

# THE S-EIGHTY™

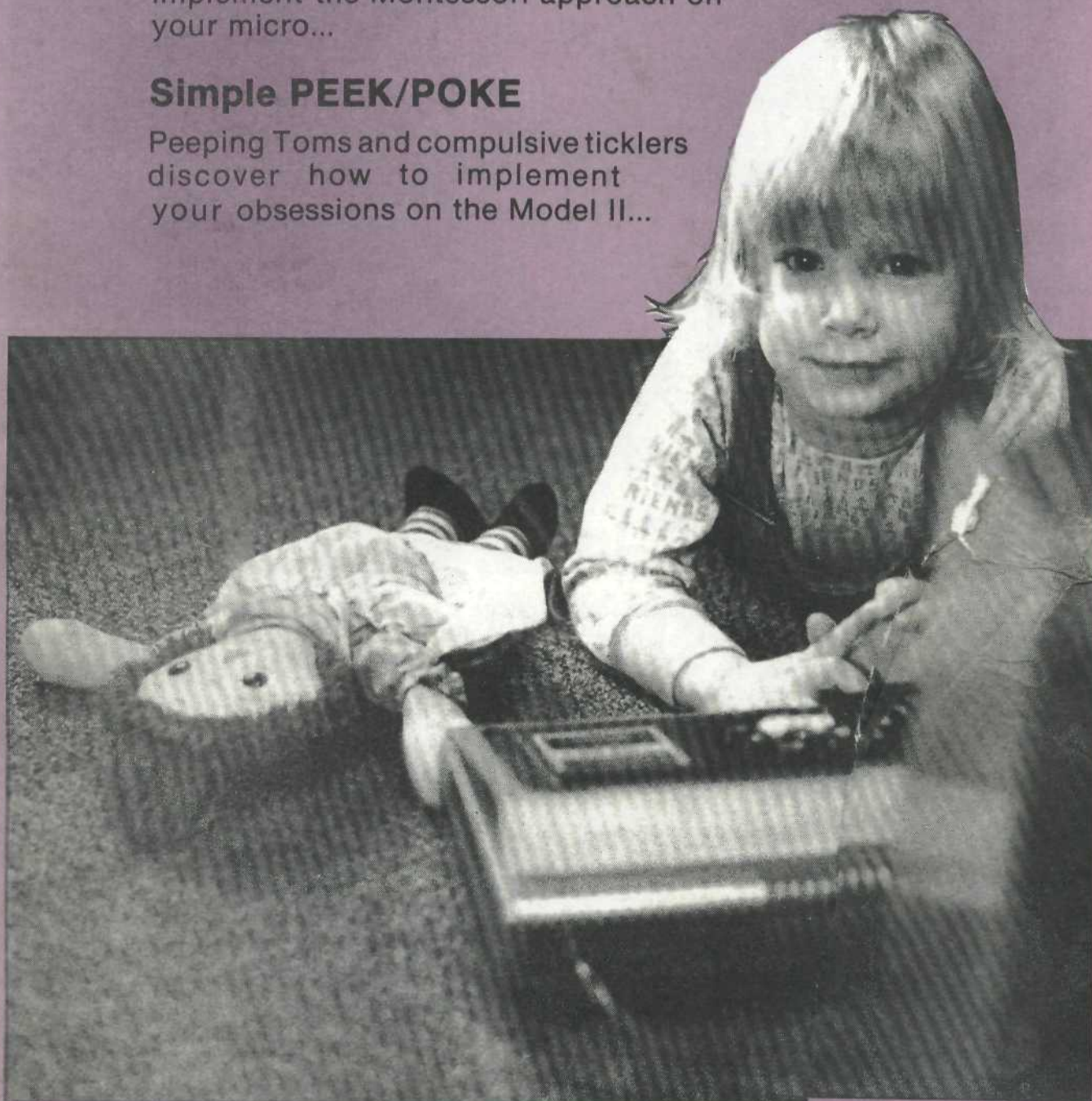
MAY 1980

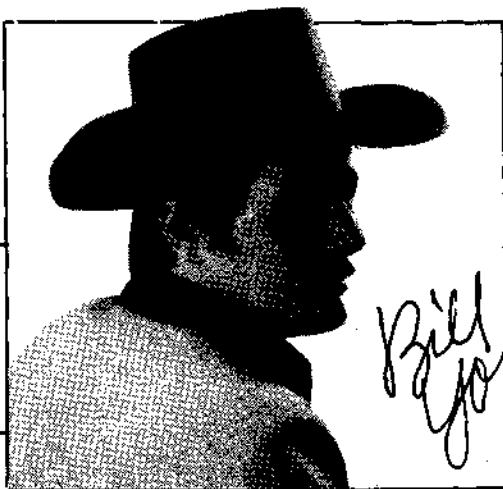
## One Clap—

The TRS-80 can start your child off on the road to word mastery. Learn how to implement the Montessori approach on your micro...

## Simple PEEK/POKE

Peeping Toms and compulsive ticklers discover how to implement your obsessions on the Model II...





# PURE & SIMPLE

I come to you not as a prophet.....

## Computer-Aided Instruction

Educational applications seem to be the newest frontier in micro's and, judging from the number of new companies I saw at the San Francisco show, the competition will be hot and heavy.

Last year at the San Francisco show, I noticed a company that was manufacturing a "Cluster" disk system...enabling four or five systems to run from one central disk drive. I don't know what happened to the first company, but Corvus Systems was marketing a similar system this year.

In this issue you will read a fascinating article by Michael Potts who has written a program for youngsters based on the Montessori method. He submitted a disk along with his manuscript and I found myself playing with it for hours. CAI is establishing a stronghold in the educational structure...but I still wonder if the youngster will be able to think independently when it is required. My doubts are most probably unfounded as my daughter is a product of the CAI system, and I haven't been able to put one over on her yet...and oh! how I've tried!!! I usually end up with "Oh, daddy!...that's dumb!" Maybe I missed something along the way.

