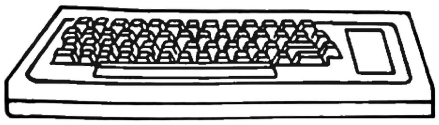
free year's subscription
with $2.50 donation to CIE
(714) 757-4849

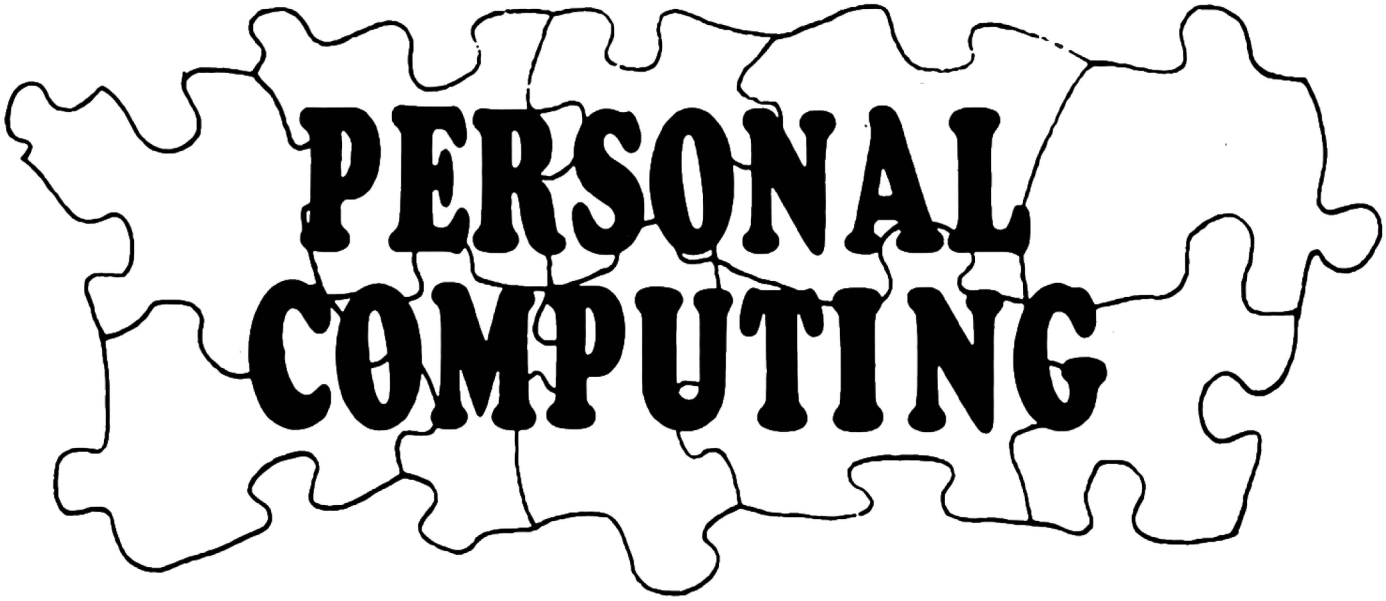
25 cents



S-80 Bulletin AND CLASSIFIED

—READER-OWNED—
NEWSPAPER

Vol. 2 No. 3 Bill McLaughlin, editor April, 1980



PIECES OF THE PUZZLE ARE COMING TOGETHER

The $500 computer has been with us about two and a half years. And that is largely what it has been—the $500 computer, which in most installations has cost far more.

In order to turn a $500 computer into a **personal computer**, we all have sent our money to numerous software vendors, frequently with disappointing results. A whole industry, largely **cottage**, has grown up around that idea of turning the $500 keyboard into a **personal computer. But frequently the only way we've been able to find out if software was any good has been to send money.** Much disappointment!

Although software has been available in some stores, probably the majority of '80 users have to depend on a diversity of suppliers for their independent software. If only they could look to **one dependable source** of independently tested and recommended software.

Starting with this issue, CIE is that dependable source of independently-tested and recommended software.

We're accelerating our efforts to turn the $500 machine into a **personal computer**. We see this new service as not competing with establish dealerships, mail order or local, but of filling a vacuum in under-$100 mass-appeal software.

BUSINESS: (also see Home)

- ☐ Accounts Receivable(A-R), Nepenthe Programs, $69.95 ($74.15CA)
- ☐ Info storage, retrival,The Alternate Source, $16.95 ($17.97CA)
- ☐ Time accounting, billing, Nepenthe Programs, $69.95 ($74.15CA)
- ☐ Aircraft maintenance, Nepenthe Programs, $125.00 ($132.50CA)
- ☐ Language teacher, Acorn Software, $19.5 ($21.15CA)

CIE PEOPLE'S SOFTWARE:

- ☐ Tape 1, Level II, 34 programs, $8 ($8.45 in CA)
- ☐ Tape 1, Level I, 25 programs, $8 ($8.45 in CA)
- ☐ Tape 2 Common Basic Programs (Osborne), Lev II, $8 ($8.45 CA)
- ☐ book, Osborne' Common Basic Programs, $12.50 ($13.25 CA)
- ☐ Tape 3 Lev II 16K People's Pascal program development system,$15.50($16.40 CA)
- ☐ Tape 4, 25 assorted programs, Lev I only, $8 (8.45 in CA)
- ☐ Tape 5, 29 misc. programs Lev II, $8 ($8.45 in CA)
- ☐ Tape 6, Lev II People's Pascal II, $23.50 ($24.88 CA)
- ☐ Tape 7 Lev. II, 31 misc. programs, $8 ($8.45 in CA)

diLithium 32 BASIC PROGRAMS FOR TRS-80:

- ☐ book, by Tom Rugg and Phil Feldman, $15.95 ($16.91 CA)
- ☐ Applications Programs, tape 1, $9.95 ($10.55 CA)
- ☐ Educatikal Programs, tape 2, $9.95 ($10.55 CA)
- ☐ Games Programs, tape 3, $9.95 ($10.55 CA)
- ☐ Mathematics Programs, tape 4, $9.95 ($10.55 CA)
- ☐ Graphics Display, Misc., tape 5, $9.95 ($10.55 CA)
- ☐ Set of all 5, $49.95 ($52.95 CA)

EDUCATIONAL:

- ☐ Language teacher, Acorn Software, $19.95 ($21.15CA)
- ☐ Math, triangle review, J-C Enterprise, $20.00 ($21.20CA)
- ☐ Trig, Nepenthe Programs, $29.95 ($31.75CA)

HOME: (also see Business)

- ☐ Telephone dialer, Blechman Enterprise, $10.00 ($10.60CA)
- ☐ Periodical cross'reference. David Stambaugh, $14.95 cas, ($15.85CA), $19.95 disk ($21.15CA)
- ☐ Electra Sketch, Macrotronics, $14.95 ($15.85CA)
- ☐ Horks Home-Office Records, Edu-Ware, $24.95 cass. ($26.45CA); $29.95 disk ($31.75CA)

LANGUAGES: Basic,

- ☐ 'BASIC3', Personal Computer Service, $24.95 ($26.45CA)

Language Forth,

- ☐ *FORTH Interest Group Membership, $12.00*
- ☐ tiny FORTH, cass. and full documentation, The Software Farm, $29.95 ($31.75CA)
- ☐ tiny FORTH, documentation only, The Software Farm, $9.95 ($10.55CA)
- ☐ FIG-FORTH Installation Manual, FORTH Interest Group, $10.00 ($10.60CA)
- ☐ Source Listing, FORTH Interest Group, $10.00 ($10.60CA)
- ☐ FORTH Dimensions, issues 1-6 as a set, FORTH Interest Group, $6.00
- ☐ Dr. Dobbs reprint, FORTH Interest Group, $2.00 ($2.12CA)
- ☐ 'Using FORTH', FORTH, INC., $25.00 ($26.50CA)

Language Pascal

- ☐ Tape 3, see CIE above
- ☐ Tape 6, see CIE above

MAILING PROGRAMS:

- ☐ Mailing List & Labels, Programma International, $9.95 ($10.55CA)
- ☐ Mailroom Plus, Peripheral People, $75.00 ($79.50CA)
- ☐ Minimail, Peripheral People, $50.00 ($53.00CA)
- ☐ Manipulation, Peripheral People, $39.95 ($42.35CA)
- ☐ Super Auto, Computer Information Exchange, $29.00 ($30.74CA)

UNIVERSITY SOFTWARE: (Printed)

- ☐ Education & Scientific Programs, University Software, $39.95 ($42.35CA)
- ☐ Fun & Games (Vol. 1), University Software, $14.95 ($15.85CA)
- ☐ Fun & Games (Vol. 2), University Software, $14.95 ($15.85CA)
- ☐ Home & Economics, University Software, $24.95 ($26.45CA)

UTILITIES:

- ☐ Autoboot, Peripheral People, $15.00 ($15.90CA)
- ☐ 'DMSONL', Personal Computer Service, $14.95 ($15.85CA)
- ☐ File Manager-80, Nepenthe Programs, $49.95 ($52.95CA)
- ☐ Generalized program utilities, Nepenthe Programs, $29.95 ($31.75CA)
- ☐ 'MLCOPY, Computer Information Exchange, $14.95 ($15.85CA)
- ☐ TRS Mod 1 to Mod 2, Nepenthe Programs, $19.95 ($21.15CA)

WORD, TEXT PROGRAMS:

- ☐ Docu-Writer, Nepenthe Programs, $39.95 ($42.35CA)
- ☐ Formlet, Peripheral People, $35.00 ($37.10CA)
- ☐ Sir Echo, Peripheral People, $10.00 ($10.60CA)

Send to CIE
or call (714) 757-4849

BOOKS from CIE

MY COMPUTER LIKES ME WHEN I SPEAK IN BASIC (1)

Bob Albrecht

This book is about people, computers and a programming language called BASIC. It's an inch by inch, step by step guide to program your computer so it will do what you want it to do. Easy to read and a valuable tool for the computer hobbyist

$3.95 paper

INSTANT BASIC

by Jerald R. Brown

Acclaimed by educators and users alike, this easy-to-read, informal approach to DEC's BASIC PLUS language is the painless way to learn BASIC. Profusely illustrated and designed for self-instruction with your home computer, this is the simple, fun way to approach the first encounter with programming language.

dilithium Press $9.95

MICROSOFT BASIC

by Ken Knecht

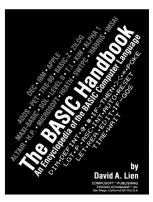
The BASIC book for TRS-80 users! A complete introduction and tutorial on programming in MICROSOFT. Save valuable programming time and effort with this valuable little tool.

dilithium Press $9.95

The BASIC Handbook an Encyclopedia of the BASIC Computer Language

By David A. Lien

This book is unique. It is not a textbook, it is far more than a dictionary. It is a virtual encyclopedia of the Basic language. While not favoring one computer over another, it explains over 250 Basic words, how to use them, and alternate strategies. Since over 50 computers are represented, it is likely to be of help in making about any Basic program run on TRS-80.



Introduction to Basic

By JEFFREY B. MORTON

Outgrowth of notes used in a first-year course taught at the University of Virginia. Divided into two parts, the first half teaches Basic, and the second half is oriented on projects, which include: simulation of a self-reproducing system, computer graphics, the great motorcycle jump, supertanker simulator, area under a curve, world dynamics simulation, simulation of the Rhine test for ESP, computer dating, the Porsche 917 race car, queuing, determination of roots and extrema, optimization by linear programming.

Matrix Publishers, 6x9 paper 206pp $9.95

Beginning Basic

By Paul M. Chirlian

Elementary text is intended for students of high school, junior college or university level who have no experience either in computer programming or with computers. Material is presented in an elementary way so that the beginner will not be confused. However, the book is complete so that the reader can become familiar with all aspects of Basic. Procedures used to actually run Basic programs are considered, including timesharing and batch processing. Students can start running Basic programs immediately. When the beginner has gone through the text, he will be familiar with almost all aspects of Basic.

dilithium Press 5x8½ paper 224pp $9.95

Structured Programming and Problem-Solving with PASCAL

By Richard B. Kieburtz

This book is an introduction to problem solving by computational methods. If it helps you learn how to specify the requirements for a solution, how to formulate, one step at a time, a procedure to follow in generating a solution, and how to describe that procedure so that it may be understood by others, then it will have succeeded in its purpose. For the reader with some experience in computing, who seeks an introduction to the notation of Pascal, Chapters 2 through 8 will satisfy his needs, although the programming techniques and applications of the remaining chapters should also be of interest.

Prentice Hall $12.95

★ A Primer on Pascal ★

By Conway, Gries & Zimmerman

Book offers students a working knowledge of Pascal in the context of an elementary first encounter with computing. It teaches a simple-but-adequate subset of Pascal, making communication with the computer easier and more rewarding for the student. Numerous exercises, problems, and detailed descriptions add to the value and applications of the text.

Withhrop Publishers $10.95

$$MONEY$$

Lemonade or Champagne:

The Anatomy of the Development of a Microcomputer System

By WILL HAGENBUCH

A "lemonade stand" computer business is one operated out of the home. Will addresses the problem of how, without worrying about ABC regulations, to turn that business into champagne-class operation. Things you always wanted to know about the development of microcomputer systems—but did not really know how to ask: problem definition, system analysis, system design, program development, unit and system testing, documentation, implementation and maintenance. With special emphasis on TRS-80 disk-file design: random files, random accessing techniques, optional file structures—and some recommended software solutions.

Nepenthe Programs, 5½x8½ 252pp $2.95

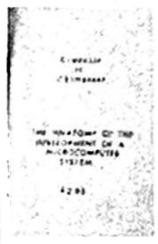
INCREDIBLE SECRET MONEY MACHINE

By Don Lancaster

The Incredible Secret Money Machine is your own small-scale computer, technical, or craft business. You'll find this cookbook and guide essential to give you the key insider details of what's really involved in starting up and going with your own secret money machine.

Another one of those get-filthy-rich-in-five-minutes-of-your-spare-time books? Hardly. First, the author has been there, is there now, and knows whereof he speaks. Secondly, instead of the usual outrageous promises, Lancaster simply shows realistic and proven ways to reduce taxes, never pay a utility bill, to profit on "investments," to get free and even paid-for vacations, to get totally free insurance, to have others pay you for your fun, and to show you the ultimate solution to start-up financing..

Howard W. Sams $5.95



MAKING MONEY WITH YOUR MICROCOMPUTER

by Carl Townsend & Merl Miller

Got an entrepreneur with a micro in your household? Here's the perfect gift. It's chock full of ideas for turning that micro into a money-making machine!

Robotics Press $8.95

(Circle 1 on free-information form)

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COMPUTERS

Level-II 4K System 529.00
Level-II 16K System 659.00
Model-II 64K System 3499.00

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40 Track 5¼ inch drive 359.00
77 Track 5¼ inch drive 549.00
4 Disk Drive Cable 39.00

PRINTERS

Centronics 730 ..... 899.00
Centronics 779-2 ..... 999.00
Comprint 912p 599.00
Integral Data 440G 999.00
NEC 5510 w-tractor 2679.00
TI 810 Basic 1895.00

MISC HARDWARE

Expansion int. TRS-80(Ok) 249.00
Novation Cat modem 159.00
16K Memory Kit 59.00
Leedex Monitor 99.00
Printer Cable for above 49.00
ISO-2 Isolator 54.00
AC LINE FILTER 24.00

STORAGE MEDIA

Verbatiim-box 10-5¼ 25.00
Memorex-box 10-5¼ 22.00
Plastic Storage Box 5.00

OPERATING SYSTEMS

NEWDOS by APPARAT INC 49.00
NEWDOS+by APPARAT INC 99.00
MMS FORTH DISKETTE-PRIMER 64.95

FINE PRINT
TRS-80 is a Tandy Corporation trademark. Use of above operating systems may require the use of Radio Shack TRS-DOS.

ORDERING INFORMATION
We accept Visa and Mastercharge. We will ship C.O.D., certified check or money order only. All orders must include 4 per cent for shipping and handling. Massachusetts residents add 5 per cent sales tax.

The Company cannot be liable for pictorial or typographical inaccuracies.

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MARK GORDON COMPUTERS, INC.
15 KENWOOD ST. CAMBRIDGE, MASSACHUSETTS 02139
617—242—2749

Praises CIE newspapers

This is to extend a word of praise and appreciation for what you folks have done with the CIE publication.

The idea of dividing your publication into two elements is great!

I have limited access to the type information you publish, and therefore look forward to each issue. Programs are plentiful thru many of the other pubs, but the timeliness and variety of information you present is just what we computer hobbyists need.

—Joe ROCKE, 224 W. Benson, Ridgecrest CA 93555.

