beaverton, OR 97075 503-649-8145

Circle No. 15 on Reader Service Card

SUSIE SOFTWARE

MICRO–MATH **#MM1** **$15.00**
Converts your computer into a convenient caluculator with 7 programmable memories. Destined to become the most often used program on your portable computer.

MICRO–LABLE **#ML1** **$25.00**
A deluxe list and lable program. Data can be saved to both ram and/or cassette tape files. It allows up to 5 lines of data to be printed onto standard 3½ x ⅞ inch labels and accepts a 6th non-printing data line for LCD display use. The program performs alphabetizing and searches for user assigned printing codes.

MICRO–FILES **#MF1** **$25.00**
A powerful data management program that permits up to 25 files of 12 fields each to be resident in the computer at one time. Each file can consist of up to 900 characters. The program can alphabetize, search on all fields and produce hard copies at the touch of a key.

MICRO–SALES **#MS1** **$25.00**
A point of sales and forms generation program in one! This program will generate personalized purchase orders, sales orders, receipts and invoices. All data can be saved to ram storage. The program is self formatting, eliminating the need for expensive pre-printed business forms, and since it can print consecutive copies, expensive multi part forms are not needed either. The program even supports sales taxes and discounts and performs all math functions.

MICRO–SALES 2 **#MS2** **$38.00**
This enhanced version of the above program adds additional editing functions and the capability to generate packing slips and statements. It also supports both taxable and non-taxable items on the same form.

MICRO–PILOT **#MP1** **$28.00**
A flight simulator game with multiple airports. Instrumentation consists of an altimeter, air-speed indicator, turn & bank indicator, compass and directional finder, DME, fuel gauge and indicators for flap and landing gear positions. A simple keyboard layout controls throttle, elevator, rudder/aileron, flap and gear controls.

[ ] #MM1 [ ] #ML1 [ ] TRS80 MODEL 100
[ ] #MS1 [ ] #MF1 [ ] NEC 8201-A
[ ] #MS2 [ ] #MP1 [ ] EPSON HX-20

Name _____

Address _____

City _____

State _____ Zip _____

709 Wilshire Dr., Mount Prospect, Illinois 60056 (312) 394-5165

Circle No. 16 on Reader Service Card

THE WIRE

But you don't give up, and dial again. You sort through your papers and pamphlets, all your hasty notes. But your mind goes back to the "news behind the news," to the people that are also "the show," the other news.

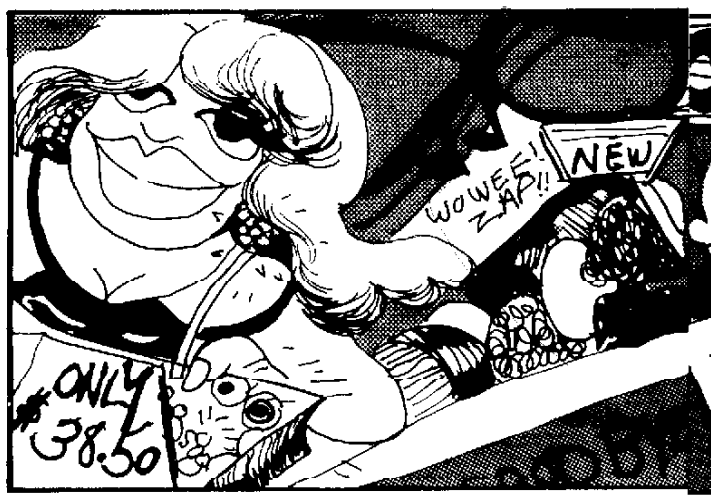
A west coast salesman told me to look around the room and picture it with two-thirds of the people and companies gone by next year. Gone? Why? They'd be out of business, he said.

The failure rate in this business is as brutal as the stress, the human cost of playing a turbulent game where the rules constantly change. What's a good product? Well, it depends on which week you ask the question. It's a voracious industry, a killer of heart-pumping hopes even as it creates new triumphs.

Every hour during the fair, you pass and ignore the results of so much effort. You turn your back on the booth that doesn't interest you, a rejection that takes just four seconds. You snub the salesman with the overly hearty greeting, "Hi! How ya' doin'? You audio or video?" You ignore the magician with three miserable pieces of rope, trying to say (a lone voice in a swirling hurricane) why his ability to stitch them together is like the "magic" of the computer components he's presenting.

But when somebody does something well, you really notice it. The Fisher demonstration was an example. Hot pink neon sign splashing out "Digital Music," Michael Jackson's "Thriller" videotape spread onto a large screen with powerful speakers on either side. The crowd came down the stairway, hooked by the sound and light. Then a glamorous Pied Piper, Fisher's statuesque hired model, glided onto the stage. She moved her hand slightly so the silver audio disk would glisten. She thanked Michael Jackson and told us us why Fisher digital music is the best there is. Her script carefully avoided "tech speak" and ended with a listen to the silver disk itself. An actress, even in an industrial show, knows when she's a winner.

Or the opposite, like the actor and actress at the Canon booth. They were too bright and brittle as they spoke their artificial lines (the script the client approved) to a smirking, shuffling audience. I was once going to be a playwright and I found it unbearable to look at the Canon actor's face. I empathized too much with what he must have been feeling. Nobody likes to be a public "turkey," let alone star in one, day after day.



THE WIRE

So it's better not to think about the poor Spectravideo pitchman, camped across the way from Coleco's mammouth castle. David on Goliath's toenail, Coleco was crammed with visitors, while the competing Spectravideo man pitched to his own sales manager just to make the booth look busy.

You can smell the danger as you pass some booths; the desolation at Kaypro and the lack of news at Epson. You can smell that as you can hear success: applause as Steve Gibson demonstrated his new invention, the Gibson Light Pen, just purchased by Koala; the buzz at Electronic Arts, people camped all around the "tent" for game demonstrations on strategically placed monitors.

My report goes out over the Model 100 like an electronic tom-tom. Readers of Participate wire back questions for the next day's march. But eventually it's over and time to say goodbye.

Goodbye fiber-blond women at the top of the Hilton wheelchair runway;

Goodbye blond gargoyles in black dresses with trays full of the light-up earrings, only $38.50. ("It comes with five light-up colors, runs on AA batteries! Want some, honey?")

Goodbye light-up state of Texas and impossible quest for the electronic roller skates a reader hoped I'd find.

Goodbye Michael Jackson everywhere.

Goodbye digital sound that I can't afford right now, but greedily want.

Goodbye man with the fuzzy-image on his large TV screen and the "state of the art" sign above it. ("No, this isn't actually the state of the art show, we just call it that.")

Goodbye to the actor dressed up as Spiderman and the actress who's Spiderman's ladyfriend and the humanoid (I'm guessing) who wears a giant box of Scotch video tape with only arms and white gloves showing.

It's also goodbye executives wandering the corridors, and the two cops talking about what kind of deals they "cut" with vendors on the last day of the show.

Goodbye Las Vegas morning 'til midnight wedding chapels, where they'll drive you to and from to get your license — if you don't want to wait an extra day for the ceremony.

Goodbye 3-D games at Mattel.

Goodbye gambling all around you and goodbye stacks of magazines and phone equipment.

Goodbye for now, CES.

Goodbye all of it... and hello brave day after.

M100 SMALL TALK

- Interface your M100 with the IBM PC or Commodore 64 using a null modem cable
- Send and retrieve files
- Use the screen, printer and disks on your IBM or Commodore
- $59.95 with null modem
  $39.95 without null modem

M100 DIAL TALK

- Interface your M100 with the IBM PC using your M100 modem
- Send and retrieve files
- Use the screen, printer and disks on your IBM
- IBM operates unattended with password access and event logging
- $59.95 single user license

NULL MODEM CABLES

- 5 feet long with metal hoods
- These will fit the M100
- $39.95 specify male/male or male/female

Send check or money order to:

Key Solutions, Inc.
19 Silvermine Road
New Canaan, CT 06840
(203) 966-9773

(Connecticut residents please add 7.5% sales tax)

IBM PC is a trademark of IBM Corporation. Commodore 64 is a trademark of Commodore Business Machines, Inc.

Circle No. 17 on Reader Service Card

BILL LOUDEN

TELECOMPUTING

GET INFORMATION EDGE WITH INVESTMENT QUOTATION DATA BASES

Looking for an investment opportunity now that your taxes are paid? Look to CompuServe's financial data bases.

CompuServe's Investment & Quotations data bases can be grouped into four categories: MicroQuote, Quick Quotes, The Value Line DataBase II, and Standard & Poor's Information File.

FOUR CHOICES. The MicroQuote securities data base contains trading statistics and descriptive data on over 50,000 stocks, bonds, mutual funds, warrants, government issues, and options. Historical prices and volumes are available for most stocks back to January 1, 1974; historical dividends are available back to January 1, 1968 and only current options are kept.

If you would rather check the current day's price (updated hourly), Quick Quotes would be for you. The Quick Quotes data base contains stock issues from the New York Stock Exchange, American Stock Exchange, Over The Counter markets, and NYSE and AMEX bonds.

The Value Line Database II offers annual and quarterly financials on over 1800 major companies back through 1968. It also includes Value Line's forecasts of company performance.

In addition, CompuServe's Investment & Quotations section includes the Standard & Poors Information File. This file contains company, business, and Standard Industry Code information on over 3,500 major companies.

WHERE TO FIND IT. The easiest method to access CompuServe's financial data bases is to enter GO FIN-6 at any CompuServe Information Service prompt (!). You may also enter GO FIN (for GO FINANCE) to view the complete spectrum of CompuServe's financial offerings.

Upon entering the Investment & Quotations area, you may receive a brief news item describing recent enhancements or new features. Next you will be told the date of the last database update. Then you will receive the PROGRAM: prompt.

To obtain a report, type the feature you want when you see the PROGRAM: prompt. You need not type the entire command, just enough letters to distinquish it from all other choices. For example, typing QQUOTE will give you the Quick Quote data base and the current day's stock prices.

TYPING ?. Whenever a program prompts ISSUE:, it is expecting a ticker symbol or cusip number for a stock, option, debt issue, or other security. If you do not know the ticker symbol or cusip number for the item you want, use the CUSIP program (enter CUSIP at PROGRAM:) to find it.

Often, typing a question mark (?) will cause a program to provide additional instructions. If a prompt ends in an exclamation point (!), you may also use the familiar Information Service navigational commands such as M for previous menu and BYE to disconnect from CompuServe. At other prompts, these commands probably won't work unless instructions specifically tell you they do.

The features that may be entered at the PROGRAM: prompt are listed in table 1.

A SAMPLE SESSION. Let's say someone gave me a "hot tip" on the market for a company called Tandy Corporation and I wanted to gather some information on that firm.

After entering GO FIN-6, I entered QQUOTE at the PROGRAM: prompt to check the current stock price.

These quotes are updated periodically during the day and cover two major U.S. exchanges as well as selected OTC. CompuServe does not edit this and is not responsible or liable for its content, completeness, or timeliness.

Each current quote costs 2 cents in addition to connect-time.

At the ISSUE: prompt, I filled in Tandy's ticker symbol (TAN) and received the current price of the stock. I decided to examine the stock more closely.

When PROGRAM: appeared on my screen this time. I responded with EXAMINE. Information scrolling across my screen included type of stock issued, earnings to date, shares outstanding, and dividend history.

Continuing, I called up Standard & Poor's data base by typing in SNP at the next PROGRAM: prompt. The S&P General Information File contains summary, important developments, product line contributions to profits, corporate officers, and selected financial items on over 3,500 companies.

I typed in Tandy's ticker symbol and received information on its S&P ranking, gross sales, and net sales.

Standard & Poor's General Information File then printed a description of Tandy, important developments for the company during August, and a description of its product line.

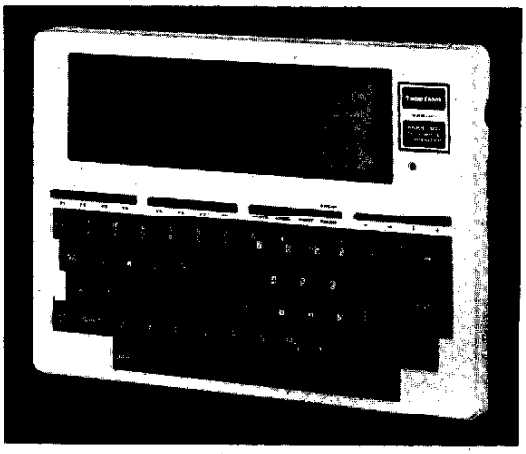
Since the current information looked

TRANSFORMS YOUR MODEL 100 INTO A COMPLETE BUSINESS ANALYST TOOL

TENKY +

Performs strategic "what-ifs" at the touch of a function key

- Does complete compilation with text-notations of any aspect of your business finances.
- Generates breakeven analysis reports, showing sales volume and selling price studies in relation to business costs.
- Prints fully formated amortization schedules also gives instant on-screen loan, term, interest or payment information.



- Does detailed printout of costs of goods, fixed costs, sales, or break-down of any variable on your financial statement.
- Solve for any of over 12 variables in financial formulas — with a single function key.
- Does IRR/MIRR, NPV, compound interest, enuities calculations.
- Does logs, powers, recipocals.
- Use TENKY + for all calculations, from the simplest to the most complex.

TENKY + $59.95

INCLUDES CASSETTE, STEP-BY-STEP INSTRUCTION MANUAL.

MC/VISA/C.O.D.

PORTABLE COMPUTER SUPPORT GROUP

11035 Harry Hines Blvd. No. 207, Dallas, Tx. 75229

PCSG provides hotline software support for the Model 100. Call us at 214-351-0564

Circle No. 18 on Reader Service Card

good, I had MicroQuote do a statistical analysis of Tandy's stock for the past three years by issuing a STATS command at the PROGRAM: prompt.

Finally, the accountant in me came out. I entered VLINE to "look at the books." The financials on most major corporations are available there.

Then, I decided to obtain a four year financial ratios report. At the PROGRAM: prompt, I entered VLANN

I was able to gather extensive company information in less than an hour of connect-time and can now make an intelligent investment decision. Any guesses what it may be?

By typing CHARGES at the PROGRAM: prompt I found the cost of my investment search (table 2).

Each time you log into MicroQuote and actually obtain data, you incur a minimum charge of $1 (plus connect-time), unless the only data you access is retrieving current-day prices via QQUOTE. (Note: the minimum charge is not assessed if you only access documentation or file area management commands.)

Obtaining data incurs transaction fees which vary, depending on the program utilized and the amount of data requested.

There are no fees other than connect-time to list out instructions and demonstrations, or manage files in your area.

The following are costs associated with the various data retrieval features:

- CUSIP. Twenty-five cents for up to 25 issues listed. The fee applies even if no issues are found that match the search criteria.

- PRICE. For prices, the cost is 3 cents per price set for the most current price and 5 cents per price for historical prices when daily prices are requested. Weekly prices are 10 cents per price set and monthly prices 15 cents per set. A set includes the date, volume (in 100s), high/ask, low/bid, and close. Accessing dividends costs 15 cents per distribution, and the accompanying data includes the date, rate, type, ex-date, record date, and payment date.

- Descriptive data (available only through MQDATA) costs 5 cents an item, up to a maximum of 35 cents per security. Those items include closing price, S&P rating, indicated annual dividend, earnings per share, shares outstanding, beta, beta rank, yield to maturity, amount outstanding, Moody's rating, underlying stock price, underlying shares, and open interest. Of course, not all of these items apply to all issues. There is no data charge for other descriptive data items. For more information on these data types, enter DEFINE (may be abbreviated to DEF) at the MicroQuote PROGRAM: prompt.

- EXAMIN. $1.25 per issue

- STATS cost $1.25 per issue for a time period up to 261 trading days (1 calendar year) or $2.50 per issue for time periods greater than 261 trading days.

- MKTHGH. The reports marked with an asterisk (*) when the menu is printed in MQUREP cost 10 cents each. Other reports cost 50 cents each.

So if you're looking for investments information, CompuServe's financial data bases can provide you with comprehensive information for investment opportunities.

NAME	FUNCTION
BONDS	List all bonds for issuer
BRIEF	Set brief mode for prompts
CATALOG	Brief list of files
CHARGES	List surcharges for session
COMMANDS	List of available features
COPY	Copies a file
CUSIP	Find tickers or cusips
DATA	Data retrieval program
DEFINE	Data descriptions
DELETE	Delete a file
DETAIL	Turn off BRIEF mode
DIRECTORY	Detailed list of files
DIVIDEND	Dividends, splits, interest
DOC	Documentation, demos
EDIT	FILGE editor
EXAMINE	Description of an issue
FILTRN	Up and download files
INFO	Information, price list
MKTHGH	Market highlights (outliers)
NEWS	News (if available)
PRICE	Price, dividend display
PROTECT	Protect file, directory
PORT	Portfolio valuation
QQUOTE	Current-day prices
QUOTES	Multiple security quotes
RENAME	Rename a file
SNP	S & P company evaluations
STATS	Price summary over date range
TELPLT	Telidon Plotting
TERMINAL	Set terminal parameters
TYPE	Type file contents
VIDPLT	Plotting with VIDTEX
VLANN	Value Line annual financials
VLDATA	Value Line data retrieval
VLFORE	Value Line forecasts
VLINFO	Value Line information

Table 1. Commands Available at Program Prompt.

PROGRAM: CHARGES PREMIUM CHARGES SUMMARY	
Current-Day Quotes	$0.02
Standard & Poor's	$0.25
Historical Prices	$3.75
Total Charges	$4.02

Table 2. Cost of Tandy Investment Search.

PortaTax

by small solutions, inc.

PortaTax T.M.

PortaTax is a tax planning, forecasting, and strategy program designed to travel with the tax professional. Invaluable for the upper-income individual's personal use as well, it:

1. Calculates Federal Income Tax using all four possible filing statuses.
2. Allows all sections (i.e. income, deductions, adjustments, and Keogh deductions) to be entered in detail (line by line) or in total.
3. Automatically calculates longterm captial gain exclusion, maximum Keogh contribution, two wage earner adjustment, medical deduction limitations, and caualty loss deduction limitations.
4. Calculates tax using both the tax rate schedules and income averaging, after IT determines whether or not the taxpayer qualifies for averaging and alternative minimum tax.
5. Calculates self employment tax.
6. Shows all items needing to be paid on a recap screen, with the option of printing all input data and results. Output is formatted to 40 columns for compatibility with most compact printers. The 32K RAM version will also print to a RAM file.
7. Makes a full use of function keys.

PortaTax T.M.

Supplied on cassette tape. 32K RAM recommended. Updates will be available at nominal cost to registered owners. Superbly packaged and documented in the Porta series style. NEC 8201 version available.

Also available with enhanced data storage and retrieval features for the TRS-80 Model's III, 4, and 12.

$99.95 plus $2 shipping and handling.

Circle No. 19 on Reader Service Card

4510 W. Irving Park Rd. • Chicago, IL 60641 • (312) 286-0762

JAKE COMMANDER

PORTABLE COMMANDER

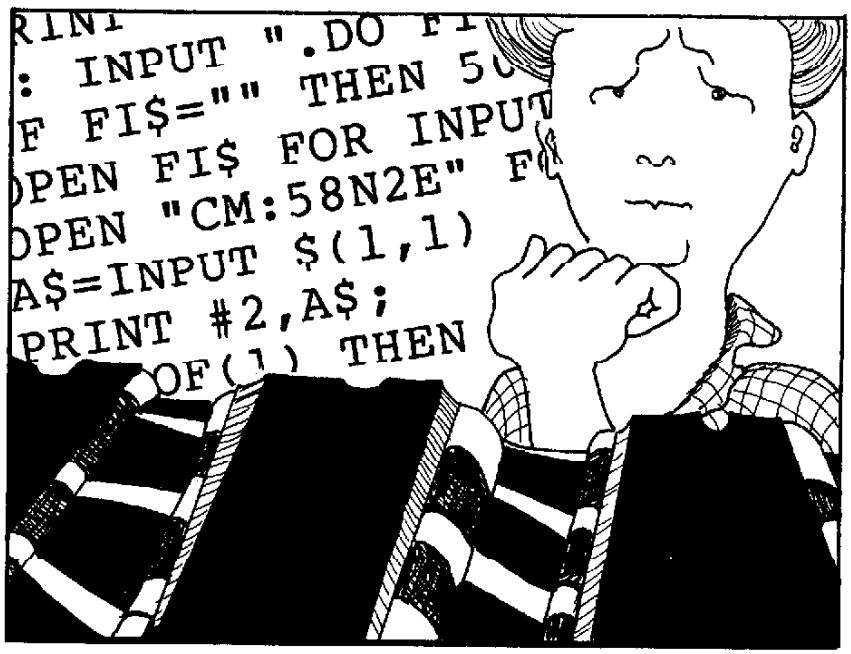
HOW THE 80C85 MICROPROCESSOR HANDLES ITS INTERRUPTS

Last month I looked at what interrupts are and the type of software processing they allow. This month I'll be describing how the Model 100 deals with these events, or more precisely, how the Model 100 microprocessor deals with them.

The microprocessor unit (MPU) in the Model 100 is a low-power version of Intel's 8085. Fabricated using CMOS technology, it is known as an 80C85. Apart from the method of manufacture and the consequent "C" identifier in its type number, it is functionally identical to the 8085 — both in its instruction set and its method of handling interrupts.

ALL IN THE FAMILY. Now, the 8085 was itself sired by another MPU, the 8080. So it won't be a surprise to find that the 8085 has an interrupt mode which is the same as the 8080's. In fact, to boil down the differences between the two chips; the 8085 is merely an 8080 with extended interrupt processing capabilities. And with the 80C85 being a CMOS version of the 8085, you now should have the relationship between all three chips.

First, let's look at the interrupt method common to both the 8080 and 8085. This is called INTR on the 8085 (INT on the 8080) and is simply the name given by the engineers who designed the chip to the interrupting signal. If a signal is placed on the INTR pin of the 8085 while interrupts are enabled, it will complete its current instruction and process the interrupt.



When the 8085 is given such a kick via its INTR line, the hardware that caused the kick has the responsibility of telling the microprocessor what to do next. It does this by supplying a machine-code instruction which it forces onto the data lines of the chip. Instead of executing the next one in the program, the chip dutifully reads and executes this forced instruction.

THE CALLING. So, what sort of instruction would the interrupting hardware want carried out? It will almost certainly be a call to a subroutine which will perform the required processing.

A call has the advantage of both transferring control elsewhere and remembering where control was before the transfer occurred. In simpler terms, the chip can shoot off, find out what the interrupting device wants, and shoot back again.

The only problem with a CALL instruction is it requires three bytes: one for the CALL opcode and two for the address at which to call. This can be a little complicated as the three bytes all have to be timed accurately. It would be much simpler to place a single byte opcode on the data bus.

RESTARTS. Well, the good old design engineers must have had this problem in mind when they decided on the instruction set. They decided to allow for eight opcodes that could perform single-byte calls...just like we want.

These opcodes are known mnemonically as RST (for restart) instructions and include RST 0 to RST 7. Each one performs a call to predefined locations in low memory. As you might expect, each of these predefined addresses are likely to contain a jump to the routine to do the donkey work.

It's worth explaining a point I alluded to earlier. I said the INTR signal would cause an interrupt if interrupts were enabled. Most interrupt modes

can be enabled or disabled using a software instruction (EI or DI).

SHY DI. A DI has the effect of making the MPU ignore any signals on its pins which demand its attention. The reason for this is that certain pieces of software are time-sensitive and would be upset if interrupted.

Imagine if you had some code that counted for precisely a tenth of a second then emitted a short tone. If the MPU was interrupted by some impatient device, the count would also be interrupted and more than a tenth of a second would elapse before the tone.

A trivial example, but it illustrates the point. What the programmer would do in such a case is to disable interrupts, do the countdown, and then re-enable them. If an interrupt occurred during the countdown, it would be ignored until interrupts were enabled again.

SAME BUT DIFFERENT. The 8085 has five interrupt pins — four more than the 8080. Of the remaining four, three are nearly identical. They are not all that different from what we've seen so far. These are called RST 5.5, RST 6.5, and RST 7.5. Notice they're called restarts as before because they perform in a similar way. The difference between these and the previous kind is fairly simple.

RST 0 through RST 7 are all software opcodes. As such, they can be used in any machine-code program. More importantly in this context they can be forced onto the data bus during an INTR interrupt.

However, RST 5.5 through 7.5 are not opcodes and are only ever invoked if an interrupt signal occurs on their individual pins. Spelling out the steps should make this clear.

HARDWIRE ACT. When an interrupt signal appears at the RST 6.5 pin in the 8085, the MPU stops what it's doing and performs a hardwired call to hex location 0034 in memory. This location would probably contain a jump to the final interrupt-handler subroutine.

Notice that this is very similar to the INTR process. The important difference is that the INTR interrupt forces an opcode (normally a RST) onto the data bus, whereas the three RST 6.5 interrupts don't. The three locations called by these interrupts are positioned halfway above RST 5 to RST 7 in low memory. This explains the .5 in the interrupt name.

A QUESTION OF PRIORITIES. So, why have three interrupts, all the same? Apart from calling different memory locations and thus different subroutines, each has a different priority. This means that if three devices all interrupt the MPU at the same instant, the RST 7.5 goes first, followed respectively by RST 6.5 and RST 5.5.

Giving priorities like this enables the most important interrupt to be dealt with before the others. The definition of what gives one interrupt higher priority over another depends on the particular machine.

Usually, interrupts which signal high-speed incoming data will have a higher priority than ones which can afford to wait a while.

BIGGEST PRIORITY OF ALL. The final interrupt is so high on the priority list that it can't even be disabled by the programmer. The Z-80 MPU has a similar one called NMI (for non-maskable interrupt). On the 8085, it's called TRAP. This is reserved for catastrophic events which override anything the processor is currently dealing with. The example always cited is that of power failure and I don't intend to be the exception.

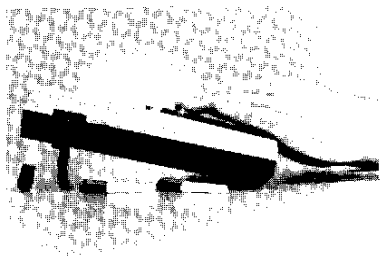
If power starts to dip on a computer, it's quite feasible to have the hardware detect the condition and place a signal on the TRAP pin. Nothing is more important (as it's about to die in a few hundred milliseconds), so the computer stops what it's doing and performs a call to yet another predetermined location in low memory.

What happens from then on depends on the hardware, but the usual idea is to save the contents of RAM on a high-speed peripheral before power goes too far. When power is subsequently restored, this peripheral can be read, memory contents restored, and the program reentered as if nothing had happened. You can see why this interrupt is not deferable.