## San Francisco...Again

With all of the chatter about shows from some distinguished publishers, (and some not-so distinguished), the 5th

West Coast Computer Faire gave the show arena a shot in the arm that it needed very badly. I had the feeling that many of the companies were trying the SF show as a last-ditch effort before giving up the show circuit...and what a pleasant surprise was in store for all. The results of SF have now provided other managers with an atmosphere of success that will attract many more companies that otherwise would have stayed home.

Neil Otto, of Otto Electronics and MITA, was mentioning the possibility of three MITA-sponsored shows, one each on the West coast, Midwest, and the East. It makes a very nice package for the potential exhibitor...providing all the necessary exposure.

## Welcome Rich Richmond

We recently welcomed Richard Richmond of Beverly, Massachusetts, aboard as our Ramworks Manager. After holding positions with various newspapers and Warner Communications, Rich has acquired an extensive background in marketing and advertising. Rich is a graduate of Eisenhower College in New York; he is completing his MBA at Suffolk University in Boston.

## Farewell

The May issue of "The S-8ighty" will be the last one in which I will be listed as the Editor. I am going to be leaving SoftSide Publications for a position with an advertising

agency in Boston where I will be serving the computer community as an Account Executive representing a large computer magazine throughout New England.

"The S-8ighty" has touched upon an area that vastly needed exposure and, in my opinion, has done the computerist and the industry a great service. I am referring, of course, to the person seeking to learn the basic fundamentals, and being able to do so without buying a technical dictionary. We have received many letters from people involved in all segments of business and industry; the most frequent request was "Tell us what we can do with the computer to help us professionally!". This we have attempted to do, and, I believe, have succeeded quite nicely.

It has always seemed to me that the magazines which bragged about being for the beginner started off way over the novice's head. It makes good business sense to cultivate this group, and bring them along so that they will be potential customers as the industry and technology grow. Industry "heavies" seem to have ignored this group...it seems more fashionable to discuss CP/M\* and PASCAL\* and interest only a fraction of the audience and lose the rest.

## COVER STORY

Our special thanks to Jaime Palmer of Milford, New Hampshire. She is our cover model—a great example of our future programming generation.

Cover photograph by Elaine Cheever

# SIMPLE PEEK/POKE ROUTINE FOR THE TRS-80 MODEL II

by Peter B. Zieger

I got my March issue of the OCTUG Newsletter and read Martell B. Royer's excellent article on the PEEK and POKE for the TRS-80 Model II. To him I owe for all the inspiration that led to this article.

The following is one method for PEEK and POKE that is very close to the original TRS-80 Model I notation. It does not use any strings, and any variables passed to it are not destroyed by the subroutine.

The assembled 32-byte subroutine is initially keyed into memory with the use of the debug utility under TRSDOS as follows:

1) DEBUG ON <ENTER Key>	:turn on debug
2) DEBUG <ENTER Key>	:enter debug
3) M	:enter memory command
4) F2E0	:position cursor at F2E0 hex
5) <F1 Key>	:enter change memory command
6) 5E 23 ... EA	:enter machine code subroutine
7) <F2 Key>	:save all changes
8) S	:return to system

Next to save the subroutine on disk, key in the following:

**DUMP PEEKPOKE/CMD START=F2E0,END=F2FF,PORT=R <ENTER Key>**

Load BASIC with a memory protect of 32-bytes by keying: **BASIC -M:62175 <ENTER Key>**

In the calling BASIC program, key the following lines:

```

10 SYSTEM "PEEKPOKE/CMD"
20 DEFUSRB=&HF2E0
30 DEFUSR9=&HF2F0
40 DEF FNPEEK(ADDR%)=USRB(ADDR%)
50 DEF FNPOKE(ADDR%,BYTE%)=FNPEEK(ADDR%)*0+USR9(BYTE%)
    
```

To implement either of the PEEK or POKE calls, just simply use FNPEEK(a) or FNPOKE(a,v) any place you could have used a PEEK on a TRS-80 Model I. For example:

?FNPEEK(&H2800) would print the contents of H2800  
A=FNPOKE(64,255) would poke address 64 with 255

To demonstrate the use of this technique, key in the following additional lines and RUN, and you'll get a formatted dump of memory starting at H0000. (Note line 0040 of the dump changes on repeated runs; this is where the real-time clock is located in memory.)



```

60 IFA MOD16 <> 0 GOTO100
70 PRINTB$: B$=" ": A$=HEX(A)
80 IFLEN(A$) <> 4 THEN A$="0"+A$: GOTO80
90 PRINTA$;" ";
100 B=FNPEEK(VAL("&H"+HEX$(A)))
110 A$+CHR$(B): IFB <32 OR B >127 THEN A$="."
120 B$=B$+A$: A1=HEX$(B): IFLEN(A$)=1 THEN A$="0"+A$
130 PRINTA$;" "": A=A+1: GOTO60
    
```

```

00100 ; SIMPLE PEEK AND POKE SUBROUTINE
00110 ; BY PETER B. ZIEGER
00120 ; MICRO-SERV
00130 ; RT 8 BOX 416
00140 ; SALISBURY, MD 21801
00150 ; (301) 742-8223
00160 ;
00170 ; PUBLIC DOMAIN SOFTWARE
00180 ;
00190 ;
    
```

F2E0		00200	ORG	0F2E0H	
F2E0	5E	00210	LD	E,(HL)	;LOAD PEEK
F2E1	23	00220	INC	HL	;ADDRESS
F2E2	56	00230	LD	D,(HL)	;TO DE REG
F2E3	EB	00240	EX	DE,HL	;SWAP ADDRESS TO HL