(We try very hard to pass all letters of praise, but this one was so nice the editor couldn't resist.—Bill)

(Circle 2 on free-information form)

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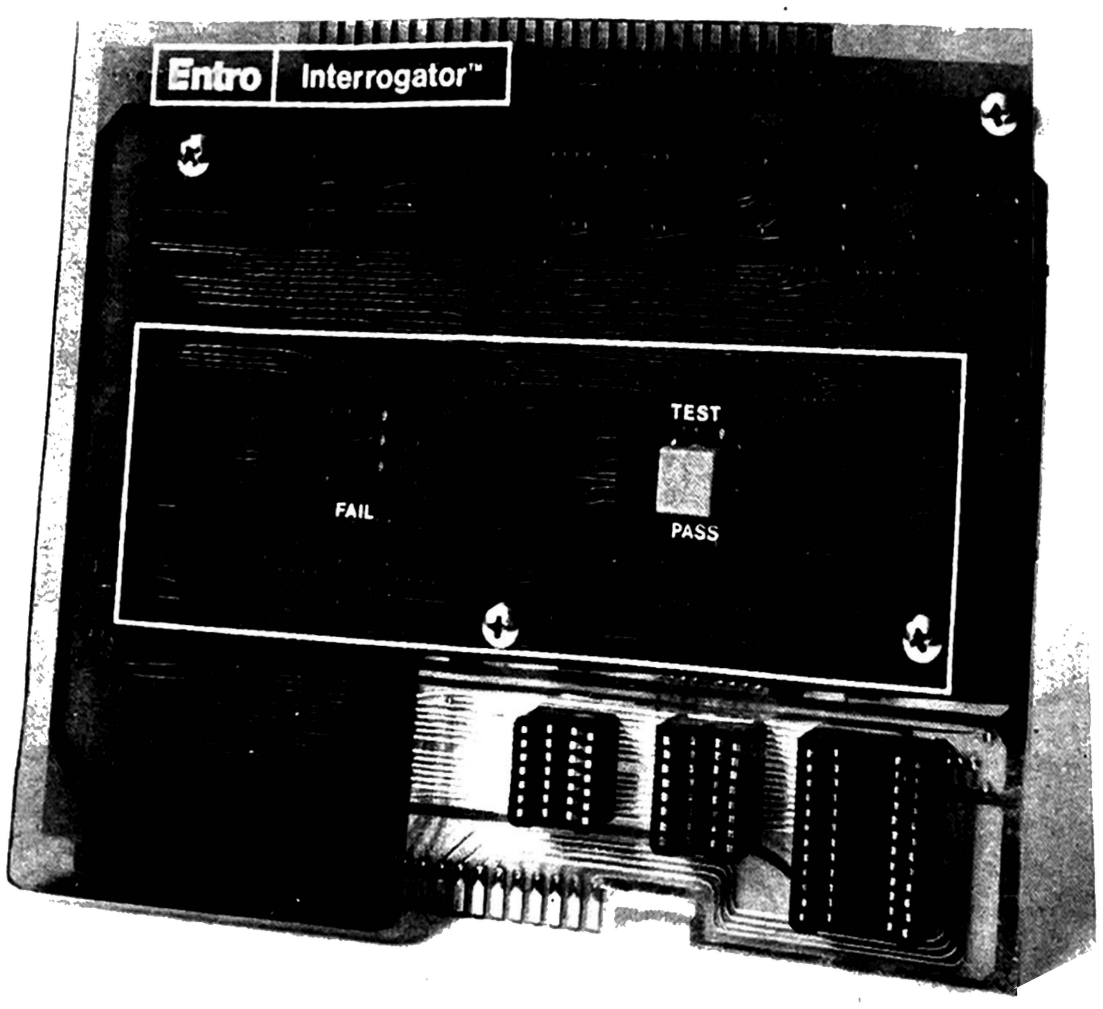


Entro lets '80 test ICs

Now TRS-80 can test integrated circuits.

Entro, a Sunnyvale CA firm, has introduced its 7310 Interrogator. The unit functionally tests all standard and custom 5V digital integrated circuits, 7-segment LEDs, and even small circuit boards with up to 24 leads or test points.

The flexible unit is driven from a single eight-line output port of a host computer and can exercise and test either individual ICs or groups of ICs in a system under test.

Individual ICs are quickly and easily tested in the on-board 14, 16, and 24 leaded ZIF (Zero-Insertion-Force) sockets. Nonstandard sockets can be mated. Base output loads connect through the 26-lead output expansion connector.

The 6310 Interrogator, complete with testing manual, sells for $249. TRS-80 I-O port and software are $99. Delivery is quoted as two weeks. Entro is at 1171 Borregas, zip 94086, (408) 734-4014.

(Circle 3 on free-information form)

Tape 2 updated to match changes in Osborne book

The 77-program People's Software Tape 2 was written from the original 1st edition of the book Some Common Basic Programs by Lon Poole and Mary Borchers.

Tape 2 now has been updated to include the changes published in the third edition of the book, now current.

The programs linear programming, and survey check (map check) have been completely rewritten. A number of other programs have had line changes.

Anyone owning one of the old Tape 2s can have it updated to the new version by sending it, with $3, back to CIE. This charge includes postage and handling.

Those not yet owning Tape 2 can have it for $8, including postage and handling, or $8.45 to Californians (something about the tax). Either call or write.

READ CLASSIFIED:

$99 COBOL, heavy printer, interface for IBM typewriter

People wanting to know where to get that fantastic $99 Nevada COBOL compiler can find the answer by reading S-80 Classified.

The bargain COBOL is just one of scores of interesting software and hardware items for sale at very good terms.

Someone wanting a good heavy-duty printer can probably do no better than pick up the 175-lb. (wow!) Centronics 101A listed in the Classified for just $900, shipping included. IBM typewriter fans will find the source, for just $3.75 (cost of one key top), of information on how to connect the IBM Electronic Typewriter to TRS-80. Detailed instructions and diagrams, and translation codes, are included.

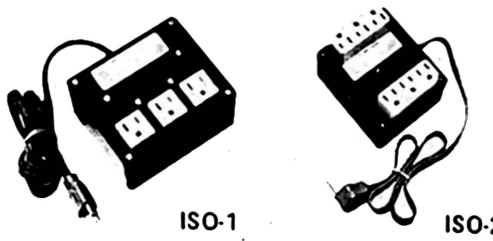
(Circle 4 on free-information form)

DISK DRIVE WOES? PRINTER INTERACTION?
MEMORY LOSS? ERRATIC OPERATION?
DON'T BLAME THE SOFTWARE

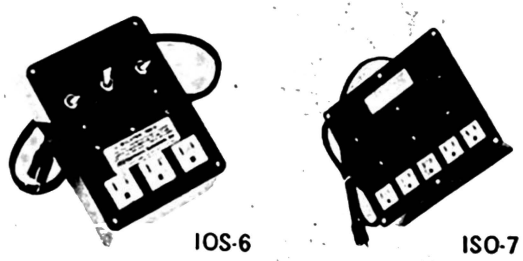
Power Line Spikes, Surges & Hash could be the culprit!
Floppies, printers, memory & processor often interact!
Our unique ISOLATORS eliminate equipment interaction AND curb damaging Power Line Spikes, Surges and Hash.

ESP Clear up Software and System problems ESP

ALL ISOLATORS: • 125 VAC, Standard 3-prong plug
• 1875 W MAX Load - 1 KW/Socket or socket bank
• Balanced Pi Filtered sockets or socket banks
• Spike/Surge Suppression - 1000 Amps, 8/20 usec
(SUPER ISOLATORS offer expended filtering and Spike/Surge Suppression capabilities)


ISO-1 ISO-2

ISO-1A -3 individually filtered sockets .... $ 56.95
ISO-4 -6 individually filtered sockets 96.95
ISO-2 -2 filtered banks; 6 sockets 56.95
ISO-5 -3 filtered banks; 9 sockets 79.95


IOS-6 ISO-7

•SWITCHABLE ISOLATORS - ALL ISOLATOR advantages combined with the versatility, convenience and utility of individually switched sockets. Each switch has associated pilot lite.

ISO-6 -3 switched, filtered sockets $128.95
ISO-8 -5 switched, filtered sockets 161.95

•SUPER ISOLATORS - Cure for severe interference problems. Useful for Industrial applications and heavy duty controlled equipment or peripherals.
• Dual Balanced Pi Filtered sockets
• Spike/Surge Suppression - 2000 Amps, 8/20 usec

ISO-3 -3 super filtered sockets ..... $ 85.95
ISO-7 -5 Super-filtered sockets 139.95

•CIRCUIT BREAKER any model (add-CB) . ADD 7.00
•CKT BKR/SWITCH/PILOT any model (CBS) ADD 14.00

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Dept. CIE

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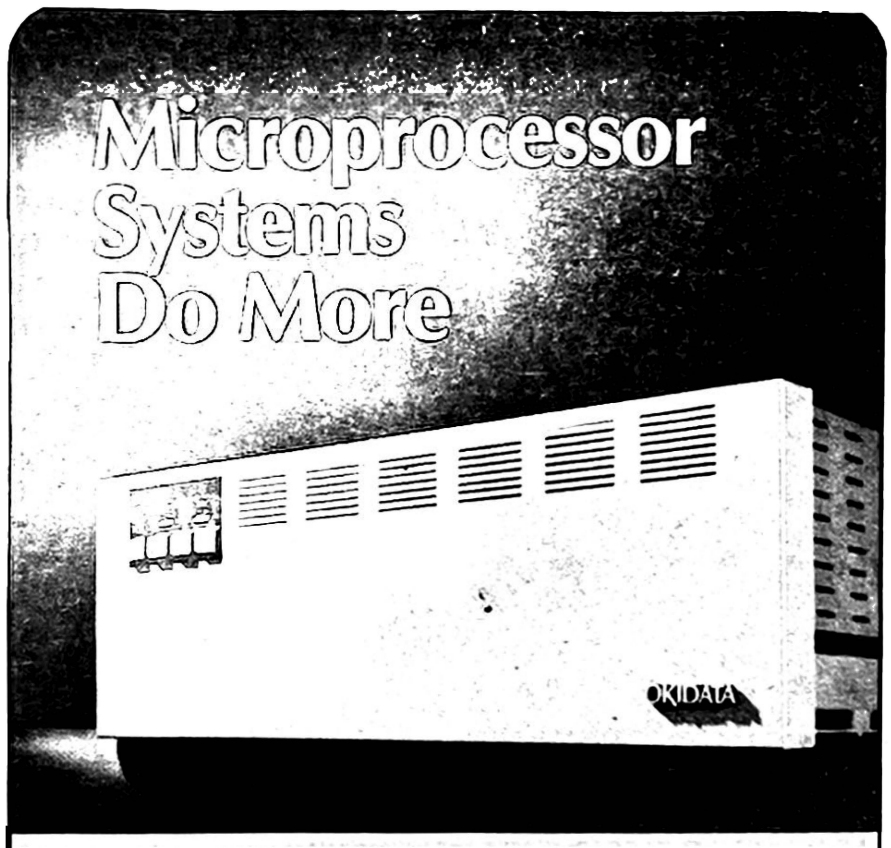

With Okidata Disc Drives

The limiting factor on throughput in virtually addressed microprocessor systems is paging memory access time. Okidata 3300 Series disc drives have moved that limit. Microprocessor systems can do more! The 3300 combines large capacity moving head storage with fast 10 ms access fixed head storage in one economical package—with hard and soft error rates previously available only in minicomputer and larger systems.

The 3300 is available in six models, from 13 to 80 megabytes moving head and up to 2.4 megabytes fixed head. All six use the same set of systems programs and all six fit in just 7" of rack space, including the power supply—Twenty-five percent more capacity than IBM's Piccolo in half the space.

The 3300 makes microprocessor systems more reliable *too. Winchester heads and discs* and Okidata's unique low mass rotary positioner are protected from the environment by the finest air filtration system in the industry.

You've probably read about Okidata "bumping out" those big name disc suppliers. The reason is, when you compare cost of ownership, reliability, OEM support and performance, Okidata disc drives do more.

OKIDATA

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Telephone: 609-235-2600

CLASSIFIEDS GREAT BARGAIN!
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INTERFACE SESSION

June 23-27 at Va Polytec

A workshop on TRS+80 interfacing and programming for instrumentation and control will be held June 23-27 at Virginia Polytechnic Institute and State University, College of Arts and Science.

The program will be directed by Drs Jonathan A and Christopher Titus, Dr. Paul Field and David G. Larsen. Jonathan is author of the Sams book: **TRS-80 Interfacing**, available from CIE Books.

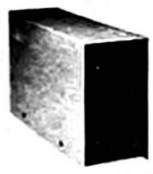
This is a hands-on workshop with participants working with and designing interfaces for TRS-80. For more information contact Dr. Linda Leffel, CEC, Virginia Tech., Blacksburg VA 24061, (703) 961-5241.

ADVERTISE IN S-80 BULLETIN

No other media offers computer marketers so so much for their money: low low rates, heavy return—and fast turnaround. By special arrangement, we've gotten ads in the Bulletin which didn't arrive until the day we went to the printer. And where else can editorial coverage match the industry's fast-pace of movement?

(Circle 6 on free-information form)

$$$ SAVE $$$
TRS-80*/ZENITH/APPLE/ MATTEL ATARI COMPATIBLE HARDWARE



DISK DRIVES

More capacity than Radio Shack 35 Track (80 K Bytes) drives. Fully assembled and tested. Ready to plug-in and run the moment you receive it. Can be intermixed with each other and Radio Shack drive on same cable. TRS-80* compatible silver enclosure.

90 DAY WARRANTY. ONE YEAR ON POWER SUPPLY.

FOR TRS-80*

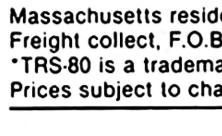
CCI-100	5¼", 40 Track (102K Bytes) for Model I	$314
CCI-200	5¼", 77 Track (197K Bytes) for Model I	$549
CCI-800	8" Drive for Model II (½ Meg Bytes)	$795
For Zenith Z89		
CCI-189	5¼", 40 Track (102K Bytes) add-on drive	$394
Z-87	Dual 5¼" add-on drive system	$1095

DISKETTES — Box of 10 (5¼") — with plastic library case $24.95

16K MEMORY UPGRADE KITS $59.95
for TRS-80*, Apple II, Sorcerer (specify)

PRINTERS

NEC Spinwriter



Letter Quality High Speed Printer
Includes TRS-80* interface software, quick change print fonts, 55 cps, bidirectional, high resolution plotting, graphing, proportional spacing $2479
With Tractor Feed $2679

779 CENTRONICS TRACTOR FEED PRINTER $995
Same as Radio Shack line printer

737 CENTRONICS FRICTION & PIN FEED PRINTER $849
Text quality matrix, proportional spacing

730 CENTRONICS FRICTION & PIN FEED PRINTER $640
7 x 7 matrix

P1 CENTRONICS PRINTER $349
Same as Radio Shack quick printer

PAPER TIGER (IP440) $995
Includes 2K buffer and graphics option

TI-810 $1599
Upper and lower case, parallel and serial, paper tray and TRS-80* interface software

OKIDATA Microline 80 Friction and pin feed $645
Tractor Feed, friction, and pin feed $745

EATON LRC 7000 + 64 columns, plain paper $349

COMPLETE SYSTEMS

TRS-80* LEVEL II-16K with keypad $722
TRS-80* Expansion Interface $274
ZENITH Z89 all-in-one computer $2295
ZENITH Z19 $740
ATARI 400 $549 **ATARI 800** $999
MATTEL INTELLIVISION $299

DISK OPERATING SYSTEMS

PATCHPAK #4 by Percom Data $ 8.95
~~CP/M for Model I, Zenith~~ ~~$145.00~~
CP/M for Model II, Altos $245.00
NEWDOS Plus — with over 200 modifications and corrections to TRS-DOS — 35 Track $ 89.00, 40 Track $ 99.00

CAT MODEM Originate and answer same as Radio Shack Telephone Interface II $157.50

The CPU SHOP

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*TRS-80 is a trademark of Tandy Corporation
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VISA

FCC standards limit computer interference

FCC standards limiting radio-frequency interference from computing-equipment go into effect July 1, but delays or waivers are possible, according to EDN, the electronic design magazine.

"The interference problem of home computers is escalating," EDN quotes the FCC, "and unless the Commission acts expeditiously to head off the problem, we may be faced with an intolerable interference problem similar to CB interference problems of several years ago."

Compliance is going to cost. Apple Computer Inc., has set up a test facility in the home of one of its employes, 25 miles from the plant, in the Santa Cruz mountains. So-called clear-field measurements are necessary, and these can not be made in urban areas. The magazine puts test equipment cost at $70,000 per station, with shielded-room adding $30,000 to the price, and complicating measurement with unwanted reflections and resonances. Outside test labs are expected to charge $1,500 to $3,000 to test even a relatively simple product.

Requirements for commercial equipment will be less stringent than for home equipment. The FCC is said to be especially concerned about emissions from equipment that can be used in the home, because a product such as a home computer is likely to interfere with the radio and TV reception of someone other than its user.

"The incredible thing is that it took years to develop the standard, and people have to comply in a few months," Cromemco President Harry Garland is quoted as saying

(Circle 7 on free-information form)

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PRINT#
Saves data from arrays one element at a time (it can take up to 30 minutes to save 10K of data using PRINT#)

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Saves, verifies and loads all array data at one time at a higher speed (HISPĒD can save array data up to 30 times faster than PRINT#)

HISPĒD
Is actually a collection of several programs designed to enhance the operation of the TRS-80™. (HISPĒD) contains data transfer programs—keyboard programs —hardcopy control programs

HISPĒD features...

- *"Single keystroke" commands (of recorder & printer)*
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- *Printer features work with RADIO SHACK line printer, RS-232 or serial printers using Port 255 (Tape Port)*

TRS 80 TRADEMARK OF THE TANDY CORP

PALOMAR SOFTWARE
170 S. Palomar Dr., Redwood City, CA 94062

☐ Please send me _____ copies of "HISPĒD" Enclosed is my check or money order (sorry, no C.O.D.) for $24.95 ea.(plus $1.00 shipping & handling. Calif. residents add 6% Sales Tax).
☐ Please send me more information about "HISPED"
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DATA BASE MANAGER IDM-IV $69
You can use it to maintain a data base & produce reports without any programming. Define file parameters & report formats on-line. Features key random access, fast multi-key sort, field arith., label generator, audit log. MOD-II version with more than 50 enhancements. $199.

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WORD PROCESSOR 16K $39 32K $49 MOD-II $49
First word processor specifically designed for the TRS-80 that uses disk storage for text. Written in BASIC. No special hardware and text limit. Use for letters, manuals & reports. 32K version features upper/lower case without hardware change and multiple input text files.

MAILING LIST advanced MAIL-V $59.
Fast sort by any field. Multiple labels and reports. 4-digit selection code, new zip code ext., screen input, live keyboard, powerful report writer. MOD-II $99.