Next month I'll be taking a look at the specific events which occur during interrupt-processing on the Model 100.

Circle No. 20 on Reader Service Card

PROP LEGS



- Elevate your Model 100 to the proper angle for use
- Slip easily into rear screw holes in case
- Snug fit
- Non-skid rubber feet
- Durable plastic legs
- Handy — your Prop Legs fit in your pocket!
- Only $3.50/pair

Please add $1.00 shipping & handling
CT residents add 7.5% sales tax

Send check or money order to:

KJM Development
P.O. Box 698, W. Hartford, CT 06107
DEALER INQUIRIES INVITED

ASSEMBLER

An 8085 assembler for the Model 100. Use the built in TEXT program to create the source code. The full use of labels are supported, as are the following psuedo-operations:

DEFM	DEFB	DEFW	DEFS
ORG	EQU	$	END

Tape.....$22.95

LETS PLAY MONOPOLY

Match wits with your Model 100!! Plays just like a real game. Fast machine language graphics and sound effects.

Tape.....$29.95

CUSTOM SOFTWARE
605 North C, #2
Wellington, Kansas 67152
316/326-6197

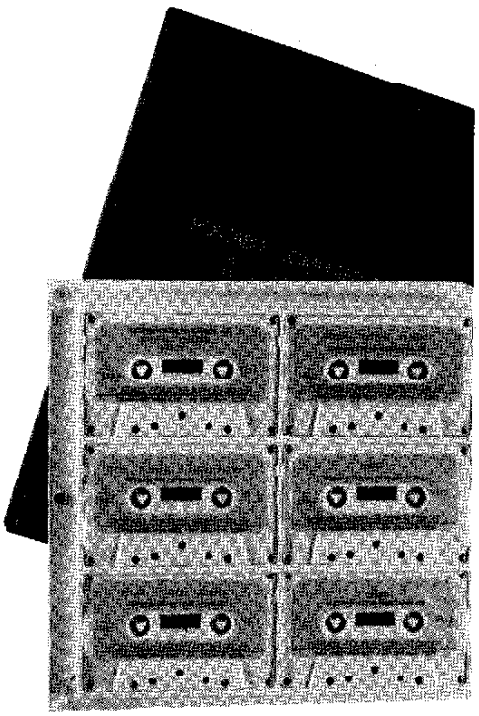
Circle No. 21 on Reader Service Card

– First with software for the Model 100 –

BUSINESSPAK+

For the Radio Shack TRS-80 Model 100

Six programs designed for the businessperson.
▪ Each on its own cassette.
▪ 125 page manual in simple language.



With BUSINESSPAK+ the Model 100 is virtually a complete tool for the manager or executive. Picture how this added capability will help you.

WRITE+: Instead of merely a text preparation device the Model 100 becomes a real word processor. Margins . . . side, top and bottom. Title page, topic headings, page numbers, and even headers and footers. You can even right justify and print multiple copies. It has over 36 features and countless format possibilities.

EXPNS+: By simply entering expenses into eighteen categories, you get a twelve day spreadsheet, giving totals for each day and category. Names of rows and columns are instantly changeable, and the sheet becomes a budget or even a financial report. Replication across the columns, cumlative totals, and automatic growth or decline rate projection, make EXPNS+ an excellent planning tool. And, all the math is built right in.

GRAPH+: Prints out Bar, Line and Pie graphs of any EXPNS+ report on the DMP-100 dot matrix printer. Shows the percents on the pie chart and values on the others.

TELEX+: From any phone send any text file to any Telex machine in the world. Just enter the receiving Telex number. Send Mailgrams for next day delivery to any address at reduced rates through the Action Telex system.

PUT+: Lets you list any information in an organized fashion. It prompts for each entry and very rapidly creates addresses or schedule items and even inventory.

SORT+: Allows you to sort any list you compile with PUT+ alphabetically or numerically from any category in the entry. It can sort large files up to 20 times faster than an all Basic program.

MASTERCARD/VISA/COD

INTRODUCTORY PRICE! $89.95

Complete package includes manual and six cassettes!

PORTABLE COMPUTER SUPPORT GROUP

PCSG provides hotline software support for the Model 100. Give us a call at 1-214-351-0564.

The only three dimensional spreadsheet in existence 18 x 18 x 18

EXPENS + /GRAPH +

With EXPENS + /GRAPH + you can format 18 rows and 18 columns, plus at any juncture you can enter up to 18 values. For example: air-fare Monday — you could have up to 18 indicated expenses. You have 5832 possible entry locations (250 actual entries permitted). EXPENS + is an application spreadsheet that is designed to meet the requirements *most* people have for a spreadsheet.

DOES: Travel expense reports, Departmental expense reports, Financial reports (P&L), Cash flow, Budgets (great for home too), Forecasts.

You can footnote any or every expense with a one character symbol or letter. Eighteen, forty character lines allowed for recording footnotes, which appear at the bottom of the report.

You get automatic replication with a single function key; Automatic growth rate or decline projection also with a single function key. Print the spreadsheet with the touch of the function key and adjust the print layout to fit any paper width. Easy use and speed of entry is what describes EXPENS + .

You can build your spreadsheet in a matter of moments. Pie, bar or line graphs are truly generated instantly from either row or column totals. Just use the GRAPH + program. It works on your choice of five dot matrix printers, plus the CGP 115 Color Pen Plotter. Graphs are precise, labels and values are shown on each printout.

Most significant perhaps, is that EXPENS + and GRAPH + can be learned in minutes. Users say that they keep on using it because it generates classy reports so rapidly. We feel that is what true functionality is all about.

11035 Harry Hines Blvd. No. 207, Dallas, Tx. 75229

© 1983 Portable Computer Support Group TRS-80 is a trademark of Tandy Radio Shack, Inc.

Circle No. 22 on Reader Service Card

DAVID BUSCH

BUSCH LEAGUE

A 100 HELPS THE JUDGES AT THE INTERNATIONAL SCIENCE FAIR

The judges went wild over my TRS-80 Model 100. Although there were a host of computer projects at the International Science and Engineering Fair held in Phoenix, AZ, last May, mine was the favorite.

As a publicist for one of the participating special awards panels, I brought my MEWS along to the judging, armed with a program that promised to make vote tallying a lot easier.

Since the Model 100 had been on the market less than two months at the time, I found the scientists, Ph.D's and all, were fascinated with the new tool. (It wouldn't surprise me at all if some of them show up with a 100 at the next fair, to be held in Columbus, OH, this spring.)

CALCULATING WINNERS A CINCH. Educators can use this same program, at local, regional, and state science fairs. You'll find, as we did in Phoenix, that calculating winners is a lot faster using this handy, but short, program.

Vote tallying systems vary. The one used by my group at the science fair works like this: The 12 judges break up into three groups, each visiting one-third of the exhibits, and as many of the other displays they can in a two-hour period. Following this overview, each group provides a list of the strongest exhibits. Usually, only about one-fourth of the entries are eliminated at this point.

Then, the judges reexamine the exhibits in six groups of two judges, spending more time interviewing the students. Some hours later, they reconvene and conduct a preliminary vote to determine the "top 30" or so exhibits. The final hours are spent talking with students who have made the final cut. By 8 p.m. that evening, the judges vote on the top exhibits for the organizations's special awards.

100 DOESN'T DALLY WITH TALLY. Our group voted by awarding each exhibit a score, ranging from a high of five to a low of one. Each was determined by a show of hands. The Model 100 tallied the score given for each category, and then calculated the average. Because the program also keeps track of the number of judges who have voted for an exhibit, an accurate average is figured.

Each round of judging begins with the program accessing a subroutine for each rating, five through one. Subroutines are used so that, if a judge decides to change a vote, a correction can be made simply by using the proper subroutine, rather than repeating the entire voting.

The subroutines, at lines 370 to 460, store the number in an array, N(n). The results, including number of votes, judges voting, and average, are figured and displayed. The average is rounded to two decimal places in line 140.

Judges are alerted that the score has been figured by a BEEP, and then the average is flashed on the screen in the middle of an INKEY$ routine at lines 250 to 300. This will continue until a key is pressed.

If a number key is chosen, indicating that corrections are needed, the program uses the value of that number to determine which subroutine should be accessed again. Any number of corrections can be entered, with the new vote and average displayed each time, until a non-number key is pressed, sending control to the next voting session.

If you have a battery-operated printer, such as has been adapted for the Model 100, you might want to add a line or two to accept the name or project number of the exhibit, and then print out that information along with the results. This will allow the judges to have a permanent record of the voting. Also, you could add a module to keep track of project numbers and vote results, and then sort them by average scores.

```
Model 100 Program - BUSCH .BA

    10 ' ******************
    20 ' *                *
    30 ' *  Science Fair  *
    40 ' *                *
    50 ' ******************
    60 BEEP
    65 ' *** Access Tally Routines ***
    70 CLS
       : PRINT
```

BUSCH

```
 80 GOSUB 370
     : GOSUB 390
     : GOSUB 410
     : GOSUB 430
     : GOSUB 450
 85 ' *** Print Results ***
 90 CLS
     : PRINT
100 FOR N=5 TO 1 STEP -1
110 PRINT " Number of ";N;"'s :";N(N)
120 SC=SC+N(N)*N
     : JD=JD+N(N)
130 NEXT N
140 AVG=INT(SC/JD*100)/100
150 PRINT @64,"Judges voting:"
160 PRINT @107,;"==> ";JD
170 PRINT @184,"Average Score:"
180 PRINT
190 PRINT "   Hit <ENTER> if no
    corrections."
200 PRINT " Otherwise enter number to
    be changed.";
205 ' *** Flash Average on Screen ***
210 FOR N=1 TO 10
220 R=RND(1)*14000
230 SOUND R,1
240 NEXT N
250 A$=INKEY$
260 PRINT @227,"==> ";AVG
270 FOR N2=1 TO 50
     : NEXT N2
280 PRINT @227,SPACE$(4)
290 FOR N3=1 TO 50
     : NEXT N3
300 IF A$=""GOTO 250
310 A=VAL(A$)
315 ' *** See If Corrections Needed
    ***
320 CLS
330 JD=0
     : SC=0
340 IF A=0 THEN RUN
350 ON AGOSUB 450,430,410,390,370
360 GOTO 90
365 ' *** Enter Votes ***
370 INPUT " Enter number of fives:";
    N(5)
380 RETURN
390 INPUT " Enter number of fours:";
    N(4)
410 INPUT " Enter number of threes:";
    N(3)
420 RETURN
430 INPUT " Enter number of twos:";
    N(2)
440 RETURN
450 INPUT " Enter number of ones:";
    N(1)
460 RETURN
```


Circle No. 23 on Reader Service Card

TRS-80 ALWAYS AT SALE PRICES

COMPUTER CENTER

WE SHIP FAST!

DFW COMPUTER CENTER
326 MAIN ST., GRAPEVINE
TEXAS 76051 — (817) 481-7283

OUR TRS-80s Have the Radio Shack warranty

To get YOUR SALE price CALL:
1-800-433-S A L E

MODEL 100

3-D GRAPHICS!!!

One of the newest and most exciting advances of the computer revolution is now available for the Model 100 16K and over — exclusively from ALPHAWARE. With 3-D GRAPHICS, you can draw a figure on the screen, enlarge it, reduce it, or rotate it in any direction by any degree, all with a 'computer-accurate' perspective of depth. Included with the program is a supply of plotting charts and a complete, example-oriented users manual that's basic enough for the beginner but extensive enough for the long-time user. For the Model 100 owner seeking computer literacy, 3-D GRAPHICS is a MUST!! USD $49.95

--ALSO AVAILABLE--

MicroEditor II — a multi-function word processing program with powerful features including an exclusive multiple-data form letter routine. One of the best available. USD $49.95

Mail Master — prints mailing labels, sorts mailing lists, prints form letters. MicroEditor II compatible. USD $29.95

M100 Cassette Log — a convenient way to organize your cassette files. 50 pages/pad, enough for 50 tapes. USD $3.50

ALPHAWARE
INCORPORATED
2100 South Boulevard • Edmond, OK 73034

Circle No. 24 on Reader Service Card

BILL WALTERS

TANDYTALK

TANDY READY TO PULL WRAPS OFF ULTIMATE COMPUTER

I ended last month with a promise of a peek at something exciting. I can tell you I am very excited about this new item and after you read and think about it, you will be too.

In 1983 Radio Shack used a carefully paced schedule to introduce six new computers...and then dropped the other shoe at COMDEX '83 with the introduction of the Tandy Model 2000 personal computer. In less than 12 months the entire product line of computers at Radio Shack had changed ...a significant accomplishment for any firm.

ONTO SOMETHING BIG. We are now poised on the brink of announcing the most significant development in computing, which will eclipse even the revolutionary TRS-80 Model 100. I am most pleased to be able to share it with you through this column.

In January 1981 when John Roach, chairman of the board, Tandy Corporation, presided over the new product announcement for the TRS-80 Model 16, he referred, somewhat tongue-in-cheek, to "The Ultimate-One" computer. He painted grand visions for this new computer, a universal operating system capable of using anyone's software, single or multi-user (of course), and a host of other lavish embellishments. This was just a "tease" or "lead-in", as he went on to say this product was not what he was there to announce.

There were a number of snickers from the audience as they realized what had just happened to them; they actually had begun to fantasize what such a device would mean to the industry. It would not be just a breakthrough product, but would be for the computer industry what the transitor was to the electronics industry!

LAUGH LAST, LAUGH BEST. I have to tell you, in the back row, we were not laughing. "How had *he* already heard?" whispered one of my cohorts. Worried glances were exchanged quickly. No. Surely it hadn't been divulged already; it was just too soon, still in too formative a stage.

Later that night at Billy Bob's, over a cold bottle of a renowned Texas beverage, I discretely pigeonholed our chairman. "Boy, you sure did have them goin' today with that Ultimate-One gag," I offered. I received a broad grin and a soft chuckle as a reply. "Of course, such a product would be fantastic, but quite impossible," I emphatically stated. "Yes, quite" was the reply.

Thank God! The secret was safe!

CAN YOU KEEP A SECRET? The next Monday at a hurriedly called meeting, it was quickly explained to all attending that *it* was still safe; only those present knew. However, now the project would have to really move along as there might be some in the audience who would pass on one or more of the ideas to the competition.

We now turned our attention to the area of major importance: "Will the one in Ultimate-One be in Arabic, Roman, or spelled out?" came the first question. I knew it was going to be a long project....

That's history now. For all the world to see, here comes The Ultimate-One Computer. This computer has been in development for many man-and-woman years and has been rigorously tested for just as long.

The Ultimate-One features:

- Availability – It is available immediately off the shelf.

- Processor – Completely unique and proprietary to each system. An advance made possible only through years of development.

- Execution Speed – Individual instruction execution speed is so rapid that even the most delicate of scientific instruments fails to measure it.

- Size – 8-bit version (complete with parity) is available in compact shirt pocket size. Larger 14-bit version (also with parity) is smaller than the TRS-80 Model 100.

- Software – The best part of all. Everything needed is included; no hidden software costs, nothing extra to buy.

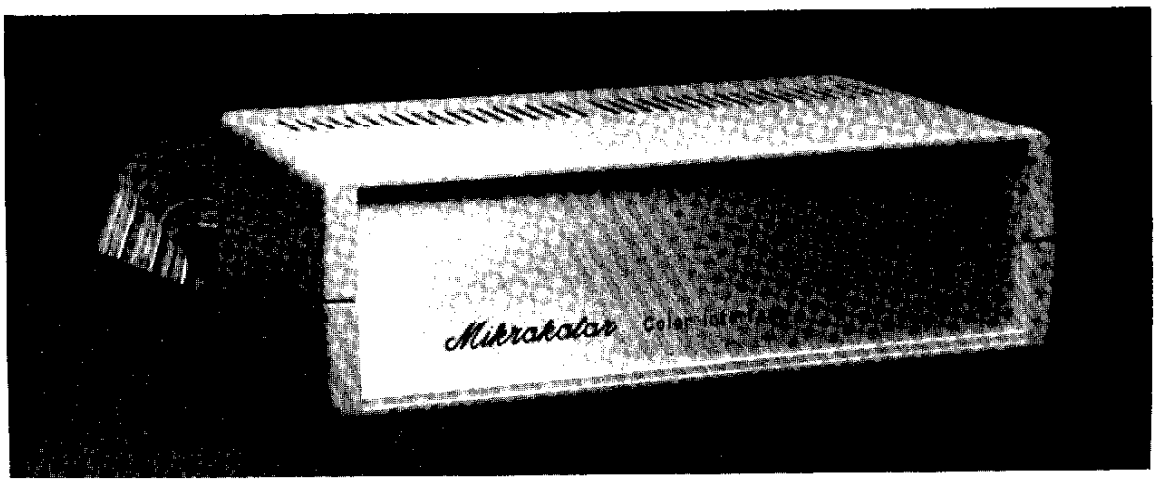
- Display – Available with either monocolor or soft light amber display.

- Word Size – Available in 8- and 14-bit versions, complete with built-in parity. Never before has such power and flexibility been available.

- Power – Revolutionary engineering breakthrough allows for operation by ambient light. Think of it, no batteries to buy, ever!

MIKROKOLOR

Color Graphics Inferface



High Resolution Color and Full Screen Video Comes to the TRS-80 Model 100!*

The MIKROKOLOR Color Graphics Inferface is designed to provide the new TRS-80* Model 100 portable computer with high resolution color graphics and text capability, utilizing a standard color television or color monitor. The MIKROKOLOR provides 256 x 192 color graphics, with 15 colors plus transparent. Its 3 dimensional Sprite planes provide for simultaneous disply of all levels. It has four modes of operation available.

1. Test mode: Provides 24 lines of 40 characters each using a 6 x 8 dot matrix, and provides 256 user defineable characters.
2. Multicolor mode: Provides 64 x 48 color graphics.
3. Graphics 1 mode: Provides 256 x 192 color graphics, 24 lines of 32 characters each, utilizing an 8 x 8 dot matrix, with 2 colors per character.
4. Graphics 2 mode: Provides the same as Graphics 1 mode, except allows 16 colors per character.

Sprites are prioritized 3-D slide planes, 32 in all, capable of displaying 15 colors plus transparent. This allows easily programmed graphics animation capability for use with business displays, graphs, charts or games. Unit provides Composite Video output for use with any color television when employed with a modulator, or by direct connection to a color monitor. Use with a black & white television or monitor allows 16 gray levels to be used instead of colors. No hardware modification is necessary to your set, as the unit plugs into the existing buss expansion socket. The Texas Instruments TMS9918A Video Display Processor uses no memory from your set, it has it's own on board RAM. Other models supported are S-100, TRS-80 Models I, III, 4 and 12 and Apple II. For information on use with other models, send complete buss information and method of addressing with a large SASE to our technical department, P.O. Box 5686, Vandenberg, California 93437. Bare boards are also available for universal adaptation to almost any 8 bit system.

The Model 100 Mikrokolor will come complete with manual containing sample programs. Also available will be a text translation program that will provide full screen text capabilities of 24 lines of 40 characters a line, with full cursor and scroll functions. VHF Modulators are available also at $54.00 including cable (powered by Mikrokolor unit). These operate on channels 7-10 VHF.

Comes with full documentation. User Manuel only $5.00. Money order, COD, check or credit card. Personal checks must clear. COD add $2.00. Visa, Mastercard add 4%. Cal. Res. add 6% tax. Custom installations are priced individually, on a case-by-case basis. Price $335.00. Order from:

Andreasen's Electronics Research & Development, Inc.

1548 Monterey Street • San Luis Obispo, CA 93401 • 805-541-6398

See cover article to 80 Micro, May '83 for additional info.

*TRS-80 is a trademark of Tandy Corporation.

Unleash The Power!

With Software from **Micro Demon** the Full Power of Your Model 100 Comes Alive.

The Powerful PRO AID

Pro Aid is a machine language utility that adds many powerful new features to your model 100. No matter what you do with the 100, Pro Aid makes it easier. Pro Aid loads in seconds, takes up less than 1.8K of memory, and becomes part of the 100's operating system. If it weren't for all the wonderful things it does, you would never know it was there.

NEC advertises that their version of the model 100 has 10 function keys. Pro Aid takes advantage of unused key sequences to give you 26 extra function keys—all more useful than the F1-F8 keys. Not only can these easily-definable keys be used in BASIC, but also in TEXT, TELCOM, ADDRSS and SCHEDL. The possible uses are enormous. The instruction manual discusses and illustrates many possible applications.

Also - With PRO AID You Can

- Use automatic line numbers with any starting line number and any increment.
- Delete any range of lines with a single stroke.
- Add a RANDOMIZE routine to your BASIC programs.
- Access TEXT, TELCOM, SCHEDL, ADDRSS directly from BASIC.
- Use the special immediate mode to perform direct calculations and provide new functions such as multiple PEEK and POKE, Hex to decimal and decimal to Hex.
- Activate the auto-off feature manually in any mode.
- Perform selected BASIC commands by control keys.
- Check program status and more.

The PRO Aid comes complete with extensive documentation for the low price of $39.95.

The Music Program

The new Micro Music Program can turn any model 100 into a musical instrument by modifying the sound routine. Comes complete with instructions, for just $19.95.

The Disassembler

Micro Demon offers you a disassembler with all the bells and whistles for just $29.95. This handy program was used to obtain the ROM map in the December issue of *80 micro*.

You can order by calling (803) 733-0980 (24 hour order line). Or send mail orders to Micro Demon, Inc., P.O. Box 50162, Columbia, SC 29250. Visa and Mastercard are welcome.

Quantity	Product (Price)	Total Price
	PRO AID ($39.95)	
	MUSIC PROGRAM ($19.95)	
	DISASSEMBLER ($29.95)	
Payment by	Total Cost of Items	
☐ Visa	Sales Tax: (SC Residents Only: 4%)	
☐ MasterCard	Shipping & Handling	$1.50
☐ Check	Total Amount Due	

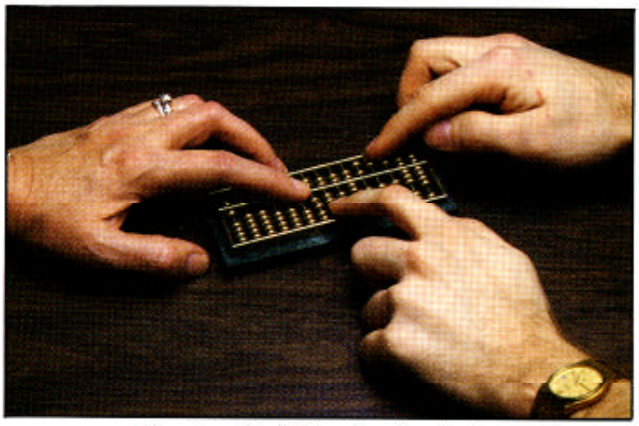
Card Number _____ Exp. Date _____

Name _____

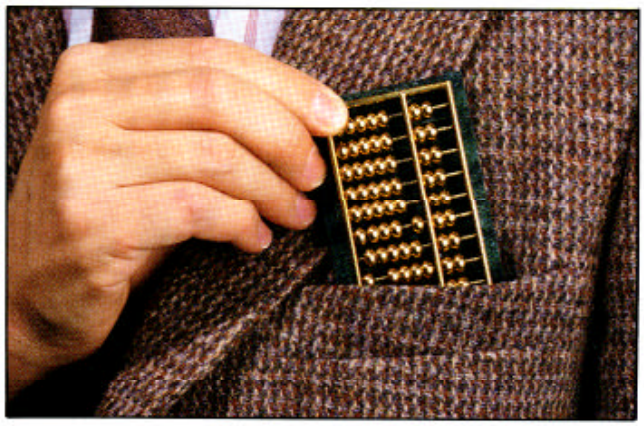
Address _____ City _____ State _____

Signature _____

Circle No. 26 on Reader Service Card



Fourteen bit with three hands using it.

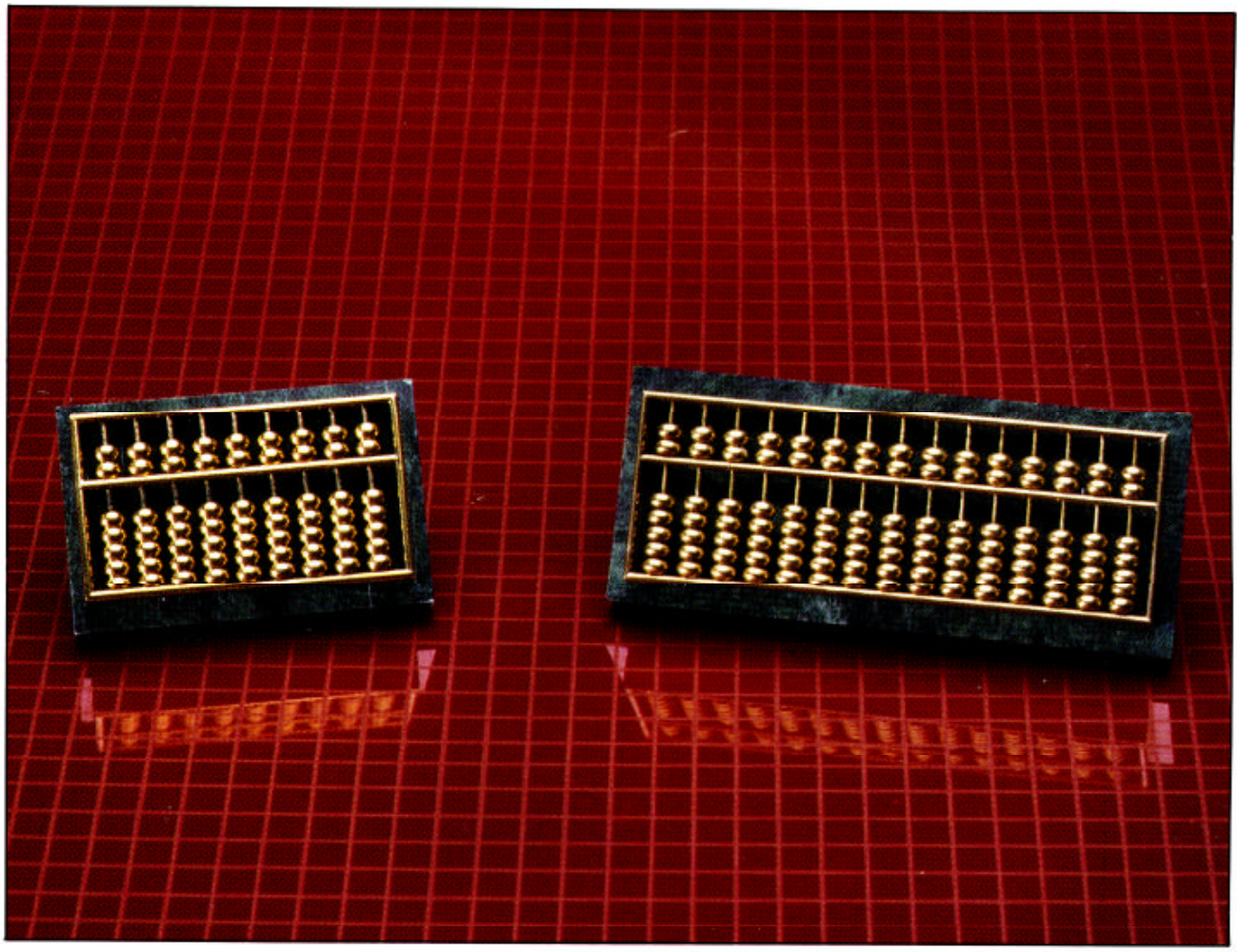


Eight bit fitting in pocket.