F2E4	22FEF2	00250
F2E7	6E	00260
F2E8	2600	00270
F2EA	DD2A0528	00280
F2EE	DDE9	00290
		00300
F2F0	7E	00310
F2F1	2AFE2	00320
F2F4	77	00330
F2F5	2E00	00340
F2F7	BE	00350
F2F8	2002	00360
F2FA	2E01	00370
F2FC	18EA	00380
F2FE	0000	00390
F2E0		00400
00000	TOTAL ERRORS	

EXIT1

POKE

EXIT2  
ADDR

LD	(ADDR),HL
LD	L,(HL)
LD	H,0
LD	IX,(2805H)
JP	(IX)
LD	A,(HL)
LD	HL,(ADDR)
LD	(HL),A
LD	L,0
CP	(HL)
JR	NZ,EXIT2
LD	L,1
JR	EXIT1
DEFW	0
END	PEEK

;SAVE PEEK ADDRESS  
;LOAD PEEK BYTE TO L  
;CLEAR H  
;PASS VALUE IN HL REG  
;TO BASIC VIA H2805  
  
;LOAD A WITH POKE BYTE  
;LOAD ADDRESS TO HL  
;POKE IT  
;CLEAR L  
;TEST IF POKE OKAY  
;BAD, EXIT WITH HL=0  
;GOOD, EXIT WITH HL=1  
;EXIT SAME AS PEEK  
;PEEK/POKE ADDRESS

Note: This subroutine is almost relocatable, if you move it you will have to adjust lines 00250 and 00320 to point to the storage address at line 00390.

### PATCH TO TRS-80 DEBUG (TRSDOS 1.2) TO ALLOW ACCESS BELOW H2800

Using DEBUG as described in previous article load into memory the following routine:

**F200 210000 2236F9 2205FA 21FFFF 2241F9 220DFA D7**

Dump it to disk by keying in the following:

**DUMP FIXDEBUG START=F200,END=F212,RORT=R <ENTER Key>**

To use key the following:

1) <b>DEBUG ON</b>	:enter debug mode	DEBUG has now been modified in
2) <b>FIXDEBUG</b>	:load routine	memory (not on disk) and you may
3) <b>J</b>	:enter jump mode	now look down in previously
4) <b>F200</b>	:execution address	protected areas.

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# ONE CLAP

## a CAI program for writing and reading

by Michael Potts

Two educational principles impress me more and more with time. One: Independence is the goal. Two: the Microcomputer is the greatest educational breakthrough since moveable type. You may have read those thoughts before ("Computers are Kid's Stuff", September 1979 **PROG/80**), but they're worth asserting again. I've tested my theories for another year since I last wrote — in the classroom with 4- to 8-year-olds, at home with my children, and with a range of older tutees and students — and I stick by what I wrote.

My sorrowful cry continues, (and I hear others echo it): **WHERE'S THE DECENT SOFTWARE?** Lurking in the hearts and minds of parents, teachers, and computer-philies who remember what it was like to be children, I guess. Our job is to get those programs out, up, and running!

Apart from the academic quibble — most teaching software doesn't teach — I have two criticisms of most existing educational programs. First, they test rather than teach. Kids can spot a test from 50 paces with both eyes tied behind their backs; like other occult phenomena, children simply refuse to be tested. Second (and a bit less obvious) is that usually the balance of "dulce" to "utile" isn't delicate enough for children: a case can be made for Star Trek as educational — vectors, coordinates, compass headings, etc. — and a bells-and-whistles edition of the State Game is undoubtedly entertaining, but...

Because of the preponderance of games, especially mathematical ones, computerists and Computer-Aided-Instruction are criticized for frivolity and shallowness in educational circles (at least the ones I run in). Simultaneously, the fact that the "TV generation" borders on functional illiteracy receives attention in the game circles. Good teaching programs, especially "humanistic" ones, dealing with language rather than mathematics, can use the machine to redress the grievance.

I think it's time to write some teaching programs that set out to explore the joys of computer learning for youngsters as cold-bloodedly, say, as the authors of the DEC PDP-10 "Adventure" set out to explore the joys of artificial intelligence. The idea is to invite the child on an adventure into her own mind, with the computer cast as Sancho Panza.

Computers (because they're fast idiots) and the Level II TRS-80's (because of their string-handling abilities in BASIC) are perfect for teaching English. The computer's attentive, immediate, focused feedback contrasts nicely with the absent-minded aspect we all too often present to our children. The natural magnetism of the CRT — it's OK to steal a little juice from the "idiot box" if we do it consciously — coincides with the young (aged 4 to 6) child's natural hunger for expression. One of my culture-heroes, Maria Montessori, called it "the sensitive period" for language. Many children, upon discovering that the computer is benign, permitting them to punch buttons to their hearts' content, delight themselves for long periods punching in nonsense lines like " GHBNNNNNTIULLLK

enter " to which the machine patiently replies, "SYNTAX ERROR". "Look what I made," they crow. Montessori asserted that writing precedes reading — most children will be building words before they can read them. The computer's display is a speedy and responsive adjunct to the painful process of handwriting.

Let me lead you through a favorite program of mine, and show you what I mean.

## SECTION 2

### —The Montessori framework—

Language doesn't start at a level accessible to the computer; there's some foundation work that has to be done first. Like any complex task, a grasp of the "program" makes the progress toward the goal — independence, remember? — orderly. A short review of how we learn to write and read might be in order. (Readers with knowledge of the Montessori reading material might want to skip this section.)

The 3-Period Lesson is a general Montessori tool which adapts well to computer-aided instruction. It's a structured technique for introducing any new material to the child; the obvious benefit is that the structure itself is familiar and doesn't detract from the new material. It goes like this: You plunk down at a table with a kid who doesn't know any letters. Out of your pocket you produce two tablets, one emblazoned with an "M" and the other with a "S". "Would you like to know what these say?" you ask innocently. (If she says no, find another victim — force will never do.) Answered affirmatively, you

say, "This is mmmm. This is ssss." That's the first period of the lesson: introduction of the concrete object linked to its name. The second period provides the child with the name, and challenges her to choose the corresponding object: you say, "Could you point to the mmmm? ...to the ssss?" In case of error you'd say, "Thank you for showing me the ssss, but I asked for the mmmm." "Leave them hungry" being a cardinal tenet of Montessori teaching, it's soon time to put the sounds away. As the child picks them up, you innocently ask, "What's that sound?" When the child supplies the answer, the third period, internal association of object and name, is complete.