INVENTORY INV-V $99.
9-digit alphanumeric key for fast key random access. Reports include order info, performance summary, etc. Calculate E.O.Q. Powerful report writer. MOD-II $149.

All programs are on-line, interactive, random access, virtually bug free, documented and delivered on disks. MOD-I requires 32K, DOS. We challenge all software vendors to offer low cost manuals so you can compare and avoid those high-priced undocumented, 'on-memory' programs. Send $5 for a MOD-I manual and $10 for MOD-II.

MOD-II programs are extensively modified, guaranteed to run with 1 year newsletter & updates. 10% off for ordering more than 1 MOD-II programs.

MICRO ARCHITECT
96 Dothan St., Arlington, MA 02174

CONSULTANT CORNER:

Let's start taking consulting seriously!

By WILL HAGENBUCH

Microcomputers have only been around a couple of years. Maybe it is too early to consider them on a serious level, but a lot of folks are taking them seriously.

I recently visited with two brothers, the owners of a petroleum refining operation. Not a big company, just one that enjoys a nice volume of business. They have come to depend on their TRS-80 for assistance in conducting day-to-day business.

They were showing me their software and I asked where they had gotten it. They answered that they had done it themselves! These brothers recognized early-on that the micro could materially assist their operations. They tried to find adequate software. Nothing seemed to be right. So they flipped a coin and the "loser" became a programmer—and what a magnificent job he has done! But at what expense!

Most small businesses that could successfully employ a micro cannot afford the luxury of taking the time to program it. They need software that works and training assistance for installation and operation. And this is where it is, and will be "at" for many micro-entropreneurs in the next few years.

There are a few pioneers out there (you can recognize them—each one has an arrow in his back) who are beginning to find their role as microcomputer consultants. That is, persons who will acquire (or write) good software and, for a fee, install it and train people how to use it. But, by and large, I would guess that there are more pioneers (two or more arrows) who are actively pursuing reinvention of the wheel. For example, how many payroll systems (in all degrees of sophistication) do you think have been written for micros thus far? But, do you really know where to get one to include with the turnkey system you propose to install?

HEY GUYS, COOPERATE

It seems that most software authors are more afraid of getting ripped-off than are anxious to distribute their product. I recently, for example, tried to find out about a particular software system that I might have been able to install in several locations. However, the author was more interested in securing a notarized affadavit binding me, my assigns, and heirs forever than he was in telling me just what his software would do. No thanks, fella, I've already been ripped-off more than a few times! (Count the arrows)

Equipment manufacturers have been at this distribution game for quite some time. (Well, some of them haven't.) Those that have been have recognized that you can't always sell on your own terms and have, consequently, come up with OEM (Original Equipment Manufacturer's) agreements that I suspicion have kept many of them in business. Why is it that the software world has not adopted a similar philosophy? I have tried to acquire software to be used locally (my little commuting area) but could never seem to make a deal. It would seem that as soon as the vendor was faced with a distribution problem other than one program-one unit price, he lost interest. That is why I have such a large collection of wheels that I reinvented.

The other day I received an inquiry from a gentleman in the great Northwest who explained that he was putting together a turnkey system for a particular business application and requested information concerning any of my products that he might incorporate. He specified, of course, just what software he required to round out the system. A letter similar I might add, to what I have sent to authors in the past and am still awaiting replies.

Now the shoe was on the other foot!

OSP—ORIGINAL SOFTWARE PUBLISHER

This gave me an excellent opportunity to practice the Golden Rule. So I answered the gentleman with my OSP (Original Software Publisher) polisy—my version of the OEM agreement.

Before passing along my OSP policy, let me state my rationale. I figure this way. That gentleman wants to put together a turnkey package for a particular segment of the business world. No doubt, if he is successful in this area, he will branch out into other related areas. But, I seriously doubt if he, as a lemonade entrepreneur like I, will pose a serious threat to me on my turf, which is about 1,500 miles away. I also figure that he should not have to reinvent the wheel for software that I already have up and running. So, here is my OSP policy:

I sent him my documentation for the software in which he expressed interest. (This was a hasty move and I think in the future I will charge a couple of bucks to at least offset publication costs.) Now, you might say, he could take that documentation and rip me off. How? By using it as specifications and recreating all of those 20K lines of code it represents? Bull, he will never get his act together if he takes that route.

I then offered this gentleman the following OSP alternatives: a. If he found anything he was interested in by reading the documentation, he could buy one copy for evaluation at my advertised price. If after evaluation, he determined that he wanted to incorporate my software, he had two alternatives: (1) He could buy it in quantity of threee, individually-packaged with documentation, for 40 per cent off list price (my normal dealer agreement). (2)He could have license to use the software any way he sees fit within and as part of his turnkey system for a one-time charge of three (3) times the regular price.
c. In either of the above alternatives, the original purchase price is credited to the total amount paid me.

There it is, gang, my OSP agreement. I want to throw it out for everyone to shoot at. Please use arrows. If you have some alternative suggestions, send it care of "Consultants' Corner", this publication. Let's start taking the consulting business serious enough to develop some sort of OSP guidelines that we might all live with—equitably.

ADVERTISE IN S-80 BULLETIN

No other media offers computer marketers so much for their money: low low rates, heavy return—AND FAST TURNAROUND. By special arrangement, gotten ads in the Bulletin which didn't arrive until the day we went to the printer. And where else can editorial coverage match the industry's fast-pace of movement?

(Circle 9 on free-information form)

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FUN! Easy
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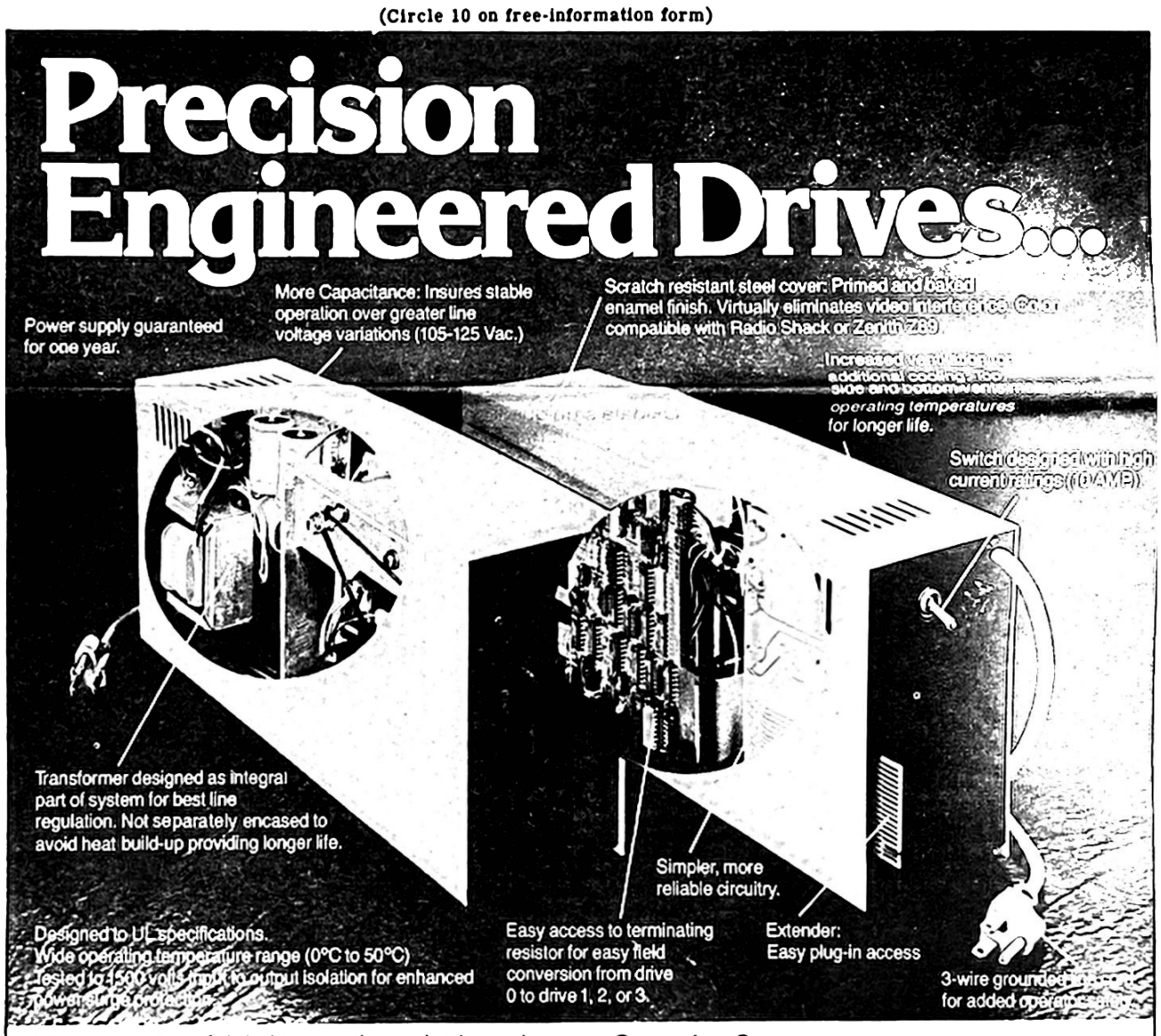

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5¼" DRIVES
CCI-100 40 Track (102K Bytes) for TRS-80* Model I $399.00
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NEWDOS Plus for 5¼", 40 and 77 Track Drives—with over 200 modifications and corrections to TRSDOS $110.00
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Four machine language programs that can be called from your BASIC program via USR functions to access records either sequentially or randomly. The INSEQ-80 programs maintain all indexes and chains for you. Includes reorganization utility to consolidate files. $49.95

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Visit our Retail Stores: Burlington, MA • Charlestown, MA • Framingham, MA • Hanover, MA • Manchester, NH • Providence, RI

master charge VISA

(Circle 11 on free-information form)

HOME CONTROL SYSTEM FOR TRS-80*

Remote control through your existing house wiring. Control lights and appliances with your BASIC programs. **Schedule** the coffee pot, TV, radio, wake-up lighting, bathroom heater, porch lights, etc. with the ease of a carefully thought out scheduler program. Our ultrasonic transmitter connects with your AUX plug, and allows your computer to control the increasingly popular, high quality, BSR X-10 control system, made by BSR (USA) LTD. Our system contains everything your computer needs to control up to 16 of the switch models listed below. Try the system for 14 days and, if not completely satisfied, return it undamaged for a prompt refund.

HC-PTR2 System includes the BSR Ultrasonic Command Console, our transmitter, relocatable machine language handler, BASIC demo program, and user manual. Also the Timing and Schedule program, which gives a screen display of day, date, and time in large characters and a system for easily setting up and updating a large schedule of repeating and special switching events. Provisions are included for fast save and reload of the schedule.

Requires 16K Level II $149.00

BSR Appliance Module, Lamp Module, or Wall Switch ..... each $14.95

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All software is on cassette. Deduct $30 if you already have the Ultrasonic Command Console. If the transmitter malfunctions within 90 days of purchase, mail it to us, and we will repair it free of charge, unless abuse is apparent. Thereafter an $8 flat fee must be included. The fee may be changed without notice. BSR equipment is provided with a one year limited warranty by BSR (USA) LTD.

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SEND CHECK OR MONEY ORDER TO:
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P.O. BOX 1465 • MESA, ARIZONA 85201

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(Circle 13 on free-information form)

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Classified advertisements just three lines for $10 (minimum order per month). Subheads will be provided, as needed (stores, services, Model 2 programs, etc.). Single lines are allowed, which may refer to a vendor, listed under a vendor subhead (thus advertisers are spared unnecessary repetition).

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Level III Basic will do more than any other Level III, at half the price!

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System tape—Faster Graphics, Shift Key Entries, Re-Num, Key Debounce, CLOAD two or more programs, many more features—$24.95 pp

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YES

OUR PRODUCTS WILL ADD A NEW DIMENSION TO YOUR TRS-80*

IMPORTANT: All our products are:
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-used with Level II BASIC 'in' and 'out' commands

•EXPANDABUS $80

Now you can hook up to 5 accessories to the TRS-80 Bus. Can be chained if more than 5 are needed. Not a loose board! 1

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16 channel I/O module, 8 inputs, 8 outputs, 2 relays, 2 opto-isolated inputs. Very easy to use with BASIC. Extensive user's manual included. Sold worldwide for over a year. 2

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The only low cost true synthesizer. Uses BASIC. Generates its own tones and does not tie up the TRS-80. Up to 10 notes per second. Built-in power supply and speaker. Now it's easy to add sound to any program..3

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8 channel ANALOG TO DIGITAL converter. Anything that can be electrically measured can be interfaced to your TRS-80 - voltage, current, temperature, pressure, light level, . . . No assembly language needed.4

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DIGITAL TO ANALOG module. 8 Bit 5% accuracy. Latest technology. Use to synthesize wave forms, program power supply, control motor speed or light levels.. .6

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THE GREEN SCREEN

If you spend more than a few minutes with your TRS-80* you will welcome this inexpensive accessory.

******

First we made it for ourselves. Since we spend many hours with our four systems, we were looking for a way to get a better display, more like the green phosphor of our big brothers. We found that a certain optical band-pass filter gave excellent results. We were so pleased with it that we decided to make it available to others.

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The GREEN SCREEN will:
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- PROVIDE A MORE PLEASING DISPLAY
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The GREEN SCREEN is custom molded to fit nicely over the TRS-80* picture tube. It ingeniously mounts in seconds without any tools.

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TO ORDER: send $12.50 + $2 S&H to:
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Both! The Microline 80 is all business when it comes to performance. It will run all day at 80 characters per second. There are no duty cycle limitations! With a tiny seven pin head that weighs less than three ounces, it coolly and quietly produces letter perfect upper and lower case characters on standard paper in both 80 and 132 column formats.

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Call or write today for the name of your local Okidata distributor! You'll find it's a pleasure to do business with Okidata.

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STATISTICAL PROGRAMS—Permutations and combinations, Mann-Whitney U test, mean-variance-standard deviation, geometric mean & deviation, binomial distribution, Poisson distribution, normal distribution, Chi-square test, student's T-distribution & test, F-distribution, linear correlation coefficient, linear regression, Nth order regression, geometric regression, exponential regression, system reliability, average growth rate-future projections, People's Software Tape 2, $7.50 + 1.50 postage from CIE.

TAX PROGRAMS—Federal taxes, tax depreciation schedule, People's Software Tape 2, $7.50 + $.50 postage, from CIE.

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PERPETUALL CALENDAR — Bio-rhythm, diet planning, decision maker, mailing & addressing, People's Software Tape 1 Lev. 2 (& all but last 2 on Lev. 1 tape), $7.50 + $.50 postage, from CIE.

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ELECTION RETURNS — Car pool, People's Software Tape 5 Lev. 2, $7.50 + $.50 postage, from CIE.

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(Continued on Page 8)

Photo by JERI ENGH, Pine Lake Farm, Star Prairie, WI 54026

Computer stay-at-home

With TRS-80, the personal computer revolution that to some extent was clustered in the urban areas has spread its benefits into the hinterlands.

Candace Lowe, who hikes to work in the summer and skis there in the winter, operates a TRS-80 Model II in her renovated barn office in rural Star Prairie SI. She handles word processing (thanks to Diablo printer), accounts receivable and payable, plus the mailing list for **The Photoletter**, a national newsletter that pairs picture buyers and photographers across the country.

'ten years ago," she says, "it wouldn't have *been possible to live miles from nowhere and still find a stimulating job just down the road."*

Photoletter is at Dept. 257, Osceola WI 54020 (715) 248-3800.

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FREE "BONUS" Programs with purchase of any of our software. NEW Level III Basic will do more than any other Level III, at half the price!

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System tape—Faster Graphics, Shift Key Entries, Re-Num, Key Debounce, CLOAD two or more programs, many more features—$24.95 pp

"MLCOPY"
System Tape allows placing any number of System tapes on one cassette—$14.95

"DMSONL"
Basic six-part program—Edit, Monitor, Disassemble and more—$14.95 pp

PERSONAL COMPUTER SERVICE
1515 Andrews Drive
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(Circle 16 on free-information form)

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Are you giving away valuable programs because of copyright application difficulties?

We provide all necessary information so that for just $10 you can copyright deserving programs. Send $10 to:

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All chips are new, top quality, factory fresh, tested and guaranteed for 6 months (Replaced with no questions asked)

2 sets 16K memory only $149

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(714) 599 - 9237

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NEW DISK APEX OPERATING SYSTEM FOR THE APPLE®

Fully Professional DOS for the Apple II The result of two years of extensive development, APEX provides a complete program development and file management system, both powerful and useable. A comprehensive command set allows the user to perform almost any imaginable disk operation. Here are some of APEX fetures:

- Command structure similar to CPM and main frome systems Contains 20 command words, with ability to treat external programs as transient commands to the operating system
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- Safety features to protect against accidental data loss. Features include backup files, directory, read-after-write & limit checks.
- 4 times faster than CPM.
- Auto default structure eliminates tedious typing by automatically setting up command strings, file names, etc.
- Functional on both single and multi-drive systems. Includes utilities for file copy.
- Device handler structure for interfacing peripherals.

The APEX package includes all of the tools for a complete assembly language development system, high speed two pass resident assembler and a powerful macro editor

The complete APEX package with operating system, assembler, editor and manuals, also includes utilities to maintain files on single or multiple drive systems

$99

RELATED SOFTWARE
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NEWDOS/80
A NEW enhanced NEWDOS for the TRS/80®

Powerful Disk Operating System for the TRS-80®, designed for the sophisticated user and professional programmer who demands the ultimate.