• Operating System – Proprietary Special Operating System (SOS). Completely unique because it makes provision for any problem or task in either a single-user or multi-user environment. Operating provisions for either single-user or multi-user with no additions or enhancements needed.

• Mouse – Yes, even the newest of display control concepts is included at no extra cost.

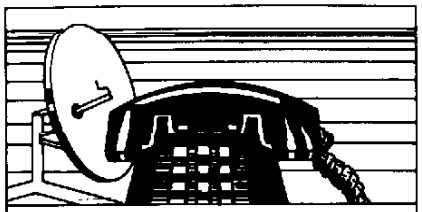
YOU HEARD IT HERE FIRST. And there you have it...a quick overview of the tremendous power and revolutionary concept that The Ultimate-One represents. I will now stop and allow history to record its acclaim.



Both eight and fourteen bit shown side by side.

WAR GAMES TECHNIQUE CAN BE VALUABLE TOOL

A persistent dialer can have more uses than just *War Games.*



COMMUNICATIONS

By JERRY W. O'DELL

In the popular movie *War Games*, a boy creates havoc by gaining access to a military mainframe with his home computer. He begins looking for computers by dialing all possible telephone numbers in an area code.

While driving home from the movie, it occurred to me that I could do the same thing with my Model 100 with very little trouble!

Everything needed is there. The machine has a modem, it can dial numbers, and all functions are controllable from Basic. Consequently, I attempted to write a program to play *War Games*.

Unfortunately, it didn't work. No mention was made in the Model 100 manual of a way to detect the carrier tone sent out by a distant computer as it reacts to the Model 100's modem tone. I tried scanning all of the Model 100 port inputs for an indication of the carrier tone but to no avail.

WAR GAMES. With the arrival of the TRS-80 *Microcomputer News*, however, the puzzle was solved. Descriptions of the subroutines in the Model 100 ROM were included. One was carrier detection. I quickly wrote the program in listing 1.

The program is very short and looks long only because of its many comments. It works as follows:

Line 1100 saves a small bit of string space and reserves room for a tiny machine-language routine. That machine language routine is loaded in lines 2000–2010. We'll discuss its operation in a moment.

The loop in line 3000 dials the numbers. Here the hero of the movie would have put the range of numbers that he wished to dial. As shown, it's 487-0000 to 487-1000.

Line 4000 connects the phone line, after which a delay of a few seconds is inserted by subroutine 9000, called again and again in the program.

Line 5000 converts the number to be dialed to a string.

Lines 6000–6050 dial the number, using a ROM routine at 540A hex, which dials a single digit.

CARRIER DETECT. Once the number has been dialed, we must detect the carrier. The routine that does this is found at memory location 6EEF hex. It returns a value of 0 in the accumulator if a carrier is detected and a value of 255 if it isn't.

Unfortunately, however, a CALL in Basic does not allow us to view the contents of the accumulator. The little machine-language program (listing 2) simply stores the accumulator in a specified memory location.

I suspect almost anyone, even someone not familiar with machine language, can figure it out. Routine 6EEF is called, the result being left in the accumulator (A). A is then loaded (LD) into memory location 62950. Thus, after calling our little subroutine, we can view the accumulator with a PEEK at 62950. Lines 7000–7040 simply scan for the carrier 500 times (a few seconds).

If a carrier is detected (a zero in 62950), the program branches to 8020, printing out the number associated with the detected carrier (LPRINT instead of PRINT would give a permanent record). If the loop in lines 7000–7040 doesn't find a carrier, the main loop ends, and another number is tried.

This simple little program works amazingly well. I must confess that I've never used the program for the same purpose the hero of *War Games* did. Imagine the chaos in the phone system if all of the Model 100 owners tried dialing all possible numbers! In addition, I suspect that the reed delay in the computer would wear out after the first thousand numbers.

PERSISTANT DIALER. However, there are legitimate uses for the program. With a few changes, the frivolous *War Games* program can be made into a very useful tool.

Frequently, when I try to use the large computer at work, all of the phone lines to it are busy. When that happens, I must dial the number again and again until a connection is made. With my old rotary-dial phone, this can be very hard on one's finger!

The program in listing 3 solves the problem for me. It dials the number repeatedly until a carrier is heard, then connects me to the computer.

The changes needed to accomplish this task are as follows:

The variable in the loop from lines 3000–8040 is changed to V, so that it won't interfere with the number to be dialed. The phone number itself is supplied in line 3010, as a string value.

The remaining change is in line 8025. When a carrier is detected (line 8020), the program branches to memory location 20806, which is TELCOM. TELCOM looks for keyboard input. This has been provided earlier in lines 3020–3030. POKE 65450,1 and POKE 65440,1 each tell the computer to expect one character from the keyboard. POKE 65451,3 inserts the internal symbol for the function key term, and POKE 65452,255 indicates that the key is, indeed, a function key.

What a handy program! When run, it dials the number again and again. When a line is finally obtained, a couple of beeps are heard (you could put in some BEEP statements to make the tone longer), and you're connected to the computer! My finger is very pleased at the result.

The program could, of course, be used in many other ways. The Dow Jones program, on page 199 of the Model 100 user's manual, dials the number and, apparently, waits forever if there is no answer or a busy signal. With a bit of additional programming, this bug could be fixed. Or, one could have the Model 100 dial Dow Jones and several other stock services in order, saving the data in a file. None of this would be possible without the inclusion of the carrier detection routine.

RESEARCH REPORT

MICROCOMPUTER OPERATING SYSTEM STRATEGIES

- Explores impact on micro hardware and software business of trends in operating systems, including Unix, MS/DOS, CP/M.
- Discusses user perceptions of operating system elements including data management, and the interface between applications software, programming tools and DBMS.
- Details past and future impact of Xerox Dynabook and Smalltalk developments on products such as Apple's Lisa, Quarterdeck's DESQ, Visicorp's VisiOn, etc.
- Establishes the product-planning parameters for future micro product offerings, and reviews probable adherence to these parameters by AT&T's future 32-bit micro, IBM's rumored "4301" and other upcoming products of significance.
- 237 pages; 42 exhibits; published September 1983; price $1,650.00.

For free descriptive literature and a detailed table of contents, contact:

INTERNATIONAL RESOURCE DEVELOPMENT INC.

30 High Street
Norwalk, CT 06851 U.S.A.
Call TOLL-FREE
800-243-5008
(203) 866-6914
WU Telex 64 3452

Circle No. 27 on Reader Service Card

RPN Calculator
For the Model 100.

What is it? It's a RPN* calculator program. It's also a data input subroutine that can be used in your own programs.

- ***CALCULATOR PROGRAM***
  +, −, /, y^x, x^2, sqrt x, 1/x, x!, lnx, e^x, 10 memories with memory arithmetic — displays stack or memory registers
- ***DATA INPUT SUBROUTINE***
  Calculator hidden in cursor at any prompt you choose — instead of INPUT X use GOSUB 5048: X=AN fully transparent
- ***RPN TUTORIAL***
  Facilitates learning RPN (reverse polish notation) by observing stack in operation
  Help function included

Includes tape and instruction booklet.

To order send check or money order for **$19.95** to:

COMPUTE/ACCOUNT

P.O. Box 3304 • McLean, Virginia 22103-3304 • (703) 759-3838

Dealer Inquiries Welcome

* RPN is a method of entering algebraic expressions into a calculator without the use of parentheses.

Circle No. 28 on Reader Service Card

WAR GAMES

Program Listing 1. War Games.

```
1000 '"WARGAMES" PROGRAM
1001 '
1002 '     SAVE SPACE
1003 '
1100 CLEAR 100,62800
1995 '
1996 ' READ IN MACHINE LANGUAGE
1997 '
2000 FOR J=62801 TO 62807
      : READ AA
      : POKE J,AA
      : NEXT J
2010 DATA 205,239,110,50,230,245,201
2090 '
2091 'BEGIN NUMBER DIALING LOOP
2092 '
3000 FOR NR=4870000 TO 4871000
3900 '
3901 'CONNECT TO PHONE LINE
3902 '
4000 CALL 21200'HOOK UP PHONE
4010 GOSUB 9000'WAIT A BIT
5000 N$=STR$(NR)
      : N$=RIGHT$(N$,LEN(N$)-
      1)'CONVERT # TO STRING
5010 GOSUB 9000'WAIT A BIT
5900 '
5901 'NOW DIAL NUMBER
5902 '
6000 FOR J=1 TO LEN(N$)
6010 B$=MID$(N$,J,1)'GET NUMBER
6020 A=ASC(B$)'MAKE A DIGIT
6030 CALL 21514,A,0'DIAL ONE DIGIT
6040 NEXT J
6050 GOSUB 9000'WAIT A BIT
6900 '
6901 'SCAN FOR CARRIER
6902 '
7000 FOR K=1 TO 500
7010 CALL 62801,0,0'CHECK FOR CARRIER
7020 AB=PEEK(62950)'CARRIER THERE?
7030 IF AB=00 THEN 8020'GOTO 8020 IF SO
7040 NEXT K
8010 GOTO 8030'SKIP IF NO CARRIER
8015 '
8016 'PRINT IF CARRIER
8017 '
8020 PRINT "CARRIER AT";NR
8021 '
8022 'HANG UP PHONE
8023 '
8030 CALL 21179
      : GOSUB 9000'HANG UP PHONE, DELAY
8040 NEXT NR'KEEP TRYING!
8050 END
8900 '
8901 'DELAY ROUTINE
8902 '
9000 FOR JJ=1 TO 800
      : NEXT JJ
      : RETURN
```

Listing 2. Machine-Language Carrier Detection Subroutine.

```
CALL  6EEF  ;CHECK FOR CARRIER
LD(62950),A ;PUT A IN 62950
RET         ;RETURN
```

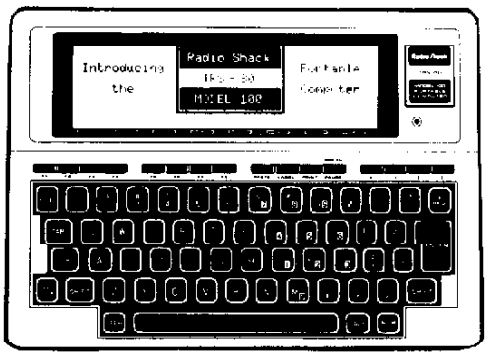
Listing 3. Persistent Dialer.

```
1000 '"PERSISTENTDIALER" PROGRAM
1001 '
1002 '    SAVE SPACE
1003 '
1100 CLEAR 100,62800
1995 '
1996 ' READ IN MACHINE LANGUAGE
1997 '
2000 FOR J=62801 TO 62807
      : READ AA
      : POKE J,AA
      : NEXT J
2010 DATA 205,239,110,50,230,245,201
2090 '
2091 'BEGIN NUMBER DIALING LOOP
2092 '
3000 FOR V=1 TO 1000
3010 NR=4871000'PHONE NUMBER
3020 POKE 65450,1
      : POKE 65451,3'PUT TELCOM
      RESPONSE
3030 POKE 65452,255' IN KEYBOARD BUFFER
3900 '
3901 'CONNECT TO PHONE LINE
3902 '
4000 CALL 21200'HOOK UP PHONE
4010 GOSUB 9000'WAIT A BIT
5000 N$=STR$(NR)
      : N$=RIGHT$(N$,LEN(N$)-
      1)'CONVERT # TO STRING
5010 GOSUB 9000'WAIT A BIT
5900 '
5901 'NOW DIAL NUMBER
5902 '
6000 FOR J=1 TO LEN(N$)
6010 B$=MID$(N$,J,1)'GET NUMBER
6020 A=ASC(B$)'MAKE A DIGIT
6030 CALL 21514,A,0'DIAL ONE DIGIT
6040 NEXT J
6050 GOSUB 9000'WAIT A BIT
6900 '
6901 'SCAN FOR CARRIER
6902 '
7000 FOR K=1 TO 500
7010 CALL 62801,0,0'CHECK FOR CARRIER
7020 AB=PEEK(62950)'CARRIER THERE?
7030 IF AB=00 THEN 8020'GOTO 8020 IF SO
7040 NEXT K
8010 GOTO 8030'SKIP IF NO CARRIER
8015 '
8016 'PRINT IF CARRIER
8017 '
8020 PRINT "CARRIER AT";NR
8025 CALL 20806,0,0'GOTO TELCOM
8026 '
8027 'HANG UP PHONE
8028 '
8030 CALL 21179
      : GOSUB 9000'HANG UP PHONE, DELAY
8040 NEXT V'KEEP TRYING!
8050 END
8900 '
8901 'DELAY ROUTINE
8902 '
9000 FOR JJ=1 TO 800
      : NEXT JJ
      : RETURN
```

Circle No. 41 on Reader Service Card

TRS-80™

SAVE SALES TAX* PLUS DISCOUNT
*TEXAS RESIDENTS ADD ONLY 4...



MODEL 100 32K

FORT WORTH COMPUTERS

WE ARE SERIOUS ABOUT SAVING YOU MONEY

(Located 30 miles from Fort Worth)
377 Plaza • GRANBURY • NR FORT WORTH, TEXAS 76048

TOLL FREE: 1-800-433-S-A-V-E

Monday thru Friday — 9:00 a.m. to 5:00 p.m.
(Order inquiries/Customer Service &) IN TEXAS: 817-573-4111

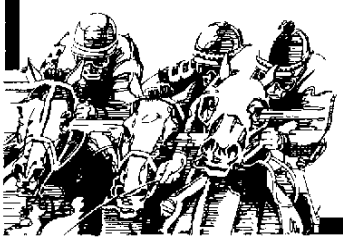
Circle No. 29 on Reader Service Card

WRITE YOUR OWN PAYCHECK!

New Discovery Guarantees You'll Pocket Big Money, No Matter What "System" You Currently Use.

Big winners at the track are not 100 times smarter than you, but they probably are making 50 or even 100 times more money. Some even use the IDENTICAL "system" you've been using. How is it possible? Money Management! Over three years of research and six months of past results prove you can consistantly make large daily profits and it works independently of any handicapping system! You decide how much you want to make. $20/race for 9 races over 6 days would equal a minimum of $1,080. The model 100 automatically tells you what you need to do each race as it tracks your every move. What's more, the system can be used either at the track or your local OTB.

The plan comes complete with documentation for only $29.95.



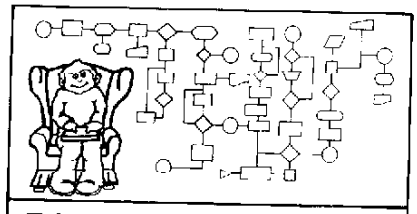
CONSULTANT SUPPORT SERVICES, INC.
435 Main Street
Johnson City, NY 13790

Circle No. 30 on Reader Service Card

BENDER'S BETTER WAY TO BETTER BASIC — 3

This month, Gary returns to his template and discusses subroutines that make programs friendlier.

By J. GARY BENDER



PROGRAMMING

Last month I explained the theory behind creating a programming template. Now let's use that theory with the sample template published in *Portable 100* last month.

Start by designing your new program. Then load the template and save it under the name you will use for your program. Next you change the obvious things (using the EDIT command in Basic) like the program name displayed during initialization in the 20000 block and the REM statements at the beginning.

Now when you run your program it will tell you its name. Not much yet, but it's a start.

If there are any subroutines in the template you won't be using, delete them and their references in the 100–200 dispatcher block. Now you can start writing your program.

WRITE-ON. You may want to start by choosing your subroutines. The template already contains many routines your program can use.

For example, if you want to input a number and make sure only valid numbers are entered, call the "entern" subroutine and use the value of ZN% that is returned (or ZN# for a large number).

The template and its subroutines not only save you the trouble of retyping (and debugging) subroutines, but they encourage you to *use* the routines.

Here is a quick program using the template. First, load the template program from a cassette. Next, save it under a different name. Now enter program listing 1.

Run the program. Try entering letters into the number. It will ignore them. Type lowercase characters for the string request; they will be printed on the next line, once as entered and then forced to uppercase. On the next line the string will be centered. This is a trivial example, but it serves to show you how to use the subroutines built into the template.

```
10010 PRINT "Enter a number: "
10020 ZQ$="entern"
       : GOSUB 100
10030 PRINT
       : PRINT "You entered ";ZN%;ZN#
10040 PRINT "Enter a string: "
10050 ZQ$="enters"
       : GOSUB 100
10060 PRINT
       : PRINT ZS$,
10070 ZQ$="fupper"
       : GOSUB 100
10080 PRINT ZS$
10090 ZQ$="center"
       : GOSUB 100
10100 PRINT ZS$
10110 END
```

Program Listing 1. A Program Using the Template.

Notice the extra PRINT in 10030 and 10060. It is needed because "entern" and "enters" intentionally do not echo the enter key. You can change the subroutines to echo enter, if you want, by putting PRINT: in lines 546 and 556. Don't hesitate to modify the subroutines to fit your style. They are your routines, not mine.

WHY DID HE DO THAT? The template in part 2 had a number of things needing further explanation.

In large programs the initialization takes several seconds. Rather than nothing happening on the screen, the template clears the screen and displays the program name. That serves as verification the user has the right program and knows it is running.

The define as an integer statement (DEFINT A–Z) should be standard in almost every program you write. A good alternative is to use various definition (DEF) statements and plan your variable names to match the defined types.

The latter approach will allow your programs to be a little smaller and a little faster. Using integers whenever possible is very significant. The variables require less storage and arithmetic involving integers is faster. Type in and run listing 2.

Now add the following line:

```
5 DEFINT A–Z
```

Now run the program again. You see what I mean. It runs almost four times faster!

NEXT I. Add an I to line 20 so it reads:

```
20 FOR I = 1 TO 10000: NEXT I
```

THE *executive* TIME MACHINE

$29.95

PLUS SHIPPING & HANDLING

PUTS TIME AT YOUR FINGERTIPS

— Applications —

- meetings
- anniversaries
- birthdates
- payment reminders
- car maintenance reminder
- medical appointments
- option dates
- call dates
- contract dates

— Features —

- marks current date
- 12 hour time (AM/PM)
- arrows show appointments
- sorts day's appointments by time
- reads appointments from NOTE.DO
- save appointments a year in advance
- detects leap year
- fast response
- easy to use

We ship 1st Class Mail within 24 hours

When ordering please provide:
NAME
ADDRESS
CITY/STATE
ZIP CODE
PHONE
CREDIT CARD NO.
EXP. DATE
Master Card holders — include interbank no.

Call our 24 hour orderline
619-695-1385
or 619-566-6013, 9 — 5 p.m. PST weekdays
or send check or money order to:

EVS ENGINEERING
9528 Suite 35, Miramar Road
San Diego, CA 92126

"Serving the Defense and Space Industry since 1979"

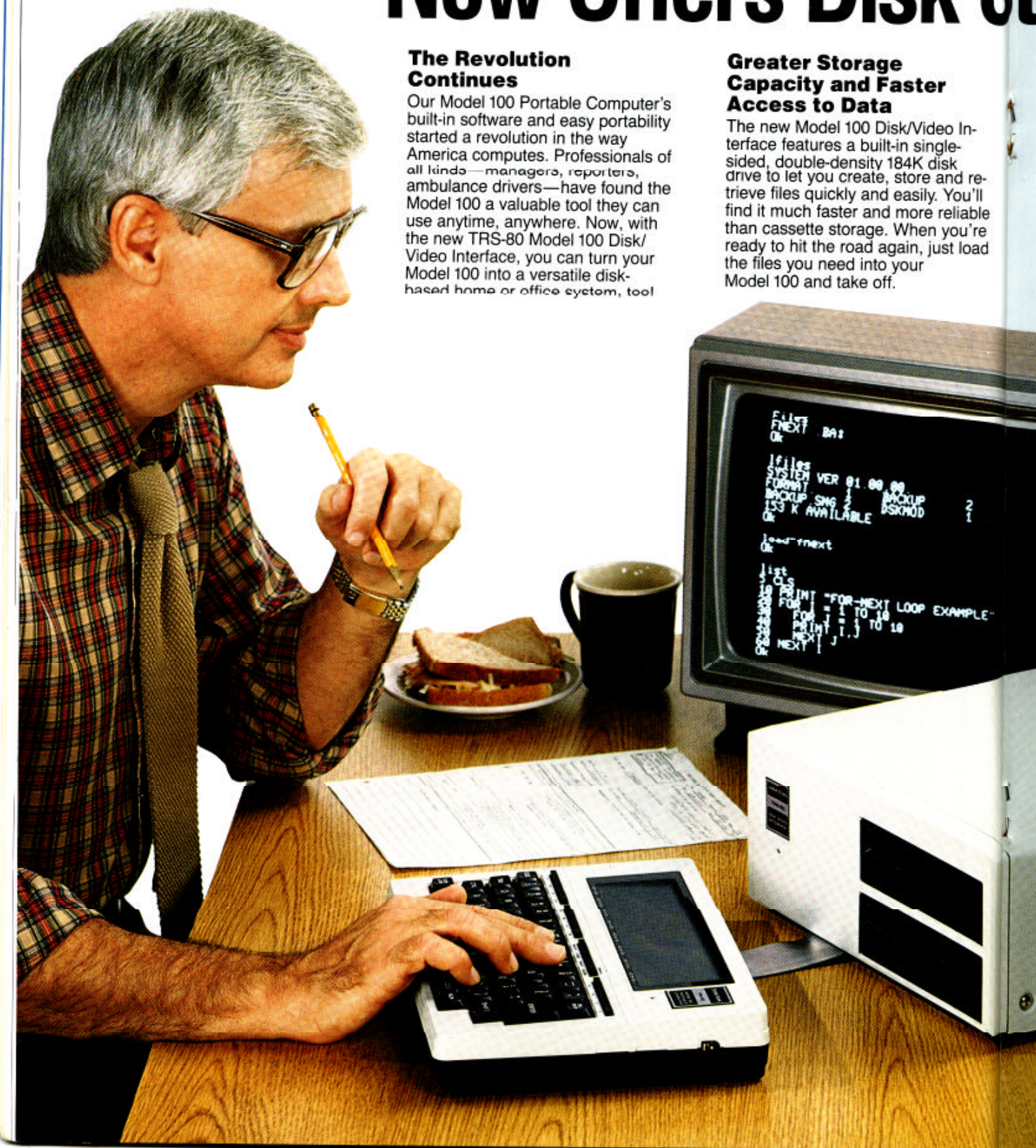
Please include the following:
$2 postage and handling
U.S. funds only
CA residents add 6% tax
COD orders add $2

Dealer inquiries invited

Personal checks OK
we won't make you wait.

Circle No. 31 on Reader Service Card

Radio Shack's TRS-80® Now Offers Disk St



The Revolution Continues

Our Model 100 Portable Computer's built-in software and easy portability started a revolution in the way America computes. Professionals of all kinds—managers, reporters, ambulance drivers—have found the Model 100 a valuable tool they can use anytime, anywhere. Now, with the new TRS-80 Model 100 Disk/Video Interface, you can turn your Model 100 into a versatile disk-based home or office system, tool

Greater Storage Capacity and Faster Access to Data

The new Model 100 Disk/Video Interface features a built-in single-sided, double-density 184K disk drive to let you create, store and retrieve files quickly and easily. You'll find it much faster and more reliable than cassette storage. When you're ready to hit the road again, just load the files you need into your Model 100 and take off.

0® Model 100 Computer Storage and Video!

Attaches Easily to Any Television

The Disk/Video Interface also lets you enjoy a big 40-character by 25-line screen display on any TV. The larger screen is perfect for writing notes and reports or developing your own programs in BASIC. When accessing data by phone, you can read a full 25 lines of information without scrolling. And you can utilize all of Model 100's graphics characters.

No Computer Wizardry Required

It couldn't be easier to use. Just plug the Disk/Video Interface into an AC outlet, connect your TV and a Model 100 with a minimum of 16K—all cables are included. One simple command switches all the output to the video screen. There's no new operating system to learn, either—the command structure is exactly the same.

Easily Expandable

You can add a second 184K disk drive (#26-3807, $239.95*) to the Disk/Video Interface for even more versatility. Best of all, the Disk/Video Interface doesn't use any of Model 100's standard connectors, so you can add a printer, bar code reader, RS-232C communications device or cassette recorder. You can make your Model 100 a high-performance desktop system.

TRS-80 Model 100 Disk/Video Interface

799.00

26-3806

Shown with optional second drive

Get Down to Business With an 80-Column Display

A Compact Office System

The Disk/Video Interface can turn your Model 100 into a professional desktop system for the office, too. With any standard video monitor, you get a large 80-character by 25-line display that's equal to other desktop computers. You'll also get the rapid access to files and storage reliability that are so necessary in today's business world.

Perfect "Second System"

A disk-based Model 100 system is an economical alternative to a second office computer. And you'll still have the advantage of portability when you need it.

AS LOW AS $45 PER MONTH

Come In Today

The TRS-80 Disk/Video Interface, along with our complete line of Model 100 accessories, is available coast to coast.

Available at over 1100 Radio Shack Computer Centers and at participating Radio Shack stores and dealers

Radio Shack®
COMPUTER CENTERS
A DIVISION OF TANDY CORPORATION

Circle No. 32 on Reader Service Card

Send me the all-new TRS-80 Catalog RSC-11.

