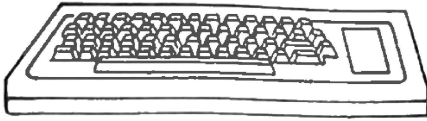


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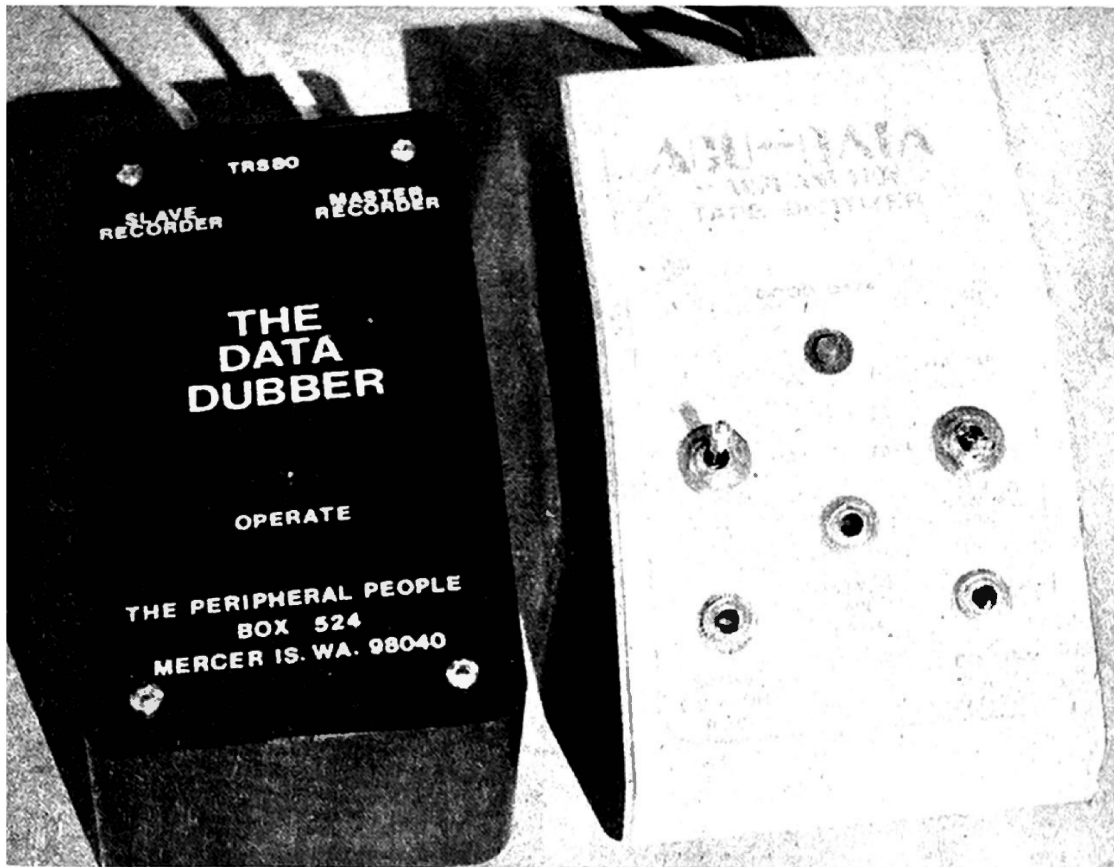
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# S-80 Bulletin AND CLASSIFIED

Vol. 1 no. 10

Bill McLaughlin, editor

November-December, 1979



**SOLVE TAPE-LOAD PROBLEMS?—**Can one of these funny little boxes connected between your tape deck and S-80 computer solve TRS-80's notorious cassette storage problem? Indeed they can! See inside.

(Circle DK on free information form)

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Integral Data Systems, Inc.

one program on each side, and for obvious reasons only three youngsters are allowed on computer during any given half-hour session.

Hundreds of children have been checked out on the PET, and the ranks of button-bearers swells by 10 each Tuesday.

In addition to the machines donated by Commodore, Albrecht says he is expecting an S-80, an Atari and already has an Apple II computer.

Cassettes presently on hand are mostly games donated by various software producers. The favorite is a fantasy adventure game called "Sword quest," one cassette of which has already been worn out by eager players. The other is a marketing-trading game called "Taipan", which is played on the S-80. The setting of "Taipan" is the China trade of the late 1800s. The players start out dealing in general goods, then as their fortunes mount, graduate to arms, silk, and ultimately into the opium trade.

In addition to the activities at the public library, most Menlo Park private and public schools are actively promoting computer curriculums. Menlo Atherton High School, the city's only high school, will soon have six PETs and four Apples. Peninsula School, a private alternative school, has four PETs and an Apple and offered 14 short computer classes last summer. Albrecht and company are also encouraging the local schools to offer adult courses.

Canada College, the local two-year college, has agreed to teach a course at the library entitled "Computers for kids and parents". Enrollment will require a team of one adult and one 8-to-13-yr.-old child. The course will move toward teaching programming in a game-playing, recreational setting.

More people and businesses in Menlo Park are getting involved. Kepler's bookstore holds computer sessions every third Friday evening and is becoming, according to Albrecht, one of the best-stocked sources of general computer books in the area. Even the local pizza parlor has gotten into the act. One Monday night a week, a group of people can be found at the Round Table Pizza on El Camino Real, crowded around a computer.

Asked what he expects to come of all this, Albrecht simply says, "We want to see what happens if a whole town knows how to use computers, especially if all the kids know how to use them and have access to them. We want to create a body of knowledge and then out of that we'll be surprised."

At the very least, he says, educators are beginning to see that, "learning is taking place—and in a new way," that through computers, very sophisticated concepts, such as strategy and contingency planning, are being taught to children. Zamora tells of the 8-yr-old who made his own template to put against the screen to figure the warp vectors for a space war game.

"When they hit a trig class, they'll have something to relate it to, something they can use," he explained. Albrecht points out that these games are an advanced form of problem solving and that schools are getting away from problem solving and are concentrating on basics and drill and practice, and "If we get all these machines in the library, kids may even be cutting school to get an education."

The next step, according to Zamora, is to take the most popular games apart and see what makes them interesting and useful as teaching tools. They wish to create what Albrecht refers to as "the pedagogy of games." He also notes several side effects of having the computers in the public library.

The library is an "underused resource", but the children do not just sit idle while waiting their turn on the computer. Instead, they are picking up books from the shelves and reading; they are discovering a source of recordings and tapes. It has even gotten to the point that parents are having to call the librarian and ask if their child, who should have been home an hour previous, is still hanging around the computer.

## Menlo Park seen as 'Computertown, U.S.A.'

By Dan Asher  
reprinted from Intelligent Machines Journal

Bob Albrecht, the self-styled 'Dragon' of People's Computer Company, is out to make Menlo Park CA into "Computertown U.S.A.," the nation's first computer-literate city.

It all started last April when Bob and some friends began taking their computers to the Menlo Park library on Tuesday evenings to teach interested people about them. Once, they invited a representative of Commodore, manufacturer of the PET personal computer. He took a PET along and was apparently impressed enough with what he saw that he left it there. That PET is now in the children's section of the library, and Commodore has agreed to donate three more.

Since then, Albrecht and Ramon Zamora, —the two co-edit **Recreational Computing** magazine, formerly **People's Computers**—have been holding classes on the PET to teach children how to load programs and operate the system.. After being checked out on the PET, each kid receives a "My computer likes me" button to be used along with his library card in order to use the computer.

(Albrecht is author of the long-popular "My computer likes me when I speak in Basic", 1972, Dilithium Press, \$3.95 postpaid from CIE —Ed)

A library of programs on cassette tape is being built up and children can

check out tapes one at a time for use on the library's computer. Cassettes have

(Circle FG on free-information form)

## Omikron transforms TRS-80<sup>\*</sup> into a powerful business system.

**STANDARD DRIVES** 8" Drives give you 5 times the speed and 3 times the storage of your mini drives! Our system provides a standard Shugart interface so you can use either your 8" drives or ours.

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The MAPPER I and MAPPER II are plug-in modules.

They don't require any circuit changes, are easy to install, and they don't interfere with the normal operation of your TRS-80<sup>\*</sup>. All your original software will still run properly. Omikron products require a minimum of 16K memory and the TRS-80<sup>\*</sup> Expansion Interface.

★ ★ ★

**MAPPER I** is a memory management unit which adapts your TRS-80<sup>\*</sup> to run standard CP/M<sup>\*</sup>. The user can choose either CP/M<sup>\*</sup> or TRS-80<sup>\*</sup> DOS through keyboard control. The package includes CP/M<sup>\*</sup> software on 5" diskette and documentation. Specify memory size when ordering. \$199.

**MAPPER II** is a disk adapter module which enables the TRS-80<sup>\*</sup> to run both 5" and 8" drives. It will interface to the MAPPER I for CP/M<sup>\*</sup> operation, or can be used alone with our modified TRS-80<sup>\*</sup> DOS software. Files can be transferred between the different size drives. Specify cable requirements when ordering. \$99, plus \$10 per cable connector.

**SYSTEMS**—Omikron's complete systems feature Shugart 8" drives mounted in a dual drive cabinet with heavy duty power supply, MAPPERS I and II, cable and CP/M<sup>\*</sup> software. Dual drives—\$1795; Single drive \$1195.

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<sup>\*</sup>CP/M is a TM of Digital Research. TRS-80 is a TM of Tandy Corporation.

Call for details on Omikron's TRS-80<sup>\*</sup> DOS package.



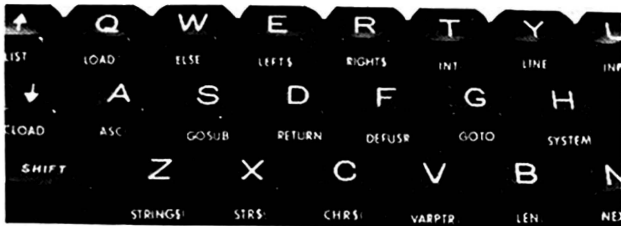
(Continued in next column)



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**TBUFF™** For LEVEL II CASSETTE USERS. Prevent and eliminate forever, cassette relay sticking. TBUFF is no larger than an ice cube and plugs in-line with the "REMOte" cable to your cassette recorder. (Specify cassette recorder make and model) . . . . . \$ 9.98

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## Non Pareil makes computer stand

Non-Pareil Industries, which has manufactured furniture for audio equipment, has introduced a stand for the TRS-80.

Panels are covered with Formica, and assembly is "slot-together", with no hardware, no screws.

Price is \$125, from Non-Pareil, 1890 Marietta blv., Atlanta GA 30318. Dealer inquiries only.

**Infinite Basic, relocatable modules for Level II and DOS systems, \$49.95 from RACET Computes, 702 Palmdale, Orange CA 92665.**

With Infinite Basic, the computerist can select which Basic commands he wants to add, and where in memory he wants them. Thus he uses a minimum of extra memory, and can keep his Basic modules clear of RS232C drivers, Meca Beta-80 operating system, etc.

