
Covering the TI99/4A and the Myarc 9640

MICROpendium

Volume 10 Number 10

November 1993

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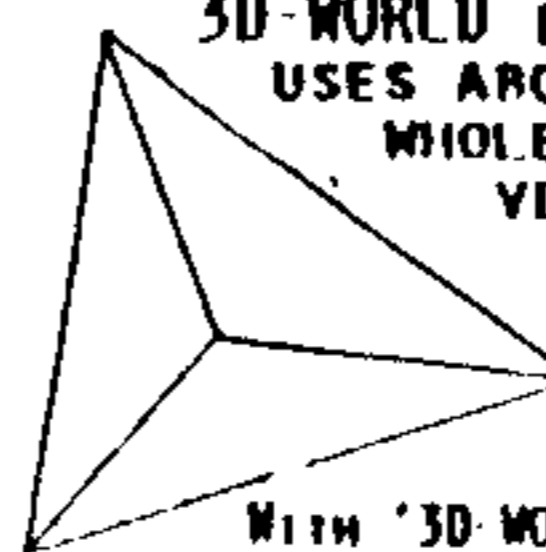
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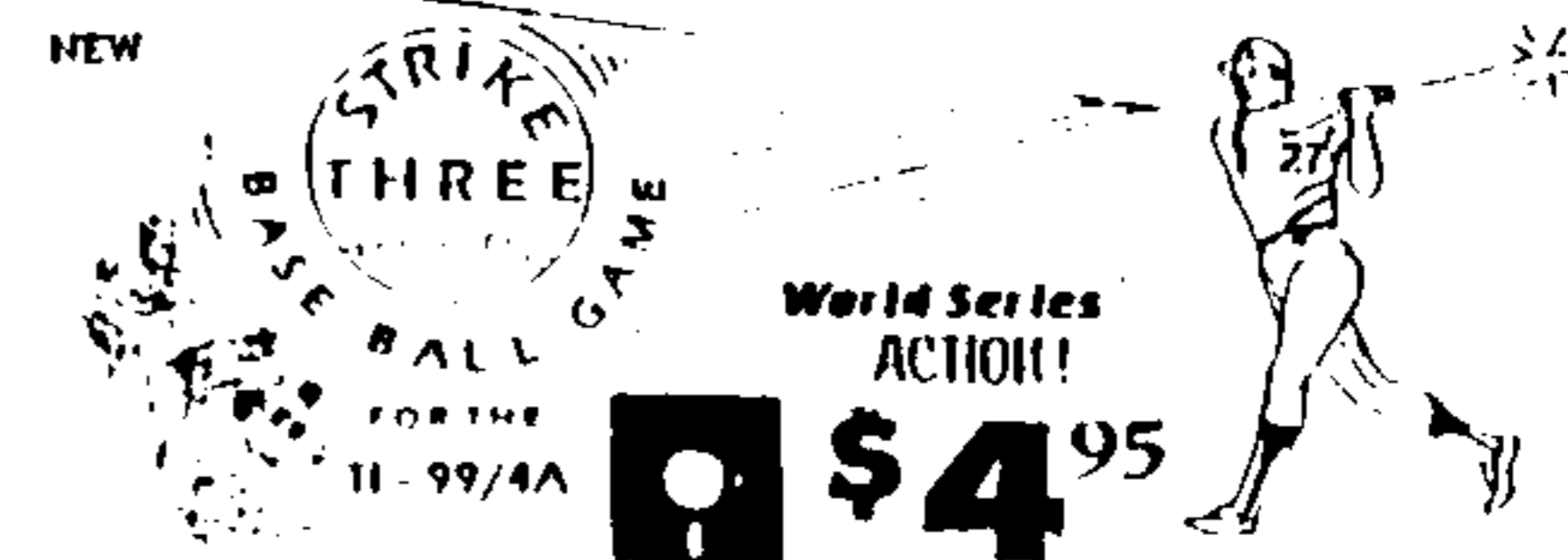
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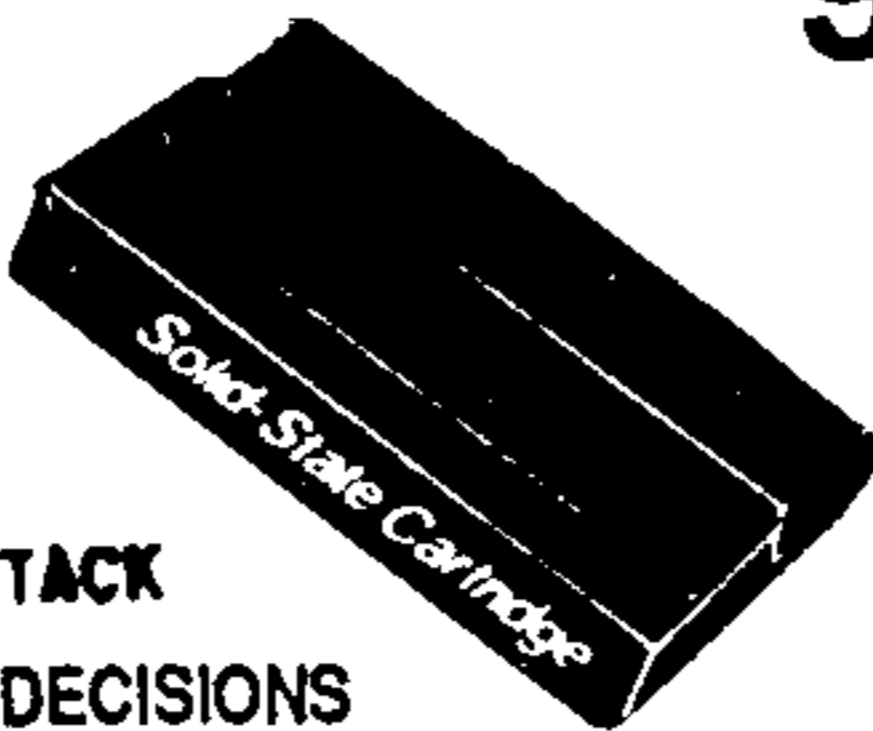
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Delphi TINET: MICROpendium

GENie: J.Koloen

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John Koloen.....Publisher

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*READ THIS

Here are some tips to help you when entering programs from MICROpendium:

1. Most BASIC and Extended BASIC programs are run through Checksum, which places the numbers that follow exclamation points at the end of each program line. Do not enter these numbers or exclamation points. Checksum is available on disk from MICROpendium for \$4.
2. Long Extended BASIC lines are entered by inputting until the screen stops accepting characters, pressing Enter, pressing FCTN REDO, cursoring to the end of the line and continuing input.

COMMENTS

Goodbye, Regena

Long-time TI users don't really know what life without Regena will be like. But after this issue, that's the reality we have to face. Regena, aka Cheryl Whitelaw, has written her last column covering the TI.

Cheryl started writing a column in the early 1980s. The column first appeared in the old 99er Magazine, and when it went out of business the column was carried by Compute. Regena has been a mainstay of MICROpendium since January 1987, but no more.

Although she's moving on to other things, MICROpendium will continue to press on. I'm not sure exactly what we'll be doing to fill the void she leaves, but we've got a couple of ideas. By January we hope to have another columnist in place, though I expect he/she to concentrate mostly on Extended BASIC, rather than BASIC.

We're also looking for someone who can handle a monthly or bi-monthly column about the Geneve. We're looking for someone who'd like to keep readers informed about the Geneve community as well as providing programming tips or even programs. Readers who are interested are encouraged to contact us.

Meanwhile, Regena, it's been a good run. Best of luck in the future. And thanks for all you've done for the TI community.

AT THE FAIRE

This year's Chicago TI fair marked a sea change for the event. Gone are the days when thousands flooded gymnasium-sized

trade floor with seminars conducted in lecture halls. The event, like the TI user base, is shrinking. But it's now possible to see everything and speak to everybody without being rushed.

There were no major product introductions at this year's fair, but there was plenty to see. Mike Wright of CaDD Electronics demonstrated the latest version of PC99, which is substantially improved over last year's incarnation. In fact it's good enough to be reviewed, and will be in the near future. Although Horizon's SCSI card still isn't ready to go, Mike Maksimik used it to control a CD-ROM drive. A Dutch user group, represented by Barry Harmsen, displayed a new disk controller which is expected to be marketed before the end of the year. Cecure Electronics generated a lot of interest among Geneve users with its new flash ROM, an erasable, programmable chip that can be used to store SYSTEM.SYS files.

Seminars weren't quite as frantic as in previous years. Bud Mills discussed at length the Horizon 4000 RAMdisk and gave an update on the SCSI project. "The hold-up is between the SCSI card and the TI not the card and the drive." He said that programmers still must translate high level routines in order to convert SCSI commands "into something the TI understands." The low-level routines were done by Will McGovern of Funnelweb fame.