NEWDOS/80 is not meant to replace the present NEWDOS 2.1 which satisfies most users, but is a planned enhancement, which significantly extends NEWDOS 2.1's capabilities Compatible NEWDOS/80 is supplied with NEWDOS 2.1 and includes enhanced NEWDOS+ utility programs Some of the features are:

- New BASIC commands with variable record lengths up to 4095
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- *Security boot-up for BASIC or machine code application programs.*
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- Compatible with NEWDOS & TRSDOS.
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$149

LIMITED UPGRADE OFFER

NEWDOS owners up-grade to NEWDOS/80 and receive trade in allowance toward purchase of NEWDOS/80 by including in your order:

- **Serial # on your NEWDOS diskette**
- **Where purchase, amount paid.**

In most cases that purchase price will be subtracted from the price of NEWDOS/80 Add $10 for postage and handling (Limited offer—good for 30 days only)

SAVE ON APPLE II 16K

FREE MEMORY UPGRADE KIT TO 48K WITH PURCHASE OF APPLE II 16K (MTI only) $1195

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TDH-1 Dual sided drive, 35 track	$499
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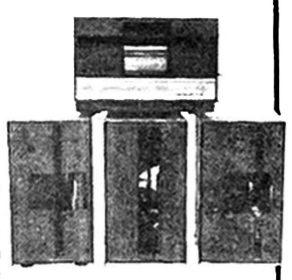

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(Continued from Page 6)

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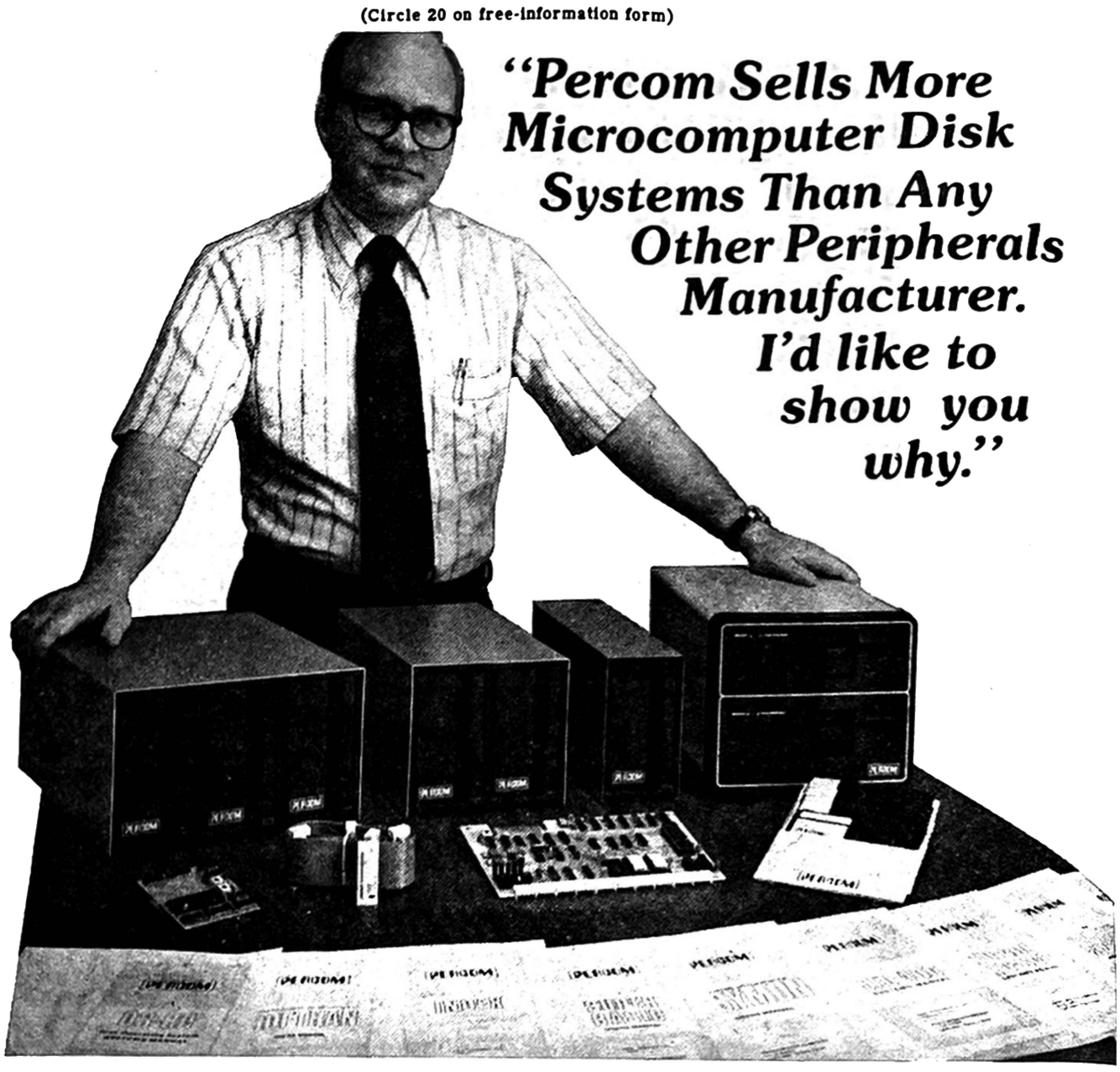

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(Continued on Page 10)

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WHAT'S HAPPENING?

(with the "Original" TRS-80® Users Journal)

Our Mar-Apr 80 issue tells about how one person improved the resolution on the '80 by a factor of 6! The photo on the cover of that issue tells the story. There is also a complete listing in BASIC of a disk-based file system, using random files and hash codes. Also in BASIC is a program that compares dollar values between any years from 1881 to 1980, and it gives comparative cost figures for housing, transportation, food, etc. (it is in L2 16K). In the "fun and games" department, there is a complete BASIC listing of a game where you play nine games of tic-tac-toe at the same time - the computer is your opponent. In the utilities department there are two methods of creating graphs, a program to give you a HEX dump of memory, and - a program to give you number conversion from decimal/octal/hex/binary. In assembly language, there is a complete listing which allows you to selectively scroll any portion of the screen, while leaving the rest of it intact! Plus, there are the regular features: A tutorial on the Editor/Assembler for beginners; New Products; Reviews and the Business Section. It isn't called the "TRS-80 Users Journal" for nothing! It is published regularly every two months, and costs just $16.00 per year in the U.S. Get a sample current issue (first class mail) for just $3.00. Use your VISA or Mastercharge and call (206) 475-2219 today! Or, send check or Money Order to: 80-U.S. Journal 3838 South Warner Street, Tacoma, Washington 98409

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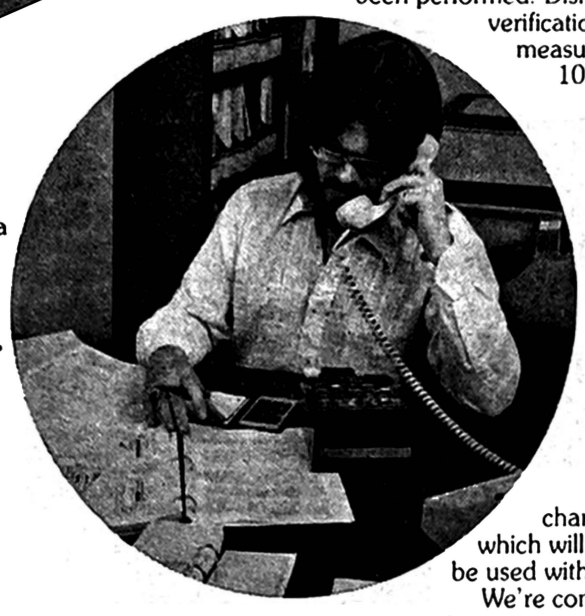

"Richard's making final changes to a disk controller which will allow Percom drives to be used with yet another computer. We're constantly developing and introducing new products that extend and enhance the value of Percom systems."

"Slipping a circuit board through the eye of a needle would be easier than slipping a cold solder joint past Beverly. These are four-drive LFD-400/800 disk system controllers she's inspecting."

Here's preview of Disassembled Handbook Vol. 2

By ROBERT M. RICHARDSON
Chautauqua Lake NY 14722

Volume II of the handbook has grown like "Topsy", and is largely a collection of essays and programs that were written to specifically expand on a number of points that were either glossed over or skipped entirely in Volume I. A number of the chapters attempt to answer specific questions raised by readers of the first volume, largely via developing programs written in either Basic or assembly language to illustrate the points raised.

The reader of Volume II is expected to have fully mastered the information in Volume I.

Disassembled source and object code without comments is like a ship without a rudder or a kite without a tail. There it is, but we have not the slightest idea of where it is going.

Even our disassembler cannot discern the difference between constants, address-table entry points and data lists which it disassembles and prints out as utter meaningless-misleading garbage.

Our favorite case in point is the opcode and operand for EX...AF,AF' which the disassembler dutifully prints out at numerous locations including: 005AH, 1479H, 1619H, 18BAH, 18BCH, and so forth. In actuality, the alternate register pairs are never used in Level II ROM, which is a decided plus for us duffer TRS-80 programmers. We may use them any time it is convenient without malice aforethought and unknowingly foul-up some important CALL function's operation or other.

Conversely, just how do we ever hope to understand how the Level II ROM functions we are CALLing work if we cannot trust what the disassembler is telling us? We are glad you asked that question, Gridley, as that is what Volume II of this handbook is all about.

Though by no means a complete anthology and discourse on each and every Level II ROM function available to us we will cover in considerable depth the ways and means with which integers, single precision-floating point, double pecision-floating point, strings and string-arrays are handled and storesd in memory.

SUMMARY OF CHAPTERS

Chapter 1 starts off quite logically by presenting a system for disassembling Level II ROM using Level II Basic's PEEK function. The entire Z-80 694-each opcodes and instruction set are covered using the TRS-80's decimal PEEK format. As such, those readers without disassemblers may decode Level II ROM. (An inexpensive disassembler is contained on People's Software Tape 7, along with about 30 other programs—Ed).

Chapter 2 is a partially-disassembled listing of Level II ROM with approximately 256 object codes and 265 source codes blanked out to protect the copyright owners. It is included as a necessary reference for those TRS-80 users who have already paid the licensing fee by purchasing Level II ROM. To others it is totally useless.

Chapter 3 familiarizes the reader with the VARPTR function as used with integers including locating in MEM the variable's number NT (number type), identification, and decoding its value. A few assembly-language ROM CALLs somewhat similar to the VARPTR function are discussed.

(Continued on Page 11)

PEOPLE'S SOFTWARE: Here's index to programs

	BUSINESS	Tape
Annual Earnings		4
Annual Interest Rate, Loans		2
Average Growth Rate, Future Projections		2
Business Percentage		4&5
Cash Flow		1
Cash Register		4
Check Writer		2
Depreciation Amount		2
Depreciation Rate		2
Discount Commercial Paper		2
Double Declining Depreciation		2&4
Dow Jones Industrial		1
Dow Jones Industrial Forecast		1
E-Index		4
Earned Interest Table		2
Effective Interest Rate		2
Federal Taxes		2
Future Value of Investments		2
Future Value of Regular Deposits		2
Initial Investment		2
Inventory		1
Inventory and Change		1
Inventory Control		4&7
Journal Ledger		1
Last Payment on a Loan		2
Loan Amortization		1
Loan Progress		7
Mailing List		5
Minimum Investment for Withdrawals		2
Mixed Monthly Sales Report		4&7
Mortgage Amortization Table		2
Mortgage Calculation		1
Mortgage Payments		5
Nominal Interest Rate		2
Payroll		1&4
Principle on a Loan		2
Regular Deposits		2
Regular Payment on a Loan		2
Regular Withdrawal from Investments		2
Remaining Balance on a Loan		2
Revolving Charge Account		1
Sales Receipt Tally		1&4
Salvage Value		2
Straight-Line Depreciation		1

(Continued on Page 15)

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(Continued from Page 8)

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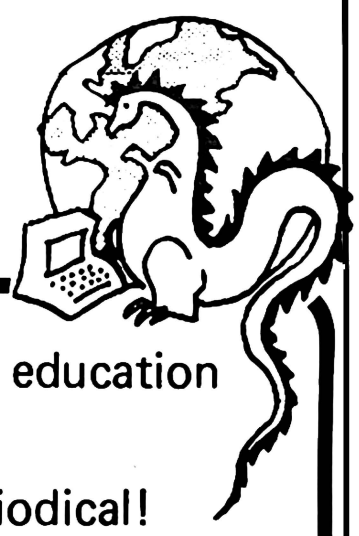

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(Continued from Page 9)

Chapter 4 addresses the VARPTR function when dealing with strings and string arrays of any depth. Strings are handled quite differently from integers and singe-double precision numbers. String identification, location, and recall are covered in depth.

Chapter 5 investigates and explains a previous "black hole" in virtually every microcomputer book written to date by covering single and double-precision floating-point normalized decimal handling, memory storage, and decoding from every aspect conceivable.

Chapter 6 covers an equivalent "JKL" LPRINTing all of the video display on the line printer, program, and fully explains how it operates on non-disk, non-NEWDOS+, TRS-80 systems. (With Newdos, if you want hard copy of anything on the screen, just simulatniously hit "JKL" keys and the lineprinter starts printing out the screen. Ed).

Chapter 7 is the "big daddy" of assembly language data movemnt programs for both video and non-video RAM memory. The highlights of this chapter teach the user fundamental video memory management and semi-automatic RAM storage and recall techniques.

Chapter 8 is the "son-of big daddy" assembly-language data movement program for video and RAM memory. In actuality, this chapter allows the reader to create two completely separate video displays with separate inputs, scrolling, MEM storage if desired, recall, and shift from TRANSMIT to RECEIVE using the 'Clear' key as the transmit-receive switch. This program is designed expressly for use with telephone MODEMs, Morse code, and-or radio teletype programs where the split-screen capability it offers is a decided plus...unless you prefer having two separate TRS-80s doing the same job.

Chapter 9 is the only chapter that includes data repeated from Volume I. It is included in Volume II so that readers do not have to refer back and forth between two books for both CALL addresses and important ancillary CALL functions such as data movement, compares, data conversions, and math routines.

Chapter 10, 11, 12, 13 contain two major Basic programs that can help the Level II programmer check out his mastery of the language. These are a Morse code transmit and *receive program, in* 16K, and one that lets the TV buff aim an antenna at the major TV satellites. Chapter 12 contains self-test questions, and the final chapter is bibliography.

About the author

Robert, author of the immensely popular "TRS-80 Disassembled Handbook" Volume I ($10 postpaid from CIE, 69 pages 8½x11—Volume II is about 160 pages, and $15), was a USAAF Aviation Cadet during World War II, and later a P-51 Mustang fighter pilot and one of the first USAAF jet fighter pilots.

He served as a radiological engineer at Eniwetok Atoll in 1950 and '51 during a number of atomic tests and the first H bomb test, which he says was spectacular.

Richardson is a former flight captain for United Air Lines, was a co-founder of Litton Industries' commercial inertial navigation division, president of ITT Navigator Systems, a division of International Telephone and Telegraph Corp., and later, World-wide Product Line Executive for ITT World Headquarters commercial aviation and marine electroniics activities.

Richardson is a prolific author in the fields of aviation electronics, microwave engineering, and computer technology. Besides Disassembled..., he has recently written "The Gunnplexer Cookbook—A 10 GHz Microwave Primer". He has since 1952 been a member of the Institute of Electrical & Electronic Engineers, and a senior member since 1960. He alternates seasons between racing his "C" scow sailboat and snowplowing a half-mile driveway to his home on the lake front.

April-May 'Computing' tests products

Computer Faire, optimistic scheduling, typesetter troubles and a scarcity of advertising combined to push the April S-80 Computing into the April-May time frame, but a great many interesting articles have come in.

We're planning to test the Archbold double-speed clock kit, and his reverse video, a couple of CRT faceplate filters to increase contrast, a Stringy Floppy, $5 telephone dialer, and hopefully more on connecting TRS-80s together

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THE COMPUTING TEACHER

The Computing Teacher is a journal for educators interested in teaching using computers and teaching about computers. It is aimed mainly at the pre-college level, elementary and secondary school. Each issue carries material of interest to elementary school teachers, to secondary school teachers, and to teachers of teachers.

The Computing Teacher is published by the International Council for Computers in Education, which is a non-profit corporation dedicated to the increased and improved use of computers in education. The journal also carries material on use of calculators.

The Computing Teacher will publish seven issues during the academic year 1980-1981. The publication is now in its seventh year.

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Based on the growing popularity of Pascal as a programming language, numerous articles, language forums and letters from past issues of BYTE magazine have been compiled to provide this general introduction to Pascal. In addition, this book contains several important pieces of software including two versions of a Pascal compiler - one written in BASIC and the other in 8080 assembly language; a p-code interpreter written in both Pascal and 8080 assembly languages; a chess playing program; and an APL interpreter written in Pascal.
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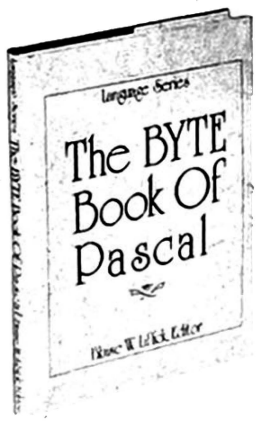
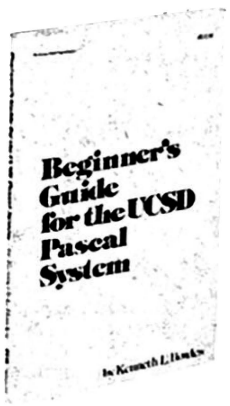


YOU JUST BOUGHT A PERSONAL WHAT?

by Thomas Dwyer and Margot Critchfield
Whether you are a novice programmer or an experienced computer user, this book is filled with practical ideas for using a personal computer at home or work. It will take you through the steps necessary to write your own computer programs, and then show you how to use structured design techniques to tackle a variety of larger projects. The book contains over 60 ready-to-use programs written in Microsoft and Level II BASIC in the areas of educational games, financial record keeping, business transactions, disk-based data file and word processing. **$11.95 pp. 256 ISBN 0-07-018492-5**

Beginners Guide for the UCSD Pascal System

by Kenneth Bowles
Written by the originator of the UCSD Pascal System, this highly informative book is designed as an orientation guide for learning to use the UCSD Pascal System. For the novice, this book steps through the System bringing the user to a sophisticated level of expertise. Once familiar with the System, you will find the guide an invaluable reference tool for creating advanced applications. This book features tutorial examples of programming tasks in the form of self-study quiz programs. The UCSD Pascal Software Systems, available from SofTech Microsystems Inc, 9494 Black Mountain Road, San Diego CA 92126, is a complete general purpose software package for users of microcomputers and minicomputers. The package offers several interesting features including:



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BOOKS from CIE

TRS-80 Disassembled Handbook
By R. M. Richardson

Will revolutionize assembly-language programming for TRS-80. Its very unique concept begins with a number of short demonstration programs that derive for the user all Basic functions' CALL addresses in ROM plus a number of chapters demonstrating their use in simple assembly-language programs. After digesting book, reviewer was able to write double-precision arithmetic, trigometric, log, exponent, etc. program in minutes, with only a few lines.