The first step toward writing establishes this association between symbol and sound — "M" makes the sound "mmm", and so forth — and this happens best when a "teacher", someone who knows the program, works with the student. Montessori doctrine dictates that the symbols are identified by their sounds — like "mmm" and "sss" — and NOT by their names — "tea" and "ess" and "em". And the newcomer to reading can begin with a minimal "tool kit" of sounds/symbols — a suggested order of introduction is in Table 1.

: 1st group:	m a s t	:
: 2nd group:	c r i b	:
: 3rd group:	g o l f	:
: 4th group:	p e n d u	:
: Table 1 :		

The theory: there's enough to learn without introducing one extra layer of complexity.

Making the jump from single sounds to words comes when the child recognizes known sounds at the beginning of familiar words. We use a game called "I Spy" with children at this stage — "I Spy (with my little eye) something in the room that begins with mmmm," we say. "Cat," hoots my student. "No, Damiana," we reply patiently, "That begins with the sound cckk. I spy something..." and so on. For the teacher this activity develops patience, and an overpowering urge to computerize the learning process.

The next step is blending two sounds: aaaa with tttt makes at...add an mmmm and you have mat. This phonetic word-building strategy makes about 80% of the English language self-spelling. (Dr. Montessori devised her method for Italian, which has a better phonetic batting average.) Unless you have a computer which speaks and listens, teaching this process requires a helpful human.

But now, with these two skills — sound/symbol association and blending — the child can attack language on the computer. (Some of the simplest commands — RUN is a good example — are phonetic, and so the child moves toward independent mastery of the machine.) ONECLAP is designed to develop and polish these earliest skills, and carry the child way beyond...

## SECTION 3

### -the First Period—

To write an orderly program, I remind myself exactly what I want done. Specification: create a language activity which will stimulate a child from the third level of reading lessons on...as simple graphically and interactively as possible. Above all, it should invite success.

Engaging the child's attention is a critical focus. Simplicity, even elegance, helps. Challenge and a sense of exploration of unknown terrain invites the child...especially if the machine is benign and logical. A program which changes, has pace and flow, holds a child's attention — although the flow should come from didactic roots, not dramatic. The Montessori principle of isolating new material with the 3-Period Lesson can provide an underlying structure with classroom resonance, allowing the child to pace her own lesson.

From the Operator-Teacher's standpoint, it's desirable to have the program "play an extended engagement": after a short introduction, the child works independently while I go get a cup of tea and start flow-charting my next program. If the program is challenging across a broad range of competencies, and stored on a medium the children can access — how we do love our disk drive! — we won't be needed after the first time.

To the program! I wrote ONECLAP to help children sharpen their ears, and to save myself from the endless queries like, "Michael, is pog a word? is eg? and how about flep?" Mindful of the Lord's answer to George Washington Carver's plea to know everything about the world, ("How 'bout the peanut, son; it's more your size.") I decided not to attack the whole English language, but to carve out a small, easily defined territory. In the realm of our Mother Tongue, that's tough. Let's take the family of phonetic "One-clap" (one syllable) words, of the form consonant-vowel-consonant. To add interest, allow the first consonant and the vowel to be built-up sounds (more than one letter, like "SP"). But so I won't go crazy programming, allow only 5 final consonants — D, G, N, P, T. That should hold the little darlings.

With children as young as those who'll be trying this program the first time, verbose instructions will be wasted. The program should lead the child in. We've found that a blank screen with a single entry and a pulsing question mark is very inviting, so we begin just so:

M A T  
?

Pressing 'ENTER' brings on another simple phonetic word. Pressing any letter, then 'ENTER', brings up a one-clap word beginning with that letter (or, in the absence of such a word, a mystery guest.) Inappropriate entries are locked out. Typing "ON" moves on to the next period; "END" goes to the endgame. The child can play with this part as long as she wants. "ON" and "END" are phonetic words, and within the competence of most children who will use this program, but a card with those two words written on it helps give the child a sense of

independence. But at the first session this might be enough: it's critically important to remember that children have short attention spans, and shouldn't be pushed past their limits for our self-centered reasons. The program will always be there for another session.

## SECTION 4

### —the Second Period—

Where the first period supplies symbol and name, the second period requires the child to supply one in response to the other. Observing children working with early versions of ONECLAP, I noted that they had difficulty finding the sounds they wanted on the keyboard. The obvious reason, their unfamiliarity with a typewriter and its arbitrary location of the letters, can be attacked directly: keyboards are here to stay, and time spent learning how to work them is productive. A less obvious difficulty is the unfamiliarity of the typeface. We've decided to bite the bullet and run this program in capital letters despite the objections — the caps aren't what they'll use primarily in later life. Yes, but: many TRS-80s don't have lower case. (The overwhelming POWER of the TRS-80 mitigates Radio Shack's corner-cutting, we all agree. Now: get it fixed!) Much more to the point, the key-caps should correspond with the display. Unmistakably, the inventor of the typewriter should have used lower-case shapes on his keycaps, but he didn't, and the stupidity has been compounded down through the years, so we'd just as well make the best of it. (A survey of reading presentations reveals that back-to-back introduction of lower- and upper-case letters is common outside of the Montessori Establishment, and in most beginning alphabet books.)

So, while the first period requires little of the child, typing "ON" takes her to the second level of difficulty, where she'll be asked to copy the symbols presented by the machine in traditional left-to-right order. Wrong responses will be locked out. A finished screen will look like this:

P A N  
P A N ?

waiting for the "ENTER" which will bring up the next screen, another randomly chosen one-clap word. Should the child "space out", the machine waits a polite interval, then prompts: "ENTER".