(See Page 28)

1993 TI FAIRS

APRIL

Northeast TI Fair, April 17, Waltham High School, Waltham, Massachusetts. Contact Ron Williams, 14 East St., Avon, MA 02322.

Canadian TI Fest, April 24, Merivale High School, Nepean, Ontario, Canada. Contact Bill Gard, 3489 Paul Anka Dr., Ottawa, Ontario, Canada K1V 9K6 or (613) 523-9396 or Fax (819) 997-2194 Attn: DMES 2.

MAY

Fourth Annual TI Orphans Reunion, May 15, Zurich Insurance Claims Centre, 9715 Ottewell Rd., Edmonton, Alberta, Canada. Contact Ron Hohman, (403) 456-0862.

SEPTEMBER

Western Washington TI Fair, Sept 18, Tacoma Waterworks, 3506 S. 35th, Tacoma, Washington. Jim Tompkins, (206) 756-0934.

OCTOBER

Annual International TI-Faire, Oct. 8-10, Evangelisches Ferienwaldheim Weidachtal, 7000 Stuttgart 80 (Mörhingen), Weidach Gewann 8, Germany. Contact Hans Huben, Berberitzenweg 6, 7033 Herrenberg, Germany; Wolfgang Bertsch, Helenenburgweg 61, 7120 Bietigheim-Biss, German; or Dierk Warburg, Lilienweg 12, 7141 Benningen, Germany.

Chicago International World Faire, Oct. 30, Holiday Inn, Gurnee, Illinois. Contact Cecure Electronics, P.O. Box 132, Muskego, WI 53150, or Don Walden, (414) 679-4343.

Milwaukee TI Fair, Oct. 31, Quality Inn, 5311 Howell Ave, Milwaukee, Wisconsin. Contact Gene Hitz, 4121 North Glenway, Wauwatosa, WI 53222.

1994 FAIRS

FEBRUARY

Fest-West, Feb. 19-20, Santa Rita Park Inn, Tucson, Arizona. Contact Tom Wills, Fest-West '94 Committee, Southwest 99ers Users Group, P.O. Box 17831, Tucson, AZ 85731 or (602) 886-2460; BJ Mathis, (602) 747-5046; or the Cactus Patch BBS, (602) 290-6277.

MAY

Lima Multi User Group Conference, May 14-15, Ohio State University Lima Campus, Lima, Ohio. Contact Lima Ohio Users Group, P.O. Box 647, Venedocia, OH 45894.

This TI event listing is a permanent feature of MICROpendium. User groups and others planning events for TI/Geneve users may send information for inclusion in this standing column. Send information to MICROpendium Fairs, P.O. Box 1343, Round Rock, TX 78680.

FEEDBACK

Dupa, Dupa, Dupa

I am such a Dupa. My paramour tells me this means stupid, thickheaded, etc. She often callz mi dis. Well, she's right this time. I allowed her to "rearrange" the apartment. This precipitated a frantic search (on my part — she just doesn't understand) for all my 99/4A docs and MICROpendiums. Miracle of miracles! I found all *except* the August issue, Volume 10, No. 7, of MICROpendium. Enclosed is \$3.50 for another copy. Love your Rag, Man! (Jack Kerouac — 1955).

By the way, I thought Barry Traver's articles were hard to understand. But then, out of Baltimore flying his MIDI 99 through the sky came ... *Bruce Harrison!* But this is good. It's a stretch. I need that in my life. Gotta go. *Now let me see. Where was I. Oh, yeah, Art of Assembly, Part 1. Sector 0, fifth nibble in the fourth column from the left....*

Gary Fitzgerald
Milford, Connecticut

Asgard changeover

This letter is to inform MICROpendium and the TI community that as of Nov. 1 I have become the sole owner of Asgard Software. That is to say, I will be the manufacturer and distributor of all *disk* software previously distributed by Asgard Software, previously in Rockville, Maryland, and later in Woodbridge, Virginia. Asgard Peripherals will maintain responsibility for all hardware oriented products of the TI such as cartridges, memory devices and mice. Repeating, I will be sharing the Asgard name, but will be responsible for *disk* products *only*.

I intend to drop a few older products, add some new ones in the coming months (including some surprises) and give this community the best service I possibly can. As you know, I have been working for Asgard for the past two years and have come to know the needs of the community pretty well, primarily the need for timely mailing of the products purchased. I have accomplished this, within reason, for the past two years and expect to continue for some years to come.

The following are some personal resolves and comments:

1. New products for the future that exceed the capacity of single-sided, single density disks will

be manufactured on *double*-sided, single density disks. There is no excuse for the members of the TI community today not to have this capacity. Certainly not when you can pick up DSDD drives for as low as \$5 apiece quite often.

2. I intend to try to put our mice to work. There have ben hundreds sold, but to date the number of programs that use these little buggers can be counted on one hand. I hope to remedy this in the near future.

3. I will be cooperative with the entire community of hardware and software producers. I have stayed out of all the wars that have occurred over the years and will continue to do so. The only possible exception to this are concerns over the 9640 and related products. I have never considered the 9640 a TI in any way, shape or form. I will *not* beat my brains out trying to make our software work with these units, nor will I go out of my way to make our programs hostile to it. New products will be sent to the 9640 News to see if they were with the Geneve and it will be up to them to recommend or reject said products for the Geneve 9640 community.

4. I will be looking for new programmers and products immediately. If you want a project to program, or have a completed one lying around with nothing to do, please drop me a line to the address below. Assembly programmers only, please.

5. My phone number is (716) 778-9104. I am available every day from noon to 9 p.m. (except Sunday or when Star Trek or DS9 is on. Tuesday is also iffy because I go to school on that day.) The phone is answered "Frontier Microfilm," my other company and the one with which I pay the bills. I *will not* return long distance phone calls if I am not here, but the phone will be answered by a human being — my wife or one of my adult offspring — leave a message of your needs and I will try to take care of you. Your message must be concise, complete and presented in a loud voice; otherwise, you're on your own ≤grin≥. Also, allow me to repeat, I cannot answer questions concerning Asgard hardware or cartridge products.

6. There will be *no* credit card orders. COD.s will go via UPS, which costs dearly — you'd better want it awfully bad.

7. Finally, I will be looking to add to my dealer base, but be advised, some stringent rules will apply to these dealers. If your group is interested, let me know; I'll send details.

I will be looking forward to your support to help guarantee continued success for our com-

puter. All future orders for Asgard Software (*disk* only) should be sent to: Harry Thomas Brashear, 2753 Main St., Newfane, NY 14108.

Hardware and cartridge orders should go to: Asgard Peripherals, 1423 Flagship Dr., Woodbridge, VA 22192.

Harry T. Brashear
Newfane, New York

Déjà vu all over again

The Comments of August '93 (which is actually September's issue) requested info on a patch to Logo II. This was covered in the April 1988 issue, page 32.

Also in the September issue, the article "Another potpourri," by Bruce Harrison, which appears to be a year old (header in Sidebar 27), explains the space reserved for string variables in the last paragraph on page 13. If Bruce or anyone else who is interested changes the X\$="" to XX\$="" I think he will figure out what the true length of a null string is and may solve the "overhead" from the previous paragraph.

In the October 1993 issue User Notes, "Program makes graph paper" is a repeat of an article published in March 1986, page 43. The code appears to be more efficient in the more recent article.

With the recent increase in the price of the magazine, the rehash of articles I do not think is warranted. Are we running out of articles to publish? Should we make a plea to programmers for new, fresh materials? Or do we lower our heads and say, "Oh, well, we are orphans in the computing world, it is to be expected"?

Jim Uzzell
Key West, Florida

Feedback is a reader forum. The editor may condense excessively lengthy submissions if necessary. We ask that writers limit themselves to one subject per submission. Our only requirement is that submissions be of interest to those using the TI99/4A, the Geneve 9640 or compatibles. Send items to MICROpendium Feedback, P.O. Box 1343, Round Rock, TX 78680.

BASIC

Farewell to friends

By REGENA

It has been a difficult decision to leave my monthly column on programming the TI, but I realized I couldn't continue to try to do too much. I am looking forward to university teaching and hope I will be able to help students there learn math, computer skills and engineering for their futures. Of course, a lot of the rest of my time is spent skiing; going to my sons' football, basketball and baseball games; and attending other athletic events as a spectator. I also do custom knitting and other needlework and may continue to publish knit and

crochet designs.

I wasn't sure what type of program to write for my last published program but finally decided on music. Queen Liliuokalani of Hawaii is said to have written "Aloha Oe," and the original text was a love song of parting. Now, "Farewell to Thee" is often sung as a brief goodbye for friends, and it seemed fitting for me to use for you.

The chorus is in a subroutine in Lines 3050-3840. The other subroutines in Lines 3850-4120 are endings of phrases which are used several times throughout the

song.