Richcraft Engineering $10

Programming the Z80
By RODNAY ZAKS

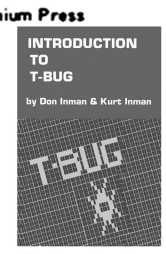
The book ahs been designed both as an educational text and as a self-contained reference book. As such, it can be used as a complete introductory book on programming, ranging from the basic concepts to advanced data structures manipulations. It also contains a comprehensive description of all the Z80 instructions as well as its internal operation, and should provide a comprehensive reference for the reader who is already familiar with the principles of programming, but wishes to learn the Z80. This book is the result of the author's extensive experience in the field of education and programming. It has been designed to be clear and easy to read. All concepts are explained in simple yet precise terms, building progressively towards more complex techniques. After reading this book, the computerist should have acquired all the basic skills required to program not just at the elementary level, but in most practical cases.

Sybex, 5½x8½ paper, 625pp $14.95

INTRODUCTION TO T-BUG
by Don Inman & Kurt Inman

At last a comprehensive guide to the TRS-80 machine language monitor operations. By the author of our best selling INTRODUCTION TO TRS-80 GRAPHICS Bound to be the best of its kind.

Dilithium Press $6.95



TRS-80 Interfacing, book I
By Dr. Jon Titus

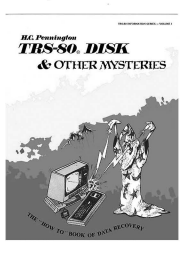
Details hands-on experiments in the use of the various signals and buses to design interfaces for transferring information or control signals between the TRS-80 and external devices. Uses BASIC, not assembly language programming, and an inexpensive breadboard to access the TRS-80 bus. Another in the Blacksburg Continuing Education Series by the authors of the BUGBOOKS. Write for infomation on the series.

Howard W. Sams $8.95

TRS-80 Disk & Other Mysteries
By Harvard C. Pennington

TRS-80 users, this is not only a worthwhile book but a great book. It's great for two reasons: It presents information on TRS-80 disk organization and file management that can be found nowhere else! Secondly, it is available when you need it—now! The book discusses how disks are organized, how space is allocated, how files are located on disk, and the tools that one may use to look at disk files and directories. Not only does it provide a general discussion of these topics, however, but it also gives clear information on how to fix disk problems such as lost files, Electric Pencil bugs and other snafus. This is a clearly-presented book packed with good disk information—Wm. Barden Jr.

IJG Computer Services $22.50



From Dits to Bits: A personal history of the electronic computer
By Herman Lukoff

In From Dits to Bits the reader is given a very personal look behind the scenes at the Moor School at the University of Pennsylvania. There, in the late 1940s, a group of young scientists struggled in their quest to devise a technology that could one day relieve man of the burdens which so encumbered his imagination and wasted his free time. This book says, perhaps above all other things, that the roots of this technology are grounded in motives and ideas as altruistic as those of any artist. Here are recounted the problems, successes and failures experienced by the author as he worked alongside John Mauchly, Presper Eckert and a number of others who are today recognized as the prime innovators in this field. This is the story of the people whose efforts and imagination gave birth to man's most significant extension of his own potential—the computer.

Robotics Press $12.95

Recommended

RUNNING WILD: The next Industrial Revolution
By Adam Osborne

Within the next decade, roughly half of today's jobs will change drastically, or disappear altogether; robots will take over assembly-line jobs from blue collar workers; microelectronics devices will perform many white collar duties as well. New technology will usher in the miracles of bionics; it will increase communications and, possibly, make real every man's dream of more leisure than labor. At the same time, microelectronics will open new horizons for computer crime. Will the coming years prove to be a dream or a nightmare? Understanding the facts of microelectronics' advancements could make the difference. Running Wild has been written for the layman, to educate and help prepare today's citizen for the coming 25 years.

Osborne-McGraw Hill $3.95

QUIKTRAN: Quick Fortran Programming
By C. Kevin McCabe

This book is written by a user, for a user. The book emphasizes simplicity without sacrificing utility. No knowledge of electronics, data processing, or math beyond algebra is assumed or required. The text is divided into three parts. The first presents the most elementary Fortran statements. This may well be enough to permit you to modify "canned" programs and do other simple programming tasks. In the second part you will become fully acquainted with the language, including such things as sub-programs, character manipulation, automatic logre and arrays. The last part picks up the odds and ends.

Dilithium Press $11.95

Software design for Microcomputers
By Carol Anne Ogdin

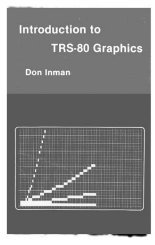
Emphasizes software design which must precede its implementation. Software is presented as a bonafide discipline, rather than a loose collection of tricks and gimmicks. Although presentation of theory is avoided, sound theoretical principles underlie the entire presentation. Up-to-date techniques are provided, among them structured programming and contemporary management techniques. Many realistic examples of specific software design strategies are provided. A Pascal-like design notation and Basis-language coding are both used at different stages. Emphasis is balanced between the design and data structures and the design of procedure structures.

PRENTICE HALL $9.95

INTRODUCTION TO TRS-80 GRAPHICS
by Don Inman

Our best selling TRS-80 book to date and no wonder From line drawing through geometrics and moving figure animation its graphics made simple with explanation and examples A must for the TRS-80 owner!

dilithium Press $8.95



PEANUT BUTTER & JELLY GUIDE TO COMPUTERS
by Jerry Willis

Essential information on the microcomputer revolution The ideal volume for the new kid on the block who wants to know all about computers and their uses A great introduction for the initated

dilithium Press $7.95

YOU NEED THIS!

Home Computers: A Beginners' Glossary & Guide
By Merl K. Miller & Charles J. Sippl

Here's a little 58-page introduction to microcomputing, coupled with an about-90-page glossary of terms, even graphic symbols. Anyone who feels he needs such a text, and isn't sure he wants to pay the price of the big one, should get this book! Size: 8½x8½ 147pp.

dilithium Press $6.95

Microcomputer
By Charles J. Sippl and David A. Kidd

The need for a Microcomputer Dictionary that offers clear explanations of products, procedures, systems, techniques and components appears quite apparent, but the dictionary and its definitions cannot be standard, pure or "idealized". The work must refelect the current literature—the use of the words as they are spoken and written by today's inventors, teachers, lecturers, writers and leaders. Few explanations can be curt or brief because they must be real, down-to-earth, simplified, but also tutorial and expository. Microcomputer Dictionary attempts to fill this need with more than 5000 entries.

Matrix Publishers 10x6½ paper 680pp $19.95

Understanding Computers
By PAUL M. CHIRLIAN

Describes how computers work. It is written for people who use small computers, are contemplating using them or who are just generally interested in computers. Starting with the most elementary gates and working up to the complete computer, the author discusses all phases of computer development. In addition to discussing machine parts, he discusses elementary machine language programming, assembly languages and higher-level languages. The object of the book however is not to teach specific languages but to provide an understanding of what languages are and how they operate in a computer.

dilithium Press 5½x8½ paper $8.95

NEW NEW
Computer Programing for the Complete Idiot
By DONALD McCunn

Here is a text about Basic that assumes you have a TRS-80 (of somewhat minimal configuration), that you don't know anything about it but you want to do something practical with it! So once the most basic fundamentals are covered, it starts telling you how to write a payroll program. Teaches Basic, programming, and a little systems design: 125pp 8½x11.

Design Enterpri Enterprises of San Francisco $5.95

Learning Level II
By David A. Lien

Learning Level II picks right up where the Level I TRS-80 User's Manual left off. Written by the same author, it teaches Level II Basic, plus the many command features, in the same easy-to-learn style that made the Level I Manual famous. Each CompuSoft Learning Series book is carefully planned and written by Dr. Lien, prominent educator and master teacher with many years' experience in private technical schools, public colleges and universities. Author of books in a variety of technical areas, his most widely-known work to date is the TRS-80 Level I Users' manual, with hundreds of thousands of copies in print.

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People's Software $8 ea

TAPE 1 LEVEL 2

Mortgage calculations, Dow Jones Industrial, cash flow, inventory-change, California income tax, journal ledger (8K), loan amortization, perpetual calendar, bio rhythm, payroll, diet planning, speed reading, touch typing, sales receipt tally, decision maker, mail addressing, straight depreciation, double-declining depreciation, and revolving charge account.

Also, math problems, queen, Star Trek I, number guessing, wheel of fortune, World War II bomber, rock-scissors-paper, seek, Star Trek II, Red Baron, mini-Trek, strategy, pilot, battleship, "On A Snowy Evening", mastermind, tic-tac-toe, grand prix auto race, capitals, etch sketch, hangman.

TAPE 4 LEVEL 1

Election returns, business percentage, ups and downs of business, index, inventory control, sales receipt tally, gas mileage, driving distance, mixed monthly sales report, payroll, annual earnings, speech recording aid, and double-declining depreciation.

Also, math problems, cash register, chase, snoopy, commander-in-chief, Christmas graphic, air raid, balance scale, stock market, tic-tac-toe and On A Snowy Evening.

TAPE 5 LEVEL 2

Memory test, mortgage payments, tension breaker, lineprinter-screen & vice-versa utilities, Federal income tax, election returns, business percentage, vacation planner, car pool(disk), diet planning 2, mailing list(disk) and first aid.

Also spelling bee, Star Trek 3, mind bender, tachistoscope, chase, common factor, klingon capture, spelling practice, Hamurabi, animals, Snoopy, cryptogram, starship, ants, Yesterday, and Pilot(disk). Pilot is the language of computer-aided instruction (CAI)..

TAPE 7 LEVEL 2

Disassembler, Pilot, roster, dropout, memory loader, memory sort, inventory control, graph, land surveying, mixed monthly sales report, shopping list, diet planning 3, loan progress chart, hex-decimal conversion.

Also Star Trek 4, states and capitals, battleships 2, spelling practice 2, number guessing, hangman 2, snark, slot machine, cipher, target, surround, adder, termites, lunar lander, multiplication exercise, five-in-a-row, Bastem, and write. A number after a program indicates there are other similar People's Software programs. Pilot is the same as the disk pilot on tape 5, except runs on 16K tape systems. People's Software $8

32 Basic Programs
By Tom Rugg and Phil Feldman

Kilobaud associate editors have written these for TRS-80 Level II. All programs are fully documented, and options are suggested. Paper-bound, book is 5½ by 8½", 267 pages. Programs are listed under the following five tapes:

dilithium Press $15.95

BOOK 1

Tape 1—Applications Programs

Practical uses at home or work: Biorhythm predict good or bad days; checkbook, balance it; decide, choose from list of alternatives; loan, calculate payments and interest; mileage, analyze gasoline usage; quest-exam, determine results of questionnaires.

Tape 2—Educational Programs

Help yourself or others to learn: arithmetic, math drills for school-aged children; flashcard, create own flashcards, then practice; metric, learn system; numbers, help pre-schoolers; tachist, increase reading speed; vocab, expand vocabulary.

Tape 3—Game Programs

Match wits with computer, or friend: decode, figure out computer's secret code; groan, dice game; jot, challenge computer to word and logic game; obstacle, arcade-like game; roadrace, keep on road; wari, attempt to beat computer at ancient African game.

Test 4—Mathematics Programs

Math, engineering and statistical applications: curve, least-squares curve fitting; diffeqn, solve ordinary differential equations; graph, display simple graph of a function; integrate, determine area under a curve; simeqn, solve simultaneous linear equations; stats, perform standard "statistics of population" calculations.

Tape 5—Graphics Display and Miscellaneous Programs

Dazzeling visual diversions, and short programs that do interesting things: kaleido, a kaleidoscope with eight-point symetry; sparkle, hypnotic sparkling patterns; squares, overlaying concentric squares; balloons, TRS-80 theater classic; birthday, what are the odds of identical birthdays in group of people?, pi, calculate approximation of pi; powers, calculate powers of integers—up to 250 digits long; pythag, generate Pythagorean triplets.

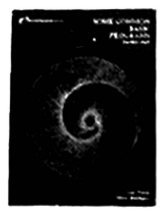
dilitheum Press $9.95 ea , $49.95 per set

Some Common Basic Programs
By Lon Poole and Mary Borchers

...Is designed for people who can use a variety of practical Basic programs. The 76 programs are written in a restricted version of standard Basic and are compatible with many versions of Basic now available to microcomputer users. Program descriptions, examples, and remarks accompanying the listings to help the reader follow Basic programming logic. All programs from this book are also available on cassette from People's Software, tape 2, for $7.50 plus $.50 postage and handling.

Osborne-McGraw Hill $12.50

BOOK 1



TAPE 2 LEVEL 2

Fully documented in Some Common Basic Programs by Lon Poole & Mary Borchers (Osborne & Associates, 630 Bancroft way, Berkeley CA 94710—or from CIE—$12.50 postpaid from CIE, via UPS, CA residents add tax (to $13.25)):

Investment, future value regular deposits; regular withdrawals, initial minimum (for withdrawals); nominal interest, effective & earned-interest; depreciation rate, amount depreciation; salvage value; discount commercial paper; loan principal, regular and last payment, remaining balance, term-loan; mortgage amortization; greatest common denom.- integer prime factors; polygon area; triangle parts; analysis, operations two vectors; radian-degree., degree-radian conversion; coordinate, polar equation, functions plot; linear, curvilinear interpolation; Simpson's & trapezoidal rules, Gaussian quadrature integration; derivative.

Side 2—quadratic equation, polynomial (Newton) & half-interval-search roots; trig polynomial; simultaneous equations; linear programming; matrix addition, subtraction; scalar multiplication, inversion; permutations & combinations; Mann-Whitney U test; mean, variance, standard deviation; geometric mean & deviation; binomial, Poisson, normal, Chi-square distribution; Chi-sq., student's T-distribution test; F-distribution; linear correlation coefficient; linear, multiple-linear, Nth order, geometric, exponential regression, system reliability, future projections; Federal withholding taxes; tax depreciation schedule; check writer; recipe cost; map check; day of week; days between two dates; anglo to metric; alphabetize. $8

SOFTWARE from CIE

Mailing List Systems

All mailing list programs are not created equal! Almost all systems CIE has seen use disk random files. To print out 15,000 labels, as CIE does about every week, 15,000 disk accesses are needed. With a program using sequentially-filed records, such as these, only about 200 disk accesses are needed, which means we have only one-seventh the disk wear—and repair that we would have with a random-access program. We use Minimail, and recommend the following:

Mailroom Plus

Powerful electric filing cabinet asks company, name, address, city-state-zip, phone, and code category. Sorts by category or zip. With Autoprint, prints in tabular or as lable as many files as you name. With its variable-length records, Mailroom Plus can put as many as 1,500 names-addresses on each disk. To maintain workspace, CIE averages 800 per disk in its archive.

Peripheral People, 48K 2-disk $75

Minimail

Compact version of Mailroom Plus, but without customer coding. Includes alpha-lookahead for duplicates, and Autoprint features of larger system. On diskette, could be used with 32K and-or single disk systems, but 48K dual disks recommended.

Peripheral People $50

Manipulation

Set of three utilities makes working with Mailroom Plus or Minimail far easier, faster. Split makes it easy to split files when they get too large. Randomly type in names to be added to one disk and Sort opens as many as 15 files and automatically adds them to the proper file. To tell how many names are on a disk, run File.

Peripheral People $39.95

Super Auto

Developed by CIE to print its average 15,000-or-so labels a week, just load SAuto and it automatically prints all files on disk, marking the end of each file with a label which names that file, tells how many labels were printed in that file, and a grand total of labels printed so far. Includes customized Minimail that supports autoprint feature. Sold only to Minimail or Mailroom Plus owners. Send us your original Peripheral People disk, or other proof of purchase, if you bought the system from someone other than CIE.

Computer Information Exchange $29

Formlet

Formlet is a simplified word processer that couples to Minimail. Prepare your letter, bulletin, notice, advertisement, etc., then load the names and addresses m Minimail files. Formlet will print the inside address, letter, next address, letter, etc. for all the names in the file. Justification feature, requires 16K single or multiple disk system (minimum), supplied on cassette for transfer to diskette.

PERIPHERAL PEOPLE $35

Autoboot

Simplifies automatic Basic program loading from DOS. Permits sequencing through your choice of DOS commands, selects files and memory size to your specification and loads or runs selected program. Allows user to see directory and free space before program runs automatically. Supplied on cassette.

Peripheral People $15

Sir Echo

Program echoes keyboard to printer, giving you an electric typewriter. Functions standalone or can be merged into programs to echo screen to printer. Supplied on cassette.