Mail To: Radio Shack, Dept. 84-A-799
300 One Tandy Center, Fort Worth, TX 76102

NAME _____

ADDRESS _____

CITY _____

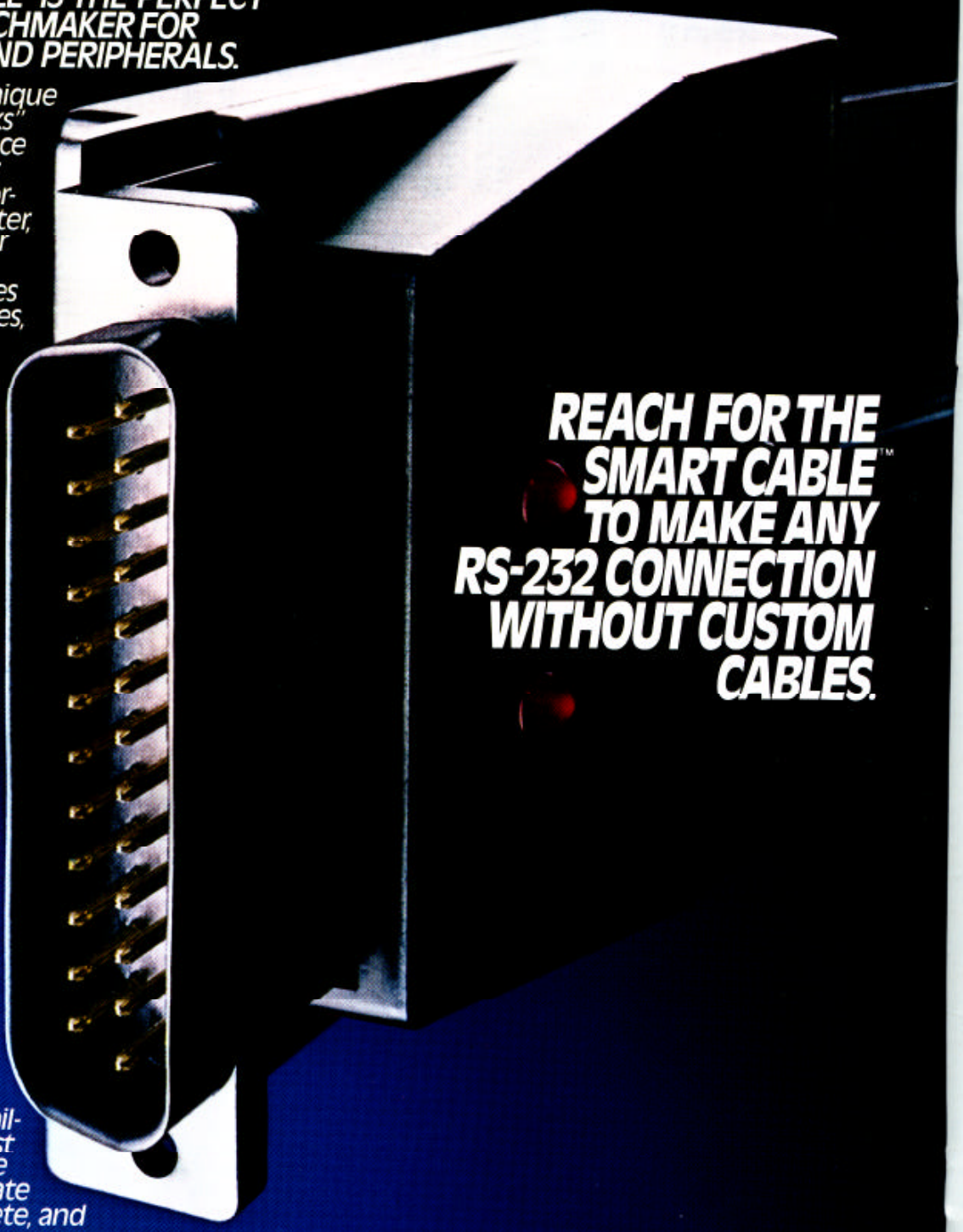
STATE _____ ZIP _____

TELEPHONE _____

*Installation not included. Prices apply at participating Radio Shack stores and dealers. TRS-80 Model 100, Disk/Video Interface and TV sold separately. CitiLine is a service mark of Citicorp.

THE SMART CABLE™ IS THE PERFECT RS-232 MATCHMAKER FOR COMPUTERS AND PERIPHERALS.

The Smart Cable's unique on-board logic "looks" at the RS-232 interface on each end of your connection, then correctly links your printer, modem or any other peripheral to your computer. Completes data lines, handshakes, everything.



NO MORE CUSTOM CABLES.

Now you can avoid the frustration and confusion of customized cables. The Smart Cable instantly creates virtually any RS-232 interface. And if you want to swap equipment, or use other peripherals, the Smart Cable adapts. Automatically. It's one accessory that's never obsolete.

GET MORE OUT OF YOUR EQUIPMENT.

At work or at home, you can re-arrange your system with ease. One Smart Cable lets you connect many different computers and peripherals. For example, you can connect portable computers to any available serial printer. Just plug in, watch for the status lights to indicate your circuit is complete, and start working.

Best of all, the Smart Cable is priced competitively with conventional cables and custom cables.

To be a success these days you've just got to have the right connections. Call us today at 800-227-6703 (in California 800-632-7979, in Canada 800-663-9767) to make yours a whole lot easier.

SmartCable

REACH FOR THE SMART CABLE™ TO MAKE ANY RS-232 CONNECTION WITHOUT CUSTOM CABLES.

IQ TECHNOLOGIES, INC.
11811 N. E. First Street
Bellevue, WA 98005
TELEX 701 472 IQTECH UD

Circle No. 33 on Reader Service Card

NEXT I is a good idea for long and nested loops during development. It serves as documentation and gets Basic to help you avoid bugs, since Basic will verify the I if it matches the index being incremented.

When you make the "run" version of the program, you should eliminate the I's since they slow things down.

If you use the DEFINT A–Z statement, remember that all other variable types will require type declaration tags (Model 100 owner's manual, page 106).

During initialization, it is a good idea to define all of the variables you will be using. Simple variables (A, B, D1, etc.) can be set equal to zero.

DEFINED VARIABLES. Every time a variable is referenced, Basic searches for it. You can significantly affect the speed of a program just by having variables defined in a different order. Generally you should have FOR indices defined first. That is what the I = 0:J = 0:K = 0 line is for. It is a reminder to define at least the index variables.

The first defined variables will be located faster than those defined later. Arrays, by the way, are stored separately. They can be defined in dimension (DIM) statements in the order of most-used first.

I did not include any strings in the template, but any string values that will be constant in the program should be defined during initialization. Strings defined within a program statement *do not* take up any string space (from that defined in CLEAR) unless they are changed during program execution.

GARBAGE COLLECTION. The I = FRE("") statement will force a "garbage collection."

If you do any string manipulation during initialization you will get your strings scattered out in the string storage area. Microsoft Basic allows dynamic string allocation which is a nice feature. Without it you would have to determine the maximum length of every string before you could write the program and then explicitly define each string's storage requirement.

Dynamic allocation has a penalty, however. As strings get changed they move around in the storage area. At a certain point, Basic decides it is time to clean things up and packs all the strings back into one end of the storage area and the process starts all over again. This clean up chore has been named "garbage collection" since the Model I days and the name has stuck.

```
10 PRINT TIME$ ;" ";
20 FOR I=1 TO 1000
     : NEXT
30 PRINT TIME$
```

Listing 2. Integer Experiment.

If you have any Basic programs using strings, you probably noticed times when the Model 100 just seems to stop then comes back 10 or 20 seconds later. You were witnessing a garbage collection.

WHEN TO TRASH IT. You may want to carefully place an I = FRE("") in parts of your program if you suspect the string area is getting cluttered and you don't expect the user to notice the delay. Sometimes it is better to control when a garbage collection will occur than to just let it happen. It can be very annoying if it happens midway through an important display. Forcing a collection will not save time. It will probably take longer than letting it go, but it may make program execution more uniform.

A good place to force it would be right before a long series of calculations followed by a display. The user is expecting a delay there, so it will be less noticable.

FUPPER AND FLOWER. Let's briefly look at the other routines included in the template. I use lowercase names to make the subroutine calls more noticable in a listing. Later, they are easier to find and replace with a conventional GOSUB.

The two routines named "fupper" and "flower" will force the ZS$ to uppercase or lowercase. "Center" returns ZS$ with leading blanks to center it on a 40-character line if the string is used in a print statement.

The subroutine "isnum" tests ZS$ to determine if it's entirely made up of numbers; "isalpha" determines if it's entirely letters.

AND THE ROUTINES CONTINUE. The INPUT$(1) Basic function is used in "entern" and "enters" to enter characters one at a time. Overflow errors from entering integers greater than 32767 and "Redo" messages from entering a letter instead of a number are prevented by "entern". With "entern" you can examine what the user entered and ask it to be entered again.

The "enters" routine allows only printable characters to be entered. It is useful for data entry to insure no control or graphics characters are entered. When you use it, make sure that is what you want.

Both routines can easily be modified to accept a set number of characters, and "enters" could use the method "fupper" to force uppercase.

The subroutine "cmatch" is a command matcher. There is a tendency when programming to examine only the first character of an input string. With "cmatch" you can compare Y, Ye, and yes in ZS$ to the command YES in ZC$. Any one of them will return true in ZF%. You can make the routine more general by making ZF% = 0 if the length of ZS$ is greater than the length of ZC$. That would prevent ZS$ = "YESTERDAY" from matching ZC$ = "YES". An easier way to accomplish the same thing is to set ZC$ = "YES".

TALK TO YOUR USER. Last time I said this part of the series would cover user prompts. Well, I snuck it in on you. The routines I've just described relate to dealing with user responses. With just two additional techniques, you will have the facilities to deal with most keyboard input requirements.

This may come under the heading of "style" rather than "technique," but one thing that drives me up a wall is prompts like this:

TYPE 1 FOR 'YES', 0 FOR 'NO':

In fact, that example gets me twice.

For one thing, lowercase has been around for quite a while. There are times when uppercase prompts are very useful for highlighting words and phrases, but there is no reason to pretend the computer is too dumb to read or write lowercase.

The other thing is, I feel my $1000 computer should know the difference between yes and no! That 0–1 business is left over from the days when Basic did not have strings, maybe 10 years ago. (There *are* cases when it may be the best way, but it is used much more than is necessary.)

THE POWER OF CMATCH. With "cmatch" (listing 3), you can easily ask "OK? " and see if the user says NO (or N, or n, or no.):

The "cmatch" routine works best where you have several command words to test. A For-Next loop comparing the words from a string array would be compact and easy.

SOME NICETIES. Another nice way to handle prompts is with a menu. You list the user's options for him and ask him to select the one he wants. This is another area where numbered responses are used much too often. Plan ahead so each option starts with a different letter. I'd much rather type C for change than 3.

There is a very easy way to handle single key responses from a menu. It is so straight forward I never bothered to put it in the template subroutines. Let's say you have four options and display them like this:

```
<C>hange
<D>elele
<I>nsert
<Q>uit
Which?
```

```
1100 PRINT "OK ? ";
     : ZQ$="enters"
     : GOSUB 10
     : ZC$="NO "
     : ZQ$="cmatch"
     : GOSUB 100
1110 IF ZF% THEN GOTO ...' do not do
     it     .... else fall thru to
     default to YES
```

Listing 3. Input Match Subroutine.

```
1200 PRINT @220;"Which ? ";
     : AN$=INPUT $(1)
     : K=INSTR(" CcDdIiQq",AN$)\2
     : IF K=0 THEN BEEP
     : GOTO 1200
1210 ON KGOTO 1220,1230,1240,1290
1211 'chan, dele, inse, quit
```

Listing 4. Menu Options Subroutine.

Get more use from your Model 100
Let the Elves help!

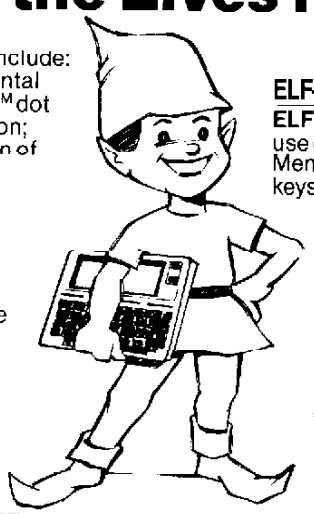
ELF-WRITER

Expand your text processor! Features include: — Formatted veiwing mode with horizontal scrolling — Formatting uses Wordstar™ dot commands: Variable margins; Pagination; Headings & Footings; Right justification of text; And Much More!!

ELF-COP

Manage your file space problems! Backup all of your files at one time. A backup report documents your backup. ELF-COP will also Copy, Rename, Delete and Report file sizes.

TM - MicroPro International Corp.



ELF-PAK = ELF 1 + 1 CALCULATOR + ELF-BANKER

ELF 1 + 1 turns your computer into an easy to use calculator. Features: Entry, Total & Memory displays; %, Exponent & Square Root keys; + More!

ELF-BANKER evaluates your money for the most return. 20 calculations including: Compound interest, Present value, Loan & Mortgage payments, Annuities & Active Savings accounts.

$39.99 EACH
•SPECIAL OFFER•
All 3 for $90.00
Price includes shipping.

Send the coupon below to:

Ceres Software Inc.
4303 S.W. Chesapeake Ave.
Portland, OR 97201
(503) 245-9011

Please send me on cassette:

☐ ELF-WRITER ☐ ELF-COP
☐ ELF-PAK
☐ Special Offer $90.00
☐ Check for _____ enclosed
☐ Send C.O.D.

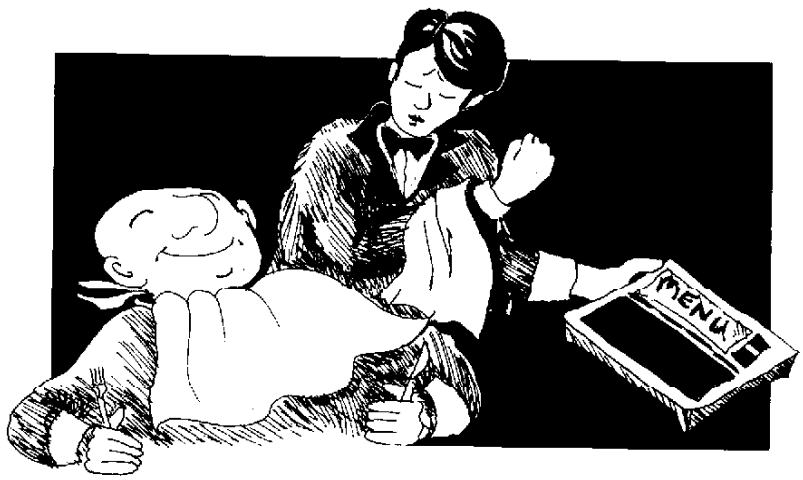
NAME: _____

STREET: _____

CITY: _____ STATE: _____ ZIP: _____

TELEPHONE: _____

Circle No. 34 on Reader Service Card



You can use four if statements to see what was typed, or you can do what's done in listing 4. The K = INSTR is the only difference between a friendly response and the 1-2-3 response.

Of course, another nice technique available on the Model 100 is the function keys. If you use function keys, it would be a good idea to add the reset CALL sequence (listing 5) as a subroutine in the template, and note it in the System section of your System Book.

```
1 CALL 23164,0,23366
: CALL 27795
```

Listing 5. Reset Call Sequence.

When you design the prompting portions of your program, be consistent. If you accept one character response without an enter in one place, do it everywhere you can. Typically it is better to require an enter after all responses, but you have to use your own judgement. Always allow upper- or lowercase input. If the program needs one case, use the subroutine for converting it.

SORTING IT ALL OUT. We covered a lot this time, so I will forego adding any new routines to the template. Next time I will include some sorting subroutines and try to wrap up with a few programming tools already in the 100, but often overlooked by novice programmers.

For those of you that want a head start, the full template is in Access in the Model 100 Special Interest Group on CompuServe. It is under the name BTEMPL.JGB. I'm sure some of the SIGers will add their own favorite routines to it. The template is public domain, so pass it around. ✔

TEXT POWER 100™

A word-processor. 1,000 words per second, ultra-compact, 100% machine-language.

Only **TEXT POWER** gives the Model 100 all the pre-printing aides you need: **Page Plot™** to "see" up to 64 lines of text similtaneously on the screen. Display mode to preview your document. Page breaks, too!

PRESS ONE KEY, exit to the TEXT mode of your file. Return to TEXT POWER 100 with one keystroke.

Only TEXT POWER 100 gives so many printing options: Use the **LetterSetter™** for automatic vertical centering of a letter. Use our built-in **MERGE** for form letters AND mailing labels! Begin a new page or change margins from within the text file!

Printer control is easy. Single-letter codes turn on and off bold-face, double-strike, condensed print, super/subscript and other print modes. Modes stay on until you turn them off.

Other features: Footer, header, page numbering, horizontal centering, top margin, bottom margin, left margin, right margin, page length, line count, page count, control codes codes remain active through carriage returns, and a lot more. More than 37 features in all!

*49.95**

The Covington Group • 310 Riverside Dr., Suite 915 • NYC, NY 10025 • 212 678-0064 • 864-1700

Payment: We accept Visa, MasterCard, Money Orders and Certified checks Make checks payable to **The Covington Group**. Checks require bank clearance. ***Order information: $49.95 plus $2.00 Shipping & Handling**. N.Y. residents add sales tax. Specify brand name, model number of your printer. Include $10.00 for each additional printer. TP100 **DOES NOT** support **SERIAL** printers unless you use a parallel-to-serial converter. Linefeed "patch" program supplied at no additional charge if needed. **Technical information:** Size: TP100 is under 2500 bytes long, depending on the printer supported. Operating speed: in excess of 5,000 cps. Bytes free to operate: 250. Hardware: Any Model 100 computer from 8K to 32K. THIS PROGRAM DOES NOT OPERATE ON THE NEC PC-8201A, send a self-addressed, stamped envelope, and we'll let you know as soon as the NEC version is ready. A NON-PRINTING version of TP100 with most features is available on Compuserve free of charge in the Model 100 XA0 data base. Type GO PCS-154 and download TP100.DOC, TPHEX.DO, TPLDR.BA

Circle No. 35 on Reader Service Card

OSBORNE AND WORDSTAR MEET THE 100

When this Osborne owner set his mind on bridging the communications gap between his Ozzie and MEWS, he set a course for some heavy-duty interfacing.

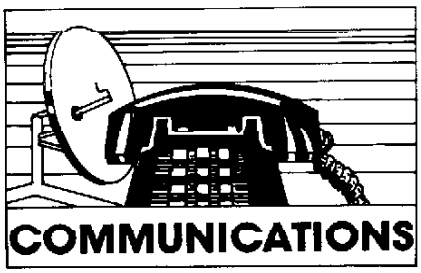
By HENRY KISOR

I use my TRS-80 Model 100 as a remote terminal for my Osborne 1 and an Atex mainframe computer in my job as a full-time newspaper editor and critic, and part time computer columnist. Uploading files from the Model 100 to Atex via modem is a simple and straightforward job, with line feeds supplied to the files after arrival with a simple program devised by the Atex tech people. Uploading to the Osborne, however, is a bit tricky.

The Model 100, like all Tandy products, does not send line feeds after carriage returns. On the Osborne, the WordStar word-processing program requires line feeds to work with the files, such as reforming them to new line widths.

In the beginning I transferred files via modem and used WordStar's control-QA search-and-replace commands on the Osborne to provide the line feeds. Although this method is more time-consuming than I'd like, it remains an easy way to make transfers if the files are short. The method is also useful if you're phoning in the files to the Osborne from some remote location. I still use it for that purpose.

LINE FEED PROGRAM. If you connect the computers' RS232 ports with a cable, a second and more efficient method of transfer is made with a short Basic program on the Model 100 that provides line feeds to the Osborne. In turn, the Osborne uses the CP/M transient program PIP.COM to write the file to disk. This method is not perfect but does the job.



Here's a step-by-step description of how I transfer files to the Osborne with a Smartmodem and OTERM405 (a public domain program by Michael M. Rubenstein available for downloading on many RCP/Ms). A similar scheme should work with any modem program, such as MODEM7, that captures incoming files in buffer memory, then writes them to a disk file.

1. Plug the Model 100's beige telephone cable into the modular socket on the back of the Smartmodem. (The Smartmodem is connected to the Osborne's RS232 port via a null modem cable.)

2. On the Osborne, boot OTERM405 in Drive A, with a file disk in Drive B.

3. On the Model 100, call up TELCOM and press F4 (Term) to enter terminal mode.

On the Osborne type ATA to catch the Smartmodem's attention. When CONNECT appears on the Osborne screen and the cursor reappears on the Model 100 screen, you know connection has been made.

5. On the Osborne, type a Control-1 to enter the control mode of OTERM 405, then type LOG CLEAR. This makes sure the buffer memory for the incoming file is clear. Then, if you wish, type another Control-1, then CONSOLE AUTOLF. This provides line feeds to the monitor, so the text will scroll down the screen instead of overprinting itself. Console line feeds will, however, have no effect on the file as it enters buffer memory. They simply make it easier to follow what's happening on screen.

6. On the Model 100, press F3 (Upload).

7. A "File on Upload?" prompt will appear. Type the filename and press enter.

8. You will then see a "Width?" prompt. Type the width you wish the file to be on the Osborne. (I usually choose 65, for no particular reason.)

9. Press enter. The file will begin scrolling down the Osborne's screen and will close automatically when transfer is complete.

10. When the entire file has been sent, turn off the Model 100.

11. On the Osborne, type Control-1, then LOG WRITE B:FILENAME.TYP. When the drive lights go out, remove your modem program disk, hit the RESET button and take a breather. Sounds complicated, doesn't it? Actually, it takes longer to describe it than to do it.

WORDSTAR LOOKSEE. Now the task is to call up the file with WordStar and take a look at it. You will see hyphens down the flag line in the 80th column instead of the customary period flag characters. This means that no line feeds have been received and that each line will overprint the next. Go ahead, try to reconfigure the file to a different width. Nothing will happen. The file will just sit there at the original width. How do you get those line feeds? Let WordStar do it.

First, run your Osborne SETUP program to configure a couple of function keys on your WordStar disk.

Here is function key 1:

```
^QA^P<cr><cr>^P^N<cr>
GN<cr><cr>
```

And here is function key 2:

```
^S ^G^B
```

(Note the space between < caret > S and < caret > G < caret > B. This is important.)

What Makes Business Information Important

Check NewsNet's Personal Information Audit

- ☐ My competition is scrambling for the latest information too.
- ☐ There's more to keep up with every day.
- ☐ We've all got that large stack of reading material that demands attention.
- ☐ Controlling the information flow to my own office pays off.
- ☐ It's become essential to search business publications for what I really need to know.
- ☐ It's embarrassing when someone at a meeting has information I should have known about.
- ☐ Information professionals have developed new tools to manage the information explosion.
- ☐ Not having the right information at the right time can mean losing business and money.
- ☐ Automated business information systems have become a necessity.

Surely these considerations strike home. NewsNet knows them well: we're the world's largest computerized database of business newsletter information. All available economically to anyone with a communicating terminal or microcomputer.

Circle No. 36 on Reader Service Card

Business competition is fierce. Everyone's looking for information to close the deal, make the sale, or take the lead. That's the information explosion.

How do you cope? Printed material stacks up at home and in your office. You know there are facts and statistics buried there that you may need for the next business meeting. If you don't have them, someone else might. So how do you get control of the information flow and target the essential information you need?

NewsNet puts you in control, with electronic desktop access to *specialized* business information. Dozens of interest areas: investments, tax shelters, satellite communications, banking, publishing, commodities, hi-tech R & D, government regulation and much more, including hundreds of stories daily from PR Newswire and UPI.

The essential news, written by specialists, is available day and night on NewsNet. Updated constantly. Indexed for rapid retrieval. Monitored continually for your keywords. Full-text news delivered to you automatically by *your personalized electronic clipping service*, "NewsFlash."

We all know what makes business information important. NewsNet makes it manageable.

Call us today.

800/345-1301

(In PA call 215-527-8030)

NEWSNET

For the Business Information Edge

945 Haverford Road, Bryn Mawr, PA 19010

DATACCOUNT

Unique software to make your lap-sized portable the equal of any desk-top microcomputer.

Professional and personal management programs designed for Tandy Model 100, NEC PC-8201, and Olivetti computers.

Dataccount's proprietary algorithms in assembly language give your computer virtual random access memory, accessing any record in less than a second, even in a 32K byte file. Other features include variable length fields, searching and sorting capabilities, with no memory overhead.

Now available from NEC dealers are four new programs by Dataccount; tax preparation, tax planning, timekeeping, and real estate analysis.

Applications now in use include:
Name, Address Data Base
Appointments
Text Formatting
Calculator
Real Estate Analysis
Timekeeping
Tax Preparation
Tax Planning
Games

DATACCOUNT
516 S.E. Morrison, Suite 820
Portland, OR 97214
(503) 232-0490

Circle No. 37 on Reader Service Card

HARD RETURNS. Briefly, the commands in function key 1 search for all the "-" flag characters and turn them into "<" (visible hard carriage returns.) Try it with the file displayed; you will see "-" turn rapidly to "<" throughout the file.

Those hard carriage returns will cause problems if they aren't returned. The file cannot be reformed neatly. Thus you want to remove all but the hard carriage returns that end paragraphs.

The commands in key 2 remove the hard carriage returns and replace them with periods, turning the file into one Wordstar can work with.