This program is nearly full memory, so be sure to use the procedure
CALL FILES(1) <ENTER>
NEW <ENTER>
before running this program.

If you wish to save typing effort, you may have a copy of this program by sending \$4 to REGENA, 918 Cedar Knolls West, Cedar City, UT 84720. Be sure to specify that you need "FAREWELL" for the TI and whether you need cassette or diskette.

FAREWELL TO THEE

```

100 REM FAREWELL TO THEE !05
3
110 REM FROM REGENA !224
120 CALL CLEAR !209
30 T=300 !112
140 CALL SOUND(T,330,2,277,6)
!070
150 CALL SOUND(T,440,2,277,6)
!072
160 CALL SOUND(T,554,2,330,6,
,110,8)!008
170 CALL SOUND(T,554,2,330,6,
,165,8)!018
180 CALL SOUND(T,554,2,330,6,
,220,8)!010
190 CALL SOUND(T,494,3,349,6,
,277,8)!036
200 CALL SOUND(T,440,3,370,6,
,147,8)!017
210 CALL SOUND(T,415,3,349,6,
,185,8)!027
220 CALL SOUND(T,440,3,370,6,
,220,8)!009
230 CALL SOUND(T,370,3,294,6)
!074
240 CALL SOUND(T,330,3,277,6,
,110,8)!011
250 GOSUB 4020 !019
260 CALL SOUND(1.5*T,440,1,3
,0,6,139,8)!046
270 CALL SOUND(.5*T,415,1,33
0,6,139,8)!254
280 CALL SOUND(2*T,370,2,294
,6,147,8)!213
290 CALL SOUND(1.5*T,494,1,3
70,6,123,9)!053
300 CALL SOUND(.5*T,440,2,37
0,6,123,9)!251
310 CALL SOUND(2*T,415,3,247
,6,165,8)!212
320 CALL SOUND(1.5*T,554,1,4
15,6,165,8)!055
330 CALL SOUND(.5*T,494,2,29
4,6,165,8)!014
340 CALL SOUND(T,110,6)!118
350 CALL SOUND(-T,165,5,110,
6)!003
360 CALL SOUND(-T,277,3,165,
5,110,6)!208
370 CALL SOUND(-T,330,2,277,
3,165,5)!208
380 CALL SOUND(-2*T,440,2,33
0,2,277,3)!135
390 CALL SOUND(T,110,8)!120
400 CALL SOUND(-T,165,8,110,
8)!008
410 CALL SOUND(-T,330,6,165,
8)!010
420 CALL SOUND(-T,440,4,330,
6,165,8)!208
430 CALL SOUND(-2*T,554,2,44
0,4,330,6)!138
440 CALL SOUND(T,110,6)!118
450 CALL SOUND(-T,165,5,110,
6)!003
460 CALL SOUND(-T,277,3,165,
5,110,6)!208
470 CALL SOUND(-T,330,2,277,
3,165,5)!208
480 CALL SOUND(-2*T,440,2,33
0,2,277,3)!135
490 CALL SOUND(T,330,2,277,6)
!070
500 PRINT "NOW ";!047
510 CALL SOUND(T,440,2,277,6)
!072
520 PRINT "OUR ";!049
530 CALL SOUND(T,554,2,330,6,
,110,8)!008
540 PRINT "GOLD";!065
550 CALL SOUND(T,554,2,330,6,
,165,8)!018
560 CALL SOUND(T,554,2,330,6,
,220,8)!010
570 CALL SOUND(T,494,3,349,6,
,277,8)!036
580 PRINT "EN ";!205
590 CALL SOUND(T,440,3,370,6,
,147,8)!017
600 PRINT "DAYS" !152
610 CALL SOUND(T/2,440,3,370,
,6,185,8)!210
620 CALL SOUND(T/2,415,3,349,
,6,185,8)!218
630 PRINT "ARE ";!019
640 CALL SOUND(T,440,3,370,6,
,220,8)!009
650 PRINT "AT ";!207

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(See Page 8)

REGENA ON BASIC —

(Continued from Page 7)

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660 CALL SOUND(T,370,3,294,6
)!074
670 PRINT "AN ";!201
680 CALL SOUND(T,330,3,277,6
,110,8)!011
690 PRINT "END;" !121
700 GOSUB 3950 !205
710 PRINT "THE ";!028
720 CALL SOUND(T,554,2,440,6
,110,8)!010
730 CALL SOUND(T,494,2,415,6
,165,10)!067
740 PRINT "PART";!082
750 CALL SOUND(T,494,2,415,6
,165,8)!025
760 CALL SOUND(T,494,2,415,6
,208,8)!023
770 CALL SOUND(T,466,2,392,6
,165,8)!028
780 PRINT "ING ";!025
790 CALL SOUND(T,494,1,415,5
,165,10)!065
800 PRINT "HOUR" !165
810 CALL SOUND(T,494,2,415,6
,165,8)!025
820 PRINT "IS ";!214
830 CALL SOUND(T,587,2,370,6
,247,8)!029
840 PRINT "COM";!249
850 CALL SOUND(T,554,2,415,6
,165,8)!022
860 PRINT "ING ";!025
870 CALL SOUND(2*T,494,2,294
,6,165,9)!221
880 PRINT "SOON," !211
890 GOSUB 3850 !105
900 PRINT "AND ";!014
910 CALL SOUND(T,440,2,277,6
)!072
920 PRINT "WE ";!214
930 CALL SOUND(T,554,2,330,6
,110,8)!008
940 PRINT "THINK," !019
950 CALL SOUND(T,554,2,330,6
,165,8)!018
960 CALL SOUND(T,554,2,330,6
,220,8)!010
970 CALL SOUND(T,494,3,349,6
,277,8)!036
980 PRINT "WHILE ";!182
990 CALL SOUND(T,440,3,370,6
,147,8)!017
1000 PRINT "SWIFT ";!202
1010 CALL SOUND(T/2,440,3,37
0,6,185,8)!210
1020 CALL SOUND(T/2,415,3,34
9,6,185,8)!218
1030 PRINT "THE ";!028
1040 CALL SOUND(T,440,3,370,
6,220,8)!009
1050 PRINT "MO";!181
1060 CALL SOUND(T,370,3,294,
6)!074
1070 PRINT "MENTS ";!196
1080 CALL SOUND(T,330,3,277,
6,110,8)!011
1090 PRINT "PASS" !158
1100 GOSUB 4020 !019
1110 CALL SOUND(T,440,1,330,
6,139,8)!012
1120 PRINT "HOW ";!041
1130 CALL SOUND(T,415,1,330,
6,139,8)!014
1140 PRINT "DE";!162
1150 CALL SOUND(2*T,370,2,29
4,6,147,8)!213
1160 PRINT "LIGHT";!148
1170 CALL SOUND(T,494,1,370,
6,123,9)!019
1180 PRINT "FUL ";!034
1190 CALL SOUND(T,440,2,370,
6,123,9)!011
1200 PRINT "HAS ";!023
1210 CALL SOUND(T,415,3,247,
6,165,8)!022
1220 PRINT "BEEN" !129
1230 CALL SOUND(T,415,2,247,
6,165,8)!021
1240 PRINT "OUR ";!049
1250 CALL SOUND(T,554,1,415,
6,165,8)!021
1260 PRINT "FRIEND";!213
1270 CALL SOUND(T/2,554,1,41
5,6,165,7)!211
1280 CALL SOUND(T/2,494,2,29
4,6,165,8)!221
1290 PRINT "SHIP'S ";!236
1300 CALL SOUND(T,440,2,277,
6,220,8)!014
1310 PRINT "BOON." !196
1320 GOSUB 4080 !079
1330 GOSUB 3050 !069
1340 CALL SOUND(T,330,2,277,
6)!070
1350 PRINT "WE ";!214
1360 CALL SOUND(T,440,2,277,
6)!072
1370 PRINT "HAVE ";!096
1380 CALL SOUND(T,554,2,330,
6,110,8)!008