Infinite Basic consists of a matrix package containing more than 30 Basic commands, and a string package with over 40 Basic commands. For \$29.95 more a business package eliminates round-off error, gives searches, automatic page headings, footings, pagination, and automatic hash for record retrieval, etc.

The matrix package is of interest mostly to people with minicomputer background or with scientific-programming interests. The \$49.95 package includes more object code than is in the Level II ROM.

Infinite Basic can be used on either disk or tape systems, but it is practical to include only about 7K of additional modules in a 16K system. Larger setups can utilize the whole package if necessary. — WM

## Want bigger Basic? firms offer option

Want something a little more versatile than Level II Basic? S-80 Bulletin is aware of three Basic upgrades on the market, two of which we have tried on our TRS-80s.

Level III Basic, from Microsoft, is the same product previously marketed by G2 Corporation.

Basic3 from Personal Computer Service is an independently-written version of about the same thing. Basic3, according to its author, Gerald J. Abear, has all the features of Level III. Our review copy pre-dated completion of the instruction booklet, so it may have some instructions Level III does not, we know it is at least a match to Level III. First, about the source:

**Level III Basic is from Microsoft Consumer Products, \$49.95 per cassette, at computer stores or from Microsoft, 10800 NE Eighth Suite 819, Bellevue WA 98004.**

Basic3 cassettes are \$24.95 postpaid from Personal Computer Service, 1515 Andrews dr., Las Cruces NM 88001.

Microsoft stresses the economy of Level III—it gives the user—most disk Basic features without the need to invest even in an expansion interface.

We think one of the most-welcomed features of Level III is elimination of key bounce. Even with disk, when not under Basic, keys "bounce". Basic3 is loaded in two parts, and key debounce, the CHR\$(1) multiple-program feature, and CLOAD improvement features go in first, real fast, and can be used without the rest of Basic3. With both Level III and Basic3, we could detect no CLOADing improvement. Sorry gang, because we wanted that to work! Maybe some other users will care to disagree. We'd be happy to pass on their experience.

With both versions of the program, you get one of the good features of Level I—abbreviations. These are called "shifted-key entries", because you don't need the period, and they are all single-key. The two interpreters differ in what the shift-key entries are not the same. With both, the user can change these to whatever he wants. Ofcourse, they go back to standard as soon as Basic3 or Level III is reloaded.

It is interesting that it is not that necessary that Basic be in ROM. With disk Basic, the user frequently has to get out of Basic: to format a disk, rename or kill a file, etc. We had the idea that a tape Basic would be inconvenient, since tape is slower loading. Well, we thought it would be a big bore, loading, reloading Level III or Basic3 every time a program crashed, a cassette didn't load, etc. Not so. Both Basics can be recovered after reset. No reloading!

The features of these Basics would take many columns to list. Let's have more on them later. They're great, very useful, and they both work!

While, from the user standpoint, they are nearly identical, the code is different. We tried to save Basic3 onto Meca Beta-80 digital tape. Couldn't—conflict with the operating system. Then we tried it with Level III. No conflict. Couldn't save it, though, because both the Beta operating system and Level III (and Basic3) have SAVE commands. Another conflict! Meca should have Microsoft or Personal Computer Service create a Beta version!

Now the third Basic:

5-STAR EDITION  
for users of  
Radio Shack's TRS-80\*



5-STAR EDITION  
for users of  
Radio Shack's TRS-80\*

# TRS-80 TRANSFORMED WITH PROFESSIONAL SOFTWARE PACKAGES

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All items listed below operate in conjunction with the CP/M operating system.

1. BASIC-80 — Disk II extended BASIC. ANSI compatible with long variable names. WHILE/WEND chaining. variable length file records. \$399/\$225

2. BASIC COMPILER — Language compatible with BASIC-80 and 3-10 times faster execution. Produces standard Microsoft relocatable binary output. Includes Macro-80. Also includes 1000 BASIC-80 or BASIC-80 code modules. \$399/\$225

3. 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). \$499/\$225

4. COBOL-80 — ANSI 74. Relocatable object output. Format same as FORTRAN-80 and MACRO-80. Most uses. Complete ISAM interactive ACCEPT DISPLAY COPY EXTEND. \$599/\$225

5. MACRO-80 — 8080/286 Macro Assembler. Intel and Zilog mnemonics supported. Relocatable binary output. Loader, Library Manager and Cross Reference List. Utilities included. \$149/\$18

6. BASIC-2 Disk II extended BASIC — Non-interactive BASIC with pseudo code compiler and runtime interpreter. Supports full file control, chaining, integer and extended precision variables, etc. \$199/\$18

7. BOS C COMPILER — Supports most major features of language, including Structures, Arrays, Pointers, recursive function evaluation. Includes library to 8080 binary output. Lacks data initialization, long float type and static & register class specifiers. Documentation includes C Programming Language book by Kernighan & Ritchie. \$119/\$18

8. POLYVIEW-80 — Full screen editor for any CRT with 21 cursor positions. 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. \$139/\$18

9. POLYTEXT-80 — Text formatter for word processing applications. Justifies and paginates source text files. Will generate form letters with custom letters and conditional processing. Support for Dasey Wheel printers. Includes variable pitch justification and motion optimization. \$89/\$18

10. Z80 DEVELOPMENT PACKAGE — Consists of (1) disk file editor with global find and replace, line facilities, (2) Z80 relocating assembler, Zilog/Moskay mnemonics, conditional assembly and cross reference table capabilities, (3) linking loader producing absolute, Intel and Zilog files. \$89/\$18

11. ZDT — Z80 Debugger to trace, break and examine registers with standard Zilog/Moskay mnemonic disassembly. Displays \$35 when ordered with Z80 Development Package. \$89/\$18

12. DISLOG — As DISTEL to Zilog/Moskay mnemonic files. Runs on Z80 only. \$69/\$18

13. TEXTWRITER II — Text formatter to justify and paginate letters and other documents. Special features include retention 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. \$129/\$39

14. POSTMASTER — A comprehensive package for mail list maintenance. Facilities include letter record extraction and label production. A form letter program is included which provides mail letters on single sheet or continuous forms. Requires BASIC-2. \$199/\$39

15. SELECTOR II-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 BASIC-2 Version 2. Supplied in source code. \$349/\$39

16. 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) DIFLUX — 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 code and documentation. \$69/\$39

17. THE STRING BIT — Fortran character string handling. Routines to find, patch, move, separate, concatenate and compare character strings. This package completely eliminates the problems associated with character string handling in FORTRAN. Supplied in source code. \$49/\$18

18. 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 retransmission. Full word and word expansion to word "ASCII" etc. \$600 hard with 300 baud with phone connection. Both ends need one. Standard and hi versions can talk to one another. \$199/\$95

19. Note: Some agreements may be subject to the terms and conditions of the Radio Shack's TRS-80 computer system.

### G2 Level III BASIC by Microsoft

Powerful extensions to Level II BASIC including 10 machine language user calls, long error messages, keyboard debounce, graphics commands and much more. Price includes User Manual, a Quick-Reference Card and a pre-programmed cassette tape. \$45

\*Radio Shack and TRS-80 are trademarks of Tandy Corporation.

Lifeboat Associates, specialists in microcomputer disk software, is proud to offer the first professional disk-based language and utility package for the Radio Shack TRS-80 computer. Written by Microsoft, creators of Level II BASIC, the package runs on a TRS-80 system with 32K RAM, one or more drives and TRSDOS. The software is supplied on diskettes and consists of:

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## 'Common Pilot' from Lords Corp

"Common Pilot," a version of the computer-aided-  
instruction (CAI) language Pilot, is available from  
Lord's Corp, Port Angeles, WA.

Common Pilot is a modified version of Pilot 73, or  
Core Pilot, except that Common Pilot is coded  
efficiently, to run on TRS-80. It was developed for and  
by teachers—Larry Kheriaty and George Gerhold.

The developers were seeking a language which  
would enable teachers to program material in their  
own strategies, sometimes complex—and without  
having previous computer experience.

Common Pilot is built upon a base of 11 simple  
instructions. These instructions, or operational  
codes, make the program relatively self  
documenting.

Conditioners enable modification of the OP codes.  
Instructions whose OP code is followed by a condition  
will be executed only when the condition is true.  
Otherwise the instruction—the whole line—will be  
ignored.

Instructions are:

**PROBLEM (PR:)** marks the start of a problem, and  
sets up options.

**REMARK (R:)** helps make program self  
documenting.

**PROB TYPE (T:)** writes alphanumeric data to the  
student's screen or terminal.

**ACCEPT (A:)** accepts alphanumeric input.

**JUMP (J:)** switches program control to an  
instruction other than the following line.

**DIMENSION (D)** allots array space.

**USE (U:)** transfers to an internal subroutine.

**END (E:)** ends a routine and causes return to  
original sequence.

**MATCH (M:)** compares student or input response  
to one or more author-supplied answers.

**COMPUTE (C:)** carries out a computation.

**EXECUTE INDIRECT (XI:)** execute the instruction  
contained in a string.

The OP codes can convert input to either all upper or  
all lowercase, can remove any spaces within the  
response, allow the student use of the GOTO  
command, or allow escape from the program, and  
code "W" provides a cut-off-point which allows use of  
duplicate labels.

Complete with text editor and 85-page manual,  
Common Pilot for TRS-80 is \$99.95 from Lords  
Corp Specialty Software, Box 99, Port Angeles WA  
98362, (206) 457-3064.

## Alignment cassette aids tape read

Alignment of tape heads is important to proper  
functioning of the TRS-80 tape input system.  
Magnetic Information Systems sells a digital  
standard reference alignment cassette, which can be  
used to properly align cassette deck heads.

Housed in a die-cast aluminum shell, the tape  
contains optically-aligned tracks recorded at 1600  
flux changes per inch.

To use, tape output is monitored with a meter,  
oscilloscope or tape-deck internal level indicator,  
and azimuth of the read head is adjusted for maximum  
stable output on both tracks. Most cassette decks,  
including the CTR-80 supplied with TRS-80, have a  
small hole in the case above the head assembly. To  
adjust azimuth, a technician simply pushes a jeweler's  
screw driver through the hole and turns a small  
screw.

The digital standard reference alignment cassette  
is \$15 from Magnetic Information Systems, Inc., 415  
Howe av., Shelton CT 06484.