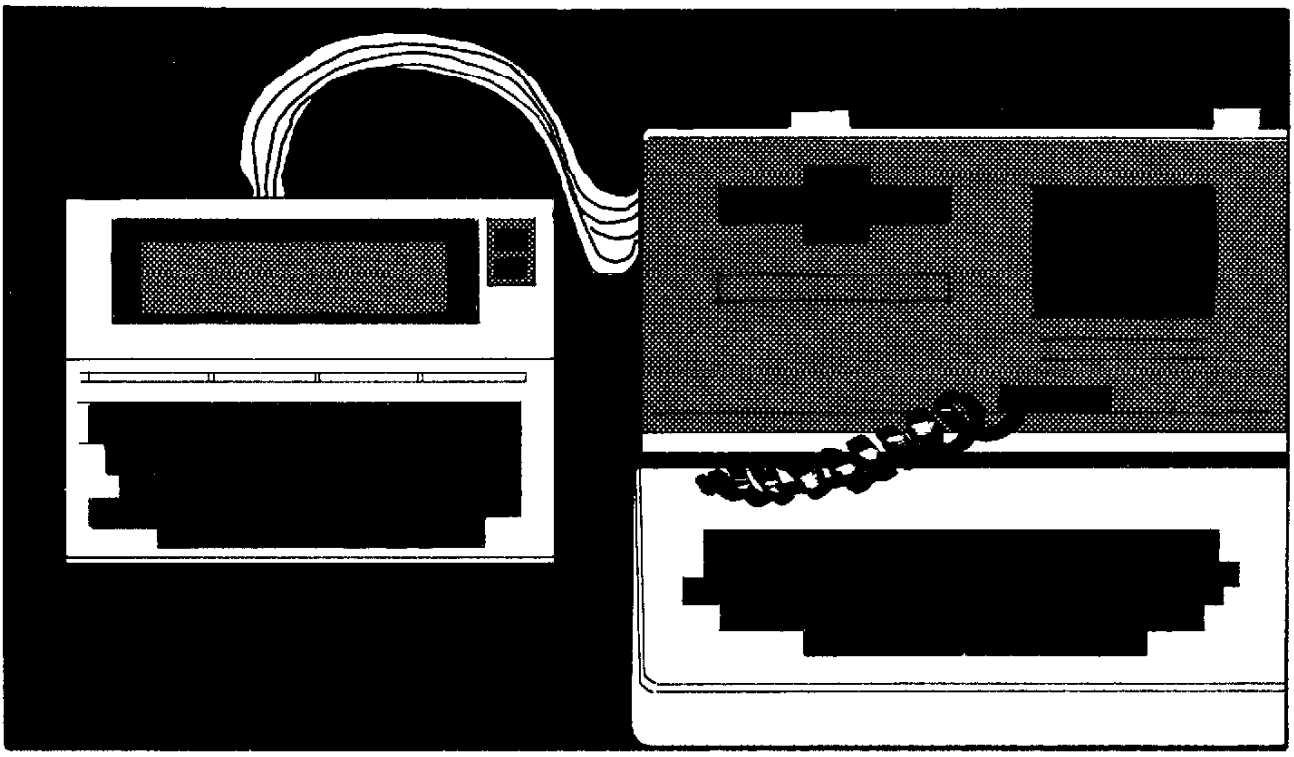
First, type the WordStar command < caret > OR, then 80, or whatever line length you want your reformed text to be. Press return.

```
 10 CLS
     : PRINT @10,"Model 100 to
     Osborne"
 20 MAX FILES =2
 30 EF$=CHR(26)
 40 PRINT
     : FILES
 50 PRINT
     : INPUT ".DO FILE TO SEND";FI$
 60 IF FI$="" THEN 50
 70 OPEN FI$ FOR INPUT  AS 1
 80 OPEN "CM:58N2E" FOR OUTPUT AS 2
 90 A$=INPUT $(1,1)
100 PRINT #2,A$;
110 IF EOF(1) THEN 130
120 GOTO 90
130 PRINT #2,EF$
140 BEEP
     : MENU
     : END
```

DELETING RETURNS. Then place the cursor in column 1 of the line under the first line whose hard carriage return you want to remove. Tap function key 2. The cursor moves to the last character in the line above via <caret > S. The space after < caret > S causes the cursor to move right one character to open space between the last word in the line and the first in the next line. The hard carriage return can be deleted by < caret> G; < caret > B reforms the line.

Watch the lines carefully and keep tapping function key 2 until the cursor is on the first line of the next paragraph. Now stop. You want to keep the hard carriage return that ends the paragraph above. So skip the cursor down one more line, then resume tapping function key 2. It goes rapidly, line by line down the file.

With extremely long files, I found this procedure tedious. There must be a better way, I thought. And there is — if you can put the computers adjacent to one another.



TRAVELING SOFTWARE

presents...

THE TRAVELING PROJECT MANAGER

Available for the TRS-80 Model 100, NEC PC-8201, Olivetti M-10

The Project Manager provides the power of many desktop project management systems costing 4 to 5 times as much.

Now you will be able to:

- Track multiple projects at the same time
- Define your own group work activities and tasks
- Record both budget and actual expenditures in both units and dollars
- Track both estimated and actual start/end dates for work activities and tasks
- View project summery information on your LCD display
- Create budget vs. actual project expenditure reports
- Produce project schedule have charts with either day, week, or monthly time measurement

VISA, Master Card orders: Call our 24-hour Toll-Free number 7 days/wk.

1-800-227-3800, Ext. 233

ONLY $59.95

TRAVELING SOFTWARE

"FOR PEOPLE WHO ARE GOING PLACES"™

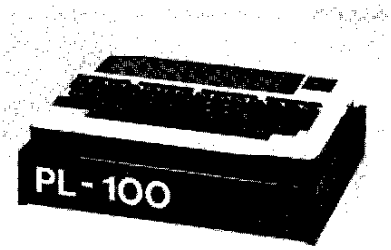
TM

11050 Fifth Avenue NE • Seattle, Washington 98125

Circle No. 38 on Reader Service Card

EXPANSION TO GO

Battery powered interface for the Model 100. Gives Analog and Digital I/O capabilities to your Radio Shack or NEC portable. Whether in the lab or in the field, Data Acquisition and Process Control are now more affordable than ever. Easy to program using BASIC input and output statements.



Complete PL-100 System $498 includes:

- Expansion Chassis (holds 3 boards)
- Combination I/O board with
  - 16 Channel 8 Bit Analog Input
  - 4 Channel 8 Bit Analog Output
  - 4 Analog Level Sense Inputs
  - 16 Bits Digital Output
  - 16 Bits Digital Input
- Battery Charger / AC Adapter
- 2 Empty expansion slots

- Uses rechargeable batteries and provides power to the Model 100
- Expansion boards available:
  - High Accuracy 12 Bit Analog I/O
  - 16 Bit Digital I/O
  - Combination Analog & Digital I/O

ELEXOR ASSOCIATES

P.O. Box 246
Morris Plains, N.J. 07950
(201) 299-1615

Circle No. 39 on Reader Service Card

END-AROUND TELCOM. The following method skips TELCOM and uses a Basic program to accomplish the task via the RS232 ports. The program provides line feeds and proper carriage returns, enabling WordStar to reconfigure uploaded files to any width on the Osborne without having to provide line feeds by hand. It runs at 1200 baud. Here's how to do it.

1. Connect your Osborne to your 100 with an RS232 cable. The pins 2 and 3, the sending and receiving pins, on the Osborne's RS232 are reversed from normal practice, thus you don't need a null-modem adapter. (I used Radio Shack cable, Cat. No. 26-1408, $19.95.)

2. Enter the Basic program in listing 1 into your Model 100 and save it to RAM by typing SAVE"RAM:OZUPLD" <enter>. It provides line feeds and the end-of-file (control-Z) command.

HOW IT WORKS. Here's how the program works:

- Line 30 defines the control-Z end-of-file character to close the file on the Osborne.

- Lines 40–70 define and open the file for sending.

- Line 80 opens the Model 100's RS232 port at 1200 baud, 8 bits, no parity, two stop bits, XON enabled.

- Line 90–120 send the file.

- Line 130 sends the end-of-character command.

- Line 140 ends the program, beeps, and returns to the menu.

3. On the Osborne, run SETUP on a disk containing PIP.COM and STAT.COM. (My disk contains WordStar and its overlays. I have double density; if you have single density, you could erase MAILMRGE.OVR to make room for PIP and STAT.) Make sure the baud rate is 1200, the highest the Os-

borne allows through the RS232 port. If that parameter must be changed, save it to disk in Drive A.

4. On the Osborne, type STAT RDR: = PTR:< carriage return >. This assigns the CP/M logical reader device to a physical "paper tape reader" device. In plain English, the Osborne is told to expect incoming data through the RS232 port.

5. Plug the RS232 cable into the RS232 ports of both computers.

6. Insert a formatted file disk into Drive B of the Osborne.

7. Turn on the 100 and run OZUPLD.BA. At the ".DO File to Send" prompt, type in the file name.

8. On the Osborne, at the A> prompt type:

PIP B:FILENAME.EXT=RDR:[BE]
<return>

(In the bracket, B tells PIP to move data in and out of a buffer to its destination. E echoes the copying to the monitor so you can watch the file as it is sent.)

Wait until the drive lights go out before going to the next step.

9. On the Model 100, press enter. Now watch the file arrive on the Osborne. It will look "messy," scattered all over the screen. Don't fret. This is normal. When the transfer is finished, the Model 100 will beep and its menu will reappear. The light on the Osborne's Drive B will go on, then off.

10. On the Osborne, run WordStar and call up the new file: Type WS B:FILENAME.TYP. You will see just a few lines of text running off into the ether past the "+" flag on the right side of the screen — the first line you sent. Relax. You can't see it, but it's all there.

11. Now type in the WordStar commands <caret>QQ<caret>B to reform the file to whatever width you wish. You'll see the complete file with proper line feeds and carriage returns.

Beautiful!

Henry Kisor is full-time book editor and critic and part-time computer columnist of the Chicago Sun-Times.

DATACCOUNT

2 for the money

TAX PREP
(for individuals)
&
TAX PLAN
(for professionals)

software designed
specifically for
Tandy Model 100
&
NEC Model PC-8201 *

TAX PREP helps you prepare 1983 taxes including schedules 1040: A, B, G, SE, and W.

TAX PLAN includes 3 versions: 6K, 10K, and 15K for 1983 and 1984 tax years, enables you to compute tax schedules or tables, income averaging, capital gains, alternative minimum tax, and schedules A, SE, and W and provides the ability to save and recall client data.

* Marketed by NEC

DATACCOUNT
516 S.E. Morrison, Suite 820
Portland, OR 97214
(503) 232-0490

Circle No. 40 on Reader Service Card

400 FREE PROGRAMS!

Spreadsheets, printing, formatters, diaries, programming, utilities and more.
All available on CompuServe's
Model 100 Special Interest Group.
Just log on to CompuServe and **GO PCS-IS4** at the (!) prompt.

Take advantage of this freeware today.

Circle No. 41 on Reader Service Card

THOUSANDS OF DATA BASES VIA ONE NETWORK

Canada is developing a network to make accessing thousands of public data bases easier than using a phone book.

By RICHARD BUTT

If you're having problems connecting to the thousands of data bases across North America, Canada will soon have a solution for you. It's called iNet.

Though still under development, iNET now is available in a number of test regions and is being developed to give quick access to a vast range of facts, figures, and graphics on business, scientific and educational subjects.

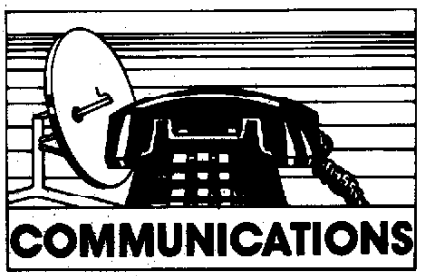
HARD TO GET THERE. Currently, there are over 1000 public data bases in North America but accessing them can be a problem.

First, how do you find the computer-based information service that is right for you?

Second, when you find a data base, you must open an account costing from a few to several hundred dollars. Only then do you obtain a sign-on code and password. All that before any information is forthcoming.

To add fury to frustration, there's the problem of a phone connection; if no local number is available your costs can quickly skyrocket. Fortunately, this can be solved with iNet.

IT HAS SMARTS. The "i"ntelligent "net"work is destined to completely automate connections between user terminals and on-line data bases. The cleverness iNet brings to information retrieval makes finding and using such services much easier.



Providing an on-line directory of data bases, iNET will enable users to identify and access services to meet their needs. To help them deal with information once retrieved, iNet will have on-line storage, text editing, and electronic mail. Subscribers will have one iNet account and will be billed for data base information and iNet services on one monthly statement.

The service is designed to be useful to any member of the information-hungry public. Business corporations, government departments, newspapers, stockbrokers, travel agents, lawyers, and laymen will be served by iNet information.

WALK-THROUGH INET. Here's how the system works. Let's say it's 9:00 a.m. and you must have information on various office heating systems by noon. You have a few pamphlets lying around, but they're outdated. Since there isn't time to search for more data, you decide to see what the computer-based information services have to offer.

Your point of access to on-line information is, of course, your computer. From there you dial a local number (through DataPac, Tymnet, Telenet, etc.) and sign on to iNet with your identity code and password. You're on, but where are you going to find information about heating systems?

GATEWAY TO HEAVEN. An on-line directory provided by iNET solves the problem. This gateway is used in much the same way as a public telephone directory; it can be searched alphabetically (as in the white pages) or by subject or keyword (as in the yellow pages).

If you're not sure of what keywords to use, consult the electronic thesaurus in iNet for suitable synonyms. In the thesaurus you will find the words energy, prices, and heating. By entering a search command and typing in these three keywords, iNet will scan its directory and present you with a list of entries that fall into all three categories.

If one entry looks promising, but you want more information on it before actually searching, the directory provides a written description of the service, similar in detail to a yellow page advertisement. In addition, there may be names, addresses, and phone numbers of individuals at the particular data base who can supply you with more information.

THE REST IS EASY. Once you have decided what service you want to access, you simply type in one command which will automatically connect you to the data base of your choice. The address of your chosen data base will be looked up, the connection made, and you'll find you're logged-in using a special iNet account, geared to locate and start up the data base you have requested.

Without iNet, you would have to locate the data base in a paper directory, open an account with the information provider (which may take several weeks and quite a few dollars) and perhaps waste time trying to make the connection yourself.

Once you have obtained the needed information, you are returned to iNet automatically. However, you return to iNet *with* the data you were searching for. This data now can be stored in an iNet file (and manipulated with the aid of an editor), downloaded to your terminal printer or disk drive, or simply thrown away.

AT LAST!
AN INEXPENSIVE SPREAD SHEET FOR THE MODEL 100

$29.95

If you are tired of using a pencil and paper next to your Model 100 just to do the simplest of calculations, then Datamasters has the answer.

ESS-2.2, an Electronic Spread Sheet program, will do almost anything you desire in the way of forecasting and planning calculations. Designed around the unique memory handling capabilities of the Model 100, **ESS-2.2** data and format files can be saved and retrieved without the use of peripherals, while formatted hard copies of spread sheets may be made using a single function key.

Datamasters wants to continue to supply you with the latest and lowest priced business and entertainment software for your Model 100. Any suggestions or comments you may have will be greatly appreciated. See mailing address on coupon at right. Thank you

DATAMASTERS
P.O. Box 3560, San Luis Obispo, CA 93403

Qty.

____ 24K version of Electronic Spread Sheet 2.2 • $29.95
____ 8K version of Electronic Spread Sheet 2.2 • $29.95
____ PTERODACTYL – A Fun Game of an invading bird creature • $9.95

Add $1.50 for postage and handling. California residents add 6% sales tax.
For fastest delivery, send Cashier's Check or Money Order. Personal checks – allow three weeks to clear.

____ Amount enclosed.

Name _____

Address _____

City _____ State _____ Zip _____

What other types of software would you like to see made available for the Model 100?

_____

_____

Circle No. 42 on Reader Service Card

SEND A LETTER. You also can, using iNet electronic mail capabilities, send edited or unedited data to various account holders who would be interested in this information, your boss for instance. Recipients of electronic mail don't have to be on the iNet system; the mechanics of iNet's protocol allow it to interface with other electronic networks.

During the present field trials, more than 300 public data bases containing financial, current affairs, airline, technical, scientific, and bibliographic information are available to about 400 users from eight common-interest groups. These groups represent banking, bibliographic, broadcasting, energy, real estate, legal, and travel organizations and interests.

WON'T STOP HERE. During the next few years, as the system is gradually implemented for public access, many more data-base services will be added.

Using portable terminals and computers such as the 100 will enable busy people almost immediate and easy access to a central storehouse of information that currently is difficult to obtain.

continued from page 13

ADDRESS ENVELOPES WITH THIS READER'S OFFERING

I am including a listing (program listing 1) of a very simple program which I use to type envelopes. I have found it most inconvenient to have a computer printed letter, but then have to find a typewriter to do the envelope. Perhaps some of your readers will find it useful as well.

Carlton Maley
Pleasant Ridge, MI

```
 1 REM  A program for the TRS Model
    100 used to print return and
    destination.
 2 REM  addresses on large (legal)
    or small (6.5"x3.75") envelopes.
 3 REM  this version allows choice
    of one of two names on the
    return address.
 4 REM  Destination address may be
    up to four lines.
10 LET LF$=CHR$(10)'Delete if line
    feeds are not desired with
    carriage returns
20 CLS
30 PRINT "LARGE OR SMALL ENVELOPE (L
    or S)";
40 INPUT S1$
50 PRINT "RETURN ADDRESS FOR 'A' OR
    'B'";
55 INPUT S2$
60 IF S1$="S" OR S1$="s" THEN S1=9
    : SP=28
    ELSE S1=12
    : SP=45
70 IF S2$="a" OR S2$="A" THEN R1$=
    "(here enter first option for
    return address)"
80 IF S2$="b" OR S2$="B" THEN R1$=
    "(here enter second option for
    return address)"
81 REM  For A and B in line 50 above,
     substitute some key (eg
    initials) to the
82 REM  two options for the return
    address names.
83 REM  In lines 70 and 80, these
    keys should be substituted for a
    and b in
84 REM  lowercase, and for A and B
    in upper case, so user may enter
    input in
85 REM  either upper or lower case
    letters.
90 CLS
100 PRINT "ENTER ADDRESS LINE 1 (OF
    4)"
110 LINE INPUT A1$
120 PRINT "ENTER ADDRESS LINE 2 (OF
    4)"
130 LINE INPUT A2$
140 PRINT "ENTER ADDRESS LINE 3 (OF
    4)"
150 LINE INPUT A3$
160 PRINT "ENTER ADDRESS LINE 4
    (LAST)"
170 LINE INPUT A4$
200 LPRINT " "+R1$;LF$
210 LPRINT " (here enter second line
    of return address)";LF$
220 LPRINT " (here enter third line
    of return address)";LF$
221 REM  Include space at beginning
    of return address lines 2 and 3
    for a
222 REM  margin at edge of envelope
230 FOR I=1 TO S1' This for-next loop
240 LPRINT LF$' rolls the envelope to
250 NEXT I' position destination
    address
260 LPRINT SPACE$(SP);A1$;LF$
270 LPRINT SPACE$(SP);A2$;LF$
280 LPRINT SPACE$(SP);A3$;LF$
290 LPRINT SPACE$(SP);A4$;LF$
300 FOR I=1 TO 10
310 LPRINT TLF$
320 NEXT I
321 REM  Delete "LF$" in lines 200 to
    320 if line feed are not needed
    by printer
330 MENU 'Returns to menu at end of
    program
```


Computer Books For Beginners

New At Your Bookstore

Portable Computers

44 Programs for the TRS-80 Model 100 Portable Computer, by Jim Cole, practical programs to make lap-sized portable do real work immediately. Ideal for business, home, 96 pages, ISBN 0-86668-034-9. **$8.95**

ARCsoft Publishers

Circle No. 43 on Reader Service Card

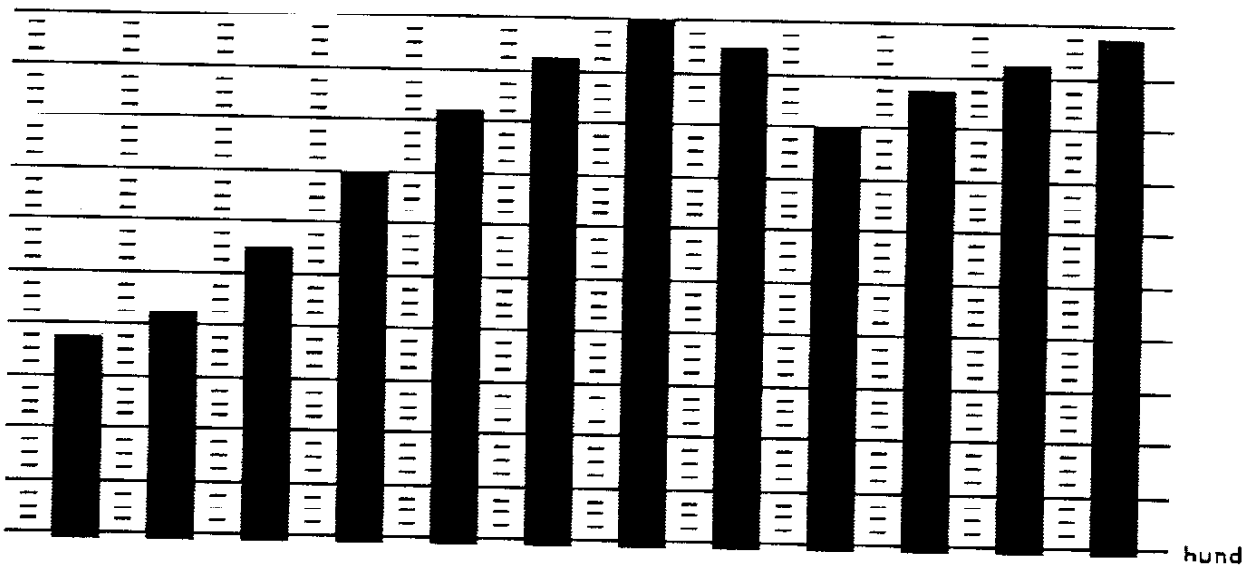
MICROBYTE INTRODUCES

POWERFUL BUSINESS AND HOME SOFTWARE AT MICRO COST FOR THE MODEL 100

DATA 1

DATA 1 A data management system written specifically for the Model 100. It's features along with the 100's built in features combine to make this the most powerful Model 100 program to date.
DATA 1 is designed to allow you to set up files to store, retrieve, update, sort, and print data in a format created by you.
DATA 1 is ideal for a large variety of business and home uses such as tracking progress, income, expences, mailing lists, home budgets, and numerous others.
DATA 1 is easy to operate and like all MICROBYTE software is priced to reduce the high cost of quality programs.

SOFTWARE SALES VOLUME 1983



GRAPH1 uses keyboard to enter heading and accepts numbers either from keyboard entry or direct from DATA 1 files
GRAPH1 Screen display of line graph and bar graph, prints bar graph either narrow or wide on dot matrix printer for standard or 132 coulmn paper.
GRAPH1 will graph an individual record from a DATA 1 file or sort first then graph the totals.
GRAPH1 is excellent for graphing production, income, expences, sales and much more.

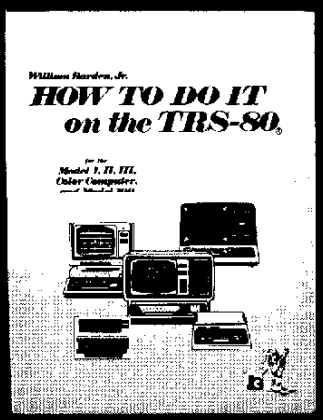
Both programs are supplied on cassette tape and come with easy to understand manual.

DATA1 $49.95 GRAPH1 $19.95 BOTH $65.00 CHECK, C.O.D., MASTERCARD, VISA

MICROBYTE 602-943 9080
11047 N.19th Ave., Phoenix, AZ, 85029

Circle No. 44 on Reader Service Card

the other half of the TRS-80: THE MIND!



THE BOOK YOU CAN BOTH READ AND UNDERSTAND

by William Barden, Jr.

IJG books are sold at booksellers and computer dealers world wide. If your dealer is out of stock, order direct. Include $4.00 for shipping and handling. Foreign residents include $11.00 in U.S. funds for shipping and handling. IJG, Inc., 1953 West 11th St. Upland, California 91786. (714) 946-5805

IJG

CompuThoughts

I can't begin to tell you everything about this book—it's unusual. The first things you notice about it are that it has no page numbers and the "table of contents" has over 2,000 entries in alphabetical order. Here's why:

We use TRS-80s—from accounting to typesetting. The variations of BASIC, applications software, hardware and operating systems is more than can be remembered. Nothing gets done when your nose is in a manual.

Why can't "they" make a book that has everything in one place? Hell's fire, "we" are "they!" I told Bill Barden that if he would write such a book I would do two things: 1) I'd publish it and 2) I would quit bitching.

I use it everyday. It answers my questions. It'll answer yours too.

H.C. Pennington, President

IJG

The Thoughtware Company™

Circle No. 45 on Reader Service Card

BOOKS

LIGHT READING FOR NOVICE MODEL 100 USERS

The Radio Shack Notebook Computer
Orson Kellogg
Sybex Computer Books
2344 Sixth Street
Berkeley, CA 94710
118 pages
$8.95, softbound

By NANCY L. LAITE

It was a funny feeling ... working by my woodstove this cold Downeast night, reading and writing simultaneously. The irony was what was being read, *The Radio Shack Notebook Computer*, was showing me how to make my writing feasible on my Model 100. Never having used the 100 before, I was as excited as a kid with a new toy. What better way to do a book review than to start green with the 100 and a paperback claiming to be a guidebook. I would soon ascertain how accurate that description was.

Author Orson Kellogg prefaces his 1984 book by setting up the following scenario: "I'm sitting here under a blue sky, listening to the birds and the wind. Just me and my Model 100 Portable Computer..."

And there was no doubt in my mind that Kellogg was sold on the 100 which, unfortunately for this reviewer, made me leary of his objectivity. Throughout the book, his adjectives describing the 100 — it "beckons you, like no other computer, extraordinary, beautiful" — were positive, to say the least. My argument is that one of his pretexts for writing this book is to help you decide whether or not to buy a Model 100; I wasn't even past page three when I knew what his suggestion was!

SQUARE DEAL. I feel Kellogg dealt fairly with the other goals of his book — what you can use your 100 for; what it can do for you; how you operate it. The scope of the paperback covers word processing, logging on to database systems, and telecommunications.

Although a writer and marketing consultant in San Rafael, CA, specializing in micros, Kellogg's only other noted piece has been, *Every Pilot's Guide to Aviation Fuel Economy*. Perhaps this lack of previous "techie" writing is what helped make the text of *The Radio Shack Notebook Computer* such easy reading. He promises it won't be technical, and he was telling the truth (I've been lulled into believing that before by other writers of so-called nontechnical essays. Huh!); so Kellogg's book was refreshingly simple.

Divided into two parts, Part I carried the bulk of the 118-page paperback. It features 10 chapters, with chapter one as a teaser. He entices you with his descriptions of Model 100 magic, enough "tricks" to cause you to want to read more. By chapter two, he has you intimately familiar with, what he refers to as "the little black box."

Chapter three is the zapper though. With that under your belt, you are suddenly word processing and having fun with the 100. And that's all within the first 30 pages.

NECESSITY LEARNED. The following chapters speedily get you utilizing the other programs in the 100. In less than 100 pages, Kellogg has your life so organized by and intertwined with the 100, you wonder how you have lived so long without it. This climaxes in chapter eight where the author has you "managing your work and life with the Model 100" via to-do lists, goal-setting lists, address book lists (where he shows you how the 100 automatically dials any phone number listed therein), scheduler, and "germination" lists. Your every waking moment literally can be dictated to by the 100. (He even includes a program in Part II for a built-in wake-up call for the 100.)

Chapter 10, Software and Accessories, was sketchy and inaccurrate in places. Although the nature of publishing deems anything outdated once printed, I still think more exciting accessories for the 100 could have been included. Rechargeable portable batteries, portable printers that fit in the palm of your hand, and RAM expanders all have been especially designed for the 100. Kellogg's list barely exceeds what's the latest in 100 carrying cases.