1390 PRINT "FELT ";!103
1400 CALL SOUND(T,554,2,330,
6,165,8)!018
1410 CALL SOUND(T,554,2,330,
6,220,8)!010
1420 CALL SOUND(T,494,3,349,
6,277,8)!036
1430 PRINT "THE ";!028
1440 CALL SOUND(T,440,3,370,
6,147,8)!017
1450 PRINT "THRILL" !056
1460 CALL SOUND(T/2,440,3,37
0,6,185,8)!210
1470 CALL SOUND(T/2,415,3,34
9,6,185,8)!218
1480 PRINT "OF ";!207
1490 CALL SOUND(T,440,3,370,
6,220,8)!009
1500 PRINT "AUT";!004
1510 CALL SOUND(T,370,3,294,
6)!074
1520 PRINT "UMN ";!043
1530 CALL SOUND(T,330,3,277,
6,110,8)!011
1540 PRINT "DAYS," !197
1550 GOSUB 3950 !205
1560 PRINT "AND ";!014
1570 CALL SOUND(T,554,2,440,
6,110,8)!010
1580 CALL SOUND(T,494,2,415,
6,165,10)!067
1590 PRINT "SHARED ";!245
1600 CALL SOUND(T,494,2,415,
6,165,8)!025
1610 CALL SOUND(T,494,2,415,
6,208,8)!023
1620 CALL SOUND(T,466,2,392,
6,165,8)!028
1630 PRINT "THE ";!028
1640 CALL SOUND(T,494,1,415,
5,165,10)!065
1650 PRINT "WIN";!008
1660 CALL SOUND(T,494,2,415,
6,165,8)!025
1670 PRINT "TER'S" !205
1680 CALL SOUND(T,587,2,370,
6,247,8)!029
1690 PRINT "COLD ";!094
1700 CALL SOUND(T,554,2,415,
6,165,8)!022
1710 PRINT "AS ";!206
1720 CALL SOUND(2*T,494,2,29
4,6,165,9)!221

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(See Page 9)

REGENA ON BASIC —

(Continued from Page 8)

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1730 PRINT "WELL;" !215
1740 GOSUB 3850 !105
1750 PRINT "WHEN ";!110
1760 CALL SOUND(T,440,2,277,
6)!072
1770 PRINT "WE ";!214
1780 CALL SOUND(T,554,2,330,
6,110,8)!008
1790 PRINT "KNOW" !166
1800 CALL SOUND(T,554,2,330,
6,165,8)!018
1810 CALL SOUND(T,554,2,330,
6,220,8)!010
1820 CALL SOUND(T,494,3,349,
6,277,8)!036
1830 PRINT "WE ";!214
1840 CALL SOUND(T,440,3,370,
6,147,8)!017
1850 PRINT "NOW ";!047
1860 CALL SOUND(T/2,440,3,37
0,6,185,8)!210
1870 CALL SOUND(T/2,415,3,34
9,6,185,8)!218
1880 PRINT "MUST ";!133
1890 CALL SOUND(T,440,3,370,
6,220,8)!009
1900 PRINT "SAY ";!040
1910 CALL SOUND(T,370,3,294,
6)!074
1920 PRINT "GOOD-";!114
1930 CALL SOUND(T,330,3,277,
6,110,8)!011
1940 PRINT "BYE," !115
1950 GOSUB 4020 !019
1960 CALL SOUND(T,440,1,330,
6,139,8)!012
1970 PRINT "ALL ";!020
1980 CALL SOUND(T,415,1,330,
6,139,8)!014
1990 PRINT "OUR ";!049
2000 CALL SOUND(2*T,370,2,29
4,6,147,8)!213
2010 PRINT "SOR";!014
2020 CALL SOUND(T,494,1,370,
6,123,9)!019
2030 PRINT "ROW," !139
2040 CALL SOUND(T,440,2,370,
6,123,9)!011
2050 PRINT "NO ";!215
2060 CALL SOUND(T,415,3,247,
6,165,8)!022
2070 PRINT "LANG";!061
2080 CALL SOUND(T,415,2,247,
6,165,8)!021
2090 PRINT "UAGE ";!094
2100 CALL SOUND(T,554,1,415,
6,165,8)!021
2110 PRINT "E'ER ";!063
2120 CALL SOUND(T/2,554,1,41
5,6,165,7)!211
2130 CALL SOUND(T/2,494,2,29
4,6,165,8)!221
2140 PRINT "CAN ";!013
2150 CALL SOUND(T,440,2,277,
6,220,8)!014
2160 PRINT "TELL." !199
2170 GOSUB 4080 !079
2180 GOSUB 3050 !069
2190 CALL SOUND(T,330,2,277,
6)!070
2200 PRINT "WE ";!214
2210 CALL SOUND(T,440,2,277,
6)!072
2220 PRINT "HAVE ";!096
2230 CALL SOUND(T,554,2,330,
6,110,8)!008
2240 PRINT "SEEN ";!103
2250 CALL SOUND(T,554,2,330,
6,165,8)!018
2260 CALL SOUND(T,554,2,330,
6,220,8)!010
2270 CALL SOUND(T,494,3,349,
6,277,8)!036
2280 PRINT "TO";!188
2290 CALL SOUND(T,440,3,370,
6,147,8)!017
2300 PRINT "GETH";!067
2310 CALL SOUND(T/2,440,3,37
0,6,185,8)!210
2320 CALL SOUND(T/2,415,3,34
9,6,185,8)!218
2330 PRINT "ER" !252
2340 CALL SOUND(T,440,3,370,
6,220,8)!009
2350 PRINT "HOW ";!041
2360 CALL SOUND(T,370,3,294,
6)!074
2370 PRINT "THE ";!028
2380 CALL SOUND(T,330,3,277,
6,110,8)!011
2390 PRINT "SPRING" !060
2400 GOSUB 3950 !205
2410 PRINT "MADE ";!083
2420 CALL SOUND(T,554,2,440,
6,110,8)!010
2430 CALL SOUND(T,494,2,415,
6,165,10)!067
2440 PRINT "MIR";!002
2450 CALL SOUND(T,494,2,415,
6,165,8)!025
2460 CALL SOUND(T,494,2,415,
6,208,8)!023
2470 CALL SOUND(T,466,2,392,
6,165,8)!028
2480 PRINT "A";!089
2490 CALL SOUND(T,494,1,415,
5,165,10)!065
2500 PRINT "CLES ";!099
2510 CALL SOUND(T,494,2,415,
6,165,8)!025
2520 PRINT "OF ";!207
2530 CALL SOUND(T,587,2,370,
6,247,8)!029
2540 PRINT "TREE" !151
2550 CALL SOUND(T,554,2,415,
6,165,8)!022
2560 PRINT "AND ";!014
2570 CALL SOUND(2*T,494,2,29
4,6,165,9)!221
2580 PRINT "FLOW'R;" !086
2590 GOSUB 3850 !105
2600 PRINT "BUT ";!038
2610 CALL SOUND(T,440,2,277,
6)!072
2620 PRINT "THE ";!028
2630 CALL SOUND(T,554,2,330,
6,110,8)!008
2640 PRINT "JOY" !088
2650 CALL SOUND(T,554,2,330,
6,165,8)!018
2660 CALL SOUND(T,554,2,330,
6,220,8)!010
2670 CALL SOUND(T,494,3,349,
6,277,8)!036
2680 PRINT "THAT ";!109
2690 CALL SOUND(T,440,3,370,
6,147,8)!017
2700 PRINT "SUM";!015
2710 CALL SOUND(T/2,440,3,37
0,6,185,8)!210
2720 CALL SOUND(T/2,415,3,34
9,6,185,8)!218
2730 PRINT "MER ";!031
2740 CALL SOUND(T,440,3,370,
6,220,8)!009
2750 PRINT "BRO'T ";!155
2760 CALL SOUND(T,370,3,294,
6)!074
2770 PRINT "TO ";!221
2780 CALL SOUND(T,330,3,277,
6,110,8)!011
2790 PRINT "US" !013
2800 GOSUB 4020 !019

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(See Page 10)

REGENA ON BASIC—

(Continued from Page 9)