This "interactive keyboard" phase allows time for the discovery of the letter locations, and also provides an opportunity to check that the child preserves the correspondence between symbol and sound. In the above example, the child should quietly say each sound — pppp, aaaa, nnnn — as the key is pressed, then make the blend — pan — as she inspects the display in preparation for ending the round with "ENTER". Observation of this procedure will make the program especially useful.

If the child ignores the machine's word and types "ON", the program proceeds to the third and final period of the program. "END", of course, exits to the endgame.

## SECTION 5

### —the Third Period—

In this third mode, the machine provides (at random) only the final consonant; the child is challenged to find a one-clap word ending with it. Each word is evaluated by the machine, and characterized as a word, or "not on my list" — it's dangerous to commit oneself, as programmer, to saying something's not a word, because there are probably words you and I have never heard. Typing 'END' takes the child to the endgame list. All entries are evaluated exactly as entered: we're seeking a synthesis here of symbol/sound association, word-building, beginning typing skills, and complexity of language even within a simple sub-group.

This is the main course, for which the first two sections served as appetizer. Most children will inspect the first parts carefully a few times, but later will skip to this part with two quick "ON"s. And that's fine: here's where a systematic exploration of the rational structure of the English language (and some of its more glaring irrationalities) begins. Hearing skills get sharpened right at the outset when the machine deems "slep" "NOT ON MY LIST", but cheerfully accepts "slip". The immense power of the phonetic concept lets the child write and read words she's never heard before. And there's always that exciting time when the child finds a word that really IS a word, but isn't on the machine's list. Our children keep coming back for years, looking for new words, funny words, (dirty words?), long words that are still one-clappers, and experimenting with combinations of letters.

We should trap the words that the child's gotten already with a mild admonishment — "THAT'S A WORD...BUT YOU GOT IT ALREADY". And we should also trap those words that should be right, but aren't — eg, wat, nit — and explain the absurdity:

PLEASE GIVE ME A WORD ENDING

—D

the child enters AD

ALMOST A WORD.

WOULD YOU LIKE TO KNOW MORE?

If the child answers yes, the screen clears, then

SOME WORDS ARE FUNNY. THIS ONE

NEEDS TO DOUBLE THE LAST LETTER

ADD

Remember that you're writing for young children who aren't too firmly based in their reading skills — the computer's speed and flashiness can be bewildering.

Trust the child to prescribe the right number of words. Often it will seem to us too few, but children aren't the gluttons for punishment we've become in our maturity. Remember the watch word: "Leave 'em hungry"...and they may come back for more! When the time has come, the child brings on the endgame with the phonetic word "END".

The endgame is most impressive if you have a printer: the child leaves the computer with his work neatly printed out for his enjoyment, and for sharing with others.

It's important for diagnostic reasons (for the child and the programmer) to save the "unwords". The appearance of near-misses indicates a sloppiness in the child's apprehension of the sounds, usually the vowels, which needs remedying as early as possible. Similarly, the programmer should plug in real words left off the machine's list at the earliest convenience: you can count on it — the kid will look for those words at his next session. (I also take words off the list from time to time, so that children can find them.) Lacking a printer, a read-out to the screen, and the invitation to the child to "copy a few", gives a sense of consolidation.

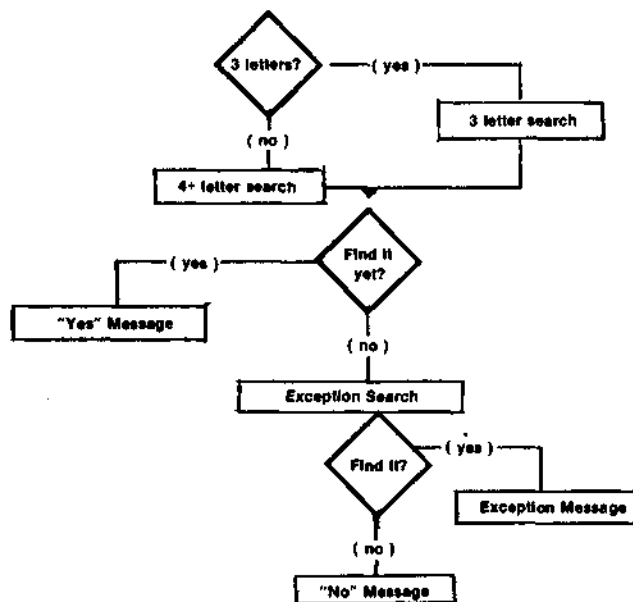
Often parents and teachers new to computer-aided instruction are troubled by the "depersonalization" of the learning process. Applied to calculators in early grades, this objection takes the familiar form "What if you're on a desert island, and your batteries fail?" It's our fond hope that the underlying principles — mathematical or linguistic — will embed themselves in young minds firmly even without the painful repetition and rote-learning most of us survived in earlier years. I have no doubt but that computers and keyboard-driven devices will brighten the days of our children when they at last enter the working world: why should they not begin their romance at a tender age?

## SECTION 6

### —Technical Challenge—

Computational speed is seldom of much moment in children's programming, because children achieve extended attention by weaving moments of wool-gathering into the long haul. Nevertheless, language programs, like this one, with lots of string-searching, should be written as tightly as possible. Machine language routines would provide an elegant speed-up, but the program needs to be easily maintainable. Evaluation of the material we're concerned with here shows that the bulk of it is in three-letter words of the form "CAT". The four-and-more letter words are another case, and the exceptions are a third.

I've adopted a search tree that looks like this:



For the three-letter search, I zip through a long strip of words — BATCATEATFAT...NUTPUTRUTEND — using the midstring function and biting them off three at a time. It could be done with just the first two letters — BACAEAF etc. — but I don't think the increased speed would make up for the difficulty of making sense out of the string at debugging and maintenance time.