# TRS-80 TRANSFORMED WITH PROFESSIONAL SOFTWARE PACKAGES

Lifeboat Associates, specialists in microcomputer disk software,  
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TRSDOS. The software is supplied on diskettes and consists of:

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FORTRAN 77 compiler (C64, C65,  
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grams—32, double precision  
floating point, natural log,  
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**MACRO ASSEMBLER**  
— A disk-based assembler for  
utilizing all common TRS-80  
production capabilities

**DISK TEXT EDITOR** — to  
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files. Also used as a  
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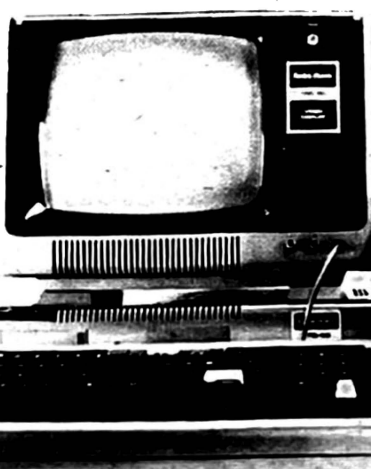
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Capacity: 290 Kilobytes  
Transfer rate: 250 kilobytes/sec.  
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Encoding method: FM  
Size: 9 1/4" high x 18" deep x 4 1/4" wide  
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DISC ERASER***Designed specifically for floppy discs!*

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GUARANTEED****USER FEATURES:**

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Apparatus compatible only. Supplied on TRS-DOS disk.

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**PERSONAL COMPUTER SERVICE**  
1515 Andrews Drive  
Las Cruces NM 88001**SOFTWARE REVIEW:  
PACHINKO,  
BeeWary**

By PAUL SEIDNER

Pachinko, by Jim MacLennan, requires 16K Level II, \$6.95 from Programma International, 3400 Wilshire bl., Los Angeles CA 90010:

Those who have pachinko machines in their game rooms really won't care for this program. Those who don't need not rush to the neighborhood computer store.

This is basically the same thing as a real pachinko, which means that to get extra balls you need to shoot balls into little slots. Exciting, isn't it?

The graphics are good and the program is well constructed. Unfortunately it does not replace the real thing, with its steel balls and lights. The simulation, therefore, tends to get monotonous.

On a one-to-10 software scale, I'd give it a 6 1/2. **BeeWary**, for 16K Level II, \$14.95 from 80-US Journal, new address 3838 S Warner st., Tacoma WA 98409:

This is number four in the graphic-sound series of Leo Christopherson. This game has you control a bee. The computer controls a spider whose goal is to devour the bee. You use the arrows on the keyboard to move the bee up, down, left and right.

The object of BeeWary is to sting the spider to death before it propels itself upward and devours you. You need a lucky and well-placed sting to kill it. The animation is excellent, and the game is well paced. The directions are uncomplicated.

I recommend this game to everyone. On a 1-to-10 software scale, I'd give this program a 9.

(Circle AT on free information form)

**TRUE or FALSE . . .****All TRS-80  
Memory Expansion Kits  
are the Same.****Dealer Inquiries  
Invited****FALSE!** All memory expansion kits are not the same. So, read on if you are about to expand your microcomputer system. We're UHF Associates and we offer a complete 16K memory kit for \$95.\* We know others offer similar storage for about the same price. Unlike others, UHF gives you *speed and storage*. After all, what's storage if your system has to wait in line to get to it. We'll tell you what it is — *an inefficient bottleneck*. Pure and simple. UHF gives you both memory expansion and a fast 200 nano-second minimum access time.

Your UHF 16K kit will come to you as eight new 4116 RAMS (fully guaranteed for one year), pre-programmed dip shunts and all necessary data for installation. All you need is a screwdriver and about 10 minutes. Or, if you'd prefer, UHF will install it for no added cost. Either way, call, write or use the order blank today. UHF offers immediate delivery and all orders are sent post paid.

When it comes to memory expansion kits, go with UHF and don't be stuck with an upgrade that falls short.

\* you can buy up to 48K for the expansion interface and save even more.

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(Circle DS on free-information form)

**TRS - 80 SPEEDUP MOD/REVERSE VIDEO****SPEEDUP MOD** — You don't have to spend \$3,500 on a TRS-80 Model II to get faster computing. Now you can speedup your TRS-80 Model I - disk systems included - by 50% or more when you install my speedup board. The result is more animated graphics, shorter program run times, and generally greater computing power for your dollar. Changes between normal and faster operation are made using a simple BASIC statement. Programs residing in memory are not affected by speed changes and no switch is required (a switch not supplied - may be installed if manual speed select is desired). Changes are provided for NEWDOS and DOS 2.2 that allow disk systems to run reliably at both the normal and accelerated rates. Although the speedup board guarantees a 50% increase in operating speed, most systems can run 100% faster.**ASSEMBLED & TESTED \$24.95****REVERSE VIDEO** is finally here! If you're tired of going blurry-eyed looking at your video display, then you are ready for reverse video. It provides dark black characters and graphics on an all white screen for a much crisper and much easier to read presentation. Change between normal and reverse by simultaneously pressing a combination of three keys on the keyboard.**ASSEMBLED \$11.95 (\$14.95 after 1 December)**Add 5% for postage and handling  
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DISK REPLACEMENT OR DISK BACKUP -  
THE BETA-80 IS YOUR BEST BUY

THREE OUT OF 4 PEOPLE BUYING DISK SHOULD BE BUYING A BETA-80 SYSTEM.



The BETA-80 sets a new price and performance standard for mass storage for TRS-80 users. The BETA-80 is not merely an intermediate step between audio cassettes and disks but a true alternative to disk in over 70 percent of small business applications and a valuable addition to disks in most of the remaining applications. The BETA-80 uses the field proven BETA-1 as the heart of the system. The BETA-1 has proven itself in demanding industrial applications for many industrial giants since production began in April, 1979.

NOT AN AUDIO CASSETTE!  
What exactly does this mean?

- 1. Full computer control of all tape functions (no buttons to push).
- 2. Loads a 1,000 Byte file in 3 seconds compared to 22 seconds on a TRS-80 audio recorder.
- 3. No volume adjustments.
- 4. No earphone or microphone connections.
- 5. No need to record several copies to insure one good one.
- 6. Guaranteed tape interchangeability.
- 7. True multiple drive capability.

This industrial quality digital cassette system outperforms similar systems offered by N.C.R., D.E.C., Data General for use on accounting machines and minicomputers. Industrial users have relied on high quality digital cassettes for the past 15 years. MECA is the first to provide the personal computing marketplace this kind of professional tape system.

INTELLIGENT OPERATION:

The BETA-80 is so intelligent that you don't have to be a computer expert to use it. Your system comes complete, you just plug it in, insert the system tape supplied with the unit, turn on your TRS-80 and within seconds your system is ready to go. The BETA-80 uses a dedicated microprocessor to do most of the data handling and control of the tape drive. This means that the BETA-80 requires less attention from your TRS-80 so your TRS-80 can do more for you.

EXAMPLE COMMANDS:

**LOAD filename** - The unit high speed searches at 100 inches per second, moving DIRECTLY to the file, engages head and reads the file into TRS-80 memory.  
**SAVE filename** - The unit automatically moves (100"/second) to the closest available space on tape, engages head and writes the file from the TRS-80 main memory on to tape.

The above examples are of program load and save. Similar features are available for Data program load and save. This versatile unit is so easy to use that even unsophisticated users will spend only a few hours mastering its use.

SPEED OF DATA ACCESS:

Data access is normally slower with a digital cassette than with a disk. In certain scientific applications where access time is crucial, disks are the natural choice, but in most business applications the BETA-80's advantages far outweigh any speed differences. The chart below gives a comparison of the access time to a single 256 byte block of data.

	BETA-80	TRS-80 DISK
Maximum Access to 80 K Bytes	6 seconds	2 seconds
Capacity for first drive	500 K Bytes	79 K Bytes
Media Cost per Megabyte of storage	\$8.60	\$102.70
Price for first drive	\$499.00	\$798.00*

\*Price includes cost of Expansion Chassis, which is required to add a disk to the TRS-80.

THE REQUIREMENT FOR THE TRS-80 EXPANSION CHASSIS ELIMINATED:

Since the BETA-80 plugs directly onto the TRS-80 Bus, owners need not purchase the Expansion Chassis. As an option, MECA provides a printer port on the BETA-80. You then have the opportunity of adding a parallel printer directly onto the BETA-80 unit. For TRS-80 owners who have already invested in an Expansion Chassis, MECA also provides the option of plugging the BETA-80 onto the Expansion Chassis.

PROG-80 reviews  
People' Pascal

Robert P. Johnson, writing in the December PROG-80, had the following remarks about People's Pascal:  
"Now that you have mastered Level I, Level II, and perhaps disk Basic, what new worlds remain to be conquered? For TRS-80 owners, Computer Information Exchange, Inc. has made available, at very low cost, an introduction to the greatest programming language since sliced bread—Tiny Pascal. This scaled-down version of Pascal was originally developed by Kin-Man Chung and Herbert Yuen and published in the September, October and November, 1978, issues of Byte magazine. In intent, Tiny Pascal bears the same relation to Pascal that Tiny Basic does to the full-blown versions of Basic (Level I vs. Level II). Thus Tiny Pascal (thru C.I.E.) offers the budding programmer the opportunity to become acquainted with Pascal without the major investment for 48K memory, two disk drives, and \$150 for the UCSD version of the big Pascal. People's Pascal I and II run on the Level II, 16K, TRS-80.  
"C.I.E. offers two versions of Tiny Pascal: People's Pascal I (under license from Pipe Dream Software), a Pascal compiler written in Basic for \$15; and People's Pascal II (under license from Super Soft) in machine language for \$23.50. Initially C.I.E. informed callers that the two versions were identical, except that:  
1. The machine language version compiles faster, and  
2. The machine language version (People's Pascal II) included 32K and 48K compilers on the cassette." (Our mistake, it is 16 and 32K, see remark at end. WM-C.I.E.)  
"As it turns out, the preceding statements are false. There are no 32K and 48K compilers on the flip side of People's Pascal II. Instead you get a backup copy of side A. Second, the monitor commands differ

- Random Access to 500K Bytes of Data
- Eliminates Need for TRS-80 Expansion Chassis
- Optional Printer Port Available
- Microprocessor Based Intelligent Controller
- Fully Automatic Operation
- Guaranteed Interchangeability of Media
- Sophisticated Operating System Supporting Named Files
- Save and Load Both Programs and Data Under Full Program Control
- Simpler to Use Than Disks

- The BETA-80 is not related to the audio cassette systems with which you are familiar. The differences between an audio cassette and the BETA-80 includes:
- 1. Digital head for greater reliability and media interchangeability.
  - 2. Full motion control allowing data access at high speed.
  - 3. Professional quality digital amplifiers assuring high read and write reliability.
  - 4. Cast aluminum chassis assuring exact tape alignment.