```

2810 CALL SOUND(T,440,1,330,
6,139,8)!012
2820 PRINT "LED ";!016
2830 CALL SOUND(T,415,1,330,
6,139,8)!014
2840 PRINT "US ";!226
2850 CALL SOUND(2*T,370,2,29
4,6,147,8)!213
2860 PRINT "ON ";!215
2870 CALL SOUND(T,494,1,370,
6,123,9)!019
2880 PRINT "TOWARD" !058
2890 CALL SOUND(T,440,2,370,
6,123,9)!011
2900 PRINT "THIS ";!116
2910 CALL SOUND(T,415,3,247,
6,165,8)!022
2920 PRINT "PEN";!253
2930 CALL SOUND(T,415,2,247,
6,165,8)!021
2940 PRINT "SIVE ";!115
2950 CALL SOUND(T,554,1,415,
6,165,8)!021
2960 PRINT "PART";!082
2970 CALL SOUND(T/2,554,1,41
5,6,165,7)!211
2980 CALL SOUND(T/2,494,2,29
4,6,165,8)!221
2990 PRINT "ING ";!025
3000 CALL SOUND(T,440,2,277,
6,220,8)!014
3010 PRINT "HOUR." !212
3020 GOSUB 4080 !079
3030 GOSUB 3050 !069
3040 STOP !152
3050 CALL SOUND(2*T,330,2,27
7,6,220,8)!202
3060 PRINT : "FARE";!238
3070 CALL SOUND(2*T,370,2,29
4,6,147,8)!213
3080 PRINT "WELL ";!112
3090 CALL SOUND(2*T,440,2,37
0,6,147,10)!248
3100 PRINT "TO ";!221
3110 CALL SOUND(2.5*T,587,2,
370,5,147,8)!062
3120 PRINT "THEE," !186
3130 CALL SOUND(T,370,2,294,
6,185,8)!025
3140 PRINT "FARE";!057
3150 CALL SOUND(2*T,330,2,27
7,6,220,8)!202
3160 PRINT "WELL ";!112
3170 CALL SOUND(2*T,440,2,16
5,8,110,9)!201
3180 PRINT "TO ";!221
3190 CALL SOUND(2.5*T,554,2,
330,6,110,8)!043
3200 PRINT "THEE," !186
3210 CALL SOUND(T,440,3,330,
6,139,8)!014
3220 PRINT "OUR ";!049
3230 CALL SOUND(1.5*T,415,3,
247,6,165,8)!056
3240 PRINT "GOLD";!065
3250 CALL SOUND(T/2,370,3,24
7,6,165,8)!213
3260 PRINT "EN ";!205
3270 CALL SOUND(T,415,3,247,
7,165,8)!023
3280 PRINT "DAYS ";!109
3290 CALL SOUND(T,440,3,247,
7,185,8)!023
3300 PRINT "ARE" !062
3310 CALL SOUND(T,494,2,294,
6,165,8)!030
3320 PRINT "COM";!249
3330 CALL SOUND(T,494,3,294,
5,165,9)!031
3340 PRINT "ING ";!025
3350 CALL SOUND(T,587,2,415,
6,247,6)!027
3360 PRINT "TO ";!221
3370 CALL SOUND(T,587,3,415,
7,247,8)!031
3380 PRINT "AN ";!201
3390 CALL SOUND(T,554,2,330,
6,110,8)!008
3400 PRINT "END," !106
3410 CALL SOUND(T,554,2,330,
6,165,8)!018
3420 CALL SOUND(T,554,2,330,
6,185,8)!020
3430 CALL SOUND(T,554,2,330,
6,208,8)!016
3440 CALL SOUND(T,440,2,277,
6,247,8)!023
3450 CALL SOUND(2*T,440,2,27
7,6,220,6)!202
3460 CALL SOUND(T,330,3,277,
6,220,8)!013
3470 PRINT "BUT ";!038
3480 CALL SOUND(2*T,370,3,29
4,7,147,8)!215
3490 PRINT "WE ";!214
3500 CALL SOUND(2*T,440,3,37
0,7,147,10)!250
3510 PRINT "WILL ";!116
3520 CALL SOUND(2.5*T,587,3,
370,8,147,8)!066
3530 PRINT "HOPE" !147
3540 CALL SOUND(T,370,3,294,
6,185,8)!026
3550 PRINT "FOR ";!034
3560 CALL SOUND(T,330,2,277,
6,220,8)!012
3570 PRINT "BRIGHT";!221
3580 CALL SOUND(T,330,3,277,
7,220,9)!015
3590 PRINT "ER ";!209
3600 CALL SOUND(T,440,2,277,
5,165,8)!021
3610 PRINT "DAYS ";!109
3620 CALL SOUND(T,440,3,277,
6,165,9)!024
3630 PRINT "TO ";!221
3640 CALL SOUND(1.5*T,554,2,
330,6,110,8)!042
3650 PRINT "COME," !184
3660 CALL SOUND(T,440,3,330,
7,139,8)!015
3670 PRINT "WHEN ";!110
3680 CALL SOUND(2*T,415,3,24
7,7,165,8)!213
3690 PRINT "FRIEND ";!246
3700 CALL SOUND(T,415,3,247,
7,165,10)!065
3710 CALL SOUND(T,440,3,370,
7,165,10)!060
3720 PRINT "SHALL ";!177
3730 CALL SOUND(T,554,2,415,
5,165,8)!021
3740 PRINT "MEET" !146
3750 CALL SOUND(T,494,2,415,
5,294,9)!028
3760 CALL SOUND(T,494,2,415,
5,165,8)!024
3770 CALL SOUND(T,415,2,294,
6,165,8)!023
3780 PRINT "WITH ";!120
3790 CALL SOUND(2*T,440,2,27
7,6,110,8)!202
3800 PRINT "FRIEND.": :!186
3810 CALL SOUND(2*T,440,2,29
4,6,110,8)!201
3820 PRINT !156
3830 CALL SOUND(2*T,440,2,27
7,6,110,8)!202
3840 RETURN !136
3850 CALL SOUND(T,247,8)!131
3860 CALL SOUND(-T,415,6,247
,8)!015
3870 CALL SOUND(-T,587,4,415

```

(See Page 11)

REGENA ON BASIC —

(Continued from Page 10)	3960 CALL SOUND(T,330,3,277,	6,208,8)!019
,6,247,8)!225	6,185,8)!023	4050 CALL SOUND(T,330,3,277,
3880 CALL SOUND(-2*T,740,4,5	3970 CALL SOUND(T,330,3,277,	6,247,8)!022
87,4,415,6)!153	6,208,8)!019	4060 CALL SOUND(T,330,3,277,
3890 CALL SOUND(T,330,8)!124	3980 CALL SOUND(T,330,3,277,	6,220,8)!013
3900 CALL SOUND(-T,415,6,330	6,220,8)!013	4070 RETURN !136
,8)!008	3990 CALL SOUND(T,330,3,277,	4080 CALL SOUND(T,440,2,330,
3910 CALL SOUND(-T,554,5,415	6,185,8)!023	6,196,8)!016
,6,330,8)!213	4000 CALL SOUND(T,554,2,440,	4090 CALL SOUND(T,440,2,294,
3920 CALL SOUND(-2*T,659,4,5	6,165,8)!020	6,185,8)!023
54,5,415,6)!157	4010 RETURN !136	4100 CALL SOUND(T,440,2,247,
3930 CALL SOUND(T,330,2,277,	4020 CALL SOUND(T,330,3,277,	6,175,8)!020
6)!070	6,165,8)!021	4110 CALL SOUND(2*T,440,2,27
3940 RETURN !136	4030 CALL SOUND(T,330,3,277,	7,6,165,8)!212
3950 CALL SOUND(T,330,3,277,	6,185,8)!023	4120 RETURN !136
6,165,8)!021	4040 CALL SOUND(T,330,3,277,	4130 END !139

THE ART OF ASSEMBLY — PART 29

Pastafazool, etc.

By **BRUCE HARRISON**
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This will be another departure from the mainstream, and may stir up controversy among other language proponents, but after all this column is the “proponent” for assembly, so we’ll brag about our favorite language here with apologies to nobody.

Some time ago, we bought our first PC, which was a Tandy 1000-SX model. For those who follow the PC market, let’s say right off that this is an old fashioned PC, with an Intel 8088 microprocessor, a mere 640 K memory capacity, and so on; by today’s standards, a veritable dinosaur in that realm. One thing we wanted to find out about that machine was how fast it would do things that are important to us, like display things on the screen. We also wanted to explore the languages we had available on that machine, including BASIC, Compiled BASIC, and assembly. To do this quickly, we made a group of “nonsense” programs that we called the “pastafazool” series. The purpose of these small programs was simply to measure speed of putting something on the screen. Each program in the pastafazool series does the same job, namely print the word “pastafazool” as many times as it can fit on the screen (6 per row times 24 rows, or 144 times on the PC’s screen). The program would clear the screen first, of course, then fill and reclear for a total of five cycles. (Five cycles gave us a measurable time span.)

Results were amazing in many ways. We found, for example, that Compiled BASIC was much slower than Interpreted BASIC performing this task! That surprised us, because BASIC in compiled form is supposed to run faster. In assembly, we had several choices of how to do the actual display operations, and the choices made a big difference. The slowest assembly method was using the DOS Interrupt services. That performed only slightly faster

than Interpreted BASIC. The next best was using the BIOS Interrupt services. That was an improvement, but still not what we’d call “blazing” in speed. As on the TI, Assembly on the PC lets us do things in more ways, including the option of writing things directly to the memory section that serves the screen. (Segment address B800H, for you PC buffs.) This produced by far the fastest result, outstripping all other ways by a wide margin. Speed was measured using the PC’s built in timer, and displayed on screen after the five repeats of filling the screen with “pastafazool” were finished.

To summarize, the results went like this:

Compiled BASIC	20 seconds
Interpreted BASIC	9 seconds
DOS service Assembly	7 seconds
Direct-to-screen Assembly	<1 second

This last is given as <1, since the time printed on the screen would sometimes report as one second and sometimes as zero second, depending how the timing of start and finish happened to catch the phase of the timer.

Okay, so what does all this have to do with the TI, you ask? We wanted to try a similar experiment on the TI, and did so. Of course we did not have so many options open, since there’s no compiler for TI BASIC (We used XB in the test) and there’s no direct equivalent of either the DOS Interrupts or the “Direct to screen” capability. In today’s sidebar are two things: A listing of the very simple Extended BASIC program that writes “pastafazool, pastafazool” on each row of the screen five times, and two Assembly source code files that do the same thing. The one called PASTAB/S uses the VSBW utility vector, and the one called PASTA/S uses the VMBW vector.

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THE ART OF ASSEMBLY —

(Continued from Page 11)

The Extended BASIC version is written as a three-line program, with all the action in line 10. Line 1 simply clears the VDP Interrupt Timer. Line 12 reads that timer, then prints the count with 255 added because the counter will have "rolled over" once, divided by 60 to report the time elapsed in seconds. This is listed in 28 column lines just as it would appear on the screen. The two Assembly versions are shown as annotated source code, so you should be able to easily follow their operation. Given what's in today's sidebar, you should be able to conduct your own tests at home. Our results went as follows:

Extended BASIC	6.4 seconds
VSBW Assembly	0.65 second
VMBW Assembly	0.2 second

Timing of the two assembly versions is done using the VDP Interrupt counter at >8378. This yields a number in 60ths of a second, which is displayed on the screen after the five cycles are finished. Both versions then use a simple key scan loop to allow you to read the number. Pressing any key gets you back to Editor/Assembler. The VSBW version reported between 39 and 40 60ths on the screen, or about 0.65 seconds. For the VMBW version, time for execution ranged from 10 to 14 60ths, so we've taken that as averaged to 12 60ths, or 0.2 seconds. That's a 32:1 speed ratio between the slowest and fastest. You may notice that we've used an "undocumented" feature of GPLLNK to convert the count number to a string for screen display. Our thanks again to Merle Vogt for that little gem.

Using the VDP Interrupt counter in this way introduces a kind of "Heisenberg uncertainty" into our measurement, since the program has to execute LIM1 2 and LIM1 0 to allow the timer to function. That's done after each row is written, but performing those actions eats time in itself, so we can't really discover how fast the operation would complete without the LIM1 operations being performed. We tried it without, and it doesn't appear to seriously hamper the speed, but we can never be sure. Heisenberg applied his principle in the field of particle physics, but the idea works here as well, in that the things we do to measure something affect the thing we're trying to measure, so we can never be sure what the case would be without our measurement.

Now to change subjects again, we'll go back to an old theme, namely things that are just plain wrong in TI's assembly book. Back in the December 1992 issue of this magazine, there was a reader-to-reader plea from Mr. Ian J. Howle concerning use of the bit-map mode on the TI's VDP. We sent Mr. Howle a short piece of source code that corrected some of the errors induced by his reading the book, so that he'd at least have a non-crashing starting point. The trouble is that, while what we sent to him won't crash, it won't seem to do what the book indicates it should do.

Before we go on, please understand that there are things we don't use on our TI, and bit-map mode is one of those. If it did work just as given in the book, perhaps we'd consider using it, but the amount of VDP space that it requires is so great, and the amount of code and data required to manipulate the screen dis-

(See Page 13)

SIDEBAR 29