Peripheral People $10

Mailing List & Labels

Here's a neat little tape-based addressing program that has much of the power and versatility of Mailroom Plus, above, but for 16K disk systems or larger, plus printer. Converted to Poor Man's Floppy (just $69, see March S-80 Computing),, should be very capable. On cassette.

Programma International $9.95

UNIVERSITY SOFTWARE's Application Programs—Published in Microsoft Basic

University Software introduces five spiral-bound editions of application software in Microsoft Basic. Each edition is organized with programs for the user's interest (small business, education, fun & games, home & economics). Appendix in each edition serves as guide to converting Microsoft Basic from one computer to another.

Small Business Programs

Within even the $100 million organization are individuals that could derive benefit from a personal computer, which is a filing cabinet, a scheduler, a calculator and word processor for the individual small businessman. Application programs include: savings & loan; mortgage analysis; materials inventory; small business accounting (posts income & expenses, prints trial balance, chart of accounts); distributions mapping; network; timer; optimum job assignments (finds best combination of employes and jobs); electric utility program; federal taxes; investment management; time-use analysis; PERT critical-path method; phone directory; polyplot, hi-plot, double-variable functions (all plotting routines); letter generator; reverse Polish calculator; Plot; graphing quadratics graphing routine; lores plotting; cross reference; amplitude plot; touch-typing course; billing systems; roundoff linear programming package; alphabetized index.

Education & Scientific Programs

Here is justification for purchasing a personal computer. This volume will tutor your children, give you a better understanding of a computer's capabilities and possibly solve a problem or two at work. Programs include: presidents quiz; 5th-8th-grade English CAI; astronomical computations; simultaneous equations; disassembler; renumber; hex-decimal; word search; multiple-linear regression; speed reader; define own graphic characters; compute atom quantom numbers; music note names; Pythagorean theorem; generate plottable graphics; truth table; hex-decimal and decimal-hex conversions; octal-decimal, decimal-octal; define graphic characters; kinematics instruction; EKG graphics display; tide table; program manager loads, runs multiple programs; CAI for math student.

University Software $39.95

Fun & Games (Vol 1)

Reversi, Mastermind, Kodath, combat, spell of life, spell, biorhythm, music machine, sorcerer slots, alien, pijanowski, life, merchant of Venus, space race.

University Software $14.95

Fun & Games (Vol 2)

Scramble, black box, World War III, caves, blackjack, tic tac toe, snake, Battlestar Galactica, life 1.0, credit monopoly, yahtzee, target practice, bridge, secret agent, block 'em, hangman, space hunt, laser fire, math tutor and tank game.

University Software $14.95

Home & Economics

Text editor; analysis of retirement plan; temperature conversion; estimate home improvement cost; mini-word processor; metric conversion; utilities—electric, water, phone, gas & trash bill control; recipe "book" sets up recipes on cassette tape; Julian calendar; checkbook analysis; budget analysis; eternal calendar returns day of week for a given date; time teacher tutors child to read clock; metric length, mass & volume quiz; microhome—appointments calendar, budgeting, recipes & conversions.

University Software $24.95

All University Software supplied in book form

HORKS Home-Office Records

Home-Office Record Keeping System allows up to 33 user-assigned major account codes per credit or debit file (or use as single-entry system). Has change or delete function with automatic audit trail; 32 or 48K disk systems (1 to 4 drives); retains all entries, not just a summary; credit and debit summaries with 3 different formats—total, monthly, and account code—with optional printer routines; search function with ability to totalize all entries found; profit-loss statement; 800 to 9200 credit-debit entries, depending on memory-disk configuration; eight packed pages of documentation. HORKS will keep record of charge card purchases, telephone & utility expenses, rent payments, taxes, interest charges, etc. Do your budget, keep your checkbook or small business records.

EDU-WARE $24.95 on cass., $29.95 disk

Math, triangle review

Here's a really great tutor, set of high-speed lookup tables for logarithms, square root, natural exponentals, right triangle, oblique triangle solutions, raising numbers to powers (exponents), sine-cosine-tangle description, decimal-degree conversion. For 16K level 2, it's called Ole' Jim's Graphic Math Review and Triangle Solutions.

J-C ENTERPRISE $20

Language teacher

Language Teacher tutorial programs on disk are in drill learning format, with language-to-English or English-to-language usage options. Each program offers hundreds of word combinations, phrases, and verb conjugation forms to inform and challenge the student. Language Teacher's sophisticated capabilities not only provide full record access, but optional printing features. Of special interest to teachers is the ability to print out a multiple-choice test. Students and teachers will want to run a full quiz diagnostic routine. Specify French, Spanish, German or Italian.

ACORN SOFTWARE $19.95

Info storage, retrieval

ISAR—Information Storage and Retrieval is a fast and usable data base system which uses random files that you create, using easy prompts. Excellent sorting routine. Best available at anywhere near price!

THE ALTERNATE SOURCE $16.95 w. source-diskette

Periodical cross'reference

Uses your TRS-80 to catalog magazine articles by subject, publication, date, page and title. You can build a file using any subjects or publications you like, search through a file and list (to CRT or printer) only those articles under a particular subject or publication, or list all the entries. You can edit, delete, or sort entries. You can load a file, make additions or corrections, and save it back on disk or tape. Disk version also includes a tape-to-disk conversion program for your data tapes in case you upgrade to disk at a later date, and a sample data file.

David Stambaugh $14.95 cas., $19.95 disk

File Manager-80

With FM-80 you can virtually ignore pages 7-37 through 7-75 of your Disk Basic manual. The hottest thing since floppys, FM-80 is an input-output control system (IOCS) which will automatically create disk file input-output instructions as well as automatically document your file layouts and variable names. A real timesaver for the Disk Basic program developer, three programs and extensive documentation. Documentation alone: $3.

NEPENTHE PROGRAMS $49.95

Generalized program utilities

Provides assistance in Basic program development and documentation. Program provides five modules which are initiated from a main menu of functions. These include:

—Change strings of characters within a program.
—Line number cross-reference of a program.
—Locate any string of characters in a program.
—Formatted program listings.
—Program compression, in three different degrees.

These functions provide the programmer with a "tool kit" of programming essentials. Documentation alone $2.

NEPENTHE PROGRAMS $29.95

Accounts Receivable (A-R)

A generalized A-R that provides expandable files to accommodate business growth. No transaction detail limit per account per billing period. Customer statements and one- or three-wide mailing labels. Interim statement preparation (between billing cycles); on-line account viewing and correction; hard-copy accounts summary and status of receivables; 30-, 60, 90-day statement ageing; selective allocation of payments; automatic interest inclusion for past-due amounts; and much more. May be configured to either two- or three-disk operation. Four programs and extensive documentation. Documation alone $2.

NEPENTHE PROGRAMS $69.95

Docu-Writer

A text-editor-word-processor just made for the programmer. Uses the familiar Basic Editor instead of a bunch of special control characters for text editing. Will concatenate text files for printing larger documents; will print upper and lowercase characters without hardware modification (uppercase identified on video screen); and will hyphenate, right justify, indent, page title and number, and perform "global" modifications—with only five control characters. Includes capability of inserting "variable" information into printed text—and more! One program and extensive documentation.

Note: Includes routine to initialize program to your printer and your way of doing business. Documentation alone $2.

NEPENTHE PROGRAMS $39.95

Time accounting, billing

This system has particular significance for the data processing professional as well as any other vocation for which estimating may be performed using a structured set of events or tasks. For example, TABS will perform time estimation of data processing systems development based upon such tasks as analysis, design, programming, testing, documentation, and installation-testing. The task names are easily modified to your requirements. The estimates are performed at the "module" level. "Modules" are then consolidated at the "application" level. "Applications" are then consolidated at the "client" level which serve as the basis for services contracts. TABS will then track progress, create client statements based upon completed effort and client payments, and provide status reports of remaining workload. Three programs and detailed documentation. Documentation alone $2.

NEPENTHE PROGRAMS $69.95

Trig

By Leonard Abbott, this highly-specialized mathematics program calculates solutions of right- and oblique-angle triangles; surface feet per minute problems; inches per revolution; sine, cosine, tangent, and cotangent of angles; idstance across corners of squares and hexagons; and, turns your TRS-80 into a calculator. Self-documenting program menu.

NEPENTHE PROGRAMS $29.95

Aircraft maintenance

Indicates mechanical components requiring overhaul-replacement during projected flying hours. Based on the Hughes Aircraft Component Maintenance Record system, indicated requirements and costs for any number of projected flying hours. Requires NEWDOS. Three programs and detailed documentation. User references provided upon request. Write for particulars on this one.

NEPENTHE PROGRAMS $125

TRS Mod 1 to Mod 2

Program enables computerist moving up to Model II TRS-80 to "filter out" all of that sloppy code that the Model I Disk Basic allowed user to get away with (but Model II won't). Adjusts all screen printing to the larger screen size of the Model II. Corrects the IF...THEN...ELSE statements and identifies anything that would be illegal on the Model II for "on-line" correction. Creates "filtered" program on Model I diskette ready for "up-line" to Model II. A real time-saver if you are "on the move".

NEPENTHE PROGRAMS $19.95

Telephone dialer

Telephone dialer program stores up to 500 names & numbers in 16K computer. Simple dialing circuit requires about $5 worth of parts (Radio Shack) and a few minutes to connect and plug onto Remote side of cassette cord.

BLECHMAN ENTERPRISES $10

use order form or phone (714) 757-4849

Learn FOURTH

FORTH is a structured high-level language that dramatically cuts program development time. You can expand the FORTH language by defining new operations and data types. FORTH programs are compiled to reduce memory space and speed execution.

tinyFORTH is a complete version of the powerful FORTH language tailored to the TRS-80. The tinyFORTH system includes FORTH, a text editor, an assembler, graphics and cassette I-O. Learn FORTH on your own computer. The tinyFORTH user's manual contains hundreds of examples to teach you FORTH in a hands-on style.

tinyFORTH for 16K level II TRS-80:

Cassette and full documentation $29.95
Documentation only $9.95

from The Software Farm

FORTH Interest Group Membership

Membership in FORTH Interest Group and Volume 2 (6 issues: numbers 7 thru 12) of FORTH Dimensions.

FORTH Interest Group $12

Installation manual

FIG-FORTH Installation Manual, containing the language of FIG-FORTH, a complete glossary, memory map, and installation instructions.

FORTH Interest Group $10

Source listing

Assembly-language source listing of FIG-FORTH for 8080.

FORTH Interest Group $10

FORTH Dimensions

Issues 1 through 6, as a set.

FORTH Interest Group $6

Dr. Dobbs reprint

Reprint of two Dr. Dobbs FORTH articles, "FORTH for Microcomputers", "DUMP Example"

FORTH Interest Group $2

'Using FORTH'

Using FORTH is the best users manual available, according to Forth Interest Group. 170 pages, spiral bound

FORTH, INC. $25

Programmers | Publishers | Store Owners | Club Secretaries | Educators

ElectraSketch

from Macrotronics
$14.95

Designed by Tim Vaughan

Animation and Graphics Compiler

Animate your TRS-80!! Continuous, smooth animation. No flicker. No jumping. Fast action. Create your own animated **MOVIE** sequences.

Programmers and Publishers

Combine graphics and plain text to create attractive program title pages. Add animation sequences in your program to add **pizzazz.**

Store Owners

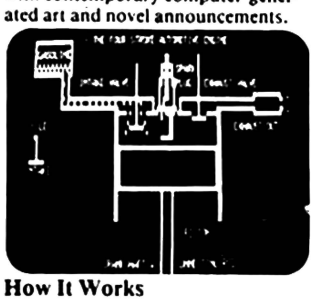
Put your TRS-80 to work during store hours to help sell your products. Create an animated sequence to quickly and effectively attract attention to a product exhibit. Prepare ad layouts in minutes and either use the printer output as-is or as a mock-up for your ad agency. Radio Shack store owners: Nothing will attract more attention to your TRS-80 than a customized animated sequence.

Club Secretaries

Electra-Sketch allows you to rapidly create newsletter cover pages, then print them on your line printer for camera-ready artwork. Create a unique and clever cover page for each issue. It takes only a few minutes with Electra-Sketch!!

Educators

Add lively animation to your tutorial programs. Take full advantage of the computer as a dynamic visual learning medium. Dress up your bulletin boards with contemporary computer-generated art and novel announcements.



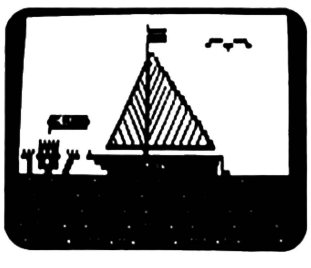
How It Works

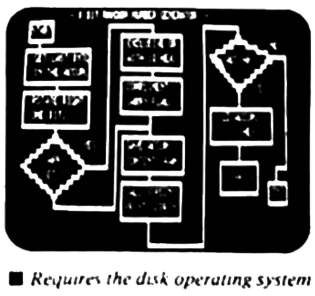
Create a picture frame using simple one key commands to control cursor direction, draw, erase, draw vectors, fill in backgrounds with any sequence of characters (previously drawn lines and characters are preserved), create titles or any textual material, save on disk, recall a frame from disk, review all previously saved frames, change the graphics print character, and print the frame on the line printer.

Saved frames may then be animated by displaying them in either forward or reverse sequence. A particularly novel feature is the ability to instantly change the speed of the animation from slow motion to rapid play in 10 increments (while the animation is taking place!) Only the changes from one frame to the next in succession are saved in **RAM**, thereby conserving memory and allowing longer sequences for a given size computer.

Information is included in the user's manual on how to call up frames for use in your own programs. Also presented is information on how to call up the animator as a subprogram.

Several demonstration frames and animation sequences are included on the diskette to quickly demonstrate the potential of the package and show off your TRS-80 to friends. These clever demos are practically worth the entire price of Electra-Sketch.





- *Requires the disk operating system*
- *Supplied on cassette with instructions on how to transfer the software onto your own diskette.*

Computer aid to nonprofits being studied

By GREGORY FEARON, director
Management Advocates, 1031 3rd st
Santa Rosa CA 95404

Recently, an effort has begun to explore consolidation of some of the administrative tasks performed by nonprofit organizations in the course of their delivery of human services. Our nonprofit organization has been in the forefront of this movement. M.A. was founded to assist the management of other nonprofits, and has had some successes we wish people to know about. We hope that others will help our project grow.

The idea of bringing nonprofit organizations together to share common resources and talents is not a new one. Workshops have periodically been held by groups which have focused on papers of widely-held interest. What is new about our project is that we began by concentrating on services to agencies which were all performed poorly. By centralizing these services on a continuing basis, lowered costs and improved quality should result. We wish to effect reduced administrative energy and increased administrative ability by setting up a strong centralized support system which does not infringe upon individual agency autonomy. Sound like a challenge? It is.

We rented and have been programming a microcomputer for the heart of the paperwork support system. We hired a nonprofit administrator with a background in computers who wanted to be the bridge between both worlds, and who wanted to lean small computer systems. Six months ago we printed a brochure and began to write programs and recruit agencies.

We are no providing full financial administrative services for six moderate-size agencies at a tremendous savings to them. We have also worked with three additional agencies who wish to computerize their client statistical information for reporting purposes. We have held workshops for office staff of these agencies. These were in computer uses for occupational upgrading. In addition, we are exploring the possibilities of using the computer for group purchase of insurance and the production of desk-resource card files for community information.

Our actions so far have been innovative and personally satisfying. However, we have been hampered by a poor investment capability in computer hardware and materials. Computers aren't cheap, even with the micro-revolution, and nonprofit organizations like ours can't afford much outlay.

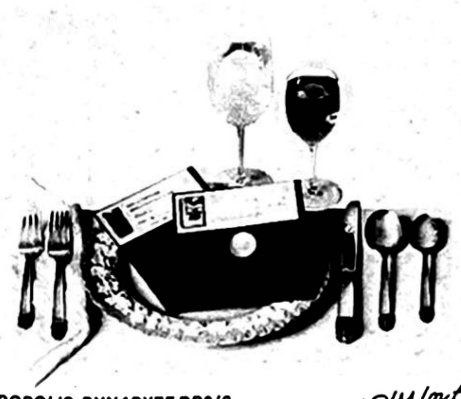
Consequently, we are with this letter exploring a new cooperative effort. We hope to bring together the computer industry and some innovative funding sources to arrange the placement and implementation of needed expansion of our system. Both in this county and in every county in california (and the world—Ed), there are agencies who would benefit by such expansion. We are eager to get such an alliance of business, foundations, and nonprofit organizations together to duplicate what we are experiencing here.

Sound interesting? We hope that others will be willing to explore with us their parts in this new adventure. We feel that they will be convinced of the benefits of such a donation the more they begin to understand the full impact such cooperation would have on the nonprofit human services field. It is not easy to overcome inertia, suspicion, and organizational reluctance to centralization.

(Management Advocates can be reached at (707) 546-5771—Ed)

(Circle 27 on free-information form)

No.12:
Gourmet Goodies



Software for most popular 8080/Z80* computer disk systems including NORTH STAR, ICOM, MICROPOLIS, DYNABYTE DB8/2 & DB8/4, EXIDY SORCERER, SD SYSTEMS, ALTAIR, VECTOR MZ, MECA, 8" IBM, HEATH H17 & H89, HELIOS, IMSAI VDP42 & 44, REX, NYLAC, INTERTEC SUPER-BRAIN, VISTA V80 and V200, TRS-80* MODEL I and MODEL II, ALTOS, OHIO SCIENTIFIC, DIGI-LOG, KONTRON PS180, IMS 5000 DISKETTE formats and CSSN BACKUP cartridge tapes.

Genuine CP/M for Apple II coming soon! Call for details.

Prices reflect distribution on 8" single density diskettes. If a format is requested which requires additional diskettes, a surcharge of $8 per additional diskette will be added. A surcharge of $25 will be added for software on CSSN format DC 3002L cartridges.