between the two versions. Third, the People's Pascal I compiler is (gasp!) a line-numbered version of Tiny Pascal. So your purchase decision will have to be made on grounds other than just price (e.g., flip a coin, or that you don't have a DOS that allows you to copy machine language tapes onto your disk).  
"Now that you have parted with \$23.50 for People's Pascal II what do you get when you tear open the package? You get a copy of TRS-80 Computing (Vol. 1 No. 4) that is devoted entirely to People's Pascal (both versions), a slip of paper telling you that you didn't get the big compilers (really, it says they are on BOTH sides one and two—WM-C.I.E.). . . . ., a pamphlet explaining the superiority of C.I.E.'s cassettes, and a cassette containing People's Pascal II. Also, you now have problems.  
"First: Volume One, Number Four of TRS-80 Computing is NOT an "Idiot's guide to Tiny Pascal". Both the Basic and machine language versions are discussed—but not well identified as to which is which. Second: if you don't already know how to program in Pascal, this 16-page pamphlet will not teach you how (well, maybe it will teach some of you). The situation is made worse by the lack of good introductory books to Pascal. Unlike Basic, Fortran, Cobol, etc. there are not hundreds of books on Pascal. Maybe next year. Hopefully, the existence of People's Pascal will encourage the writing of such books—or even Pascal tutorials in some of the magazines (hint-hint PROG-80!). Alternatively, you can lurk around your local Apple II dealer and see what they come up with in the way of a basic Pascal manual.  
"Moving right along, you load your People's Pascal II tape to see what you've got. If you are like me ('immediate gratification'), you will soon conclude that you have a +&!\$ faulty cassette. From experience, I can assure you (almost) that the cassette is O.K. The Pascal compiler does not start to load until the tape has run for almost a minute. Finally, success! The Pascal package, plus a sample program, are loaded. Following the directions in TRS-80 Computing, you compile and run this program and are treated to an interesting graphics display. . . . . It is not clear why these programs are included. Presumably they demonstrate some qualities of Pascal—but what?  
"To sum up—should you buy this version of Tiny Pascal? Sure, why not? In fact, buy both People's Pascal I and II. The reasons are numerous:  
• The cost is low (\$39 total for both).  
• You're going to want to learn another language anyway. It is depressing having everyone badmouthing the only language you know. Strike back! Now you can badmouth Fortran and APL.  
• Remember all those articles in the magazines on Pascal that you didn't read because you only had Basic? Now you can go read them. It will give you something to do until David Lien writes a Pascal manual for the TRS-80.  
• Now you can stand up to other microcomputer owners. No color capability? No high-resolution graphics? So what! Now for a few paltry cents, YOU CAN RUN PASCAL!! (well, sort of).  
• If you thought Adventure was a challenge, learning Tiny Pascal on your own will really captivate you.  
• The People's Pascal software does what it says it will do. It will give you the capability of running Pascal (and learning in the process). Learning it is up to you. In a world of misleading advertising, People's Pascal delivers what it promises (but no more)."  
**NOTE FROM CIE:**  
We have left nothing out of People's Pascal II (People's Software tape 6). We have combined what was supposed to have been side one and two onto one side, and given a backup copy on the other. Five programs-five programs, instead of three-two.  
I'm going to have to examine our promotion, because while we do supply 16 and 32K compilers, we do not have 48K Pascal. UCSD does!

(Circle EJ on free-information form)

THE COMPUTING  
TEACHER

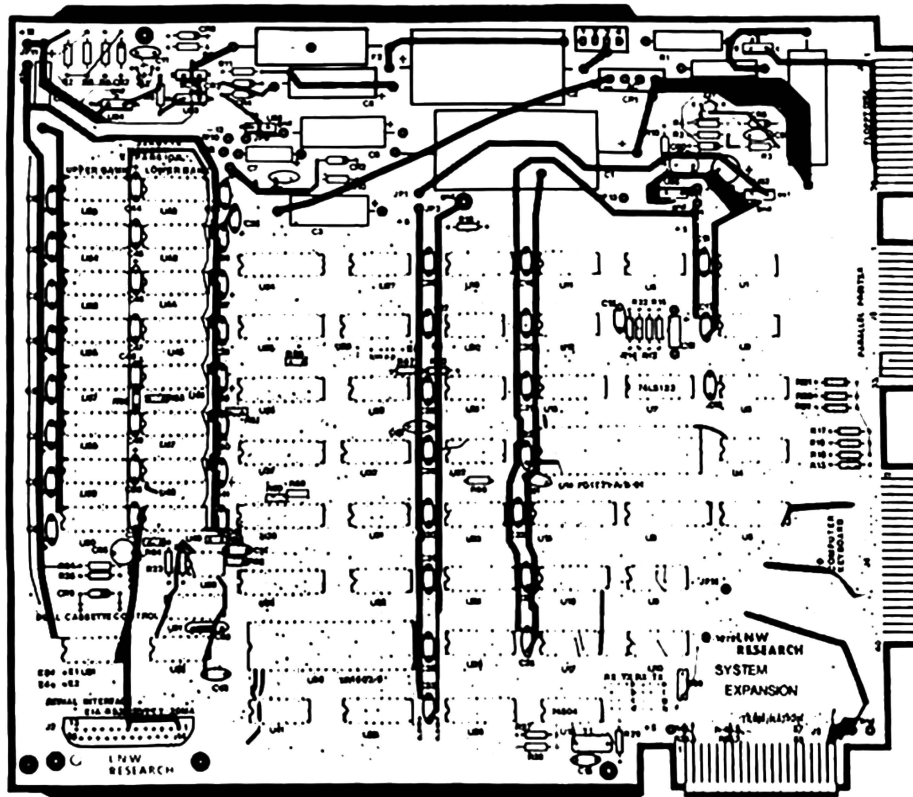
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- SERIAL RS232C/20mA I/O
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In order to interface to modems, teletypes, serial printers, and other TRS-80's, you need a bidirectional Serial Interface. That's why it's standard on the System Expansion. The interface is implemented with RS-232-C, as well as, 20 mA (TTY) at the standard baud rates. Software compatibility has been maintained and listings of driver programs are supplied.

### QUIET MEMORY DESIGN

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\*TRS-80 is a product of Tandy Corporation.

### BUILD WHAT YOU NEED

We know that everyone may not need all the features of our System Expansion Board, and why pay for something you don't need? By offering the bare PC Board and providing PARTS LISTS BY SECTION you can build the board according to your current needs and expand later. This MODULARITY serves to further reduce the cost of your interface.

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With every circuit board comes a COMPREHENSIVE USER MANUAL. This detailed manual features Parts Lists, Assembly Instructions, Testing Sections, Circuit Descriptions, Troubleshooting Information and Schematics.

### SOFTWARE COMPATIBLE

Since the System Expansion Board is fully SOFTWARE COMPATIBLE with the TRS-80's, no patches or special software is required.

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## SYSTEM EXPANSION

### — SPECIFICATIONS —

#### 1. ELECTRICAL

##### A. SERIAL INTERFACE

1. EIA RS-232-C or 20mA (TTY)
2. Jumper Selectable Baud Rates:  
a. 110, 150, 300, 600, 1200, 2400, 4800, 9600 Baud.
3. Parity:  
a. Even, Odd, or Disable.
4. Word Length:  
a. 5, 6, 7 or 8 bits.
5. Jumper Selectable as Data Terminal Equipment or Data Communication Equipment.

##### B. FLOPPY CONTROLLER

1. Controls up to four (4) drives.
2. FD1717B-01 Floppy Disk Formatter/Controller.

##### C. MEMORY EXPANSION

1. Support 0K, 16K or 32K bytes of expansion.
2. Utilize 16K x 1 dynamic RAM.

##### D. PARALLEL LINE PRINTER INTERFACE

1. Compatible with the Radio Shack/Centronics printers.

##### E. DUAL CASSETTE PORT

1. Relay Controlled.

##### F. REAL-TIME CLOCK

1. "Heartbeat" interrupt type.

##### G. POWER SUPPLY

1. Overvoltage protection.
2. Short circuit protection.
3. Thermal shutdown.
4. Four (4) supplies:  
a. +12V @ 300 mA  
b. +5V @ 1.1 A  
c. -5V @ 1 mA  
d. -12V @ 20 mA
5. Utilize Radio Shack's UL approved TRS-80\* Computer Power Pack.

##### H. SCREEN PRINTER BUS

1. Extension of the TRS-80\* 40-pin Bus.

##### I. PHYSICAL

##### A. CONSTRUCTED BOARD SIZE

1. 9.6" x 11.5" x 2"

##### B. PRINTED CIRCUIT MATERIAL

1. Epoxy with solder mask and silk screened reference.

### — ORDERING INFORMATION —

• SYSTEM EXPANSION including printed circuit board and user manual . . . \$69.95

• USER MANUAL . . . \$6.95  
On all orders, please add \$3.00 for postage and handling. California residents add 6% sales tax.

LNW RESEARCH

P.O. Box 16216  
IRVINE, CALIFORNIA 92713

## Matchless sells computer cables

Matchless Systems, which has been marketing its MS-80 add-on drive for the TRS-80, is now offering cables for both the end user and OEM markets.

Matchless provides off-the-shelf availability of cables for drives and printers, as well as specialty units—such as tape-drive cables.

Retail price for the two-drive cable is \$24.50, and the four-drive cable is \$34.50.

The cable for the MS-204 Printer (and other printers such as Anadex, Microtek, Emako or any other Centronics-compatible printer) sells for \$34.50.

Prices for custom-made cables, plus OEM prices, are available on request. For quantity prices and other information, contact Mike Conner, Matchless Systems, 18444 Broadway, Gardena CA 90248, or call (213) 327-1010.

those involved in it would be beyond the law, and rigged elections are what Osborne sees as the main perils. He seems much more comfortable with a world full of small computers than one in which large computers are set up to efficiently handle some large problems. He does not want ballots counted in American elections, electronic funds transfers, or electronic stock exchanges. Perhaps wisely, he does not feel the checks and balances of a less-efficient manual system can be built into large-mainframe computerized versions.

While Osborne seems most at ease with S-80-size computers, he predicts that Intel (house of 8080 and producer of first commercial microprocessor) "may well be producing microelectronic chips that exactly reproduce the capabilities of IBM computers, and in keeping with the price profile already described they will sell initially for \$200, and finally for \$2, as compared to the hundreds of thousands of dollars IBM charges for the same computers today."

While Osborne sees the silicon-brained industrial robot as threatening U.S. factory employment, he fails to note that some of those jobs have long been lost to low-paid third-world workers, and that one effect of the new automation will be to bring that production back to this country. Full consideration of the effect of future automation must hold this in view, along with the Iranian-like repercussions possible.

Osborne's purpose does not seem to be simply to show off the clearness of his vision—that is indeed impressive—but to awaken a sleeping public:

"No one is paying attention to the way in which Microelectronics and computers are being used, or to the impact such uses might have on our society. We had better start paying attention, or we will be very, very sorry," he concludes. — WM

## REVIEW:

## 'Running wild-the next industrial revolution'

(Circle GC on free-information form)

by Adam Osborne

(Circle EM on free-information form)

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Anyone interested enough in the new computer technology that he would pay at least \$500 for a S-80 computer should almost certainly spend an additional \$3.95 to find out how right he was in laying out that amount of cash.

The book should prove a delightful ego trip for anyone prophetic enough to have gotten into microcomputing at the current-early stage of development.

"Did you ever think you would see the day when IBM would compete with Radio Shack? Well, it does today. IBM is selling its smallest computer (the 5110) and Radio Shack is selling its TRS-80 in the same microcomputer marketplace," Osborne observes, not quite a quarter-way through this interesting paperback.