```

* SIDEBAR 29
* FIRST, THE XB PROGRAM PASTABAS
* LISTED IN 28 COLUMNS
*
*
1 CALL INIT :: CALL LOAD(-31
879,0)
10 FOR J=1 TO 5 :: CALL CLEA
R :: FOR I=1 TO 24 :: DISPLA
Y AT(I,3):*PASTAFAZOOL, PAST
AFAZOOL* :: NEXT I :: NEXT J
12 CALL PEEK(-31879,A):: PRI
NT (A+255)/60
*
*
* NEXT, THE SLOWER ASSEMBLY VERSION
*
* PASTAB/S - SOURCE FOR VSBW VERSION
* CODE BY B. HARRISON
* PUBLIC DOMAIN
*
DEF START2      DEFINE ENTRY
REF VSBW,VMBW,KSCAN,GPLLNK
START2
LWPI >20BA      LOAD USER WS
CLR @>8378      CLEAR VDP INT COUNTER
LI R4,5         5 SCREENS
NEXSCR
LI R2,768       768 CHARS
LI R1,>2000     SPACE CHAR
CLR R0          SCREEN ORIGIN
CLRLP
BLWP @VSBW      WRITE ONE SPACE
INC R0          NEXT ADDRESS
DEC R2          DEC COUNT
JNE CLRLP       IF NOT 0, RPT
LI R0,4         ROW 1, COL 5
LI R3,24        24 ROWS
PRLIN LI R5,PASTA POINT AT STRING
MOV B *R5+,R2   GET LENGTH
SRL R2,8        MAKE WORD
MOV R2,R6       SAVE LENGTH
PRCHR MOV B *R5+,R1 GET ONE BYTE
BLWP @VSBW      WRITE THAT
INC R0          INC SCRN ADDR
DEC R2          DEC COUNT
JNE PRCHR       IF NOT 0, RPT
AI R0,32        ADD ROW LENGTH
S R6,R0         SUB STRING LEN
LIMI 2          ALLOW INTERRUPTS
LIMI 0          THEN STOP THEM
DEC R3          DEC ROW COUNT
JNE PRLIN       IF NOT 0, RPT
DEC R4          DEC SCRN COUNT
JNE NEXSCR      IF NOT 0, RPT
MOV @>8378,R10  GET VDP INTERRUPT COUNT
CLR @>837C      CLEAR GPL STATUS BYTE
BLWP @GPLLNK    USE GPL LINK
DATA >4D00      TO SCROLL SCREEN
AI R0,-32       MOVE BACK TO ROW 24
MOV R10,@>835E  MOVE TIME COUNT TO >835E
CLR @>837C      CLEAR GPL STATUS
BLWP @GPLLNK    USE GPL LINK
DATA >2F7C      TO CONVERT INTEGER TO STRING
MOV B @>8361,R2 GET STRING LENGTH
SRL R2,8        RIGHT JUSTIFY
MOV B @>8367,R1 GET STRING ADDRESS LOW BYTE
SRL R1,8        RIGHT JUSTIFY
AI R1,>8300     ADD HIGH BYTE
BLWP @VMBW      WRITE "TIME" STRING TO SCREEN

```

THE ART OF ASSEMBLY—

(Continued from Page 12)

play in that mode is also daunting. In our experimenting with it, we tried many variations on the theme as to where the screen image table, color table, and character table should be placed. Results varied, but the over-all pattern was that the definitions we put in the character table for characters 0 through 7 would simply repeat for the rest of the characters 8 through 255, in eight character groups. That is, 8 through 15 would have the same pattern as 0 through 7, 16 through 23 would repeat those patterns, and so on. Of course we know that other programmers have used bit-map mode with success, so there has to be an answer, but it's most certainly not what's given in the E/A manual.

It has sometimes occurred to us that we should "document" all the known errors in the big book, but that's really a huge job, and our time keeps getting eaten up by creating new products from what we know how to use, leaving no time for the arduous task of documenting errors found. There are others in the "community" who have no doubt found errors and found corrections to make things work. Harry Wilhelm's name comes to mind, as one who not only found out how to use bit-map mode, but also how to make it accessible from Extended BASIC, complete with automatic sprite motion, which the book implies can't be done. Harry probably also knows how to use half-bit mode, whatever that is.

One of our customers asked us about that, and we had to plead ignorance about the whole subject.)

Here then is another plea to our readers, many of whom have written to us. If you've discovered a case where the book is wrong, and a solution to make something work, pass it along to us at 5705 40th Place, Hyattsville MD 20781, and we'll try to work it into a future column. In past columns, we have passed along some "undocumented" features and some "trade secrets" of our own, but we are certainly not the ultimate source of such information, as our knowledge is limited to what we've tried doing. Even at that, we don't always succeed in "breaking the code" to make certain functions work (e.g. bit-map mode).

Once again we are not sure about next month's topic. We are always working on little projects of one kind or another, and that is where the material for these columns comes from. The mysteries of the TI are still many, even with all the probing done by its users over the years. There's a rumor about that somebody has obtained the source code for Extended BASIC, and that may make more of TI's "trade secrets" accessible. The whole topic of GPL language is gradually being unraveled, and that's probably good, even though some of us have no plans to write in that language. At least there are practitioners exploiting that realm now, and giving still more power to the users of our beloved orphan.

One more tidbit before we close. The last few of these columns were written on a laptop PC instead of on our TI. That's not because we're losing faith in our TI, but just because the RAMdisk on the TI was filled up with source code for one of our current projects, and the PC had plenty of disk space available.