CP/M* VERSION 2 FOR TRS-80 MODEL II NOW AVAILABLE

All Lifeboat programs require CP/M, unless otherwise stated.

Software with Manual

☐ CP/M* FLOPPY DISK OPERATING SYSTEM — Digital Research's operating system configured for many popular micro-computers and disk systems

System	Version	Price
North Star Single Density	1.4	145/25 v
North Star Double Density	1.4	145/25
North Star Double/Quad	2.x	170/25
ICOM Micro-Disk 2411	1.4	145/25
ICOM 3712	1.4	170/25 v*
ICOM 3812	1.4	170/25 *
Mits 3202/Altair 8800	1.4	145/25
Heath H8 + H17	1.4	145/25
Heath H89	1.4	145/25
TRS-80 Model I	1.4	145/25
TRS-80 Model II	2.x	170/25
Processor Technology Helios II	1.4	145/25
Cromemco System 3	1.4	145/25
Intel MDS Single Density	1.4	145/25
Intel MDS Single Density	2.x	170/25
Intel MDS 800 Double Density	2.x	200/25
Intel MDS 230 Double Density	2.x	200/25
Micropolis Mod I	1.4	145/25 v
Micropolis Mod II	1.4	145/25 v

The following configurations are scheduled for release during the first half of 1980

North Star Double-Quad + Corvus	2.x	250/25
North Star Horizon HD-1	2.x	250/25
Ohio Scientific C3	2.x	200/25
Ohio Scientific C3-B	2.x	250/25
Ohio Scientific C3-C	2.x	250/25
Micropolis Mod II	2.x	200/25
Mostek MDX STD Bus System	2.x	350/25 **
ICOM 3812	2.x	225/25 *
ICOM 4511/Pertec D3000	2.x	375/25 * +
TRS-80 Model II + Corvus	2.x	250/25

Software consists of the operating system, text editor, assembler, debugger and other utilities for file management and system maintenance. Complete set of Digital Research's documentation and additional implementation notes included. Systems marked * and ** include firmware on 2708 and 2716. Systems marked + include 5440 media change. Systems marked ® require the special ® versions of software in this catalog. Systems marked v have minor variants available to suit console interface of system. Call or write for full list of options.

☐ MP/M* — Intel MDS single density only (Documentation includes CP/M 2.0 manuals) $300/$50

☐ Z80 DEVELOPMENT PACKAGE — Consists of: (1) disk file line editor, with global inter and intra-line facilities. (2) Z80 relocating assembler, Zilog/Mostek mnemonics, conditional assembly and cross reference table capabilities. (3) linking loader producing absolute Intel hex disk file $95/$20

☐ ZDT — Z80 Monitor Debugger to break and examine registers with standard Zilog/Mostek mnemonic disassembly displays. $35 when ordered with Z80 Development Package $50/$10

☐ XASM-68 — Non macro cross-assembler with nested conditionals and full range of pseudo operations. Assembles from standard Motorola MC6800 mnemonics to Intel hex $200/$25

☐ XASM-65 — As XASM-68 for MOS Technology MCS-6500 series mnemonics $200/$25

☐ DISTEL — Disk based disassembler to Intel 8080 or TDL/Xitan Z80 source code, listing and cross reference files. Intel or TDL/Xitan pseudo ops optional. Runs on 8080 $65/$10

☐ DISILOG — As DISTEL to Zilog/Mostek mnemonic files. Runs on Z80 only $65/$10

☐ SMAL/80 Structured Macro Assembler Language — Package of powerful general purpose text macro processor and SMAL structured language compiler. SMAL is an assembler language with IF-THEN-ELSE, LOOP-REPEAT-WHILE, DO-END, BEGIN-END constructs $75/$15

☐ Hey C — Interactive interpretive system for teaching structured programming techniques. Manual includes full source listings $105/$40

☐ BDS C COMPILER — Supports most features of language including Structures, Arrays, Pointers, recursive function evaluation, overlays. Includes linking loader, library manager, and library containing general purpose file I/O, and floating point functions. Lacks initializers, statics, floats and longs. Documentation includes "The C PROGRAMMING LANGUAGE" by Kernighan and Ritchie $125/$20

☐ WHITESMITHS C COMPILER — The ultimate in systems software tools. Produces faster code than a pseudo-code Pascal with more extensive facilities. Conforms to the full UNIX* Version 7 C language, described by Kernighan and Ritchie and makes available over 75 functions for performing I/O, string manipulation and storage allocation. Linkable to Microsoft REL files. Requires 60K CP/M $630/$30

MICROSOFT

☐ BASIC-80 — Disk Extended BASIC. ANSI compatible with long variable names, WHILE/WEND, chaining, variable length file records $325/$25

☐ BASIC COMPILER — Language compatible with BASIC-80 and 3-10 times faster execution. Produces standard Microsoft relocatable binary output. Includes MACRO-80. Also linkable to FORTRAN 80 or COBOL-80 code modules $350/$25

☐ FORTRAN-80 — ANSI 66 (except for COMPLEX) plus many extensions. Includes relocatable object compiler, linking loader, library with manager. Also includes MACRO-80 (see below) $425/$25

☐ COBOL-80 — Level 1 ANSI '74 standard COBOL plus most of Level 2. Full sequential, relative, and indexed file support with variable file names. STRING, UNSTRING, COMPUTE, VARYING/UNTIL, EXTEND, CALL, COPY, SEARCH, 3-dimensional arrays, compound and abbreviated conditions, nested IF. Powerful interactive screen-handling extensions. Includes compatible assembler, linking loader, and relocatable library manager as described under MACRO-80 $700/$25

☐ MACRO-80 — 8080/Z80 Macro Assembler. Intel and Zilog mnemonics supported. Relocatable linkable output. Loader, Library Manager and Cross Reference List utilities included $140/$15

☐ XMACRO-80 — 8086 cross assembler. All Macro and utility features of MACRO-80 package. Mnemonics slightly modified from Intel ASM86. Compatibility data sheet available $275/$25

☐ EDIT-80 — Very fast random access text editor for text with or without line numbers. Global and intra-line commands supported. File compare utility included $80/$15

☐ PASCAL/M* — Compiler generates P code from extended language, implementation of standard PASCAL. Supports overlay structure through additional procedure calls and the SEGMENT procedure type. Provides convenient string handling capability with the added variable type STRING. Untyped files allow memory image I/O. Requires 56K CP/M $150/$20

☐ PASCAL/Z — Z80 native code PASCAL compiler. Produces optimized, ROMable re-entrant code. All interfacing to CP/M is through the support library. The package includes compiler, Microsoft Compatible relocating assembler and linker, and source for all library modules. Variant records, strings and direct I/O are supported. Requires 56K CP/M and Z80 CPU $395/$25

☐ PASCAL/MT — Subset of standard PASCAL. Generates ROMable 8080 machine code. Symbolic debugger included. Supports interrupt procedures, CP/M file I/O and assembly language interface. Real variables can be BCD, software floating point, or AMD 9511 hardware floating point. Version 3 includes Enumeration and Record data types. Manual explains BASIC to PASCAL conversion. Source for the run-time package requires Digital Research's MAC. Requires 32K $200/$30

☐ ALGOL-60 — Powerful block structured language compiler featuring economical run time dynamic allocation of memory. Very compact (24K total RAM) system implementing almost all Algol 60 report features plus many powerful extensions including string handling, direct disk address I/O etc. Requires Z80 CPU $195/$20

☐ CBASIC-2 Disk Extended BASIC — Non-interactive BASIC with pseudo-code compiler and run-time interpreter. Supports full file control, chaining, integer and extended precision variables, etc. $120/$15

MICRO FOCUS

☐ STANDARD CIS COBOL — ANSI '74 COBOL standard compiler fully validated by U.S. Navy tests to ANSI level 1. Supports many features to level 2 including dynamic loading of COBOL modules and a full "ISAM file facility. Also, program segmentation, interactive debug and powerful interactive extensions to support protected and unprotected CRT screen formatting from COBOL programs used with any dumb terminal $450/$50

☐ FORMS 2 — CRT screen editor. Output is COBOL data descriptions for copying into CIS COBOL programs. Automatically creates a query and update programs of indexed files using CRT protected and unprotected screen formats. No programming experience needed. Output program directly compiled by CIS COBOL (standard) $200/$20

Tasty lower prices!

EIDOS SYSTEMS

☐ KISS — Keyed Index Sequential Search. Offers complete Multi-Keyed Index Sequential and Direct Access file management. Includes built-in utility functions for 16 or 32 bit arithmetic, string/integer conversion and string compare. Delivered as a relocatable linkable module in Microsoft format for use with FORTRAN-80 or COBOL-80, etc $335/$25

☐ KBASIC — Microsoft Disk Extended BASIC with all KISS facilities, integrated by implementation of nine additional commands in language. Package includes KISS .REL as described above, and a sample mail list program. $585/$45. To licensed users of Microsoft BASIC-80 (MBASIC) $435/$45

☐ XYBASIC Interactive Process Control BASIC — Full disk BASIC features plus unique commands to handle bytes, rotate and shift, and to test and set bits. Available in Integer, Extended and ROMable versions. Integer Disk or Integer ROMable $295/$25. Extended Disk or Extended ROMable $395/$25

☐ BASIC UTILITY DISK — Consists of: (1) CRUNCH-14 — Compacting utility to reduce the size and increase the speed of programs in Microsoft BASIC and TRS-80 BASIC. (2) OPFUN — Double precision subroutines for computing nineteen transcendental functions including square root, natural log, log base 10, sin, arc sin, hyperbolic sin, hyperbolic arc sin, etc. Furnished in source on diskette and documentation $50/$35

☐ STRING/80 — Character string handling plus routines for direct CP/M BDOS calls from FORTRAN and other compatible Microsoft languages. The utility library contains routines that enable programs to chain to a COM file, retrieve command line parameters, and search file directories with full wild card facilities. Supplied as linkable modules in Microsoft format $95/$20

STRING/80 source code available separately $295/n.a.

☐ THE STRING BIT — FORTRAN character string handling. Routines to find, list, pack, move, separate, concatenate and compare character strings. This package completely eliminates the problems associated with character string handling in FORTRAN. Supplied with source $65/$15

☐ VSORT — Versatile sort/merge system for fixed length records with fixed or variable length fields. VSORT can be used as a stand-alone package or loaded and called as a subroutine from CBASIC-2. When used as a subroutine, VSORT maximizes the use of buffer space by saving the TPA on disk and restoring it on completion of sorting. Records may be up to 255 bytes long with a maximum of 5 fields. Upper/lower case translation and numeric fields supported $175/$20

☐ CPM/374X — Has full range of functions to create or re-name an IBM 3741 volume, display directory information and edit the data set contents. Provides full file transfer facilities between 3741 volume data sets and CP/M files $195/$10

☐ BSTAM — Utility to link one computer to another also equipped with BSTAM. Allows file transfers at full data speed (no conversion to hex), with CRC block control check for very reliable error detection and automatic retry. We use all R's great! Full wildcard expansion to send a COM, etc. 9600 baud with wire, 300 baud with phone connection. Both ends need one. Standard and ® versions can talk to one another. $160/$30

☐ WHATSIT?* Interactive data base system using associative tags to retrieve information by subject. Hashing and random access used for fast response. Requires CBASIC-2 $175/$25

☐ SELECTOR III-C2 — Data Base Processor to create and maintain multi-Key data bases. Prints formatted sorted reports with numerical summaries or mailing labels. Comes with sample applications, including Sales Activity, Inventory, Payables, Receivables, Check Register, and Client/Patient Appointments, etc. Requires CBASIC-2. Supplied in source $295/$20

☐ GLECTOR — General Ledger option to SELECTOR III-C2. Interactive system provides for customized COA. Unique chart of transaction types insure proper double entry bookkeeping. Generates balance sheets, P&L statements and journals. Two year record allows for statement of changes in financial position report. Supplied in source. Requires SELECTOR III-C2, CBASIC-2 and 52K system $250/$25

☐ CBS — Configurable Business System is a comprehensive set of programs for defining custom data files and application systems without using programming language such as BASIC, FORTRAN, etc. Multiple key fields for each data file are supported. Set-up program customizes system to user's CRT and printer. Provides fast and easy interactive data entry and retrieval with transaction processing. Report generator program does complex calculations with stored and derived data, record selection with multiple criteria, and custom formats. Sample inventory and mailing list systems included. No support language required $295/$25

Prices and specifications subject to change without notice.

MICRO DATA BASE SYSTEMS

☐ HDBS — Hierarchical Data Base System. CODASYL oriented with FILEs, SETs, RECORDs and ITEMs which are all user defined. ADD, DELETE, UPDATE, SEARCH, and TRAVERSE commands supported. SET ordering is sorted, FIFO, LIFO, next or prior. One to many set relationship supported. Read/Write protection at the FILE level. Supports FILEs which extend over multiple floppy or hard disk devices.

☐ MDBS — Micro Data Base System. Full network data base with all features of HDBS plus multi-level Read/Write protection for FILE, SET, RECORD and ITEM. Explicit representation of one to one, one to many, many to many, and many to one SET relationships. Supports multiple owner and multiple record types within SETs. HDBS files are fully compatible.

☐ MDBS-DRS — MDBS with Dynamic Restructuring System option which allows altering MDBS data bases when new ITEMs, RECORDs, or SETs are needed without changing existing data.

HDBS-Z80 version	$250/$40
MDBS-Z80 version	$750/$40
MDBS-DRS-Z80 version	$850/$50

8080 Version available at $75 extra

When ordering, specify one of the languages listed below.

NOTE: HDBS and MDBS manuals purchased alone come without specific language interface manuals. Manuals are available for the following Microsoft languages. 1) MBASIC 4.51, 2) BASIC-80 5.0, 3) Compiled BASIC-80 or FORTRAN-80, 4) COBOL-80, 5) MACRO-80 $NA/$10

All Micropro prices are discounted!

MICROPRO discounted!

☐ SUPER-SORT I — Sort, merge, extract utility as absolute executable program or linkable module in Microsoft format. Sorts fixed or variable records with data in binary, BCD, Packed Decimal, EBCDIC, ASCII, Floating & fixed point, exponential, field justified etc. Even variable number of fields per record! $225/$25

☐ SUPER-SORT II — Above available as absolute program only $175/$25

☐ SUPER-SORT III — As II without SELECT/EXCLUDE $125/$25

☐ WORD-STAR — Menu driven visual word processing system for use with standard terminals. Text formatting performed on screen. Facilities for test paginate, page number, justify, center and underscore. User can print one document while simultaneously editing a second. Edit facilities include global search and replace, Read/Write to other text files, block move, etc. Requires CRT terminal with addressable cursor positioning $445/$40

☐ WORD-STAR Customization Notes — For sophisticated users who do not have one of the many standard terminal or printer configurations in the distribution version of WORD-STAR $NA/$95

☐ WORD-MASTER Text Editor — Full screen word processor. ® set of CP/M's ED commands including global search and replace, forwards and backwards in file in video mode, provides full screen editor for users with serial addressable cursor terminal $125/$25

Everything on #12 runs on 64K TRS-80 Model II

Lifeboat Associates, 2248 Broadway N.Y., N.Y. 10024 (212) 580-0082 Telex 220501 ™

Corvus connects up to 64 TRS-80s

Corvus systems has announced a multiplexer which can connect from two to 64 TRS-80s or other personal computers into an interactive multi-user network sharing high-speed access to up to 40 million bytes of Corvus hard-disk capacity.

Called the Constellation, it will be of great interest for many business and educational applications now limited to one dedicated computer and a small data base.

In addition to sharing open or secured access to the large Corvus data base, computers in a Constellation network can share peripherals, such as a common prinjer, and communicate in a fully-interactive mode.

STAR CONFIGURATION

The Constallation is a back-end local network in which multiple computers are connected in a star configuration. To ensure compatibility and future expandability, each computer interface uses the standard Corvus bus, the same as that employed in the Corvus disk system and the Mirror backup.

The center of the star is the Corvus Constellation host multiplexer. This central node contains hardware that polls up to eight computers in a round-robin fashion.

TRS-80s are parallel-interfaced via maximum-50'-long ribbon cable to the multiplexer. Corvus says the computers can in some cases be as far as 200' apart.

A two-level network containing up to eight host multiplexers connected to a central multiplexer allows up to 64 computers to share disk storage.

ALL COMPUTERS ACTIVE

All computers in the network are active—the central node is the Constellation multiplexer, not a dedicated computer.

Total capacity of the disk system is up to 40 megabytes, four eight-inch Winchester disk drives. Users can implement a Corvus disk system as a simple one-user computer system o a multi-user network with no penalty in cost or software effort.

Any personal computer compatible with the standard Corvus disk system is compatible with the Constellation. These include, besides TRS-80, Apple, S-100, Altos and LSI-11.

Computer interface hardware is the same as that used by the single-user disk system. The Constellation operating system software is the unmodified operating system provided with the host computer, assuring application compatibility.

Price of the Constellation multiplexer is $750. Interfaces for the computers in the network are as low as $235 each, and deliveries are quoted as 30 days. Corvus is at 2029 O'Toole av., San Jose CA 95131, (408) 946-7700.