Because of microelectronics, Christmas '79 proved expensive to the average shopper with game-aged children on his list. During the next 25 years, microelectronics will prove far more expensive:

"Of all jobs held in 1978, perhaps 50 per cent could be eliminated during the next 25 years. This figure is based on an analysis of data in the 'Employment and Earnings' monthly publication put out by the Bureau of Labor Statistics for September '78."

Thus it is a revolution Osborne sees, not evolution, that will drastically, sometimes abruptly affect the way we live and work.

Who is safe? "Microelectronics will begin by replacing jobs that do not require too many 'smarts'. Supposedly these are blue collar jobs, although some might argue the point. The last jobs to go will be those that depend on human judgment and opinion."

Unfettered, big computers can be as dangerous as a carelessly-operated Three Mile Island reactor, Osborne feels. Computer crime so lucrative that

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## REVIEW: 'Erase-Sure' 'Rapid Rewind'

When using cassette tape, TRS-80 computerists may frequently make false starts, poor loads and other mistakes that have to be erased if you are going to have a good copy of the program for the tape library.

To erase in the recorder, takes as long as it took to botch things up in the first place. In a day of instant solutions, a bulk eraser is very nice.

Just as handy is an alternative to the rewind and fast-forward buttons on the CTR-80 tape recorder. It is nice to be able to rewind one tape while you are recording another.

Magnesonic makes two little battery-powered units, one for rewinding, one for erasing. We tried them both and here is what we found.

Both units arrived at once, and our tape-handling people were very curious as I unpacked the boxes, a carryover from the spirit of Christmas past.

Bulk erasing is a big thing with people who are into tape duplication, as CIE is. Tape duplicators do not have erase heads. Before re-recording a tape that failed specifications the first time, complete erasure is necessary.

The Radio Shack bulk eraser fails to thoroughly erase a computer tape so that it can be re-recorded on a duplicator.

Stereo Review and Radio-Electronics reviewed Erase-Sure. Radio-Electronics found Erase-Sure action "swift and sure", and Stereo Review measured noise levels of erased tapes to be very near those of unused tapes. Erasing just with erase heads on a tape recorder increased noise by 5.5 dB. Erasette decreased it by 4.7 dB, "to very nearly the original level."

"Several slow passes of the cassette over the eraser were necessary to completely erase a recorded signal . . . . ., but we have had to go through the same process erasing . . . . . tape with an AC-operated bulk eraser."

Stereo Review was not dealing with computer-generated pulses, and giving the tapes back to a computer for criticism. We found the tapes unacceptable for use with bulk erasing, but that is not very strong criticism, since that is the result when using most erasers. Almost all potential users have tape recorders with erase heads, and would probably find Erase-Sure quite thorough.

Your reviewer simply left his new toys sitting around the office. It was not long before it was noticed

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that Rapid Rewind was at work on the People's Software release-tape desk. Tape checker Heidi Stottler rated it a Handy Gadget. And on several occasions programmer Julie Barrett borrowed it. Because it rewinds tapes with the tape in full view, Julie found some tape faults via visual inspection. Tape-handling problems can cause wrinkled and worn tape, which almost certainly will result in loading problems. When this is suspected, Magnesonics' Rapid Rewind is a nifty way of reeling through the tape without losing visual contact with it.

Each unit is priced at \$24.50, which includes four AA batteries. AC adapter is available for \$9.50. Include \$1.50 each unit for postage; CA residents add 6 per cent sales tax, from: Magnesonics, Box 758, Ventura CA 93001.

## HW Club Alliance offers discounts

Hobby World Electronics has organized Hobbyworld Computer Club Alliance, which offers discounts and specials to selected clubs in either group or individual purchases.

Discounts are offered on the smallest components, memory ICs, software, printers, terminals and entire systems.

Details on membership can be obtained from: Pat Olson, Hobby World Electronics, 19511 Business Center dr., Northridge CA 91324, phone (800) 423-5387 or in California (800) 382-3651, or local (213) 886-9200, all numbers ext. 25.

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## Standard CP/M vastly increases S-80 capability

By ROBERTA SMITH

For what is believed to be the first time "standard" CP-M is available for the TRS-80. CP-M has been available to TRS-80 users for some months but it has been a non-standard version designed to run only on S-80. The limited amount of application software available which runs under this special version is also nonstandard. Transportability (to other computers) of nonstandard software is almost always expensive and generally not cost-effective, so that overall system cost is high.

The ability to take advantage of new products, both hard and soft, is severely hampered using non-standard operating system software. With standard CP-M, compatibility is nearly guaranteed with most new hardware and software. It is important for the end-user to note the motivation of hardware and software developers with regard to standard operating system software—the marketplace for their products is much larger and development time shorter due to the commonality of standard CP-M. The benefits of this standardization are passed on to the user in the form of more immediate availability of new products at more competitive prices.

With standard CP-M available, mature, high-quality application software is now on the market for S-80 users. Advanced hardware, too, the most desirable now being larger and faster disk storage. Standard 8" soft-sectored disks have already been mated to S-80 under standard CP-M by the same manufacturer(s)—ED who made standard CP-M use possible. This means that if a user has outgrown the minidisk (which is becoming typical), he can add virtually any 8" drive directly to his present S-80 system.

CP-M originator Gary Kildall feels the fundamental issues involved in the evaluation of a computer system are its operating system, speed,

and cost. Users of nonstandard operating systems always have difficulty in evaluating cost of upgrade to a new computer system because they are not necessarily assured their old software will work in the new environment, and they face the intangible costs which include retraining, changes in operating procedures, etc. Use of the standard operating system virtually eliminates these costing difficulties because existing software remains fully compatible.

Furthermore, according to Kildall, it is the policy of Digital Research (supplier of standard CP-M) to fully support and upgrade CP-M. Recently-released CP-M 2.0 incorporates several new features, most important being an upward-compatible extension for hard disk and separated user areas which Kildall feels are essential. However, at the user level, release 2.0 shows no differences—which means no retraining, and full compatibility with existing software. In addition, Digital Research has released the MP-M operating system, which incorporates 2.0 but also allows multi-programming and multi-tasking. MP-M thus supports multiple-terminal operations, including communications and point-of-sale systems.

Virtually every major programming language is offered users of standard CP-M—and from multiple sources at that! Fortran, Cobol, Basic, Cbasic, Pascal, PL-M and more. In addition to these are a wide variety of "super" assemblers, word processors, utility programs and of course business applications programs.

When Business Microproducts first received the Mapper I & II systems for evaluation we discovered several deficiencies. These were not in the CP-M operating system per se (some of which is contained in EPROM on the Mapper I board) but were incompatibilities with existing high-level-language implementations. The first of these we encountered was the inability to produce from the keyboard a backslash character, which in Cbasic is used extensively as a continuation character. We subsequently found that this omission had also been made in the nonstandard CP-M from at least three sources.

Next, we discovered that our standard CP-M did not support all of the printed cursor controls which are mandatory for the operation of the Osborne & Associates business systems (these systems use a "fixed background" display technique and scrolling is never used). In particular the up-arrow (or up-cursor) is essential not only for the Osborne & Associates packages but for Micro-AP's Selector II & III as well. The keyboard input of the up-arrow is essential, of course, for the exponentiation symbol.

Business Microproducts now has all of these problems solved and all Mapper systems purchased from us will contain the specially-customized EPROMs which contain full cursor control, keyboard backslash and up-arrow, a parallel port print routine, serial RS232C I/O driver, automatic form-feed function, and other features as well.

Since implementation of firmware in the EPROM does not use any of the address space assigned to RAM (you still have a full 48K RAM capacity) we feel that a lot more horsepower can be added without detracting from the overall system capacity. Planned additions are a dual-density disk controller and hard-disk (Winchester drive) interface—as well as some dynamite applications software. Current Business Microproducts software includes CP-M, CBasic2, payroll with cost accounting, accounts payable, accounts receivable, and general ledger, Selector III-C2 information management system, all of which are fully compatible with standard CP-M. They are available on both 5 1/4 and 8-in. disks.

Other software products, compatible with TRSDOS and NEWDOS+ are Paysoft payroll program, accounts payable, accounts receivable, and general ledger, Radex-10, NEWDOS+ and others. The firm also handles Mapper and Shugart dual-density 8-in. floppy drives. For information call (415) 443-4876 9a to 6p pacific time, or write 609 S. Livermore av., Livermore CA 94550.

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you to define Keyboard Macros. Plus all the regular features of course, with tutorials, New Products, Reviews and the Business Section. We call it our "80-cubed" issue - 80 pages, in 80-U.S. for 1980! It isn't called the "TRS-80 Users Journal" for nothing, it really is just that! It is published bi-monthly, and costs \$16.00 per year in the US. 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. 3838 South Warner Street, Tacoma, Washington 98409



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## 'Database' is easy way to program computer

This is the first in what we hope will be a long series of reviews of database management systems.

Database manager programs are generalized programs the user personalizes for his own applications. These are limited only by the versatility of the database program, and the imagination of the user.

"Database" from Tele Remote Systems is fast, easy, inexpensive—and it really works. Beginning computerists may not see the significance of the last remark. If a program is on the market, it is available and it works, right? Maybe. CIE has tested a number of database programs, and, for one or another reason, they have never worked. That's really nothing to get excited about. Eventually, we are sure, all those systems will work, and the buyers will be satisfied. Anyone in a hurry to use one of the buggy systems, however, may panic!

Tele Remote Systems' Database accepts up to ten different categories of information per file. Because of programming technicality, it numbers these 0 through 9—no big deal.

Users can configure those columns into accounts receivable or payable, address list, inventory system, whatever.

We decided to put the program to work writing obituaries. In the newsroom few things are much more demoralizing than to have to tackle three or four obits as soon as you come in the door. Obituaries should be computerized, and it can easily be done, using the Time magazine style of obituary: "Died, John Smith, 88, formerly of Hot Springs, AR, turnip farmer for 50 years, known for his wild ways, of cancer, at home, survived by everyone."

We initialized a file named Obit, with 10 columns, containing name, age, native of, occupation, known for, died of, at, and survived by. This was called "creating" a file. One of the nice features of the program is that it remembers the format. Just keep a number of different Database disks, one for each format you have created.

Having created the obit format, we ask the to write to the file. It then queries us with NAME?, AGE, NATIVE OF?, OCCUPATION?, etc. With such a tool in a newsroom, copy persons could write all routine obits.

Tele-Remote Systems' database did not output a satisfactory obituary—simply because it does not print a comma-spliced listing. Also, we were using all uppercase, something the newspaper reader would not accept. These are technicalities, and we were thrilled to have an in-house obituary program, of sorts, to test.

Speaking of sorts, it will the first line alphabetically, or the fourth line numerically. This makes it a natural for mail addressing. Each record can contain up to 10 data items (you've set that number when you initialized the program and formatted the file).

The sort does not break any speed records—about a minute per ten names—but the versatility, zip sort or alpha, is a nice feature.

When it comes time to print the list, the database program will either print labels or a tab list.