His list of Model 100 magazines contained some errors. Most flagrant was his confusing *Portable 100* with *PCM*. This glaring mistake made me wonder what other detailed information might be wrong in the book.

Another irritation about the book is the lack of an index. There were numerous times when I wanted a quick answer, and where I was forced to leaf through the owner's manual that came with my 100 to find it. That, in my opinion, defeated the *raison d'etre* of Kellogg's book. I resorted to the manual enough times to realize that a lot of his writing was the 100's documentation, repackaged!

A glossary also would have been greatly appreciated by any user of this guide. Going on his assumption that the majority of readers would be computer novices, a list of computerese as a handy reference would have been a great aid.

WONDERFUL, WONDERFUL. In Part II I had a wonderful time. Promising to get you making music with your 100, or telecommunicating in no time, Kellogg, in the same breath, warns readers they aren't going to learn programming here. Instead, he lists programs, culled from others, that were

continued on page 80

TEL-LTR(tm)

THE PERSONALIZED ELECTRONIC SYSTEM

TEL-LTR(tm)

No more look-alike grams. Your letter can now be customized with a personality of its own.

TEL-LTR is THE ELECTRONIC MAIL SYSTEM that allows you to send those necessary letters — TODAY — from your **PORTABLE MODEL 100**.

This service is for the BUSINESSPERSON who wants to send a "THANK YOU" letter to a client just visited — for the ENGINEER who needs to confirm SPECIFICATIONS in writing — or the JOURNALIST who wishes to forward COPY of an article just written.

TEL-LTR is the service that does this AUTOMATICALLY from your MODEL 100. It produces a letter on your own LETTERHEAD and sends it in a personally addressed ENVELOPE (not a window envelope) with a postage stamp. And best of all you get a hard copy CONFIRMATION!

Letters are produced in the normal "TEXT" mode off-line. When ready to transmit one or more letters, call in the "TELLTR" program — plug in either the direct connect cable or acoustic cups — depress a function key and the rest is done automatically.

TEL-LTR allows you to send your correspondence from ANY PHONE — ANY WHERE. NO need for special PASSWORDS — LOGON sequences etc. TEL-LTR is the first "AUTOPILOT" communications package for the MODEL 100.

TEL-LTR allows you to send TELEX messages and provides you an ELECTRONIC MAIL BOX for intra-company use. All messages for others in your company are handled in the same transmission and when the Model 100 is finished transmitting it automatically picks up any MESSAGES waiting for you and DOWNLOADS them into your 100 for reading at your leisure.

The TEL-LTR division of GUNTHER INTERNATIONAL is DEDICATED to the most complete on-line facilities EXCLUSIVELY FOR THE MODEL 100.

TEL-LTR(tm)

SOON TO BE AVAILABLE

——ELECTRONIC ORDERING & DELIVERY OF MOD 100 SOFTWARE——
——ELECTRONIC NEWS SEARCH——
——ELECTRONIC BULLETIN BOARD——
——ELECTRONIC CONFERENCE ROOM——

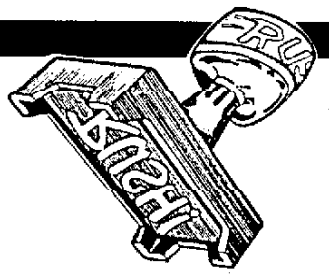
FIRST PAGE OF EACH LETTER $1.75 (includes postage and transmission charges), EACH ADDITIONAL PAGE $.75. To become a member of this revolutionary service, call **TOLL FREE 1-800-CALL-800** (1-800-225-5800). There is no membership fee nor monthly minimum-useage requirement. Credit card information must be provided when you become a member.

Gunther International, P.O. Box 586, Mystic CT. 06355
Tel. (203) 536-4926

**(tm)Tandy Corporation

Circle No. 46 on Reader Service Card

NEW PRODUCTS



DISK/VIDEO INTERFACE AVAILABLE FOR 100 AT RADIO SHACK STORES AND DEALERS

At your local Radio Shack, you can now purchase a 40-80 character video monitor display (furnish your own monitor) plus single 5.25-inch disk, with space to have a second one installed. Bill Walters, of Radio Shack headquarters, reports the disk, subtracting the operating system space, has about 176K of user storage and plugs into the bus connector in an "interesting fashion."

First, you plug in a ZIF (zero insertion force) connector, then plug the interface into that. The door on the 100's bottom is replaced by one allowing the ZIF to plug in through it. Connection is via a flat ribbon cable.

Look for more details in the next issue of *Portable 100*.

PROGRAM YOUR KEYBOARD WITH PRO AID FROM MICRO DEMON

Pro Aid, an interrupt-driven, machine-language program for the 100, has just been released by Micro Demon Inc. of South Carolina.

Once activated, it becomes a part of the computer's operating system, functioning transparently to the user. It constantly checks for particular key sequences that otherwise have no significance to the Model 100. When it detects such a sequence, it takes various actions.

For instance, most of the control keys have no effect in Basic. Pro Aid provides an importance to these control keys. Also, a shifted letter key has no meaning when the caps lock key is down. Pro Aid turns all such shifted keys into function keys. Even the escape key becomes worthwhile when Pro Aid is installed.

The following are a sample of Pro Aid's features, all within 1.8K RAM.

- New function keys (26 of them) that can be used in any mode, and are easily defined by the user.
- Automatic line numbers. The user can specify any starting line number and any increment.
- Immediate deletion of any range of lines from a Basic program.

IMPROVED SCRIBE SOFTWARE PROMISES TO ENHANCE 100 IN TEXT

Now you can have fancy features in your 100 only found previously in larger and more expensive word processors. That claim comes from Chattanooga Systems Associates about their new Scribe 3.0

For under $30, this convenient and powerful 2.1K Basic word processor offers flexibility and portability. "Working with the built-in Text program, it saves at least 2K of RAM, and that's worth about $100," Chattanooga Manager Ray Hoskins boasts.

A partial list of features includes:

- Menu control and prompting messages with defaults for convenience.
- Standard formats for pica, elite, and micro size type.
- Automatic paging and numbering.
- Use of continous tractor feed paper or individual sheets.
- Basic word processing without learning any special commands.
- Printing documents of any length from a combination of files from RAM or tape.

Scribe does not do underlining. It sells for $29.50 plus $2 for mailing and handling from Chattanooga System Associates, P.O. Box 22261, Chattanooga, TN 37422, 615-892-2339.

IT'S APRIL... HAVE YOU FILED YOUR TAXES YET? HERE'S HELP

To aid in the annual chore of preparing the dreaded 1040 form, Traveling Software has announced a tax management software package. Up to 12 supporting schedules and forms can be run on your 100.

Also included with the software is a free one-year's subscription to the Traveling Tax Newsletter. The newsletter is published quarterly by a practicing tax attorney and CPA and publishers promise it contains valuable tips and updated information for the tax year.

The Tax Manager sells for $59.95 (tax deductible, of course) and comes complete with written and audio tutorial guide. It can be obtained by contacting Traveling Software, 11050 Fifth Avenue, N.E., Seattle, WA 98125, 206-367-8090:.

FINANCIAL CONSULTING FOR BUSY EXECUTIVES ONLY A TERMINAL AWAY

An on-line service providing financial information and communication tools such as electronic mail and electronic conferencing is available now for business people. The Executive Information Service, via CompuServe, is accessed through either a personal computer or computer terminal and modem.

CompuServe, of Columbus, OH, has teamed up with Stonehedge Information Services Group Inc. of Parsippany, NJ, with the signing of an exclusive, long-term product development license. The agreement provides the product, known as the Geneva Series, is an interactive data base of individual and national consultant organizations offering information and services.

"Business executives," according to Lawrence Embley of Stonehedge, "currently have no central resource where specialized consultants can be easily located, and their credentials and fees examined." Now, this information is available without their leaving their desks.

For more information, contact CompuServe, P.O. Box 20212, Columbus, OH 43220, 614-457-8600.

THE CASE

FOR EVERY CASE

The **Chip-Tote™ PCD-1** by Kangaroo Video Products Inc., makes your TRS-80 Model 100 truly complete. It's a compact, light-weight, foam padded soft case that doubles as a desk.

Businessman, journalist, professional or hobbyist—the **Chip-Tote™ PCD-1** provides the maximum in portability and protection for your computer and its accessories.

Kangaroo Video Products Inc. has been the leader in protecting T.V. cameras and video tape recorders for professionals worldwide. Now we have brought our thoughtful design and quality construction to the portable computer industry.

The **Chip-Tote™ PCD-1** features:

- Slim, handsome design
- Made of rugged Cordura® nylon
- Fully padded with Evazote® closed-cell foam
- Non-scratch lining won't mar display screen
- Double-zip zipper for easy access
- Stand-up utility top holds papers upright for easy reference
- Pockets hold papers, notepads, business cards
- Detachable zippered pouch holds batteries, modem cord, acoustic coupler, AC adapter
- Convenient hand strap
- Comfortable adjustable shoulder strap
- Also fits the Epson HX-20 and NEC PC-8201

The Kangaroo **Chip-Tote™ PCD-1** is available in black or smoke gray for $59.95. Include $2.50 for UPS shipment (CA residents add 6% sales tax). M/C, Visa, C.O.D. orders excepted—or mail check or money order to:

KANGAROO VIDEO PRODUCTS INC.
10845 WHEATLANDS AVE., SUITE C • SANTEE, CA 92071-2856 • (619) 562-9696

ENGINEERED CASES FOR SENSITIVE ELECTRONIC EQUIPMENT

Circle No. 47 on Reader Service Card

MONTHLY JUST RELEASED TO INDEX THE FLOOD OF MICROCOMPUTING LIT

In an effort to organize the vast amount of scattered information about microcomputing, *Microindex* has been published, and in the works is an index specifically designed for *Portable 100*.

Article data includes: title, author, page, length, journal, issue, reader level, and rating. Article types include all features, articles, product reviews and announcements, and significant letters and notes. Tabulation is for easy referencing in level by microcomputer model and general and specific topics.

The following *Microindex* versions are available (prices shown include postage and are intended for U.S. distributed orders only):

- *Microindex*; a monthly, $99/yr., $12/issue; especially of interest to large libraries, universities, and businesses.
- Abridged *Microindex*; a monthly, $49/yr., $6/issue, especially of interest to medium-sized libraries, colleges, high schools, academies, computer dealers, and small businesses.
- Journal-specific, end-of-volume *Microindexes*, annual, from $5 to $12/issue; especially of interest to single journal readers as well as small libraries, schools, businesses.

For more information, contact Serious Personal Computing, P.O. Box 7059, South Nashua, NH 03060, 603-888-1376.

MODEL 100 CHOSEN TO ADVENT NEW PAPERBACK ESTIMATING SYSTEM

Because of its self-contained screen ability to display eight full lines, the 100 will debut the new Electronic Quotebook. Introduced by Lithocolor

Press Inc., it enables their clients to do planning and cost projections while studying other otpions before entering an order for the final print run.

Also included is a program called "Cost Effective Order Point," or CEOP. It analyzes the minimum and maximum run being considered as well as possible reprints and computes the markup and rate of return on projected sales.

More information on the Electronic Quotebook is available by contacting David G. Pilcher, General Manager of Lithocolor Press Inc., 9825 West Roosevelt Rd., Westchester, IL 60153, 312-345-5530.

COMPMAIL+ TO BE NEW COMMUNICATION TOOL FOR COMPUTER SOCIETY

A unit of ITT is now providing an electronic mail and information service for its 80,000 members. The Computer Society of the Institute of Electronic and Electrical Engineers (IEEE) has announced the formation of COMPMAIL+ which will enable subscribers to communciate with each other via electronic terminals and also order IEEE Computer Society publications electronically.

Other features include online registration for IEEE conferences, seminars, meetings, an electronic bulletin board, and word-processing capabilities. The service is used with any ASCII terminal, personal computer, or telex terminal.

Each Society member is responsible for his or her own personal usage charge of $16 per hour; a special introductory offer of a $30 credit against usage is being provided. For additional subscription information, contact IEEE Computer Society, 1109 Spring Street, Silver Spring, MD 20910.

NIGHTLIFE COMPUTER BUFFS NEED NOT BE ALONE DURING THE WEE HOURS

If it's not past your bedtime, Tuesday nights at eleven o'clock you can tune into a half-hour TV show on your local PBS station. The Source, in collaboration with "The New Tech Times On-line," has created a national two-way television show for personal computer owners.

Following the show, TV viewers who are members of The Source will have the opportunity to "talkback" to their TV set. Through The Source, electronic mail may be sent to the show's producers, previews of upcoming program listings may be received as well as addresses or phone numbers for companies and individuals featured on the program, transcripts and discount books may be ordered, free offers sent for, and topics for upcoming shows can be suggested.

The New Tech Times, designed to help people better understand the electronic marketplace, is hosted by lecturer, columnist, professor, and former FCC Commissioner Nicholas Johnson. Author of *How to Talk Back to Your TV Set*, Johnson says his book was written before that was possible. "Now with these electronic services, interactive TV is no longer just a dream."

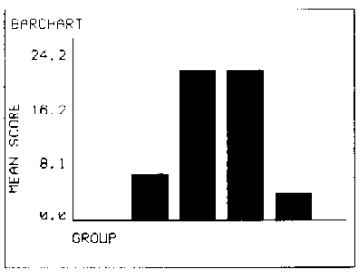
The Portable Statistician

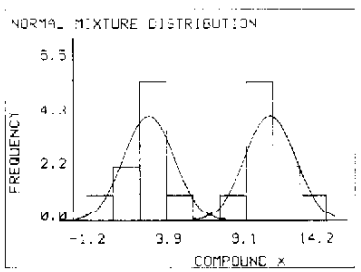
Software package to make your Radio Shack Model 100 and CGP115 color plotter into a portable statistics/graphics workstation.

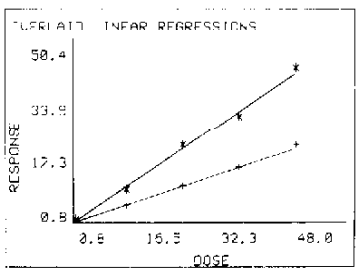
Features:

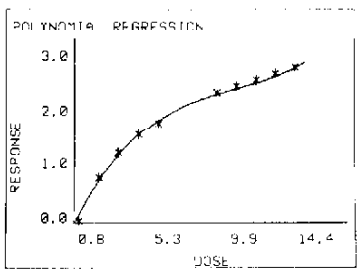
- Descriptive statistics
- t-statistics
- One-way, two-way ANOVA
- Repeated measures ANOVA
- Linear regression
- Nonlinear regression
- Multiple regression
- Chi-square
- Mixture analysis
- Histograms
- Scattergrams
- Barcharts
- Line charts
- Linear plots
- Nonlinear plots
- Normal dist plot
- FISHER's exact test
- YATES correction

ONLY $99.00









Also available for IBM PC and XT

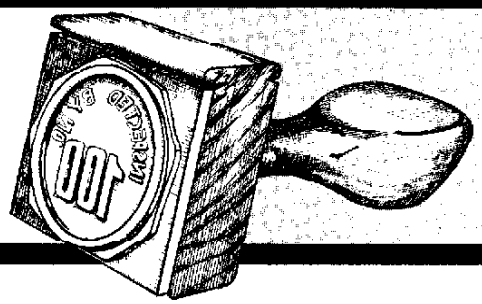
TRS-80 is a registered trademark of Tandy Corporation
IBM is a registered trademark of International Business Machines Corporation

Works with 32k or 24k versions

Statware
7413 Lake Street
Morton Grove, Illinois 60053
312/248-8836

Circle No. 48 on Reader Service Card

REVIEWS



TIME MANAGER EXCELLENT TOOL FOR BILLING BY HOUR

Traveling Time Manager
Traveling Software Inc.
11050 Fifth Avenue NE
Seattle, WA 98125
206-367-8090
$59.95

By JOHN P. MELLO JR.

Don't be cooled by this program's documentation. Traveling Time Manager is first-class software, a valuable tool for consultants and others billing clients by the hour.

The software lets you define hourly rates for clients and projects, track the hours you spend on them, and print a report of your activities.

It contains some very attractive displays and makes good use of the 100's function keys.

MACHINE LANGUAGE WOES. When you load Time Manager into your 100 make sure you don't have any other machine-language programs in your computer. This could interfere with the program loading properly. On one occasion, I had the operating system for the 100's disk-video interface in my machine and received repeated function call errors because Time Manager's loader program doesn't expect company in high memory.

From Time Manager's main menu you're presented with these options:

- Update Time Log;
- View Summaries;
- Print a Report;
- Define Activities; and
- File Management.

Although the program's documentation explains the top three options first, you'll probably want to define your activities before doing anything else.

From the set activities screen you may code a client or project, describe it, and assign an hourly billing rate. Up to 30 activities may be set this way.

ENTERING DATA. When you're finished defining activities, you can start entering data via the add or update option. There you identify a client or project, define his activity code, input the date and hours worked for him, flag the item as billable or not, set the hourly rate (this is done automatically if the work is defined activity), and comment on the item.

Using the 100's function keys in this mode, you can save the item, delete it, view a previous item, or view the next item in the sequence.

Once you've created some items, you can see a roundup of them in the summary mode. After setting the time period for the summary, you may view:

- The total time spent and dollars earned for each activity within a project or for a client;
- Time and money totals for each project or client;
- Time and money totals for each activity; and
- Time and money grand totals for billable and non-billable activities.

You can view a detailed summary of your activities by printing a report of them (example 1). The program prints an 80-column report showing:

- Each project and client;
- Each activitiy within the project or for the client;
- Comment on each activity;
- Time and dollar totals for each project, client, and activity;
- Time and dollar grand totals, and
- A list of defined activities.

AUTOMATICALLY TEACHES TYPING

TUTOR +

Learn keyboard skills quickly and enjoyably

- 30 lessons fed from text files, presenting exercises at graded speeds
- After each lesson, or whenever you like, you are tested for current speed and accuracy
- Detailed, professional manual corresponding to lesson files.
- Has game mode for fun and excitement while learning.

TUTOR + $39.95

INCLUDES CASSETTE AND EXCELLENT MANUAL

MC, VISA OR C.O.D.

PORTABLE COMPUTER SUPPORT GROUP

11035 Harry Hines Blvd. No. 207, Dallas, Tx. 75229

PCSG PROVIDES HOTLINE SOFTWARE SUPPORT FOR THE MODEL 100. CALL US AT: 1-214-351-0564

Circle No. 49 on Reader Service Card

Example 1. Time Manager Report.

THE TRAVELING TIME MANAGER
TIME EXPENDITURE SUMMARY

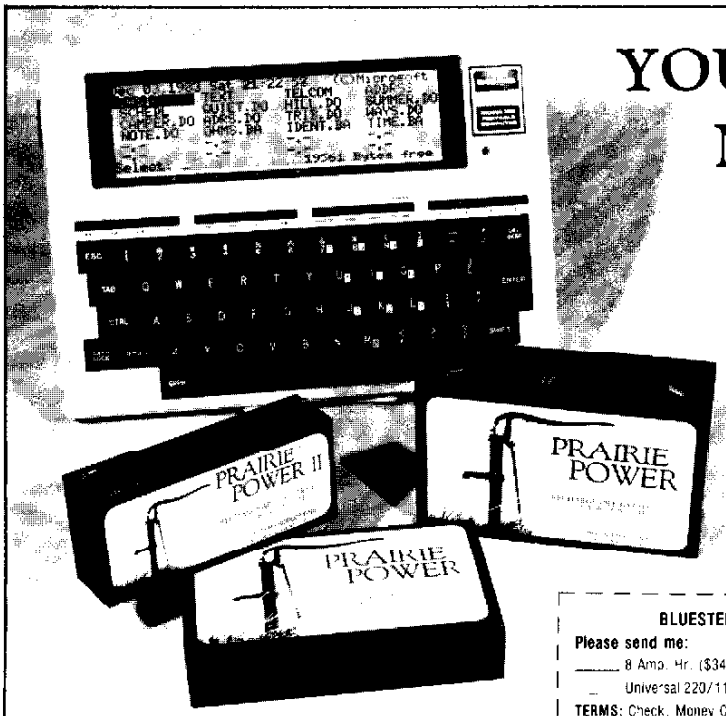
02/07/84 Page 1
01/01/84 Thru 04/01/84

Proj/ Client	Act	Date	Hr:Mn	Rate /Hour	Dollar Amount	
BLUE	CNS	03/24	3:00	50.00	150.00	DESIGN MAGAZINE FOR SUPER MICR
			3: 0		$150.00	
	LUN	02/07	2:00	80.74	161.48	LUNCH FOR FIVE AT CAPPY'S
			2: 0		$161.48	
PR/CL TOTALS:			5: 0	62.30*	$311.48	
GREEN	TEL	02/09	0:40	10.00	6.67	TALKED WITH CLIENT'S ATTY.
			0:40		$6.67	
	WRT	02/07	2:00	20.00	40.00	REVIEW OF WIDGET INTERFACE
			2: 0		$40.00	
PR/CL TOTALS:			2:40	17.50*	$46.67	
RED	EDT	02/17	2:00	12.00	24.00	EDIT BOOK MANUSCRIPT
			2: 0		$24.00	
PR/CL TOTALS:			2: 0	12.00*	$24.00	
GRAND TOTALS:			9:40	39.53*	$382.15	

* INDICATES AVERAGE HOURLY BILLING RATE

DEFINED ACTIVITIES

EDT - EDITING MANUSCRIPTS
CNS - MAGAZINE CONSULTING
WRT - WRITING ARTICLES



YOUR WELL NEED NEVER RUN DRY

PRAIRIE POWER™...Freedom at last for the Radio Shack Model 100 and other six-volt briefcase portables. Prairie Power is a carefree battery system that eliminates the need for AC outlets or the expensive use of "AA" batteries. This rechargeable system can be used anywhere, in any position. Check the ratings below to see how PRAIRIE POWER compares as a real value. Our system can give up to 160 hours between charges...that's over a month (8 amphere-hour unit) if you use the Model 100 four hours a day. Our light-weight, palm-sized systems will easily fit into your attache or computer case and come with a 5' cable for the Model 100. One year warranty. (Charger extra.)

PRAIRIE POWER COMPARISONS

"AA" Duration on MODEL 100	19 - 20 Hrs.
PRAIRIE POWER (8 Amp. Hr. Unit)	140 - 160 Hrs.
(5.5 Amp. Hr. Unit)	90 - 100 Hrs.
(2.6 Amp. Hr. Unit)	45 - 55 Hrs.

Cost for "AA's" at 3 Hrs. Usage/Day can cost $100/Yr.

BLUESTEM PRODUCTIONS, Box 334, Wayzata, MN 55391 • (612) 471-7795

Please send me:

_____ 8 Amp. Hr. ($34.95) _____ 5.5 Amp. Hr. ($29.95) _____ 2.6 Amp. Hr. ($21.95)

_____ Universal 220/110 charger ($10.95) **Add $3 to total for freight.**

TERMS: Check, Money Order, Visa/MC. U.S. Funds only. MINN. add 6%

Name _____ Phone _____

Address _____

City _____ State _____ Zip _____

_____ VISA _____ M/C Card # _____ Exp. Date _____

Signature _____

Circle No. 50 on Reader Service Card

Time Manager's last option enables you to view the number of log entries and activities you've made and the size of your Time Manager file. By pressing F1, the program makes a backup of your Time Manager file that appears on the main menu. That allows you to save the file to tape.

TRAVELING PROF. What about the documentation? Although it's clear and complete, the documentation often conveys the impression the authors (or author, if you believe Traveling's claim its portable guru, The Traveling Professor, penned the docs) feel they're writing for boobs.

The flip side of Time Manager's cassette is an audio tutorial by the professor. I heard a segment of it last year at a portable computing seminar. Mercifully, the audio track on my copy of Time Manager doesn't work.

This tomfoolery is only a minor irritation, though, and you shouldn't shy away from this quality program because of it.

DATA + WORKS LIKE A CHARM, IS SIMPLE TO USE

DATA +
Portable Computer Support Group
11035 Harry Hines Blvd., #207
Dallas, TX 75229
214-351-0564
$59.95

By WOODY LISWOOD

Now you have a Model 100, you're probably wondering what else you can do with the little beastie besides write, type, communicate, and maintain a name, address, and telephone-number file. Well, now Data+ gives you some reasonable file-management capability.

A FILE MANAGER. Data+, to me, is a file rather than data-base manager. Data+ records, organizes, and returns data to you in an orderly fashion, but it doesn't let you do mathematics between fields, screen those calculations, and use them as data in a new screen or report field. Don't get me wrong. Data+ doesn't say it can do those things, but many of us need those features in a data-management system.

The documentation for Data+ says it's "an easy to use data entry, file maintenance, merge and listings program. It works only with what can be held in memory and doesn't use tape for working space."

Data+ will allow you to have up to 16 fields on screen at any one time. The program comes with four screens to use and learn with, then you can create your own screens and have some fun. I had no problems loading the program and its associated files from the tape. In fact, I have yet to have a problem with any tape or program supplied by the Portable Computer Support Group. I wish I could say I had that kind of luck with my micro-based software.

READER SERVICE

Obtain more information concerning products advertised in this month's issue of **PORTABLE 100** — it's simple and free!

- ☐ Answer questions A through H on the card opposite.
- ☐ Circle the number(s) corresponding to advertisements for which you would like more information.
- ☐ Either (a) print or type your name and complete address on the attached card and mail; or (b) telephone **TOLL FREE:**

1-800-225-5800

and give the operator your name and address. The operator will then ask you several of the questions (A through H) and which issue you are referring to (i.e., Issue 8401 - January 1984), as well as in which Reader Service numbers you are interested.

- ☐ The literature you have requested will be mailed to you free of charge directly from the manufacturer.
- ☐ Please bear in mind that sending information represents a major expenditure on behalf of the advertisers. **PLEASE BE SELECTIVE IN YOUR CHOICES.**
- ☐ Allow 3 to 5 weeks delivery time for advertisers' material (1 to 3 weeks if you telephone 1-800-225-5800).