(Circle 28 on free-information form)

TRS-80 NEEDS FILLED

Disk drives with power supply and case
MPI 40 Track (102,400Bytes) 315.00
40 Track (102,400Bytes-Side) use both sides 349.00

Micropolis 77 Track (197,120Bytes) 495.00
4—Drive Cable 31.00; 10 Disks:5in 26.00, 8in 39.00;
Hard Case 3.50&5.0016K Memory Kit 59.00
Base 2 printer-(60 line-min, 72,80,96,120,or132 Char. Line Bi-direct dot matrix impact 96 Char ASCII, 15 Baud rates, Centronics Parallel, RS232, 20 ma & IEEE488, load your Char. set) 499.00

2K Buffer, Graphics, & Tractor option avail.
Centronics 779 TRCTR—950.00 & 730—690.00 - Cable 31.00
Harris Selectric (Word Processing—Typewriter & Printer) 790.00
UPS (Uninterruptible Power Supply) prevent power drop, surge or out? From 195.00

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Tewksbury, MA 01876
(617) 851 3156

(Circle 29 on free-information form)

Software with Manual / Manual Alone

☐ **POLYVUE/80** – Full screen editor for any CRT with XY cursor positioning. Includes vertical and horizontal scrolling, interactive search and replace, automatic text wrap around for word processing operations for manipulating blocks of text, and comprehensive 70 page manual! $135/$15

☐ **POLYTEXT/80** – Text formatter for word processing applications. Justifies and paginates source text files. Will generate form letters with custom fields and conditional processing. Support for Daisy Wheel printers includes variable pitch justification and motion optimization . . . $65/$15

☐ **TEXTWRITER III** – Text formatter to justify and paginate letters and other documents. Special features include insertion of text during execution from other disk files or console, permitting recipe documents to be created from linked fragments on other files. Has facilities for sorted index, table of contents and footnote insertions. Ideal for contracts, manuals, etc. Now compatible with Electric Pencil* prepared files . . . $125/$20

Now applications software for Microsoft's BASIC interpreter!

PEACHTREE SOFTWARE

☐ **GENERAL LEDGER** – Records details of all financial transactions. Generates a balance sheet and an income statement. Flexible and adaptable design for both small businesses and firms performing client write-up services. Produces reports as follows: Trial Balance, Transaction Registers, Balance Sheet, Prior Year Comparative Balance Sheet, Income Statement, Prior Year Comparative Income Statement and Department Income Statements. Interactive with other PEACHTREE accounting packages. Supplied in source code for Microsoft BASIC . . . . . $990/$30

☐ **ACCOUNTS PAYABLE** – Tracks current and aged payables and incorporates a check writing feature. Maintains a complete vendor file with information on purchase orders and discount terms as well as active account status. Produces reports as follows: Open Voucher Report, Accounts Payable Aging Report and Cash Requirements. Provides input to PEACHTREE General Ledger. Supplied in source code for Microsoft BASIC . . . . . $990/$30

☐ **ACCOUNTS RECEIVABLE** – Generates invoice register and complete monthly statements. Tracks current and aged receivables. Maintains customer file including credit information and account status. The current status of any customer account is instantly available. Produces reports as follows: Aged Accounts Receivable, Invoice Register, Payment and Adjustment Register and Customer Account Status Report. Provides input to PEACHTREE General Ledger. Supplied in source code for Microsoft BASIC . . . $990/$30

☐ **PAYROLL** – Prepares payroll for hourly, salaried and commissioned employees. Generates monthly, quarterly and annual returns. Prepares employee W-2's. Includes tables for federal withholding and FICA as well as withholding for all 50 states plus up to 20 cities from pre-computed or user generated tables. Will print checks, Payroll Register, Monthly Summary and Unemployment Tax Report. Provides input to PEACHTREE General Ledger. Supplied in source code for Microsoft BASIC . . . . . $990/$30

☐ **INVENTORY** – Maintains detailed information on each inventory item including part number, description, unit of measure, vendor and reorder data, item activity and complete information on current item costs, pricing and sales. Produces reports as follows: Physical Inventory Worksheet, Inventory Price List, Departmental Summary Report, Inventory Status Report, The Reorder Report and the Period-to-Date and Year-to-Date reports. Supplied in source code for Microsoft BASIC . . . . . $1,190/$30

☐ **MAILING ADDRESS** – Keeps track of name and address information and allows the selective printing of this information in the form of mailing lists or address labels. Allows the user to tailor the system to his own particular requirements. User-defined format and print-out systems uses a special format file which tells programs how to print the mailing list or address labels. Standard format files are included with system. Automatic sorting of data uses indexed file management routines which allow the name and address information to be sequentially retrieved and printed without file sorting. Supplied in source code for Microsoft BASIC . . . . . $790/$30

GRAHAM-DORIAN SOFTWARE SYSTEMS

☐ **GENERAL LEDGER** – An on-line system; no batching is required. Entries to other GRAHAM-DORIAN accounting packages are automatically posted. User establishes customized C.O.A. Provides transaction register, record of journal entries, trial balances and monthly closings. Keeps 14 month history and provides comparison of current year with previous year. Requires CBASIC-2. Supplied in source . . . $995/$35

☐ **ACCOUNTS PAYABLE** – Maintains vendor list and check register. Performs cash flow analysis. Flexible – writes checks to specific vendor for certain invoices or can make partial payments. Automatically posts to GRAHAM-DORIAN General Ledger or runs as stand alone system. Requires CBASIC-2. Supplied in source . . . $995/$35

☐ **ACCOUNTS RECEIVABLE** – Creates trial balance reports, prepares statements, ages accounts and records invoices. Provides complete information describing customer payment activity. Receipts can be posted to different ledger accounts. Entries automatically update GRAHAM-DORIAN General Ledger or runs as stand alone system. Requires CBASIC-2. Supplied in source . . . $995/$35

☐ **PAYROLL SYSTEM** – Maintains employee master file. Computes payroll withholding for FICA, Federal and State taxes. Prints payroll register, checks, quarterly reports and W-2 forms. Can generate ad hoc reports and employee form letters with mail labels. Requires CBASIC-2. Supplied in source . . . $590/$35

☐ **INVENTORY SYSTEM** – Captures stock levels, costs, sources, sales, ages, turnover, markup, etc. Transaction information may be entered for reporting by salesman, type of sale, date of sale, etc. Reports available both for accounting and decision making. Requires CBASIC-2. Supplied in source . . $590/$35

☐ **JOB COSTING** – Designed for general contractors. To be used interactively with other GRAHAM-DORIAN accounting packages for tracking and analysing expenses. User establishes customized cost categories and job phases. Permits comparison of actual versus estimated costs. Automatically updates GRAHAM-DORIAN General Ledger or runs as stand alone system. Requires CBASIC-2. Supplied in source $995/$35

Orders must specify disk systems and formats e.g. North Star single double or quad density, IBM single or 2D 256, Altair Helios II, Micropolis Mod I or II, 5¼" soft sector (Micro-Com-SO Systems, Dynabyte) etc.

Manual cost applicable against price of subsequent software purchase.

The sale of each proprietary software package conveys a license for use on one system only.

Prices F.O.B. New York. Shipping, handling and C.O.D. charges extra.

VISA

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Software with Manual / Manual Alone

☐ **APARTMENT MANAGEMENT SYSTEM** – Financial management system for receipts and security deposits of apartment projects. Captures data on vacancies, revenues, etc. for annual trend analysis. Daily report shows late rents, vacancy notices, vacancies, income lost through vacancies, etc. Requires CBASIC-2. Supplied in source . . . $590/$35

☐ **CASH REGISTER** – Maintains files on daily sales. Files data by sales person and item. Tracks sales, overrings, refunds, payouts and total net deposits. Requires CBASIC-2. Supplied in source . . $590/$35

☐ **POSTMASTER** – A comprehensive package for mail list maintenance that is completely menu driven. Features include keyed record extraction and label production. A form letter program is included which provides neat letters on single sheet or continuous forms. Compatible with NAD files. Requires CBASIC-2 . . . $150/$15

New Features

STRUCTURED SYSTEMS GROUP

☐ **GENERAL LEDGER** – Interactive and flexible system providing proof and report outputs. Customization of COA created interactively. Multiple branch accounting centers. Extensive checking performed at data entry for proof. COA correctness, etc. Journal entries may be batched prior to posting. Closing procedure automatically backs up input files. Now includes Statement of Changes in Financial Position. Requires CBASIC-2 . . . . . $1250/$25

☐ **ACCOUNTS RECEIVABLE** – Open item system with output for internal aged reports and customer oriented statement and billing purposes. On-Line Enquiry permits information for Customer Service and Credit departments. Interface to General Ledger provided if both systems used. Requires CBASIC-2 . . . . . $1250/$25

☐ **ACCOUNTS PAYABLE** – Provides aged statements of accounts by vendor with check writing for selected invoices. Can be used alone or with General Ledger and/or with NAD. Requires CBASIC-2 . . . $1250/$25

☐ **PAYROLL** – Flexible payroll system handles weekly, bi-weekly, semi-monthly and monthly payroll periods. Tips, bonuses, re-imbursements, advances, sick pay, vacation pay, and compensation time are all part of the payroll records. Prints government required periodic reports and will post to multiple S.S.O. General Ledger accounts. Requires CBASIC-2 and 34K of memory . . . . . $1250/$25

☐ **INVENTORY CONTROL SYSTEM** – Performs control functions of adding and depleting stock items, adding new items and deleting old items. Tracks quantity of items on hand, on order and back-ordered. Optional hard copy audit trail is available. Reports include Master Item List, Stock Activity, Stock Valuation and Re-order List. Requires CBASIC-2 $1250/$25

☐ **ANALYST** – Customized data entry and reporting system. User specifies up to 75 data items per record. Interactive data entry, retrieval, and update facility makes information management easy. Sophisticated report generator provides customized reports using selected records with multiple level break points for summarization. Requires CBASIC-2 . . . . $250/$15

☐ **LETTERIGHT** – Program to create, edit and type letters or other documents. Has facilities to enter, display, delete and move text, with good video screen presentation. Designed to integrate with NAD for form letter mailings. Requires CBASIC-2 . $200/$25

☐ **NAD** Name and Address selection system – Interactive mail list creation and maintenance program with output as full reports with reference data or restricted information for mail labels. Transfer system for extraction and transfer of selected records to create new files. Requires CBASIC-2 . . . . . $100/$20

☐ **QSORT** – Fast sort/merge program for files with fixed record length, variable field length information. Up to five ascending or descending keys. Full back-up of input files created . . . . . $100/$20

★★★★★★★

CONDIMENTS

☐ **HEAD CLEANING DISKETTE** – Cleans the drive Read/Write head in 30 seconds. Diskette absorbs loose oxide particles, fingerprints, and other foreign particles that might hinder the performance of the drive head. Lasts at least 3 months with daily use. Specify 5" or 8".
Single sided . . . $20 each/$55 for 3
Double sided . . . $25 each/$65 for 3

NEW

☐ **FLIPPY DISK KIT** – Template and instructions to modify single sided 5¼" diskettes for use of second side in single sided drives . . . $12.50

☐ **FLOPPY SAVER** – Protection for center holes of 5" and 8" floppy disks. Only 1 needed per diskette. Kit contains centering post, pressure tool and tough 7 mil mylar reinforcing rings for 25 diskettes.

NEW
5". Kit . . . $14.95
5". Rings only . . . $7.95
8". Kit . . . $16.95
8". Rings only . . . $8.95

☐ **PASCAL USER MANUAL AND REPORT** – By Jensen and Wirth. The standard textbook on the language. Recommended for use by Pascal/Z, Pascal/M and Pascal/MT users . . . $10

☐ **THE C PROGRAMMING LANGUAGE** – By Kernighan and Ritchie. The standard textbook on the language. Recommended for use by BDS C, Ley C, and Whitesmiths C users . . . $12

NEW ☐ **STRUCTURED MICROPROCESSOR PROGRAMMING** – By the authors of SMAL/80. Covers structured programming, the 8080/8085 instruction set and the SMAL/80 language . . . $20.00

NEW ☐ **ACCOUNTS PAYABLE & ACCOUNTS RECEIVABLE – CBASIC** – By Osborne McGraw-Hill . . . $20

NEW ☐ **GENERAL LEDGER – CBASIC** – By Osborne McGraw-Hill . . . $20

★★★★★★★

Hearty Appetite.

*CP/M and MP/M are trademarks of Digital Research
Z80 is a trademark of Zilog, Inc.
UNIX is a trademark of Bell Laboratories
WHATSIT? is a trademark of Computer Headware
Electric Pencil is a trademark of Michael Shrayer Software
TRS-80 is a trademark of Tandy Corp.
Pascal/M is a trademark of Sorcim

†Recommended system configuration consists of 48K CP/M, 2 full size disk drives, 24 x 80 CRT and 132 column printer

‡Modified version available for use with CP/M as implemented on Health and TRS-80 Model I computers

§User license agreement for this product must be signed and returned to Lifeboat Associates before shipment may be made

Ⓒ This product includes ©Excludes the language manual recommended in Condiments

PEOPLE'S SOFTWARE:

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Angle Conversion: Radians to Degrees	2
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Binomial Distribution	2
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Change	1
Chi-Square Distribution	2
Chi-Square Test	2
Common Factor	5
Coordinate Conversion	2
Coordinate Plot	2
Curvilinear Interpolation	2
Derivative (disc basic only)	2
Distance Driving	4
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F-Distribution	2
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Gas Mileage	4
Geometric Mean and Deviation	2
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Hex-Decimal	7
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Roots of Quadratic Equations	2
Simultaneous Equations	2
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Speed Reading	1
Spelling Bee	5
Spelling Practice	5
Spelling Practice II	7
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Touch Typing	1
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Klingon Capture	5
Lunar Lander	7
Mastermind	1
Mind Bender	5
Mini Trek	1
Number Guessing	1&7
Pilot	1
Queen	1
Red Baron	1
Rock, Scissors, Paper	1
Seek	1
Snark	7
Star Trek I	1
Star Trek II	1
Star Trek III	5
Star Trek IV	7
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Surround	7
Tension Breaker	5
Termites	7
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Car Pool	5
Date Between Two Days	2
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Decision Maker	1
Disassembler	7
Dropout	7
Election Returns	4&5
Graph	7
Federal Income Tax	5
Linear Programing	2
Lineprinter to Screen	5
Mailing and Addressing	1
Map Check (disc basic only)	2
Memory Loader	7
Memory Sort	7
Memory Test	5
Perpetual Calendar	1
Recipe Cost	2
Roster	7
System Reliability	2
Vacation Planner	5
Write	7
Yesterday (computer music)	5

PASCAL PROGRAMS — 3&6

Microsoft offers Z80 board for Apple

Apple computer users now can plug a Z-80 processor into their systems and run CP-M, the disk operating system to which many TRS-80 users have turned, and Microsoft disk Basic.

Cost, with Basic and CP-M, is $349.

(Circle 30 on free-information form)

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Performance Continuous operation at up to 300 lines per minute . . . Letter perfect printing through five copies.

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Q. My computer is not a TRS-80. How do I hook it up to Electric Crayon?
GURU. Any computer with an 8-bit parallel port is easily interfaced to the Electric Crayon. The inputs to the Electric Crayon consist of eight active-high data lines and an active-low strobe pulse that "strobes" the data into the Electric Crayon. If the Electric Crayon is not ready to receive data it sends a busy signal to the computer. No other "handshaking" is required.

Computers and peripherals are interfaced to the Electric Crayon via dual, 8-bit I-O ports. One dual port is referred to as the computer port and the other dual port, which is not operational until an optional PIA (Parallel Interface Adapter) chip is installed in the socket provided, is referred to as the peripherals interface. The circuitry of the I-O ports includes ample strapping contacts for interfacing versatility.

Q. How do I connect Electric Crayon to my color television set?
GURU. The video output from the Electric Crayon may be connected directly to a color monitor or to a color TV that has been modified for direct video input. Since most color tv sets do not have direct video input, the Electric Crayon video output signal must be up-modulated to vhf (or uhf) for connecting to tv antenna contacts. This may be accomplished either by adding some inexpensive components to Electric Crayon, or use of an inexpensive Radio Shack or other tv interface modulator or by connecting to video cassette recorder.

Q. You are a great guru, Guru. How did Percom find you?
GURU. I'm in the Yellow Pages under Wizards.

GURU SPEAKS:

Answers queries on Percom Electric Pencil

The Bulletin has received many questions about Percom Data Company's Electric Crayon(tm) since running a product announcement in the January issue. We called the Percom Guru, and the following dialog developed:

Q. How many color display modes can Electric Crayon generate?
GURU. With a full complement of display memory, the Electric Crayon can generate color displays in 10 different modes: an alphanumeric-semigraphics mode, a pure high-density semigraphics mode and *eight graphics modes of varying resolution.*

Q. What's the difference between graphics and semigraphics?
GURU. A graphics display is comprised of elemental dots or picture elements which are either illuminant—in a program—or keyboard-selected color—or extinguished. A semigraphics display is comprised of rectangles or "boxes" of six equal parts depending on the semigraphics mode selected. The separate parts of each semigraphics box may be either illuminant or extinguished under keyboard or program control.

Q. What is the resolution of each graphics mode?
GURU. There are five different resolutions for the eight graphics modes:

64 picture elements x 64 picture elements
128 picture elements x 64 picture elements
128 picture elements x 96 picture elements
128 picture elements x 192 picture elements
256 picture elements x 192 picture elements

Q. What colors are available for each display mode?
GURU. Displays of two, four or eight colors may be generated, depending on the mode selected. The two and four-color displays may be inverted or complemented either manually or under program control.

Q. How much memory is required for each display mode?
GURU. See the table above. A guru never repeats hisself. Never.

Q. Is it easy to compose displays?
GURU. Very easy. Displays are composed and generated with simple one-character keyboard or program commands. For example, the character M is used to select or change the display mode. M0 selects Mode 0, M1 selects Mode 1, etc. The letter C and a numeral select a color. For example, C2 selects the color blue. A horizontal line is generated by inputting the character H followed by the beginning X-Y position coordinates and a length value. The command H 2 4 30 generates a 30-element line that begins two elements to the left of the origin (upper LH corner) and four elements down. Other commands are equally simple.

Q. What television systems will work with the Electric Crayon?
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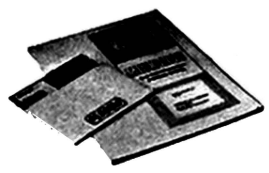

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