There are two species of database programs, those which create so-called random files and those using sequential files. Random files have your disk drives running, running, running. Random files mean your printer must wait while the next record is loaded from disk. Sequential files go to disk only to save or load. You can print a whole file before a disk has to spin.

CIE has something on the order of 13,000 to 15,000 names on file—our Bulletin and S-80 Computing subscriber list. Using sequential files and a 125cps printer, it takes three working days to print the list.

Were we to be using random files, we might not know how long it takes to print—we might not have completed it yet. That is not only because it takes so long to print using random files, but possibly before we had written 13,000 labels we might have been into who knows how many generations of new disk drive mechanisms!

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Two-Drive Add-On .....	1268.95
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Price includes Percom PATCH PAK™ described elsewhere in this ad.

### Disk System Interconnecting Cables

Improved design places drive 0, which includes the cable termination, at the end of the cable — not in the first position like the RS design — to eliminate the reflected noise of an unterminated cable and thereby improve data and control signal integrity. Prices:

Two-Drive Cable .....	\$ 24.95
Four-Drive Cable .....	34.95

### Power Line Filter

Eliminates switching spikes and other noise caused by equipment sharing the TRS-80® ac power line. Also reduces TV interference caused by the TRS-80. \* 115/250 V, 50-400 Hz. Instructions for easy installation in standard aluminum mini-box chassis. Price .....

\$ 19.95

### Media

<b>Minidiskettes:</b>	
10 Disks in a convenient plastic organizer box .....	\$34.90
Single Disk .....	\$ 3.49
<b>Cassettes:</b>	
These data cassettes provide orders-of-magnitude improvement in data integrity over ordinary audio cassettes. Features include a pylon-coated pressure pad which eliminates lint and minimizes erratic tape motion, and an energy-absorbing foam pad that is superior to a leaf-spring-mounted pad which tends to oscillate and cause fluttering. Five-screw case virtually precludes deformation during assembly.	
Pylon-10™ .....	\$1.95 ea
Pylon-30™ .....	\$1.99 ea

### How to Order

Order by calling Access Unlimited toll-free on 1-800-527-4196†. Mail orders also accepted. Orders may be charged to a VISA or Master Charge account, or paid by a cashier's check, certified check or money order. We accept COD orders with 25% deposit. Sorry, we cannot accept personal checks. We pay shipping and insurance charges on orders over \$1,000.00. Add approximate insurance and shipping charges for under \$1,000.00. If in doubt about these charges, ask when you call in your order. Texas residents include 5% sales tax. Minimum order: \$20.00. Allow 2 to 4 weeks for delivery.

†Texas residents call (214) 494-0206

Prices and specifications subject to change without notice.

## CP/M 2.0 for Mod II

A fully-CP-M-compatible operating system for the new Mod-II Radio Shack TRS-80 computer has been announced by MPU of San Carlos, CA.

The new operating system will work with CBASIC and all other CP-M programs, requiring no changes in the operating codes.

Source and object files will both work on the system, and programs from MPU and other CP-M-code suppliers will be fully compatible.

The entire operating system sells for \$249.95, but will be available through Dec. 31, '79, at an introductory price of \$199.95. This system opens the entire CP-M library of user-proven programs to the Mod-II owner.

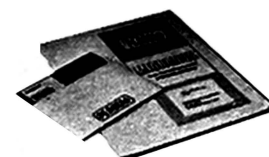
In addition to the operating system, MPU also offers the complete Osborne accounting package: accounts receivable and payable, payroll with cost accounting, and general ledger. All are available immediately for Mod-I and Mod-II TRS-80s. Inventory, database and mailing list programs and a special package of interest entirely to professional programmers, all are now under development.

For more information write MPU at Box 808, San Carlos CA 94070, or call toll-free anytime (800) 824-7888 and ask for operator 883 to take your name and address, and information will be sent to you. In California call (800) 852-7777. Dealer inquiries are invited.

We think a lot of people can get quite a bit of mileage from this program. Anyone wanting additional features built-in should contact the distributor, Tele Remote Systems, Box 1554, La Mesa CA 92041. It is being sold now for \$49.99, down from \$99.95. That includes disk.

Incidentally, the program uses less than 5K of ram, and requires 32K 1-or-more disk systems, with Apparat NEWDOS. It was written by TRS-partner Wayne Emerson. The other guy is David Long, who is writing another neat program. WM.

(Circle AG on free information form)



### Disk System Software

**MICRODOS™** an advanced, easy-to-use operating system for TRS-80s\* using Percom disk storage systems, works entirely with

Level II BASIC commands. MICRODOS™ replaces primitive TRSDOS\*, is more powerful and faster, yet resides in only 7K bytes of RAM. Up to 10 user-defined functions may be added to existing functions, and hexadecimal constants may be used in expressions. MICRODOS™ is supplied on a system minidiskette that also includes three self teaching BASIC language programs: (1) a file management program, (2) a disk utility program — illustrating how disk utilities may be written with only a few BASIC statements, and (3) a sample application program. The application program is an expandable, user accessible "notebook" of information about MICRODOS™ BASIC statements. Price \$29.95

**PATCH PAK™** is supplied free (on disk) with the purchase of a Percom TFD-100™ or TFD-200™. PATCH PAK™ extends TRSDOS\* to accommodate 40- and 77-track drives. It also de-glitches TRSDOS\* 2.1. With the patch applied to TRSDOS\* 2.1, interference with disk operations from the TRS-80® "heartbeat" pulse is eliminated, as is premature stopping of the drive motor during operation — a problem sometimes referred to as "silent death." PATCH PAK™ is applied to your system disk "on the fly" using two drives. Application instructions are included. Price (if sold separately) .....

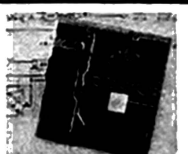
\$10.00

**new DOS, new DOS+ —** Disk operating system corrects and improves TRSDOS\* 2.1. Fixes keyboard bounce. Fixes APPEND, LOC and VERIFY. Fixes SYS3 bugs which crash the disk directory, and bugs which cause "Lost Data" errors. Enhancements include: machine language line renumbering program • faster LOAD & SAVE functions • space saving allocation of minidiskette granules • password disable/re-enable capability • validity check of output to disk — and more. new DOS+ also includes these exceptional utilities: Editor/Assembler with tape & disk I/O and output to line printer • disk-based disassembler with output to line printer • SUPER ZAP — Apparat's hex dump utility • Level I ROM located in Level II RAM • LMOFFSET for Tape/Disk transfers — and more. Prices:

new DOS .....	\$49.95
new DOS+ .....	\$99.95

### New! the SEPARATOR™

This PC board plug-in adapter for the TRS-80® virtually eliminates data read errors (CRC error — Track locked out!) which occur on high density inner disk tracks when clock and data bits are not reliably separated during playback. This problem has plagued many TRS-80® systems. The SEPARATOR™ is installed in the Expansion Interface without modifying the host system. Caution: Opening the TRS-80® Expansion Interface may void the limited 90-day warranty. Price .....



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## Custom Tickerscreen available for S-80

Max Ule & Co. and Intersystems Software have introduced a system that allows a S-80 user to watch the entire New York or American stock exchange on a real-time basis with no delay as well as monitor 48 or more stocks, keeping track of their last sale prices and volume.

Called Maxi-Micro Ticker-TRS Tickerscreen, it allows the user to see the last 10 trades of any of the monitored stocks to be seen on demand, and monitors all reports, announcements and hourly exchange indices and volume information at the touch of a button.

Stocks can be maintained in either of two alphabetical lists so that, for example, speculations might be kept separate from long-term holdings. Price limits can be put on any stock and the computer will visually indicate when these prices have been reached.

The system enables S-80 owners to access the stock exchanges at a lower cost than with any other system, according to Max Ule, who is marketing it. Software prices start at \$1,000. A monthly fee charged by the exchange is the only additional cost after purchasing the package.

The system is available on cassette or disk with custom options available on request. Delivery is immediate. Demonstrations are given at the office of the distributor, Max Ule & Co., 6 E 43rd st., New York City 10017 (212) 687-0745, or (800) 223-6648.

## Friden-Burroughs interface card

Micro Builders of Hoboken, N.J. make an interface that converts a Burroughs 9350 or Friden 7000-series punch-tape typewriter into a standard full-duplex ASCII conversational terminal (like Teletype).

The firm claims that no software changes are needed to make the converted terminal talk to Basic, or any other popular piece of software. The interface board can be configured to plug into an S-100-bus computer, or can connect to computer via RS-232C. The latter approach requires addition of a power supply.

In either configuration, a switch gives the user the option of converting all lowercase letters to uppercase, thus accommodating software that cannot accept lowercase (as is the case with Basic).

Interfaces are available for delivery within three weeks of receipt of order. Price is \$224.95 for assembled, tested, and burned-in for 10 hours board, or \$149.95 for a kit (all ICs tested), or \$64.95 for board and manual, or manual separately for \$5 (credited towards purchase). Micro Builders is at Box 28-D (1 Mar Neview Plaza), Hoboken 07030. Bruce R. Ratoff and Jeffrey B. Colter are the proprietors.

weighted accumulative score, reflecting the student's performance by topic. Presentation of the text material, in varying levels of detail, is controlled by the student's performance of the topic.

MicroGnome's CAIware program is available on cassette for \$24.95. MD residents must add \$125 tax. Order via MasterCard, VISA, certified check or money order, from Fireside Computing, 5843 Montgomery rd, Elkridge MD 21227, (301) 796-4165.

(Circle GA on free information form)

## PUT YOUR TRS-80\* TO WORK! SET TYPE!

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### FAST SERVICE. BIG SAVINGS.

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TRS-80\* with lower case modification and The Electric Pencil\*\* are required. Text files may be transmitted via telephone with optional disk drive and modem for even faster turnaround time.

Our **Manual For Microcomputer Typesetting**, which includes instructions, examples and type specimens is \$50.00. Shipped within 24 hours. Return within 10 days for full refund if not satisfied. VISA and MASTER CHARGE accepted. Give card number and expiration date.

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Text for this ad was composed on a TRS-80!

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\*\*THE ELECTRIC PENCIL is a trademark of Michael Shroyer

## Program simplifies educational uses

MicroGnome's CAIware is a software system for authoring and using computer assisted instruction (CAI) on 16K Lev. II TRS-80s. CAIware is not another programming language to be mastered. Instead, according to Donald E. Coyne, president of Fireside Computing, it is an **authoring system**, whereby the writer is guided and prompted by a set of well-defined prototype questions.

CAIware is said to be so easy to use that educators, parents and managers can be producing useful courseware, and playing it back, in their first CAIware session. CAIware is intended as an aid, not as a replacement, for the teacher or the textbook.

Courseware subjects for CAIware can range as broadly as the interests of the instructional designers. History, religion, auto repair, math and sales training are good examples.