For the 4+ letter search, I used spaces as the delimiters, and the # symbol to note "end of string". The exceptions require that their type be encoded with the probable misspelling. "Wat", "ad", and "eg" all belong to the family of words that need a double last letter — call them type 1. "Nit" and "nat" need help with their initial sound — types 2 and 3. "Det" requires an added b — type 4.

Assuming the input word is on the list, the program needs to perform another string search to see if it's been used before. The 4+ letter search procedure works fine here, run on a string of all the good words.

Other programming considerations — the need for clarity and elegance in the display, for instance, and the fact that the program's material is linguistic, not algebraic, should be of interest to the programmer. This program can be a model, a starting place from which other language-teaching programs could be developed. One of the unwritten laws of programming — do I dare write it? — is that any program, if up and running, is obsolete.

## SECTION 7

### —Looking Forward—

If the computer is to play a real role in the classroom — and it will, my friends, it will — it won't be because there are a few comprehensive and exciting programs scattered all over the map of education. To succeed in any real sense, CAI must begin to be a useful program, undertaking to apply the computer's obvious strengths in an area where they're appreciated. But it's a drop in the bucket of the whole linguistic curriculum. Carver's Peanut Principle decrees that many, many special programs must be written to manage the complexities of learning language.

Where to work next? The next place in the Montessori continuum needing attention is the area of phonemes — two letters (like "ou" or "ow") which, taken together, have a unique sound. Unfortunately for the beginning reader, the sounds are multitudinous, inconsistent, often overlapping. Nevertheless, they are systematic exceptions...and where there's a system, there's a way to program it.

As the children grow up, their skills burgeon, and some child-oriented games will be needed. Some of the less orderly exceptions will need to be dealt with. Somewhere out there, someone has a pet concept that can be made into a program that will help our kids read. It's not all that hard: a little study and experimentation, some plain-and-fancy flow charting, time observing the first few kids on the first-draft program work, some thought and polishing, and — voila! — the program is done. The challenge to the programmer should be persuasive enough.



Reading is the key to so much — not just the recreational material, but the incredible avalanche of technical stuff that may very well bury us all. Nor need I linger on the increasing class sizes and the exploding curricula our children are expected to master before they hit the job market in not-so-many years. It's true that math programs are easier to write, and game programs have interesting graphics, but we need to remember that it's not just a fun machine for adults; we, too, should seek a decent balance of dulce and utile in our work. A caution I didn't mention before: software seems to be, all too often, the domain of illiterates — the first ranks of the TV generation. We should remember that we "write" a program: the stylistic and aesthetic values of any literary form should apply.

The rewards of authorship accrue to the programmer as surely as to the poet: reading leads our children toward independence faster than any other acquired skill. By helping our children address and stretch the frontiers of their knowledge, through the agency of a program we've written, we begin truly to realize the promise of computer-aided instruction — one of the most exciting promises of our time.

Now, take silent e for example: that's fertile field for a learning program. If we take the string of all...

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07:11:17 PM 19:11:17

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- 2 MAIL HOUSE PAYMENT BY THE 10TH
- 3 REFILL THE WATER SOFTENER
- 4 INCREASE JOGGING TO 11 LAPS
- 5 UNCLE ED'S BIRTHDAY (20TH)
- 6 WATER THE BARREL CACTUS
- 7 CHANGE DATSUN OIL+FILTER #0111
- 8 GRADUATION PRESENT FOR JIM
- 9 MAIL ELEC. BILL WITHIN 2 DAYS
- 10 TIME FOR JAN'S TEETH CHECKUP

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READER SERVICE J

## Letters to the Editor...

Gentlemen:

With regard to Lance Micklus' article on "pirates"... may I say that I agree with his premise that the copying of ideas tends to cause authors and inventors to devote their efforts to other fields. It should be obvious to anyone except the dwellers in the dreamland of the political left who feel that no-one should be rewarded for his/her efforts but that all should share in what others produce; to each according to his needs and from each according to his abilities. Since I need a program or idea, and don't have the ability to create it, I have the right to steal it.

Unfortunately, few are going to refrain from such theft

simply because it is immoral or even illegal. I had a personal experience with a former employee stealing a design, even though it was protected by law, and by an employment contract. From a practical standpoint, there was nothing I could do to prevent him from having the article made by one of my competitors. The development time my company spent on the item, which had to be amortized over the sales price of several items, was obviously not a cost to the other manufacturer. What I found really galling was their use of a picture of my item in their sales literature.

However, I do have a solution for the problem. Just as I swallowed my pride and continued manufacturing the stolen design, I would recommend that talented programmers, whose games we enjoy, do the same. I no longer compete with my own design because I priced it such that it is not attractive to copy. I suggest

that all software be so marketed. For example, I buy cassettes from Pyramid Data Systems, in small quantities, for about sixty cents each. If I record a program or two on it, and sell it for four bucks or so, isn't the inconvenience worth more to a pirate than the four bucks? How many pirated editions of CLOAD do you see? At three sixty a copy, people are too lazy to bother. It's easier to pay the price than to copy it.

So, I say—hang the ethics. Nobody gives a rat's tail about morality these days. Turn the customer's vice to your advantage. Mass-produce your programs and sell them so cheaply nobody would bother to copy them. And if you ever suspect somebody of doing so, you'll have the satisfaction of knowing it cost them more than if they bought from you. Sincerely,  
John A. Hern, Jr.

## NOTICE TO S-8IGHTY READERS

With the May issue, the S-8ighty Magazine will arrive free of charge only to readers who subscribe to either SoftSide S-80 Edition, or Prog 80. If you have been a customer of The Software Exchange in recent weeks, then you will also receive The S-8ighty free of charge.

To all others, a \$3.00 subscription fee for 12 issues will be required.