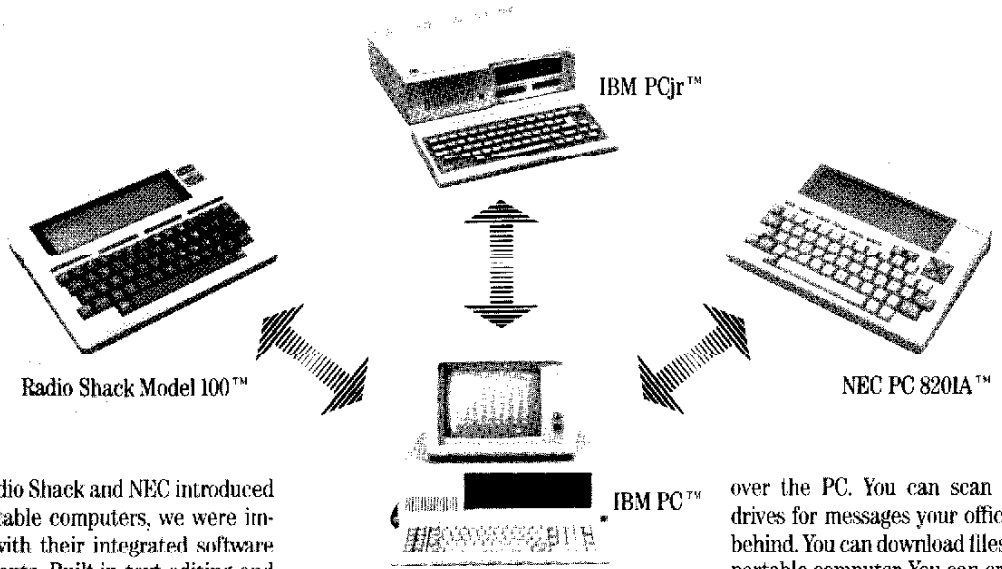
IF YOUR NEED IS MORE IMMEDIATE, PLEASE CONTACT THE ADVERTISER DIRECTLY

Circle No. 51 on Reader Service Card

BULLETIN

Kensington Microware Ltd.
251 Park Avenue South □ New York, NY 10010
(212) 475-5200 □ Telex: 467383 KML NY

Introducing REMOTE CONTROL The link between portable computers and your IBM PC.



When Radio Shack and NEC introduced their portable computers, we were impressed with their integrated software environments. Built-in text editing and communications software made these portables perfect travelling computers. But one thing was missing: an easy link between the portable and the office IBM PC. We went to work. The result is REMOTE CONTROL™ software.

Here's what REMOTE CONTROL software will do for you.

1. At the office: When you load REMOTE CONTROL on your IBM PC, you have an integrated text editing and communications environment. You no longer have to switch between word processing and communications programs. REMOTE CONTROL is modelled after the highly regarded software in the Radio Shack and NEC computers. If you have one of these portables, you'll find the command structure is identical. You don't have to learn any additional programs.

2. Direct connection: Move files at high speed over a standard RS232 cable between your IBM PC and your portable computer. Take your portable computer to a meeting and simply transfer your notes into your IBM PC when you return to the office. A null modem cable is included with REMOTE CONTROL.

3. Host mode: This is great. Now you can communicate with and control your unattended IBM PC over telephone lines from your portable computer keyboard. Move files, execute DOS commands and run stand-alone programs from your remote site as easily as if you were at your desk. For example: You're travelling with a portable computer. Late at night you dial your office PC with your portable. REMOTE CONTROL answers your call and gives you control over the PC. You can scan your disk drives for messages your office has left behind. You can download files into your portable computer. You can create messages with your portable and upload them to the office PC, save those messages to disk, even print the messages out on the PC's printer. Your correspondence is waiting for your office staff when they come in the next morning.

REMOTE CONTROL, only $180. Contact your local IBM dealer, or call us to order direct at 212 475-5200.

AVAILABLE SOON
1-TO-1™ with MCI Mail℠
1-TO-1™ with Western Union EasyLink℠

KENSINGTON™ MICROWARE

System requirements: REMOTE CONTROL runs on an IBM PC, PC-XT, or any IBM PC compatible with a minimum of 64K RAM.

tradémarks: Remote Control — Kensington Microware Ltd.; Radio Shack—Tandy Corporation; NEC—Nippon Electric Corporation; IBM—International Business Machines Corp.
© 1984 Kensington Microware Ltd.

Circle No. 52 on Reader Service Card

HIGH-STANDARD DOCS. The documentation meets the same good standards of other programs from the group. It comes in a three-ring binder with the tapes in their own holder. Each of the files is placed on the tape a few times, so if something does happen and one of the files goes bad, you will have some backups.

The only problem there is it becomes quite time-consuming waiting for a program or screen to load while skipping copies of the program you just loaded. A minor point, but an irritation to me.

Many of the advanced printing functions supported by Data+ work with the group's Write+ program (reviewed in September 1983 and March 1984 *Portable 100*). I didn't test that aspect of Data+ for this review, although the documentation explains how to make the programs work together.

A PROBLEM. I had one problem when using Data+. The group's Note+ screen didn't work. I loaded different versions, and each did the same thing: They scrolled past the top of the screen, making the top of the form unusable.

According to the documentation, this problem is caused by using carriage returns or arrow keys during the creation of the screen. I called the group in Dallas for help. They suggested I eliminate any carriage returns from the file. I looked but couldn't find any.

Oh well. I was able to redo the screen using the instructions from the documentation about creating a new screen and it worked fine.

LOTS OF SUPPORT. While working on this program, I called the group a couple of times — all with questions I knew the answers to. I wanted to see how they treated consumers. Some of my questions were dumb and the answers obvious to anyone who had glanced at the documentation. But all of them were treated with courtesy and taken seriously. Having owned an Apple since the early days, I can say the customer support shown by the group is better than anything I ever experienced in the Apple or CP/M world.

RUNNING THE PROGRAM. When you run Data+, you're prompted for the screen and file you're going to use. That is a sophisticated feature and means you can use the same screen and have separate files identically formatted. Later, by using the Data+ merge facility, you could create subsets of those files for specific reporting requirements without having to consolidate them.

Creating the screen is easy. There is only one special rule to follow: You cannot use any carriage returns or your arrow keys while creating the screen. Backspace and space bar are all you should use to move about the screen. You also must use the space bar to go from line to line.

You create the screen using the built-in text editor. I follow the Data+ format and label the data entry screen P I X (where X is your file name) so I know which files on the screen are Data+ files. After you identify a field name, you show the number of spaces for that field by using ASCII 239 (shift-graph-x).

If you want a job code field of digits, you would follow the colon with six solid boxes. You must have a space after the end of the field before you go to another field name. Using the space bar to go from line to line allows you to have labels on the screen by just typing them in where you want to go. When you're finished designing the screen, you press F8 to save the file.

That is all there is to it — works like a charm. Beware, though, that if you forget and use a carriage return or move from line to line with the arrows (rather than filling in the entire screen with legitimate spaces) the file will not work or load properly with Data+.

ENTERING DATA. Entering data is simple. When you run Data+, load the proper screen. The cursor will be positioned in field number one. Enter the data and press return to move to the next field. You can edit by using the arrow keys. When all is correct, pressing F3 saves the data to memory. Escape erases the field. F8 erases the current record and returns you to a blank screen.

EDITING DATA. Editing data is just as easy. From the same blank screen, enter the data you're looking for in the appropriate field, then press F1. If you have more than one identical field, press F1 again to bring up the next record with that data in the search field. That is another sophisticated feature for a data base operating in such a small environment. I, to say the least, am impressed.

By the way, the documentation says it can find the field within 10 seconds for a 100 record file.

PRINTING YOUR DATA. Pressing F6 will get you to the listing section of the program. There you must respond to a series of prompts about paper size and line length, so Data+ will know what to do. There were three features of this section that impressed me:

- First, the way Data+ let me identify the records I wanted listed. I paged through my screen file and placed numbers in the fields to indicate where I wanted the field to appear in the listing. For example, if you wanted both first name and last name to appear on line one, you would put a 1 after first name and a 1 after last name.
- The second feature I liked was the ability to direct, or redirect, my output to a variety of places: through the printer or communications ports, or to tape, or screen.
- The third feature I found exciting was selecting the records for my report. Again, this is a feature absent from some data-management systems even in the micro world.

It works simply. You are queried on whether or not you wish to print all your records. If you say no, you get a blank input screen. You move the cursor to the field you wish to select from and press F3. Data+ asks you if this is an alpha field. Then you enter the lower bound of the selection criteria, followed by the upper bound. Data+ does all the rest.

MAILING LABELS. I've found in reviewing data bases the publishers always assume the only reason you have this kind of program is to keep names and addresses for mailing labels.

Data+ is no exception. Much of its documentation shows you how to do mailing lists and form letter merging. I'll let you read those sections for your-

THE MSTRAP™

MAKES YOUR MODEL 100 EASY TO CARRY

The MSTRAP provides the Model 100 user with a convenient way to hand or shoulder carry their Model 100. Conversion from hand to shoulder carry and back again takes only a few seconds.
Installation of the MSTRAP will not void any of Tandy's warranties and can be performed by the purchaser in just a few minutes.
The MSTRAP comes with full instructions and has a lifetime guarantee.

ONLY $12.00

POSTAGE & HANDLING INCLUDED

THE DONALD STEPHENS COMPANY
M100 Model
Hardware & Software
1962 Pommel Avenue
Las Vegas, Nevada 89119
(702) 739-6113

Circle No. 53 on Reader Service Card

MODEL 100 & NEC PORTABLE SOFTWARE

SCRIBE 3.0 – WORD PROCESSOR – 2.1K

MENU CONTROL WITH DEFAULTS FOR EASY OPERATION. STANDARD PICA, ELITE AND MICRO TYPE FORMATS. WORD PROCESSING WITHOUT COMMANDS. EXPANDED POWER WITH EASY TO REMEMBER COMMANDS TO: RESET LINE LENGTH, MARGINS AND INDENT; CENTER AND PRINT DOUBLE WIDTH TITLES; SEND PRINTER CODES; INPUT FROM KEYBOARD; TURN RIGHT JUSTIFICATION ON AND OFF; SKIP LINES; START NEW PAGE; AND INSERT COMMENTS. PAGINATION, HEADINGS AND NUMBERING. MULTIPLE COPIES AND PERSONALIZE FORM LETTERS. BUFFERED TYPEWRITER OPERATION. PRINT FROM A COMBINATION OF RAM, TAPE AND KEYBOARD. VARIABLE LINE SPACING. CONTINUOUS FORMS OR CUT PAPER. COMPUTES TEXT LENGTH. CUSTOMIZE FOR DOT MATRIX OR OTHER PRINTERS. PRINT QUALITY SELECTION. TAPE WITH 14 PAGE MANUAL.

BOOK – BOOKKEEPING – 2.8K/3.8K

SINGLE ENTRY BOOKKEEPING FOR SMALL BUSINESSES, PROFESSIONALS AND SELF EMPLOYED PERSONS. SYSTEM OF 52 ACCOUNTS BASED ON TAX FORM 1040 SCHEDULE C EXPANDED TO INCORPORATE TRAVEL EXPENSE ACCOUNTING. REVIEW FINANCIAL STATUS AT A GLANCE. PRINT SUMMARY STATEMENT AND ENTRIES BY ACCOUNT. MENU CONTROL WITH PROMPTS. TAPE WITH 12 PAGE MANUAL.

$29.50 EACH

PLUS $2.00 MAILING AND HANDLING

CHATTANOOGA SYSTEMS ASSOCIATES
POST OFFICE BOX 22261
CHATTANOOGA, TN 37422

DEALERS INQUIRE

Circle No. 54 on Reader Service Card

self. You'll need to learn many of the techniques for other activities. Just once, though, I'd like to see some documentation using something different to illustrate the features of a program.

MERGE. The final area Data+ addresses is merge. This lets you create form letters or invoices. By taking data from a Data+ file and placing it in identical letters, you could prepare a multitude of mailings with a minimum of effort.

In addition, you may want to use merge for formatted reports. This would feature text and information stored in your Data+ files. To its credit, this program's documentation shows you how to do both.

Merge works best, according to the documentation, if you create your format file using Write+, another program from the Portable Computer Support Group. As you create a form, you place an up-caret and a field number where you want data taken from the file and placed in your form. Data+ suggests you will need one practice run before your form looks right, but I found I needed as many as four runs before I got things the way I wanted.

The problem is field size. For most letters, this won't be a problem. You will just let the data fall as it comes. However, if you are designing invoices or some other special application, you will need to design and test your form a number of times to insure your data will fall where you want and other data in the same field will not cause inappropriate effects on your printout. By the way, that's no different from the problems you'd have with the mail merging facilities of programs such as WordStar or Apple Writer.

SUMMARY. The program does what it says it will. You will find it a useful addition to your library of Model 100 programs.

In future editions, I would like to see computed fields and the ability to get summary statistics on a field-by-field basis. I also would like to have the ability to transmit data through the communications port in a variety of types. This would let my large capacity data bases read the files on the micro level.

AMPI SPREADSHEET: TOO MANY STROKES FOR MOST FOLKS

TPLAN/NPLAN
AMPI (American Micro Products, Inc.)
705 N. Bowser, Suite 125,
Richardson, TX 75080
214-238-1815
Minimum of 24K required.
Main program, $65.; specialized applications templates, $29.95 each

By SCOTT L. NORMAN

TPLAN and NPLAN are Basic-language spreadsheets for the Model 100 and the NEC 8201A, respectively. Your $65 buys both, furnished on opposite sides of a single cassette.

Spreadsheets are of great interest to many users of small business computers, of course, and Model 100 owners are fortunate in having machines that are attracting the attention of so many software developers. Several spreadsheets are now available, and so it's fair to demand a high standard of performance from these products. Unfortunately, while TPLAN has some worthwhile features, I have to report that TPLAN does not measure up some of the other spreadsheets on the market.

Let me assume you are familiar with the conventional functions of an electronic spreadsheet — automatic calculations on rows and columns of figures according to user-defined formulas and all the rest. This will allow me to focus on three areas where I feel

1	Setup
2	Edit
3	Save
4	Load
5	Print
6	Compute
7	Calculator
8	Computer Menu

Example 1. TPLAN Main Menu.

TPLAN is deficient: the user interface, specific functions, and documentation.

TOO MANY STROKES. TPLAN keeps you extremely busy; an inordinate number of keystrokes are required to perform almost any function. A great deal of switching between operating modes is required before you can obtain results from your spreadsheet.

Let's walk through the process. The program wakes up with a copyright notice (there's a reason for mentioning this) from which a single keystroke gets you to the main menu (example 1).

These choices are to be made with the conventional number keys, not the function keys. To dispose of the easiest one first, 8 returns you to the Model 100 menu.

GETTING ESTABLISHED. The first step in setting up a new spreadsheet is to specify the maximum size of your data array. Selection 1 (Setup) brings up a screen which reminds you that TPLAN can handle up to 90 rows and 26 columns, then asks how many you will need. This is a little unusual in a spreadsheet, although I have worked with statistics programs that need this information up front. (TPLAN itself is quite large, over 13,000 bytes.) In any case, once you have entered these two parameters, you return to the main menu.

Well, not exactly. You are actually returned to the copyright notice! It then takes an additional keystroke just to get back to the menu. This is a hallmark of TPLAN's operation, and frankly it seems unnecessary.

At this point, selection 2 (Edit) lets you see your sheet so you can begin to work with it. The display shows four rows and four columns, each eight characters wide, plus a command entry line and the labels for function keys 1–5. You can turn off the labels if you wish, but this still won't buy you a fifth line of data.

As you might expect, the four arrow keys move the cursor over the spread sheet. Function key 1 also can be used if you want to jump to a remote location. Keys F2–F4 select the three different operating modes you will use when entering and examining figures: F2-vin, F3-out, F4-fil, and F5-hip — which brings up a one-line subsidiary

VIN, OUT, FIL. The vin (view input) mode is probably most useful for examining formulas which you have entered at an earlier time, like the view or edit commands of other spreadsheets. Strangely enough, it is the mode in which TPLAN wakes up, although it is not used to actually enter the data and formulas; that requires the fil (fill) mode, obtained with F4. Fil also is required if you don't like what you see in a formula, and want to change it.

The out mode is the converse of vin; it lets you see the results of calculating with your formulas, rather than the formulas themselves.

Having selected fil you can enter numbers, text labels, and formulas in a fairly conventional fashion. Labels are identified by a leading colon, formulas by a leading plus or minus sign (minus if you want to begin with the negative of a particular cell entry).

There are some formatting problems, though. For one thing, the leading colons don't just appear on the command line; they are actually entered onto the spreadsheet, and even show up on a printout. In addition to detracting from the appearance of your sheet, they take up space, reducing the column width available for a label to seven characters.

It is possible to enter longer labels and then reformat columns for printing, but nothing can be done to alter the appearance of the LCD display. About the best you can do is to verify your text on the command line with vin and go on with your work.

FORMATTING, A BOLLIX. There is no auto-advance feature to move the cursor from cell to cell during entry. If you make a mistake while entering data or formulas, you have the option of entering it and retyping the whole thing, or using the left-arrow key to backspace and erase characters.

If you are designing a spreadsheet that will be used repeatedly, you might want to enter just the row and column heading and formulas, and then save the blank sheet under its own filename. The process, which is the same as saving a completed sheet, is:

- Use F5 to bring up the Help line;
- Use F1 to exit to TPLAN's main menu. Unfortunately, you will get the

AUTOPLOT for the TRS-80

MODEL 100 (16k+)

and the **CGP-115** Color Graphic Printer

A picture is worth a thousand words. Now you can produce color graphs of professional quality effortlessly in minutes wherever you go. Plot tabulated data or functions. Choose from line graphs, scatter plots, bar graphs and more. Axes are automatically scaled and labelled. A few keystrokes select from many options, such as plot size, continuous curves and/or separate marks, multiple curves, optional grid overlay, linear or log plots, numeric integration or differentiation. . . A label-maker program lets you add fancy titles or legends. **AUTOPLOT** is written in BASIC and comes on cassette, together with an exceptionally clear 28-page manual.

Why such a small ad for such a fantastic program? By keeping down our overhead, we can offer you **AUTOPLOT** at the unheard-of introductory price of **$39.50**

Offer good thru Feb. 84

Also available:

AUTOPLOT for TRS-80 Model I/III (48k, 1 disk and CGP-115...$69.50

AUTOPLOT for TRS-80 Model I/III and EPSON printer with Graphtrax...$79.50

AUTOPLOT for LNW-80 (+ Hi-Res video graphics)...$99.50

Please add $3.00 for shipping and handling CA residents please add sales tax. Phone orders, VISA and MASTERCARD welcome.

MENLO SYSTEMS

3790 El Camino Real, Suite 221

Palo Alto, CA 94306, Tel (415) 856-0727

TRS-80, CGP-115, TM of Tandy Corp

Circle No. 55 on Reader Service Card

ACCOUNTS RECEIVABLE PROGRAM

- Accepts data
- Creates account files
- Ages files
- Prints statement
- Prints accounts receivable schedule
- Prints AR ledger
- Automatic date entries
- Enter name and address on each statement
- Ready for folding
- Holds 150 accounts per cassette

$49.95

COASTAL

Office Systems, Inc.

28054 Ermine St.

Canyon Country

CA 91351

Please add $5 for shipping & handling; 6.5% for LA residents; 6% for Cal. residents

Circle No. 56 on Reader Service Card

POWERFUL SOFTWARE
FOR YOUR TRS-80 MODEL 100

APPOINTMENT MANAGER View any monthly calendar. Easy entry, updating or rescheduling of appointments.
SALES MANAGER Provides customer listing of ongoing customer activity, including a reminder for next follow-up call.
TIME MANAGER For professionals who provide service by the hour. Accumulate hourly expenditures within projects. Sumarize billing rates on Model 100 display.
EXPENSE MANAGER Record both personal and business expenses. No limit to number of accounts defined. Print expense summaries.

ONLY $59.95 EACH

All of these programs include a 6 x 9 binder with a tutorial guide and cassette tape made by "The Travelling Professor."

VISA, MasterCard orders: Call our 24-hour Toll-Free number 7 days/wk.

1-800-227-3800, Ext. 233

TRAVELING SOFTWARE™

"FOR PEOPLE WHO ARE GOING PLACES"™

Circle No. 57 on Reader Service Card

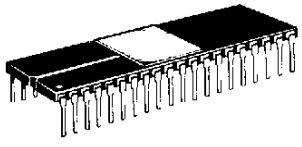
11050 Fifth Avenue NE • Seattle, Washington 98125

8K RAM MEMORY MODULES

EXPANSION RAM FOR TRS-80
MODEL 100 PORTABLE COMPUTER
NEC 8201 COMPATIBLE

$64.95 EACH
3 OR MORE $59.95 EACH

△ EXACT REPLACMENT
△ EASY TO INSTALL
△ INSTALLATION INSTRUCTION INCLUDED
△ HIGH QUALITY MANUFACTURING
△ WARRANTY INCLUDED



PG DESIGN ELECTRONICS
66040 GRATIOT
RICHMOND, MICH. 48062
313-727-2744

DEALERS INQUIRIES WELCOME
TRS-80 is a trademark of TANDY CORP.

Circle No. 58 on Reader Service Card

copyright screen! It takes another keystroke to get to the menu itself;

• Select option 3 to save the spreadsheet to either RAM or tape.

The ubiquitous copyright notice reappears after the save. In fact, it also shows up when you load a TPLAN file into active memory from tape or RAM storage.

COMPUTATIONS. Once your spreadsheet is completely set up, it's time to do the computations. Now another deficiency comes to light; TPLAN has no automatic recalculation capability.

You must return to the main menu via the first two steps outlined above, and select option 6, compute. You can select either row-wise or column-wise calculations, depending on the structure of your data array and formulas. The program gives you a running on-screen tally of which cell is being computed, a handy thing to have for sheets of any size. Of course, this adds something to the calculation time.

And the program is slow enough as is. One of my standard tests for the Model 100 is a little travel expense report form, similar to the printed forms used at my office. The calculations are simple sums; TPLAN took about one minute, 45 seconds to handle a sparsely-populated 12-by-14 array. That's slow.

RESULTS HARD TO FIND. Regrettably, TPLAN doesn't even show you the results as soon as it finishes calculating a spreadsheet. Instead, it displays, you guessed it, the copyright! To see your results, you must get to the main menu and select the edit option to view the sheet. At least it comes up in out mode after a computation cycle, so you don't have to use the function keys again.

As you can probably tell, I'm unhappy with TPLAN's proliferation of modes. It's true the lack of automatic recalculation prevents error indications from cropping up when you set up a formula for which some of the data aren't in place, but that's a scant comfort. Spreadsheets simply shouldn't require so many keystrokes to do everything.

One of TPLAN's strongest points is its substantial library of functions which can be used in your own formulas. There are eight trigonometric

and transcendental functions, and six more for special purposes such as finding the minimum, maximum, or average of a range of cells. These are "big program" features, and very welcome in a Model 100 spreadsheet.

RELATIVE ADDRESSING. But there is an operational problem which I consider little short of horrendous: TPLAN does not handle relative addressing properly.

Remember that one of the pleasures of an electronic spreadsheet is its ability to take a formula which was set up for one cell and replicate it to calculate a whole row or column of results. In general, each cell in the "results" range will depend on the values in different cells (related in a particular pattern, of course), so it is necessary to give the user the opportunity to specify "relative addressing" during their formula replication process. This lets the program adjust the cell references in the formula to ensure that each calculation uses the right variables. TPLAN does this.

What it fails to do is give you the option of skipping relative addressing for any particular cell reference in a formula. Sometimes you would like to use the contents of one particular cell as a constant for a whole string of calculations; then the replication process ought to leave it alone. This is an option which TPLAN lacks; it's either all or nothing when it comes to adjusting cell references.

This is a significant omission. To see how easily a problem can arise, try to imagine a simple spreadsheet where sales figures for a number of different products appear in column B, from cells B05 to B15, for example. Let's total the column and put the sum in cell B18; as a final step, we'll express the sales of each item as a fraction of the total, and put the results in column C.

In TPLAN's syntax, the formula for total sales is +[B05+B15]; the square brackets are the shorthand for performing the indicated computation for every cell between the limits (B05 and B15, here). Remember, this is entered into cell B18.

Now to express individual sales figures as fractions of the total, we need merely divide each one by the contents of B18. The formula for cell C05 is +B05/B18, for C06 it's +B06/B18,

FORTH FORTH FORTH FORTH

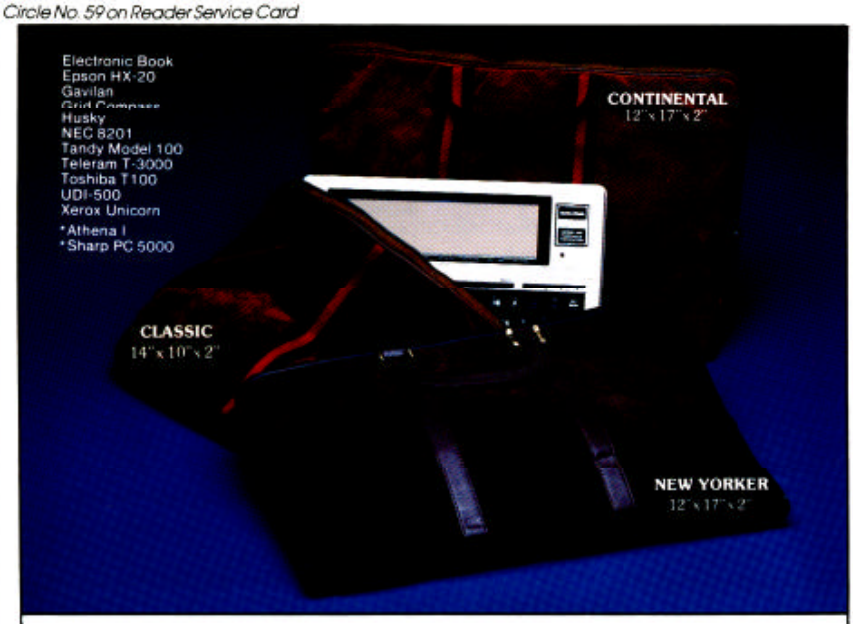
79 STANDARD

now available on the TRS-80 Model 100 and the NEC PC-8201A

ampi

American Micro Products, Inc.
705 N. Bowser Richardson, TX 75081
(214) 238-1815

Circle No. 59 on Reader Service Card



"LUXURIOUS GENUINE PIGSKIN CASES"

Show off your new portable computer in one of these beautiful European-style carrying cases. Made of the finest handpicked pigskins, these custom bags are **stain and water resistant**. They are fully lined and will give you lasting beauty since pigskin is more durable than leather or even vinyl. Indulge yourself and show everyone you appreciate the finer things in life. It's "IN THE BAG!"

Classic	$49.95
Continental	59.95
New Yorker	59.95
*Custom Bag Special Price	

Allow 2-3 weeks for delivery.