The first prototype question is multiple choice, with up to eight choices. The number of attempts the student is allowed is the number of choices minus one. The second prototype provides the short-answer format. The author may specify up to three correct answers, which may be spelling variations of the same answer or totally different but correct answers. The student is allowed three attempts. The author may copy elements from a preceding question by depressing a single control key. The last line of the screen is reserved for instructions to the author when in author mode.

Questions are identified by subject, lesson, topic and number, and the question number may be entered by the author or automatically generated by the program. Text may be inserted between topics and may be identified in three levels of detail. Students are automatically guided to more difficult material or presented more detailed assistance, as their performances indicates. CAIware maintains a

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# TRS-80



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## tinyFORTH

**tinyFORTH** is a powerful interactive programming system for the TRS-80. tinyFORTH combines the structured high-level language, text editor, and assembler of FORTH with the graphics and cassette I/O of the TRS-80.

tinyFORTH programs are quickly developed by defining new modules in terms of previously defined modules. Each new module is compiled for fast execution and compact memory space.

tinyFORTH is easy to learn. The user's manual contains hundreds of examples to teach you tinyFORTH in a hands-on style. Special chapters explain graphics applications, the text editor, and the assembler.

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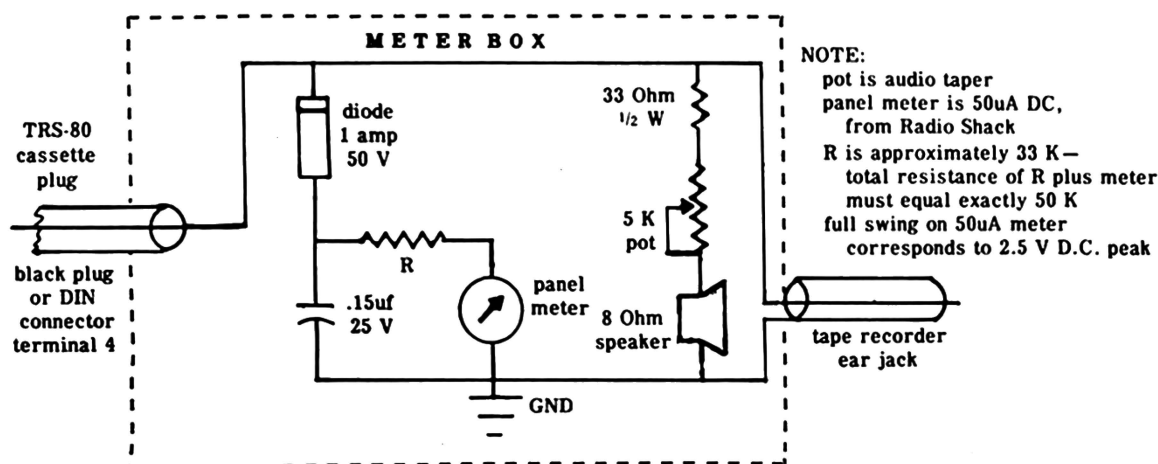
## The Software Farm

Box 2304 Dept. A8 Reston, VA 22090

questionable-quality dupes from duplicated tapes (commercial program tapes). (Since that was written, we wanted a copy of TR Copy, which we use a lot, and copied it tape-to-tape through a digitizer and got a good-quality copy). The Peripheral People are at Box 524, Dept. C, Mercer Island WA 98040, phone 232-4505.

Microsette offers a similar product, called Data Enhancer. The firm is at 777 Palomar av., Sunnyvale CA 94086.

## TEST REPORT: E-Z Loader, Data Dubber, Tape Digitizer, Verifier



**INEXPENSIVE LOADING AID**—This circuit is input to unmodified TRS-80 used by CIE to test People's Software release tapes. User might still find meter helpful even with

free Radio Shack XRX-III modification, which everyone should get. Level II tapes load at 10uA on meter, Level I at 20uA. Circuit was designed by John Strong.

How can the TRS-80 owner ensure easy tape loading? Until recently, there has been no easy answer!

Back in TRS-80 year one, John Strong designed his Strong box meter circuit. CIE has used these ever since, currently using one on the People's Software release-print test bench. See diagram for details of Strong box. All parts are available at Radio Shack.

The next improvement in tape-input reliability came as the free Radio Shack XRX-II modification. Since it is free, everyone should have Radio Shack install it. We have heard good reports on this mod, but have had less than spectacular results with it here at CIE. Two of our four machines have XRX-II boards installed, but the two used to test People's Software release prints are unmodified, so that our tapes are tested under the most severe conditions.

(Circle GB on free-information form)

Z-80/TRS-80<sup>™</sup> Users  
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THE Z-80: HOW IT WORKS  
(THE PROGRAMMERS PERSPECTIVE)

By Monte Corum

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Our modified machines are less "touchy" than the unmodified ones, but they are still more stubborn than anyone would like them to be.

Next to come to our attention was the supposed-improved loading of tapes when you use Microsoft Level II Basic or Basic3 from Personal Computer Service. We didn't notice any improvement in loading.

**E-Z LOADER**—Dave Miller and Paul Goelz sent us one of their E-Z Loader bare boards, which they sell for \$6. We were very excited about this circuit, which is detailed in the September 73 Magazine. Imagine, a little digitizer circuit that restores your tape-input signal to the same square shape it was when outputted to computer, for only \$6.

The parts list for E-Z Loader gives Radio Shack stock numbers. We went to Radio Shack and bought all the parts except resistors, which we had in the parts box. Cost was over \$24. Then, in order to get the board made, so that it wouldn't just sit around as a pile of parts, we asked a neighbor to build it for us. That cost us \$18. Our E-Z Loader totaled as much as a commercially-made product, but was a naked circuit board with exposed wires, two of which were 110 V AC!

Did E-Z Loader work? It made loading exceedingly easy, as its product name implies. It did not make tape-to-tape duplication possible, although the authors claimed it would. E-Z Loader reproduces only the top of the wave form. Our experience has been that at least part of both top and bottom spikes are needed for good recording.

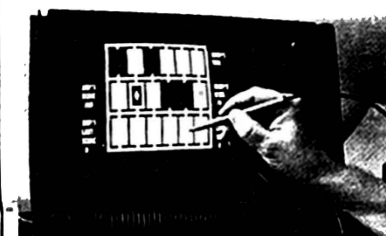
E-Z Loader is a good buy if you either have most of the parts in stock, or don't mind taking the time to order them from a parts house such as Jade, and you have the time to build the board. It is available for \$6 plus self-addressed-stamped envelope from: Paul Goelz, 2228 Madison pl., Evanston IL 60202.

At this point, having been more than a year and a quarter into the project and still not having easy loads, in a nice-looking package, plus tape-to-tape duplication (we are intrigued by the idea of adding such circuits to our tape-duplication amplifiers, and have a technician working on it), we received a new product to test:

**DATA DUBBER** from The Peripheral People is a nice-looking plastic box that sells for \$49.95. We bought one and found it makes loading very easy. Just turn up the volume a little past the point where a red LED starts to flicker, and you're loading. We tried dubbing tape-to-tape and were delighted to find we could go three generations, but the third generation is a bit "touchy" on loading. This means the TRS-80 owner can copy good-quality tapes that were CSAVED on a TRS-80 (original tapes), but might get

(Circle FY on free information form)

## SOFTWARE FOR THE TRS-80<sup>®</sup>



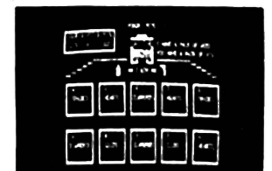
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**QS LIGHT PEN.** We have taken the excellent PhotoPoint light pen and packaged it with our own custom software. You get the light pen, which plugs into your tape recorder, and an instruction booklet that includes the software you need to interface a light pen to your own BASIC programs. Our software routines are in BASIC and a simple GOSUB puts the light pen in action. Two program examples are included. The "menu select" mode lets you set up selection squares anywhere you wish on the screen. The "screen location" mode searches for the pen position and returns the screen address to the calling program. One 9V battery required, not included. Light Pen — \$19.95

**SKETCH-80<sup>™</sup>** by Bob Christiansen. Use the QS light pen to draw figures on the TRS-80 screen. Figures are drawn at three times normal size. Then save your sketch in memory and start another one. Your sketch can be displayed at normal size or at the enlarged size at which they were drawn. Combine two or more sketches on the same screen. Save your sketches to tape or disk. You can even ask the computer to print out the POKE values required to produce your sketch. This system program figures out how much memory your TRS-80 has and allocates storage accordingly. Requires level II, 16K. On cassette — \$14.95

THE FOLLOWING PROGRAMS REQUIRE LEVEL II, 16K, AND CAN BE PLAYED WITH OR WITHOUT A LIGHT PEN.

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**LOWBALL POKER** by Danny Shea. How low can you go? It's you against Micro Molly and the lowest hand wins. That's the rule in lowball poker. This version plays the popular Gardena, California rules. Don't take her for granted — Molly plays an excellent game. Written in BASIC. On cassette — \$11.95

**RUMMY MASTER** by Dave Gubser. Play rummy against the computer. Exceptional graphics display your hand, the discards, and the cards that have been melded. You see your opponent shuffle and deal out the cards. Tested in an arcade, this program was a big hit. Written in BASIC. On cassette — \$11.95

**MATCH CARDS** by Danny Shea; **BANKSHOT** by Bob Christiansen. Two programs on one cassette. MATCH CARDS is a concentration-type game where you match numbers, letters, or graphic shapes. For 1 or 2 players. Automatic scoring rates your recall ability. Written in BASIC. BANKSHOT is a billiard-like game for those who think they know all the angles. Hit the ball into the pocket, but you must hit a wall first. Written in BASIC with machine language subroutines. Just CLOAD and RUN. For 1 or 2 players. On cassette — \$9.95

THE FOLLOWING PROGRAMS REQUIRE LEVEL II, 16K, AND DO NOT USE A LIGHT PEN.

**FASTGAMMON<sup>™</sup>** by Bob Christiansen. Our popular machine language backgammon game that started us in business. The computer plays against you and makes good moves instantaneously. Option to replay dice rolls from the previous game. An eight-page instruction booklet is included. On cassette — \$19.95  
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**DEBUG** by Bob Pierce. Debug machine language programs by stepping through one Z-80 instruction at a time. Relocatable. Several display options. Multiple break points. Modify memory and registers. On cassette — \$14.95

**Z-80 DISASSEMBLER** by Vic Tolomei. Decode machine language programs, including TRS-80 ROM with this Z-80 Disassembler written in BASIC. Instruction mode prints out machine code and Zilog mnemonics in standard format. Or use the ASCII mode which converts machine language code to ASCII. On cassette — \$14.95



**QUALITY SOFTWARE**

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**HOW TO ORDER:** MasterCard and Visa cardholders may telephone their orders and we will deduct \$1 from orders over \$19 to compensate for phone charges. Or mail your order to the address above. California residents add 6% sales tax. Orders outside North America add \$5 for registered airmail, pay in U.S. currency.

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Box 210  
New Durham, New Hampshire 03855  
(603) 859-7110

ALPHANETICS makes what it calls its **Tape Digitizer**. It says Tape Digitizer automatically compensates for variations in playback volume and thus operates over a wide range of volume control settings so that a computer operator can stop worrying about exactly where to set the cassette recorder's volume control.