```

SCAN  BLWP @KSCAN      SCAN KEYBOARD
CB    @ANYKEY,@>837C KEY STRUCK?
JNE  SCAN             IF NOT, REPEAT
LWPI >83E0           LOAD GPL WS
B    @>6A             RETURN TO GPL

PASTA BYTE 24
      TEXT 'PASTAFAZOOOL, PASTAFAZOOOL'
ANYKEY BYTE >20
      END

*
* LAST, THE FASTER ASSEMBLY VERSION
*
* PASTA/S - SOURCE FILE FOR VMBW VERSION
* CODE BY B. HARRISON
* PUBLIC DOMAIN
*

      DEF  START        DEFINE ENTRY
      REF  VMBW,KSCAN,GPLLNK

START
      LWPI >20BA        LOAD USER WS
      CLR  @>8378        CLEAR VDP INT COUNTER
      LI   R4,5         COUNT IN R4

NEXSCR
      LI   R3,24        24 ROWS
      LI   R2,32        32 COLUMNS
      LI   R1,BLNKLN    32 SPACES
      CLR  R0           SCREEN ORIGIN

CLRLP
      BLWP @VMBW        WRITE 32 SPACES
      A    R2,R0        ADD 32
      DEC  R3           DEC ROW COUNT
      JNE  CLRLP        IF NOT 0, RPT
      LI   R0,4         ROW 1, COL 5
      LI   R3,24        24 ROWS

PRLIN LI   R1,PASTA    TEXT STRING
      MOV  *R1+,R2      GET LENGTH
      SRL  R2,8         MAKE A WORD
      BLWP @VMBW        WRITE STRING
      AI   R0,32        DOWN 1 ROW
      LIM  2           ALLOW INTERRUPTS
      LIM  0           THEN STOP THEM
      DEC  R3           DEC ROW COUNT
      JNE  PRLIN        IF NOT 0, RPT
      DEC  R4           DEC SCREEN COUNT
      JNE  NEXSCR        IF NOT 0, RPT
      MOV  @>8378,R10   GET VDP INTERRUPT COUNTER
      CLR  @>837C        CLEAR GPL STATUS
      BLWP @GPLLNK     USE GPL LINK
      DATA >4D00      TO SCROLL SCREEN
      AI   R0,-32      MOVE BACK TO ROW 24
      MOV  R10,@>835E   STASH TIME COUNT AT >835E
      CLR  @>837C        CLEAR GPL STATUS
      BLWP @GPLLNK     USE GPLLNK
      DATA >2F7C      TO COVERT INTEGER TO STRING
      MOV  @>8361,R2    GET STRING LENGTH
      SRL  R2,8         RIGHT JUSTIFY
      MOV  @>8367,R1    GET STRING ADDRESS LOW BYTE
      SRL  R1,8         RIGHT JUSTIFY
      AI   R1,>8300     ADD HIGH BYTE
      BLWP @VMBW        WRITE STRING TO SCREEN

SCAN  BLWP @KSCAN      SCAN KEYBOARD
CB    @ANYKEY,@>837C HAS A KEY BEEN STRUCK?
JNE  SCAN             IF NOT, RPT
LWPI >83E0           LOAD GPL WS
B    @>6A             RETURN TO GPL