Mail Check or Money Order
TO: IN THE BAG, INC.
P.O. Box 1154
El Toro, CA 92630
For further information call direct 714/837-2035

Include $4.00 Shipping. California residents add 6% Sales Tax.
Dealer inquiries welcome

Circle No. 60 on Reader Service Card

and so on. The usual practice is to enter the expression for C05 and then ask for replication via the one-line menu that the F5 key brings up. TPLAN gives you only two options at this point: copy the formula into all of the destination cells as is, or adjust all of the cell references.

THE WRONG CHOICE. The first is clearly the wrong choice for our problem; it would use the expression for C05, for every cell up to C15. But the second choice is equally incorrect, as it gives you no way to keep B18 in the denominator of each expression while changing the numerator. The replicated formula for cell C6 comes out as +B06/B19 , C07 gets +B07/B20, and so on.

To my mind, this greatly diminishes the value of TPLAN's formula replication option.

There are also a couple of problems with the printing routines. TPLAN allows you to suppress row and column addresses, change column widths and row spacings, print either the formulas defining various cells or the results of calculating with those formulas, and select scientific or financial formats for your results. What it lacks is the ability to print a portion of a spreadsheet; you always get the whole thing. If your sheet is wider than 80 characters, you are out of luck when it comes to printing it in two strips. You have to accept a broken multiline format for each row.

DOCUMENTATION. The TPLAN manual is curiously uneven. It goes into fairly good detail about the effects of individual keystrokes for menu selection, but then breezes by formula replication.

There is also what appears to be a good discussion of the effects of various print options, but then the book stops short of telling you exactly how to get the printout! (You must press the F1 which is labelled "Print input" at this point in the program, even if you have selected "Print output," the option which displays results instead of formulas.)

You may recall that option 7 of the program's main menu is something called calculator. This sets up a screen display which simulates the operation of an RPN (Reverse Polish Notation) calculator like those manufactured by Hewlett Packard. It's meant to be used for quick calculations when you need a number for your spreadsheet, I suppose. At any rate, the display is entertaining enough for an old H/P user like myself, but I can't help wondering what the novice must think. RPN takes some getting used to, and once again the documentation isn't much help.

STILL IN THE DARK. As I said at the outset, we are coming out of the dark ages where Model 100 software is concerned. These are serious little machines for serious applications, and I don't think it's unfair to ask professional performance from commercial programs. Working with a Basic spreadsheet can be rather frustrating in any case, merely on the basis of speed; having to use an extraordinary number of keystrokes, and having to think about a large number of modes, are unnecessary obstacles.

PCSG OFFERING IS PROGRAM THAT SORTS IN PLACE

SORT2+
Portable Computer Support Group
11035 Harry Hines Blvd., #207
Dallas, TX 75229
214-351-0564
$29.95

By WOODY LISWOOD

SORT2+ is an easy-to-use sort program. Let me quote the documentation: "Sort2+ does what is known as an 'in situ.' " sort. This means your records are sorted in their own file, therefore Sort2+ is not memory intensive. It only requires 1K additional "free" memory while sorting.

As near as I can tell, that claim is correct. I tried sorting a 10K data file using Sort2+ when the initial display said I only had 3K of additional space left; it worked.

Why is this "in situ" sorting important? Many sort programs work by extracting information from the source file in the same order you want information in the new file. That means if you have a 10K file to sort, you would need at least 10K of additional memory to hold the new file.

Since Sort2+ sorts in place, I would not use my original version of the file. You never know when something may happen. Make certain you save your original to tape before you do any data manipulation affecting your original. No, I did not have any problems when I tested Sort2+, but I have destroyed enough files back in the micro world to use plenty of caution in the Model 100 world.

DOCUMENTATION. The documentation is the same three ring binder type of instructions which accompany all of the Portable Computer Support Group (PCSG) programs. As always, it is easy to read and to the point.

HOW IT WORKS. When you run the program, you are asked for the name of the input screen you created to use with the Data+ program. It then displays the screen for you. You move the cursor to the field from which you want to control the sort and press enter. If the field is alphabetic and you wish to have Sort2+ sort all uppercase entries ahead of lowercase entries, you would press F1 instead of enter. If you are sorting a numeric field and wish it to be in ascending sort, lower to higher, you press F2.

After this you will be asked to identify the data file name. Remember, when you use Data+ you can use the same data entry screen to create many files of data each with a different name.

Sort2+ then looks at the file. If you entered and edited it only using Data+, then things will be okay. However, if you edited that file directly and created some fields not in the standard Data+ format length, Sort2+ will not work and will display an error message that the file has odd length records. Otherwise, the screen will say it is loading a file, then say it is sorting it. A series of numbers will appear. The documentation says these numbers are "indications that the records are being sorted."

SUMMARY. Sort2+ works and is easy to use.

"There's No Time Wiser Than After Dark."

When you're looking for solid, up-to-the-minute information, the best place to search is BRS/AFTER DARK. The one system designed for serious searchers, AFTER DARK offers you more databases citing more authorities on more subjects than any other popular online information service—at the lowest cost.

For only $6 to $20 per connect hour, including telecommunications charges, you can personally access the same online files used by major reference libraries and corporations worldwide. These files contain the latest information on subjects ranging from business management, mathematics and education to health, psychology, chemistry, family planning, and just about everything in between.

The range of databases available keeps expanding all the time. AFTER DARK now brings you the full text of the **Academic American Encyclopedia**, as well as the **Harvard Business Review**.

And for microcomputer buffs, there's a new online Software Directory listing major software packages.

AFTER DARK's simple, interactive language and straightforward logic take only minutes to master. The system is outstandingly comprehensive, remarkably fast, and above all, fun to use. All you need is your classified BRS password and any dial-up system. Then, every weekday from six in the evening until the early morning hours—round the clock on weekends and holidays—you can summon up a wealth of valuable information.

Use the coupon to sign up for BRS/AFTER DARK before another evening goes by. Seriously, it's like having your own university library online at home.

BRS COLLEAGUE
AFTER DARK

☐ Sign me up as a BRS/AFTER DARK subscriber. I understand I will be charged a one-time subscription fee of $75 plus connect hour rates as low as $6 per hour, billed to my credit card account with a monthly minimum charge of $12.

☐ I'd like to know more. Please send me a list of databases and a brochure describing BRS/AFTER DARK.

My profession is _____.

Mail to BRS • 1200 RT. 7 • LATHAM, NY 12110 • (518) 783-1161

Name _____

Address _____

City _____ State _____ Zip _____

Charge to MASTERCARD/VISA/AMERICAN EXPRESS
(Circle one)

Acct. No. _____

Expires _____

Signature _____

Circle No. 61 on Reader Service Card

LAST NIGHT, 39 MUSICIANS HAD A COMPUSERVE CONFERENCE, SO DID 31 M.D.S, 49 SPORTS FANS AND 640 APPLE POLISHERS, AND NO ONE HAD TO LEAVE HOME.

The Electronic Forum. Cheaper than Long Distance and Much More Rewarding.

Every night on the CompuServe Information Service, professional and social groups discuss a wide range of subjects. From what's new in medical technology to what's nouvelle in continental cuisine.

And every day more computer owners who share a common interest are discovering this exciting new way to exchange ideas and even transfer hard copy data.

And besides electronic forums, they leave messages for each other on our national bulletin board, "talk" informally on our CB simulator, and communicate via CompuServe's electronic mail.

But best of all, in most cases, CompuServe subscribers get all of these state of the art communications options, plus a world of on-line information and entertainment for the cost of a local phone call plus connect time.

To become part of this flexible communications network, all you need is a computer, a modem and CompuServe. CompuServe connects with almost any personal computer, terminal, or communicating word processor.

To receive an illustrated guide to CompuServe and learn how you can subscribe, contact or call:

CompuServe

Consumer Information Service, P.O. Box 20212
5000 Arlington Centre Blvd., Columbus, OH 43220

800-848-8199

In Ohio call 614-457-0802

Circle No. 62 on Reader Service Card

An H&R Block Company

TERRY KEPNER

FULL-DUPLEX

Editor's Note: Full-Duplex is dedicated to solving reader's Model 100 problems. Readers needing assistance should address their letters to: Terry Kepner, c/o Portable 100, 67 Elm St., Camden, ME 04843.

COMMUNICATING 100 WITH MODEL I EASY, USE TERM

I'm trying to link my Model 100 to my Model I through the RS232 ports. I'm switching the TERM switch on the Model I RS232 card to COMM, but everytime I try to use the TERM program on the 100, it dies. Can you help?

Won't Talk
Norcross, GA

Communicating between the Model I and the Model 100 is easy; I've been using that combination from the day I bought my MEWS. First, are you using a null-modem connector between the two computers? If you are, you must set the TERM switch to TERM. This sets up the Model I RS232 card for two-way communication to a modem (or a computer through a null-modem connector). The other position, COMM, is used to send data to a communications device like a printer or teletype.

Set STAT to 37E1E. Set your Model I terminal program to 300 baud, 7-bit words, even parity, one stop bit, and XON/XOFF protocol. If you have a null-modem connector in place between the two computers, set the TERM switch of the Model I RS232 card to TERM. If you don't have a null modem in place, set the switch to COMM. When you initialize the two communications programs, whatever you type on one should show up on the other, and vice-versa. If you can't get communication established, start trouble shooting.

First, test the Model 100. Take a small piece of wire and insert one end in the slot marked 2 on the RS232C socket. Insert the other end in the slot marked 3. Make sure the wire fits all the way in tightly. Go to TELCOM, then to TERM. Whatever you type should be echoed back onto your display. What you've done is connect the transmit line of the 100 to its own receive line, so anything typed goes out line two and immediately comes back in line three. If this doesn't work, your Model 100 RS232C port is faulty; have Radio Shack check it out. If it is bad, your logic board will have to be replaced (about $70).

If the Model 100 passes its test, do the same thing with the Model I RS232 port. This is a trifle more difficult since the Model I connector is a male plug. But if you're patient and have steady hands, you can get it to work by holding the wire's ends to the proper pins.

If the Model I card fails the test, you have two possible problems: the RS232 card is bad, or the connections between the RS232 card and the Expansion Interface-RS232 cable are bad. Of the two, I suspect the problem is the connections. Clean the contacts between the EI and the RS232 cable with alcohol and cotton swabs. Remove the RS232 card and clean its edgecard connection the same way.

The Model I RS232 placement design is very poor and causes all kinds of problems. The compartment that holds the card is unventilated and the board gets very warm. Since the connection between the EI and card is a set of press clips with a screw at each end of the connector, the board will gradually warp and pull away from the EI connector distorting or totally destroying the RS232 signal integrity.

On my system, I drilled a series of half-inch holes in the compartment and its lid. I also fine tuned the screws; positions by putting them all in. Then, with the computer and terminal program in operation, I slowly unscrewed each screw, half a turn at a time until keystrokes were properly echoed. (I bought a female DB25 connector and soldered pins two and three together so I wouldn't have to worry about not holding the wire correctly.)

This solution will have to be repeated periodically since the connections of the EI are coated with tin-lead solder and slowly corrode and degrade the connection.

Of the possibilities, I think all of your problems come down to simply poor EI-RS232 connections.

(P.S. to help prevent the RS232 board from warping, try getting a small piece of insulated metal and drilling two holes in it to match the screws on the connector. Then place it over the board and connector and put the screws in place. This should hold the board flat and tight against the connector.)

LOW BATTERY LIGHT BURNS BRIGHT WHEN PRINTER'S ON

The red low battery light comes on when I turn off my Model 100. I've tried several sets of batteries without any change. I have also been using the AC adapter and the light still comes on. However, if I just let the 10-minute limit expire, the machine powers off automatically and the red light doesn't come on. Any advice?

Lit up
Palo Alto, CA

Sounds like you have a printer on that's attached to your Model 100. The Model 100 tests the printer port all the time to see if there's a printer connected and turned on. If there is, it sets some of the parallel data lines high, which is a draw on the internal batteries. When you turn the computer off, it still maintains the high signals on the parallel port if the printer is still on. To let you know that there is a high

drain on the batteries, the red light comes on.

When the computer keyboard "times out," the computer uses a different power-down sequence. The designers apparently thought that anyone who let the unit "time out" would be back soon to use it. In that case, having the red light come on would be ridiculous, since the purpose of the "time out" is to conserve energy while you're distracted. Making you turn off the printer just because the keyboard "timed out" is a needless hassle. On the other hand, if you turn the computer off, you obviously aren't going to return soon, so you should be told to unplug or turn off the printer to maximize battery life.

READER LOSING HIS MIND OVER LOSS OF MEMORY

Whenever my memory is almost full (24K) and I go to delete files in order to add other files, I have the same problem: I have only 11K of memory remaining after deleting everything. The only way to get to the full 21K of usable memory is to remove the operation batteries, turn off the memory backup, and do a hard reset. Does anyone else have this problem?

Lost Memory
San Leandro, CA

▲How are you deleting the files? Are you using any Basic programs? If you are using the select and cut keys to delete files, then your paste buffer isn't cleaned out and is holding memory hostage. Before you leave a text file, push F7 followed immediately by F6. This will set the paste buffer to empty.

If you've been using Basic programs, it's possible that the MAXFILES has reserved several buffers for I/O, or that the HIMEM has been set to preserve high memory drivers.

While in Basic, type MAXFILES = 0 to reduce the number of buffers to zero, then type CLEAR200,62960 to reset HIMEM to the highest address available to user RAM. Type PRINT HIMEM to see the current address; if its already at 62960 don't bother with resetting it.

If these techniques don't give you the full 21K, take your computer to the repair center and demonstrate the problem to the technician. (Put all of your files on tape first, so you can reload and repeat the demonstration as often as necessary.)

A FLIP OF THE SWITCH WILL ALLOW NEC TO PRINT

Is there some kind of DIP switch setting I can use which will let me print .DO files on a NEC 8023? When I try, all I get are carriage returns without line feeds. I have tried everything, but nothing works. I have a Prowriter at home which doesn't have this problem, and I've been told they have the same innards.

Stuck on One Line
San Francisco, CA

▲The problem is your printer expects to receive a line feed with each carriage return it receives. The Radio Shack computers, on the other hand, assume that all printers will automatically execute a line feed and a carriage return when a carriage return alone is sent.

There should be a DIP switch setting in the NEC which is labeled LF/CR on one side and just CR on the other. Carefully check your manual for this switch. I know one has to exist, or the NEC 8023 wouldn't be sold as TRS-80 compatible.

In the meantime, you can always embed a CHR$(138) at the beginning of each line, which will send a linefeed character to the printer. To do this in TEXT, just place GRPH / (which prints as a "not equals" sign).

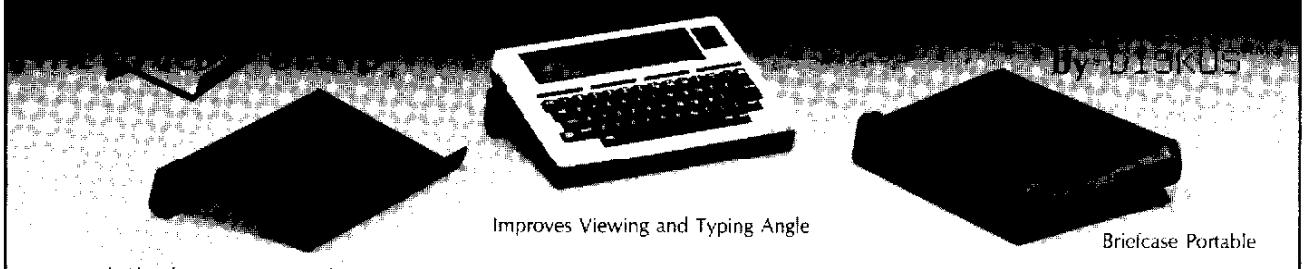
CORRECTED SEQUENCE WILL ENABLE BUFFER

I was wondering if anyone has solved the problem I'm having with my CGP-115 and the Microfazer Printer Buffer: Characters get through the buffer okay, and the copy works, but it doesn't buffer the output. In other words, the computer and printer act as if the buffer weren't in place, with the computer waiting for the printer.

Buffered Out
Temple, AZ

▲I believe the problem is with hand shaking between the three devices, which is established when they are turned on. Turn on the computer first, the printer buffer second, and the printer last. Or, connect them all to a single switch and turn them on all at the same time. I think the buffer interprets the test signal sent by the 100 (to test for a printer when the 100 is first turned on) as the "disable buffering" command from the computer. ▼

PORTABLE COMPUTER DESK TOP STAND



Improves Viewing and Typing Angle

Briefcase Portable

Mail Check or Money Order to: **DISKUS PRODUCTS** 6003 Bandini Blvd., Los Angeles, CA 90040. VISA or M/C call (213) 726-3088 *The POCO STAND* $17.95 plus $2.00 each unit Shipping & Handling — CA residents add 6.5% sales tax.
Patent Pending. © 1983 DISKUS PRODUCTS **For RUSH Delivery** add $2.00 extra — U.P.S. Blue Label

Circle No. 63 on Reader Service Card

—TARGET-WRITER—

Manuscripts, Reports, Proposals, Newsletters, Personalized Letters

Columns with decimal alignment

- UP TO 5 FOOTNOTES[1] PER PAGE typed "in-line" where referenced and automatically moved to the bottom of the page.
- PARAGRAPH TEXT ALIGNMENT under paragraph headings (1., B., 1., a., etc.) and under "bullet" characters of your choice. Paragraphs may be ANY length.
- MAILER feature for customized personal letters with up to 9 inserts while maintaining even margins. Letters for TARGETED names or for an entire list. Plus:
  - SURNAME RECOGNITION
  - MULTIPLE OVERLAPPED ADDRESS LISTS
  - ENVELOPE & LABELS
  - ATTENTION LINE

CENTERING

OR LEFT

RIGHT JUSTIFIED,
and RIGHT ON THE *same* line!

- CHARACTER STYLES (superscript, subscript, underline, compressed, italic, expanded... or whatever your printer will produce) pre-defined to single character controls for on/off operation.

MIXED CHARACTER *STYLES* ON THE SAME LINE while maintaining even margins!

- JUSTIFIED MARGINS
- SINGLE-CHARACTER CONTROLS
- PAGE BREAKS, SIZE AND LENGTH
- DRAFT or FINAL QUALITY
- MULTIPLE COPIES
- Pass-through control for special printer codes
- INCLUDING OTHER FILES
- TAB WIDTH AND MARGIN CONTROL
- HEADING AND PAGE NUMBERING
- CONTINUOUS or LETTERHEAD
- CR/LF option

Program size 8k; in BASIC. Price $69.95; California residents add 6% or 6.5% sales tax as applicable. Price includes cassette, 12 page user guide and shipping. Specify printer type and model when ordering. For other than EPSON, GEMINI, RADIO SHACK printers, enclose copy of control code summary with 5 character styles preferred. To order, send check or money order to:

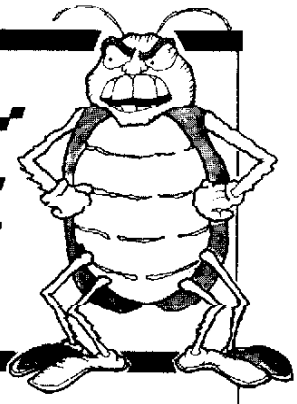
TARGET SYSTEMS
BOX 507, PACIFIC GROVE, CA 93950
408-646-1547

[1] May be superscript, numbers, letters, or symbols.

Advertisers Index

PG	RS#	Advertiser
29	24	Alphaware
6	7	Alpine Data System
9	9	American Micro
71	59	American Micro
C-4	3	American Tourister
31	25	Andreasen
54	43	Arcsoft
12	12	Avion
64	50	Bluestem
73	61	BRS
44	33	Ceres
13	13	Chattanooga Choo Choo
68	54	Chattanooga Systems
69	56	Coastal Office
11	10	Companion Computer
74	62	CompuServe
36	23	Compute Account
37	30	Consultant Services
45	35	Covington
25	21	Custom Software
48	37	Dataccount
51	40	Dataccount
53	42	Datamasters
29	23	DFW
76	63	Diskus
50	39	Elexor
39	31	EVS
37	29	Ft. Worth
58	46	Gunther International
5	6	Holmes
56	45	IJG
71	60	In The Bag
42	33	IQ Tech
36	27	IRD
60	47	Kangaroo
66	52	Kensington Micro
19	17	Key Solutions
25	20	KJM Development
69	55	Menlo
55	44	Micro Byte
32	26	Micro Demon
47	36	Newsnet
1	4	PG Design
70	58	PG Design
17	15	Pocket Programs
3-C	2	PC Support Group
3	5	PC Support Group
21	18	PC Support Group
26-27	22	PC Support Group
63	49	PC Support Group
10	10	Purple Computing
40	32	Radio Shack
41	32	Radio Shack
65	51	Reader Service
51	41	SIG
7	8	Skyline Marketing
23	19	Skyline Marketing
6	5	Source
61	48	Statistical Software
68	53	Stephens
18	16	Susie Software
77	64	Target Systems
2-C	1	Traveling Software
79	65	Traveling Software
50	38	Traveling Software
70	58	Traveling Software
16	14	800 Number

BLACK FLAG



Ron Balonis discovered an error in his QSBOOT.BA program (*Portable 100*, February 1984, page 45) after a 251-record sort aborted on him. The bug "crawled" into his program, Ron writes, after he compressed the software from 500 to 309 bytes.

The corrections submitted by Ron change lines 150 and 200 of the program:

```
150 IF PRTY=44231 THEN 200
200 SAVEM "QSORT.CO",62650,62959,62959
```

Kenneth Overman of Painted Post, NY, adds he found the name of a file to be sorted by Ron's program must be in uppercase and include the extension .DO.

Ken recommends changing :CLS in line 1 to :CLS: FILES: and every PRINT@ statement to PRINT. "These changes put all files on the screen so you don't have to remember the filename," Ken writes.

He also contends Ron used POS and OR as variable names in the program. If this were the case, as Ken points out, the program would not run because those are Basic keywords. However, Ken's comment is an oversight. The variables he is referring to were P0S and IRR0R and were published correctly in the February issue.

Also in that issue, Michael Heim (CIS ID 75665, 1640) points out a typographical error in F. W. Harland's letter recommending changes in Write+ sold by the Portable Computer Support Group. The INPUTF$ in line 5, he notes, should be INPUT$.

In Jake Commander's disassembly program (December 1983, page 41), line 1040 should have a caret after Q+16.

Greg Sprole of Hiddenite, NC, recommends the following changes in Joel and Debby Dinda's music program (November 1983):

- Delete the C before the INT in line 103;
- Remove the carriage return after PRINT in line 2030;
- 190 CLS:IF LEFT$(CH$,1) = "y" OR LEFT$(CH$,1) = "Y" THEN GOTO 120 ELSE END

THE TRAVELING WRITER™

FOR PEOPLE WHO ARE GOING PLACES™

Have you tried other Model 100 print formatting software? Are you looking to have true WORDSTAR* and MAILMERGE* capabilities? Your wait is over—the TRAVELING WRITER™ is now available from TSI!

Compare the following features and capabilites of THE TRAVELING WRITER™:

- Use standard WORDSTAR* "dot" commands and/or no imbedded commands at all.
- Use your "ADRS.DO" file (or any other file) with our MAILMERGE* feature to print personal documents using:
  Name
  —Address
  —City & state
  —Telephone number
  These items can be placed anywhere in the document. You can even include up to 10 additional items in your "ADRS.DO" file to use with this feature such as company name, title, amount outstanding, etc.
- Left and right justification, can mix justified and unjustified text in same document.
- Margins can be set and changed anytime within a document.
- Forced and conditional paging.
- Time of day and current date can be automatically placed anywhere in a document.
- Automatic page numbering at a specified beginning page.
- Automatic numbering of up to 10 independent items such as document section page numbers IV-2, X-8...etc.
- Center text.
- Centered page headings up to 10 lines.
- Output can be directed to RAM (file), MODEM, serial part (i.e., another computer), as well as to the printer.
- Choice of carriage return or carriage return/line feed to allow compatibility with all printers.
- Ability to imbed printer controls for special print characteristics such as bold face and large fonts.
- Actual TAB command (no preset tab settings.
- Ability to produce multiple document copies
- Single, double, triple...etc. line spacing.
- Ability to change "dot" commands to any specified control character.

$49.95

Add $2.50 for Shipping and Handling
VISA, MasterCard, and COD orders: Call 24-hour toll-free order number 7 days/wk.

1-800-227-3800 **ext.** 233

* Introductory price is valid for all orders received on or before February 29, 1984. Price after introductory special will be $49.95.
* WORDSTAR and MAILMERGE are trademarks of MicroPro Corporation.
* THE TRAVELING WRITER is available for the TRS-80 Model 100, NEC PC-8201 and Olivetti M-10.

"FOR PEOPLE WHO ARE GOING PLACES"™

TRAVELING SOFTWARE™

Traveling Software Inc. • 11050 Fifth Avenue NE • Seattle, Washington 98125 • (206) 367-8090

Circle No. 65 on Reader Service Card

©1983 TRAVELING SOFTWARE, INC.

A CASE THAT'S AS ADVANCED AS YOUR COMPUTER!

A. The strong stainless steel tongue and groove frame, designed for moisture and dust resistance, is the only one of its kind.

B. Secure three-point latching is provided by lock and key combined with an easy to use combination lock. Our Sureglide™ cam action swivel closures hold even when the case is dropped.

C. Customized foam interior is die cut to fit and protect your computer. On larger cases the lid is padded with convoluted urethane foam for complete protection. On 20" cases the lid contains a folio designed to hold floppy discs, full 15" printout paper and manuals.

D. A sturdy wall of high impact resistant ABS (used in football helmets and auto bumpers) provides durable outer protection as well as good looks. The inconspicuous exterior of the case camouflages your computer for added security.

E. Comfortable padded handle makes carrying easy. Larger models also have easy glide reinforced wheels and the convenient T-bar pull handle that flips up when you need it, folds down for travel.

American Tourister computer cases offer you a way to carry, protect and camouflage your personal computer or printer in style. They're built with the same high quality and features that have made American Tourister luggage famous for more than 50 years.

Quality control atmospheric, stress and "abuse" tests maintain the strict American Tourister quality standard. And in the event of loss, damage or theft, the unique American Tourister lifetime case registration program will verify the date of purchase for insurance claims. Available in metallic graphite gray and classic black.

FULL ONE YEAR LIMITED WARRANTY
30 DAY MONEY-BACK GUARANTEE!

USE YOUR VISA, MASTERCARD OR AMERICAN EXPRESS

TO ORDER, CALL TOLL FREE **1-800-341-6311**

IN RHODE ISLAND, CALL 401 273-2020.

© 1983 American Tourister®, Inc. 91 Main Street, Warren, RI 02885