Tape Digitizer is said to filter out noise, hum and other extraneous sounds which might interfere with program or data.

Tape Digitizer is said to synthesize the exact digital waveshape that the S-80 computer gave to the cassette deck. This is done from the analog representation the cassette plays back. This synthesized waveform is fixed in amplitude and shape, "almost independent of cassette volume control settings, always giving the S-80 computer the optimal level it wants to hear."

Digitizer and Data Dubber seem to work equally well. Digitizer has a more elegant case, optional

remote-override switch, and does not require battery.

Data Dubber, with its battery, does not provide yet another line cord (UGH!).

Data Dubber's square-wave pulses are narrower than Digitizer's, which are the same width as TRS-80s. In practice, this does not seem to make any difference.

Tape Digitizer is \$44.94 without cassette remote-off-on override switch, and \$49.94 with it, from Alphanetics, Box 597, Forestville CA 95436.

Why didn't Radio Shack add an extra IC and give everybody digital-tape reliability? Or make CTR-80 digital? Or both? These digitizers are absolutely necessary for reliable tape loading!!!

**VERIFIER** software solution—Wolf & Associates offers this product, which we were anxious to add to our tape-troubleshooting capability.

Verifier can be used to calibrate how loud a tape should be played for proper loading. Be sure to mark it on the tape! And it can also be used to "certify" blank cassettes prior to use.

The program works, and we will have more on this system later, but we favor the more expensive hardware approaches, which give you the ability to "bulldoze" through even audible dropouts, tapes which are clearly "unloadable. These load flawlessly with Data Dubber and Tape Digitizer—and you can make a good tape-to-tape copy (which makes SYSTEM tape copying easier).

Verifier is \$14.95 from Wolf & Associates, Box 8073, La Crescentia CA 91214.

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# Announcing-TINY PASCAL FOR TRS-80

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Here is a partial list of People's Pascal features: recursive procedure/functions • for (loop) • case if/then/else • one-dimensional arrays • write • read constant • repeat/until (loop) • "peek & poke" • plot (graphics for TRS-80)

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People's Pascal I (tape 3), is written in Basic, implemented for TRS-80 by John Alexander of Berwick Australia. It compiles more slowly and is harder to use, but includes instructions for converting to disk. People's Pascal II (tape 6) is entirely by the Chung/Yuen team and is a further development stage of their concept. Full documentation included. Other People's Software tapes \$7.50

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The complete tinyForth 2.1 system (cassette tape and documentation) for a 16K (or larger) Level II costs \$29.95, FOB Reston VA. Shipping and handling charges are \$1.50 per unit in the U.S. and \$6 foreign, via registered air mail. Payment must be by check, money order, VISA or MasterCard. Write Box 2304, Reston VA 22090, (703) 437-9218.

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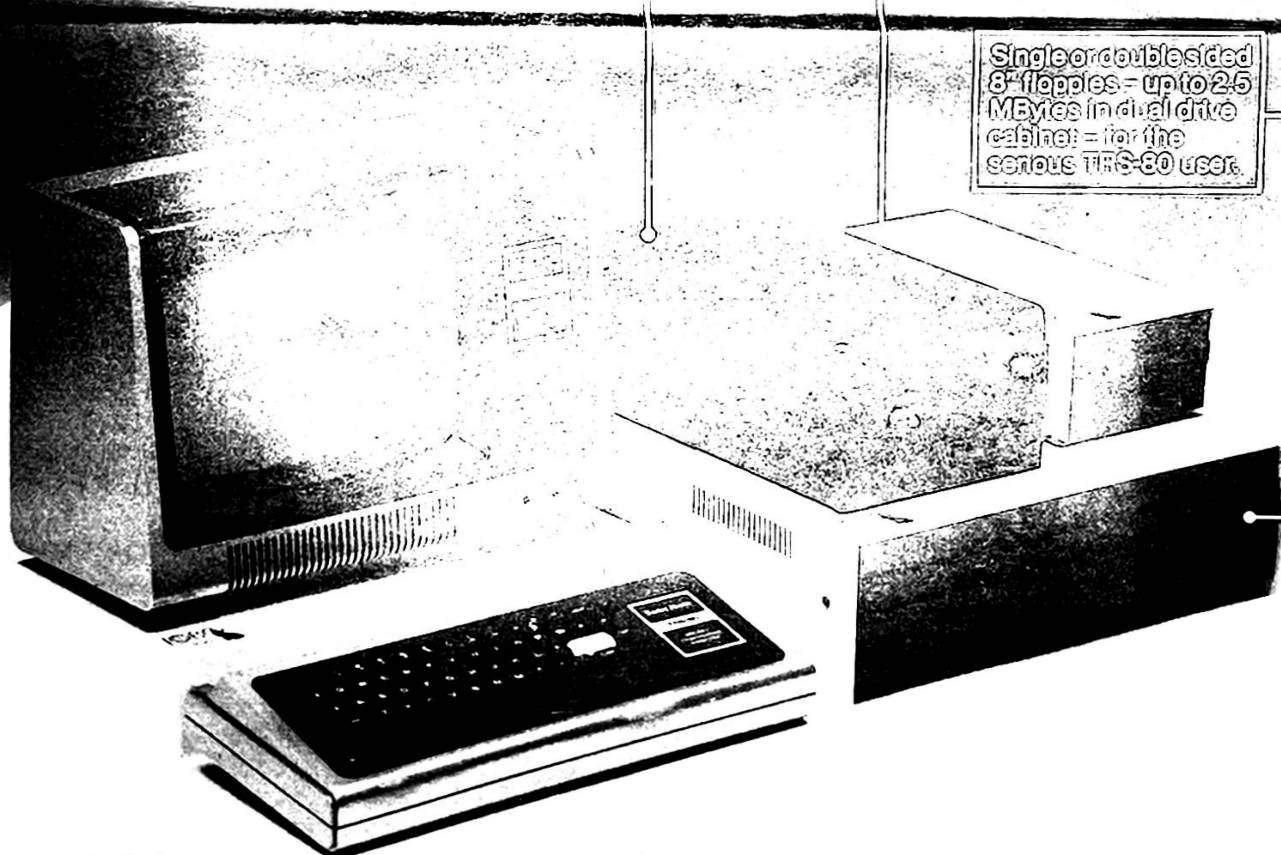
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## Our name change, new classifieds

The market created by Radio Shack with its TRS-80 has long outgrown the Tandy '80 trademark and with this issue CIE starts using S-80 to describe TRS-80-compatible products. This has been made necessary by Tandy legal moves, and by talk of a Hong-Kong-produced lookalike. We hope others will join us in using the S-80 term.

Our classified section has been made possible by new phototypesetting equipment, which makes this new service readable and attractive. We see this as possible data base on S-80 products. There are more than 1,000 people selling items for S-80. By pricing ads as low as \$3.33 per line (of approx. 10 words each), and by accepting single-line ads referring readers to another ad with name-address, suppliers will be able to economically list each month their products. Subheads will be added, as needed. Thus each month the Bulletin should be able to provide the best possible listing of programs, hardware, services, supplies, stores, etc., and for just \$3.33 a line, advertisers can reach the Bulletin's 60,000-per month circulation.

## Last issue going to unpaid subscribers

Starting with next issue, S-80 Bulletin will be going monthly to S-80 Computing and Bulletin subscribers only.

Some months it will go to the entire CIE 13,000-name S-80 owner's list, other months only to subscribers.

To get the Bulletin each month, send a \$2.50 donation to CIE. This entitles you to 11 monthly issues.

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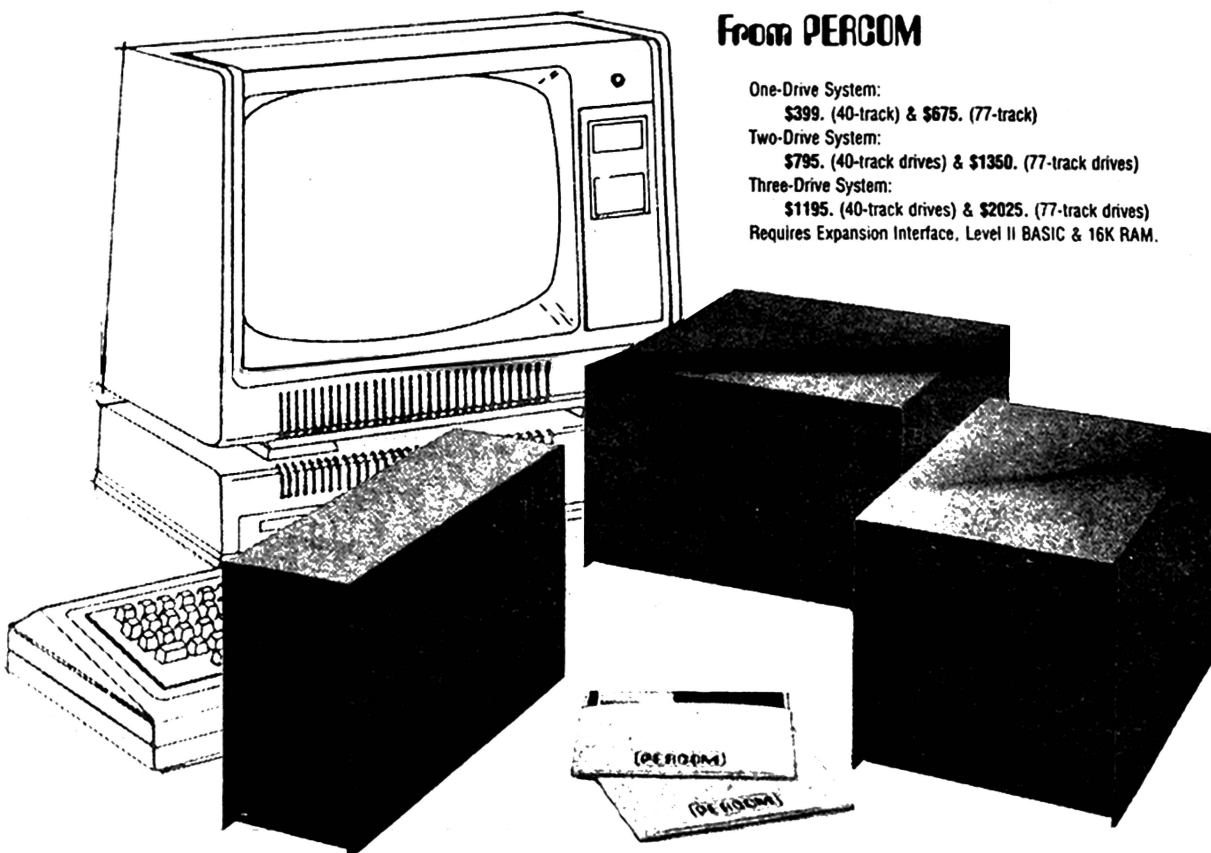
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