Please fill out the attached and return with your subscription fee to: P.O.Box 66 Millford, New Hampshire 03055

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(Continued from page 8)

**More New Products!**

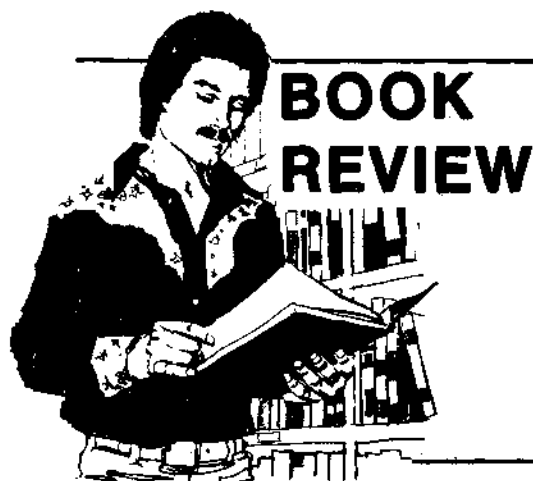
## MICROSOFT CONSUMER PRODUCTS ANNOUNCES TRS-80 BASIC COMPILER

Bellevue, WA, March 14,  
1980—Microsoft Consumer  
Products announces BASIC

Compiler for the TRS-80, a powerful tool for BASIC programming that increases program execution an average of 3-10 times.

Microsoft BASIC Compiler compiles programs written with the TRS-80 Disk BASIC interpreter, producing Z-80 machine code that is directly executed by the TRS-80. Extensive optimizations performed during compilation maximize the speed of the resulting object code. Speeds up to 30 times faster than the speed of interpreted programs can be obtained if extensive use of integer operations is made.

In addition to adding speed the compiler also has new programming features to make writing BASIC programs easier and more efficient. These include double precision trigonometric functions; full PRINT USING for formatted output; extensive disk file capability; WHILE/WEND conditionals; variable names up to 40 characters; and a CALL statement to assembly language or FORTRAN subroutines.



## BOOK REVIEW

**BOOK : "DISSASSEMBLED HANDBOOK FOR TRS-80"**

**VOLUME 2      175 pages**

**8½"x11", 14 chapters @ \$15 ppd.**

**AUTHOR : R.M. Richardson**

**PUBLISHER: Richcraft Engineering Ltd.,**

**Drawer 1065, #1 Wahmeda Industrial Park,  
Chautauqua, NY 14722**

**REVIEWER: Dick Robertson, Washington, DC**

If you were one of the 8000+ adventurous and intrepid readers of Volume 1 of the "Disassembled Handbook For TRS-80", I truly promise that Volume 2 will 'blow your mind'. It turns out that Volume 1 was only a TEASER that introduced the reader to using Level II ROM's myriad subroutines in assembly language programming. Volume 2's 175 pages provide in-depth coverage of: "all the things you wanted to know about Level II ROM, but were afraid to ask". To give you an idea of all the good things in Volume 2, let me briefly review the 14 chapters.

### **Chapter 1:**

Covers all 694 Z-80 instructions and illustrates both their decimal and hex values. This is the FIRST treatise I have seen that matches up the Z-80 instruction set with its decimal value, which is the way the TRS-80's PEEK function reads-out a given Level II ROM MEM location. When you finish this chapter, you will understand how easy it is to disassemble ROM by yourself...no disassembler required.

### **Chapter 2:**

Is a partial disassembled listing of Level II ROM with a number of object and source codes blanked out to protect Microsoft, the copyright owner. Since you have finished Chapter 1 by now, filling in the blank spaces is a SNAP.

### **Chapters 3 & 4:**

Illustrate how ROM stores integers, strings, and string arrays in MEM. A number of mini-programs illustrate these functions' storage protocols using VARPTR.

### **Chapter 5:**

Is the first treatise this reviewer has ever seen which clearly and lucidly explains how single and double precision floating-point numbers are stored in MEM, plus provides a number of truly UNIQUE programs that will logically and understandably decode their absolute and true values. This chapter is really worth the price of the entire book, in my opinion.

### **Chapter 6:**

Explains and fully covers how both non-disk and disk users, without the NEWDOS press—'JKL'—to—LPRINT—out—video feature, may quite simply utilize and add this useful function. Even NEWDOS users will find it attractive as it adds the function of 'press SPACEBAR' to stop printing.

### **Chapter 7:**

Presents a program plus detailed comments that will teach the reader video MEM handling, storage, and recall techniques that are extremely useful for all sorts of applications. These include storing and recalling telephone line/Modem computer bulletin boards and/or teletype, just to name a few. This chapter leads quite logically into Chapter 8.

### **Chapter 8:**

I believe that this is one of the BEST chapters in ANY TRS-80 book EVER published anywhere/anytime. It leads the user very gently and ever so easily into a program that creates a truly SPLIT-SCREEN capability for the TRS-80. Some buffs thought it could not be done. Well, it certainly can be done and it is not all that difficult the way it is presented.

This unique program allows the user to create TWO entirely separate video displays on one TRS-80 screen. Each display is completely independent of the other with its own scrolling, CLS, and MEM storage and recall if desired. When you finish this chapter you will be able to lecture and write a book on the subject.

### **Chapter 9:**

Includes a summary of ALL Level II BASIC ROM CALLS and significant ancillary function CALL addresses. This is a repeat of Volume 1 so that the reader does not have to switch books.

### **Chapters 10 & 11:**

Are BASIC review and cover both a 16K MEM length Morse code transmit/receive program and a TV satellite azimuth-elevation-range program for ALL the major TV satellites up there in geostationary-equatorial orbit. Data is to YOUR location.

### **Chapters 12 & 13:**

Include a bibliography (the author has taken 'kindness pills' in this volume) and the self-programmed learning questions and answers for each chapter. When I occasionally misunderstood a point that was covered, the questions and answers sections invariably clarified the point at hand.

### **Chapter 14:**

Is a useful combined index for Volumes 1 and 2. It sure helps one to find the forgotten location of a given function/subject. It also notes the availability of ALL of the programs from both Volumes 1 and 2 on a single cassette or disk from THE ALTERNATE SOURCE in

Lansing, Michigan. This will certainly be a useful classroom aid to instructors/teachers/computer science professors who do not have the time to compile their own.

#### Summary:

This Volume, as well as Volume 1, will become a classic TRS-80 BIBLE for the advanced programmer, mark my word. It is a MUST for every TRS-80 bookshelf. The author's style and informal presentation make mastering this heretofore difficult subject a real pleasure instead of an unpleasant rote chore.

FORTH is an advanced language and system for advanced programmers. MMSFORTH is a professional version tailored to the Radio Shack TRS-80 Model I and supported by Miller Microcomputer Services.

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## NEWS ON OUR "Monkeying Around" CONTEST

We have had several guesses as to the wearer of the gorilla suit. None of them were right! The answer of course, is not the obvious. For those of you who would like to keep guessing, here's a clue: The person under the suit is also hirsute.

## for the TRS-80 from Micro-Mega

### CASSETTE CONTROL UNIT

• Speed up your cassette tape handling • Pinpoint program locations on tape with an audible monitor • Get protection from recording and playback glitches resulting from ground loops • Eliminate the tedious plugging and unplugging of recorder cables. The Micro-Mega Cassette Control Unit does all this and more. You get instant manual control of the recorder at the flick of a switch. Want to find the beginning or end of a program? Flick another switch and you'll hear it. All cables remain plugged in all the time. The Micro-Mega Cassette Control Unit does a lot to improve the appearance of your TRS-80 system, too. As shown, it's in a 2 1/2" x 5" box which snugly fits between the keyboard and your recorder. There is no need to move the recorder, and all cables come neatly into the unit. The Cassette Control Unit is tailored to the CTR-41 recorder, but may be used with most other recorders as well.



CASSETTE CONTROL UNIT ..... \$37.95  
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Ever find yourself with a blank screen wondering what your computer is up to? The Micro-Mega CPU Monitor can tell you, for example. • If your CPU is in a loop with no exit. • When a long sort is nearing completion, or. • If a key bounces during keyboard input. The CPU Monitor lets you listen to all CSAVES and CLOADs and will help you quickly find the correct recorder volume setting. If you have an expansion interface, you will always know whether the real-time clock is on or off because you can hear it. The Micro-Mega CPU Monitor gives a voice to the Z80 microprocessor in your TRS-80 by using AM radio circuitry to pick up the computational rhythms of the CPU, which are amplified and played through a loudspeaker. The pickup unit of the CPU Monitor, shown at left in the photo, goes under your TRS-80 keyboard. It is connected by a 36" cable to the speaker and control unit, which includes an on/off volume control and an LED "power-on" indicator. The Monitor is powered by an AC adapter, shown at right in the photo. No batteries are needed and no electrical connections to your TRS-80 are required.



By listening to the CPU Monitor, you will soon become familiar with the "personalities" of the programs you run and whether they are executing in a normal way. A dramatic use of the CPU Monitor is in the great enhancement which it provides for computer games. (See "Gaming Environment" below.) CPU MONITOR ..... \$47.95  
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### THE GREEN-SCREEN

The eye-pleasing Green-Screen fits over the CRT of your TRS-80 Video Display and gives you improved contrast with reduced glare. You get bright, luminous green characters and graphics like those featured by very expensive CRT units.

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### CREATE YOUR OWN SPECTACULAR GAMING ENVIRONMENT (and save \$5.00)

The Enterprise is in battle trim with deflector shields at full power. As her captain, you are taking her into combat. The battle stations sirens ring in your ears and "CONDITION RED" flashes on your monitor screen. You call for warp drive and key in the coordinates of the quadrant where your scanners have detected Klingon ships. As you select the warp factor, you hear the reassuring clicking of your navigational gear as it activates the warp drive.

Suddenly, you break out of hyperspace and your monitor displays the chilling sight of three Klingon Battle Cruisers floating on your screen! Their evil shapes glow in luminous green against the black void of space. Moments later, you hear the characteristic rasping sound of Klingon laser weapons, and, as you watch, high-energy beams come knitting toward the Enterprise in succession from each of the Klingon ships.

You have been hit! You hear the distant sound of the damage control alarm as "DAMAGE TO WARP DRIVE" and "DAMAGE TO PHASERS" flash on your screen. The Klingons have stopped firing! The Enterprise is crippled, but your best weapon is still intact, and it's your turn now! You key in the command for photon torpedoes. As your screen again displays the position of the Klingon ships, you select a firing vector from your torpedo chart and key it in. Now you hear the buzz of your photon torpedo as you see it speeding toward a Klingon ship. It strikes him dead-center! As you watch, the Klingon Battle Cruiser disintegrates, accompanied by a satisfying cracking sound.

Does the above scenario sound far fetched? Not at all. It's a small sample of what you will experience with Micro-Mega's Gaming Environment, which consists of: • The STAR TREK PACKAGE • The GREEN-SCREEN and • The CPU MONITOR. The fast-paced and dynamic action reflects the superb Star Trek III program together with the "Voyage Log" and "Torpedo Chart" of the Star Trek Package. All of the unique graphic displays are greatly enhanced by the Green Screen. Finally, the uncanny sound effects are produced by the CPU Monitor, which faithfully picks up the FOR NEXT loops and other CPU patterns, which create the distinct ve siren sounds that accompany the ALERT and DAMAGE messages along with the harsher notes of the weapons salvos. Once you've tried it, you won't any longer be satisfied with silent computer games.

Remember that with the Gaming Environment you also get all of the other excellent features of the CPU Monitor and the Green-Screen for non-gaming applications. You also save \$5.00 off the combined cost of the individual items.

GAMING ENVIRONMENT ..... \$79.95  
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