BLNKLN TEXT '
PASTA BYTE 24
      TEXT 'PASTAFAZOOOL, PASTAFAZOOOL'
ANYKEY BYTE >20
      END

```

Laser printers and the TI

How much you can expect to pay and what you'll get for your money

By DEANNA SHERIDAN

The following article appeared in several newsletters.—Ed.

With the cost of laser printers falling almost daily, you may want to investigate the feasibility of using one with your TI. I have looked for a comprehensive review of laser printers in newsletters for the past 2 or 3 years, and not one article has appeared.

You may have seen what Martin Smoley has been able to do with his laser printer and the TI, but most of us would not go through what he does to get his printouts. Since no TI software has built-in printer commands for lasers, Marty has to write his own.

I recently purchased a Hewlett Packard Laserjet IIIp and thought that my experience might help others decide if there might be a laser in their future also.

I knew that you could print text from the TI through Funnelweb, but was concerned that I would not be able to use my graphic programs. The laser prints at 300 dots per inch, which most dot matrix printers use under 200 dots per inch. Thus, all you would get is garbage.

If you read the advertisements for laser printers, you will notice that many of them support several printer emulations. That means that if it is emulating a Diablo 630, or an Epson FX, or an IBM Proprinter, the printer commands for those printers will be accepted by the laser printer and output as though they were native to that machine.

Many of the newer dot matrix printers have a variety of fonts built in. My XR-1000 has Courier, TW Light, San Serif, Cinema and several more that I can choose from the front panel of my printer. Even though most laser printers advertise 14 basic fonts, they will not be used to with your dot matrix. These 14 fonts are basically variations of one font — Courier is Courier 10 pt., 12 pt., 16 pt. (condensed as we know it), in regular, bold, italic, etc. Thus, this is the only font you will get when you are in said Epson, Diablo, Proprinter, etc. mode. The commands for condensed, enhanced, double wide, etc. will be interpreted

and printed as you usually expect.

Thus when considering a laser, the first thing that you will want to know is whether it has built-in Epson emulation or whether a separate card can be purchased to emulate an Epson. With this feature, you can use Page Pro, TIPS, etc., without any modifications to the program.

When considering a laser, the first thing that you will want to know is whether it has built-in Epson emulation or whether a separate card can be purchased to emulate an Epson. With this feature, you can use Page Pro, TIPS, etc., without any modifications to the program.

There are several laser printers advertised between \$600 and \$900, but the cheapest in price may not be the least costly in the long run. If the Epson emulation is not built in, the cartridge will cost about \$100. A lot of these low-end printers only have 512K memory.

A laser printer is a "page printer." All of the data necessary to print an entire page is sent to the printer before it prints anything. Thus, if there is not enough memory in the printer to hold the whole page, not all of it will print. Articles on lasers say you should have at least 1 meg. in order to print a full page of graphics. I don't know how many of us would be printing a page of high density graphics and nothing else. But it is something you should consider.

The cost of laser memory varies widely from printer to printer. You can add a meg to your PC for about \$50, but it will cost you two to three times that for your printer, depending on the make.

Another cost to consider is the imaging process the laser uses. Some use a toner/drum combination which is standard in the HP laserjets. Others require you to

replace the toner and drum separately. This is not done each and every time you need toner, but every so many thousand copies. Some use the HP toners and others use their own brands, which are not as plentiful or as cheap.

I seriously looked at the Epson Action Laser II. This is a very basic inexpensive printer. It has Epson emulation built in, and uses Hewlett Packard Font cartridges (which you could use for text on the TI). The print speed on this machine is rated six pages per minute, which is fast for a low-end printer. Standard memory is 412K and additional memory was about \$100 for one meg and \$150 for two megs. The second meg is sometimes cheaper because it goes on the same board as the first. However, I started to get second thoughts when I found out that the toner cartridges were about \$100 each and the drum had to be replaced at 130,000 (I may die before I reach that many, though) at a cost of about \$150. The street price of this printer is a little over \$650.

Since I would be using my laser in both my TI and on my DOS machine, I looked at a machine I probably would not have passed up if I only had my TI. This is a TI microlaser which was highly rated in a *PC Magazine* review. However, when I went out to CompuADD, the only dealer in this area, they did not have one in and did not know when they would get one, and couldn't tell me how much an Epson font cartridge would cost or where I could get one. Guess you know they lost that sale in a couple of minutes.

Another machine I would definitely have considered if I were buying for only my TI would be the Star Laser 4. This comes with Epson emulation, 1 meg of memory, uses HP standard toner cartridges and font cartridges. Most dealers are including a 25-font cartridge in the price, which is about \$799. It is a four page-a-minute printer. However, it uses something called RISC processing which sends the data out to the printer faster.

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LASER PRINTERS AND THE TI —

(Continued from Page 14)

Because I intended to use my laser for business as well as pleasure, I chose the Laserjet IIIp for that very reason. It is probably a little more expensive than most of you would feel free to spend, and you might choose instead the Laserjet Iip which has a street price about the same as the Star Printer.

We are getting a Laserjet III at work and what I did at home would be compatible with what I do at work without any modifications. The only noticeable difference for me is the print speed. Of course, it is not nearly as large, with smaller paper trays, but I am finding it adequate for a home printer. The Laser III and up family supports scalable typefaces, filled fonts and most of the fancy tricks you see Marty do with his Canon laser. However, just as with Marty's printer, the software drivers for the popular DOS packages do not yet take advantage of these features. If I am to use them, I have to learn an entirely new language called PCL and have a software

program that will let me insert my own printer codes. It comes with 1 meg of RAM standard. I added a second meg and got the Epson cartridge which added about \$200 to the street price. Recently Micro Center advertised cartridges for the Iip and IIIp at \$50. Just as diskettes and ribbons became cheaper when the volume of users increased, we should see toners decrease also. My toner cartridges are supposed to be good for 1,000 copies. After you get a couple of cartridges, you can always have them remanufactured. I am told that the cost for this is about \$40. When cartridges are selling for \$75 to \$100 this is a sizeable savings.

I wrote this article using Art Gibson's Newsletter Printer program and the Epson Emulation cartridge on my HP Laserjet. I recently purchased a scanner and scanned the picture of a Laserjet from an ad in the *Computer Shopper*. I converted the scanned image to a Mac file and sent it over to the TI where I converted it to an instance. I used TI-Artist to add text above and below the picture.

That sounds like a lot of work when I could have just printed it in two columns from Word Perfect with high resolution graphics and a fancy font. We all know that Word Perfect can do a decent job of desktop publishing, but not everyone knows the TI is no slouch considering its age and lack of memory and sophistication.

New address for TIGRES

The TIGRES de Argentina — TIGERS of Argentina have a U.S. address. Write Norberto A. Revilla — TIGRES de Argentina, 010-100581, 4405 N.W. 73 Ave., Miami, FL 33166-6436.

Snyder address update

Bill Gaskill's article on the Extended BASIC card index for the TI99/4A gave an outdated address for obtaining Brad Snyder's 40-Column Utilities. The program is available for \$8 from Snyder at 4260 Cedar Dr., Walnutport PA 18088.

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Please forward any changes to me directly.

Symbols before names:

"-" indicates an unverified number.

"+" means we know that a number is there, but we're not sure about it.

"*" stands for a board that is temporarily down.

"#" means a new BBS or recently updated entry.

"!" means a software changeover taking place shortly.

Symbols under the bits per second (Bps) column:

"[" indicates 300.

"[-]" indicates 300/1200.

"[*]" indicates 300/1200/2400.

"[:]" indicates 300/1200/2400 with MNP compression.

(See Page 17)

SECTION 1: BBSes using a TI/Geneve

City	ST	XX	BBS Name	Phone #	BPS	Sysop
Tucson	AZ	%1	Cactus Patch	602-290-6277	[*]	Tom Wills
Sacramento	CA	5	Sac TIBBS [701]	916-927-3012	[*]	Woody Large
! San Diego	CA	?	S.C.C.G.	619-263-9135	[*]	??
* Oldsmar	FL	3	Challenger BBS	xxx-xxx-xxxx	[*]	Joe Dematteis
* Sunrise	FL	3	The Drawing Board	305-749-5690	[*]	Mark Wacholz
Indianapolis	IN	%3	HUG BBS	317-782-9942	[*]	Bill Lucid
Belleville	IL	3	MuLTiverse BBS	618-236-7907	[*]	Tim Townsend
Calumet City	IL	%3	Chicago UG BBS	708-862-0182	[:]	Mike Maksimik
! Chicago	IL	1	TI South BBS	312-651-7252	[*]	Jim Brooks
# Louisville	KY	%3	KYANA TI BBS	502-495-6389	[*]	Dan Gittings
Marrero	LA	2	TI Net #4	504-340-5603	[*]	Paul Arnold
Buffalo	NY	1	AM-CAN Friends	716-835-5316	[*]	Jim Cavanaugh
Columbus	OH	?	Spirit of 99	614-263-3412	[-]	Irwin Hott
London	OH	%7	TIABS	614-851-0708	[*]	Bud Wright
Philo	OH	3	Brush Creek 9 p.m.-7 p.m.	614-674-4942	[*]	Jim Davis
Toledo	OH	1	TI Comm BBS	419-385-7484	[*]	Don Turner
Sperry	OK	3	Orphanage BBS, The	918-288-6708	[*]	Harold Mayo
! Walnutport	PA	%1	The First Floor	215-670-0527	[*]	Brad Snyder
Dallas	TX	5	99'er Connection	214-233-1750	[*]	Louis Guion [701]
Fort Worth	TX	%7	Colossus III	817-457-7043	[*]	Tom Collins
Salt Lake City	UT	%1	Salt Flats PBBS	801-394-0064	[*]	Dave DeHeer
Renton	WA	5	Puget Sound Orphans	206-255-8662	[-]	Lloyd Wagner
Lake Sinnissippi	WI	1	Mayberry, R.F.D.	414-386-5699	[*]	Randall Vogt
Milwaukee	WI	%3	S&T Software BBS	414-962-3622	[/]	Tim Tesch
+ Milwaukee	WI	3	Rivendale Express	414-643-1647	[*]	Mike Podziemski
Muskego	WI	3	Milwaukee UG BBS	414-422-9669	[*]	D. Walden/T. Tesch
Port Washington	WI	3	Graphics Clipper	414-284-6108	[*]	Scott Stasiowski
Edmonton	AB	6	ENER.C.U.S.	403-450-1787	[*]	Andrew Webster
! Vancouver	BC	%1	Dial a TIPBBS	604-522-9830	[*]	Ron Warfield
Ottawa	ON	6	TI Ottawa 99'ers	613-738-0617	[*]	Peter Arpin

XX: BBS SOFTWARE: 1-PBBS, 2-TINET, 3-S&T, 4-99BBS, 5-TIBBS, 6-TEXLINK, 7-OTHER. "%" means hard drive storage available.

TI/GENEVE BULLETIN BOARD DIRECTORY —

(Continued from Page 16)

“[/]” indicates 300/1200/2400/9600.

“[!]” indicates 300/1200/2400/9600-
/14.4K

“[\$]” indicates 300/1200/2400/9600-
/19.2K/

“[?]” unsure of the bps rate.

Note: excluding the “[” indicates that
the system does not allow 300 bps users

(i.e... “-]” is 1200 only, “/]”
1200/.2400/9600 only).. Excluding the “[”
indicates that the system does not allow
1200 bps users (i.e. “*” is 2400 only, “/”
2400/9600 only).

• All BBSes are 24-hour systems unless
otherwise noted.

• All BBSes are free access upon logon or
1-2 day validation unless noted.

• PCP and Starlink access codes are not in-
cluded with this listing.

If anyone wishes to provide me with the
appropriate information, I may include it
in the next update pending validation.

If the S&T Software BBS does go of-
line, the Milwaukee TI User Group BBS
will be available for any correspondence
or assistance.

SECTION 2: IBM AND COMPATIBLE SUPPORT SIGS for TI/Geneve

City	ST	xx	BBS Name	Phone #	BPS	Sysop
Costa Mesa	CA	**	U.G.O.C.	714-751-4332	[/]	Ben Hatheway —
Safety Harbor	FL		Cy's Swap Shop	813-725-4568	[/]	Cy Leonard
Springfield	MA		Mass. Gold Mine	413-736-0667	[/]	Edward Goldberg
Raleigh	NC	**	TI-Raleigh	919-833-3412	[/]	Walter Tietjen
Patchogue	NY		TI Source Texaments	516-475-6463	[/]	Steve Lamberti
Columbia	SC	**	Why Knott	803-781-4626	[/]	Mike McGaughey
Sioux Falls	SD	**	Dakota Infonet	605-336-3578	[/]	Rory Binkerd
Memphis	TN	**	9640*NEWS BBS	901-368-0112	[!]	Beery Miller
Round Rock	TX		NUSHC BBS 6 p.m.-8 a.m.	512-255-1557	[*]	John Koloen
Milwaukee	WI	**	WRFM line #1	414-352-6176	[/]	Pete Porro
Milwaukee	WI	**	WRFM line #2-4	414-351-1823	[*]	Pete Porro —
Toronto	ON	**	TIBM Wizard	416-743-6703	[?]	Tony D'Alfonso —
Toronto	ON		TI*Tower BBS	416-921-2731	[?]	Gary Bowser

** These systems are known to carry the TI National ECHO (FIDOnet [tm])

NETWORK SIGNUPS (the following numbers have not been verified):

-Cambridge,	MA	800-544-4005	DELPHI
-Rockville,	MD	800-538-9636	Genie
-Columbus	OH	800-848-8199	COMPUSERVE
-Albuquerque,	NM	505-881-6964	StarLink sign-up and Information
-Kansas City,	KS	800-736-1130	P.C.P. sign-up and Information 7 a.m.-7 p.m. C.S.T.
-Kansas City	KS	800-877-2006	P.C.P. sign-up BBS

T • H • E • G • A • M • E • S

Running and swimming event in XBASIC

By LUCIE DORAIS

The following article and program ap-
peared in the newsletter of the Ottawa
TI99/4A User Group.—Ed.

Another year, the seventh for this col-
umn, and I've got the seven-year itch.
Nothing new in Extended BASIC from
me, because I have spent part of the sum-
mer playing with BASIC on the PC:
QuickBasic and now Visual Basic for
Windows. While some things are more
easily done on the PC, like writing and
editing a program, some functions that we

take for granted on the TI, like MAX and
MIN, do not exist in Microsoft Basic.

But that does not mean there will be no
more Fast XB column, as long as I can find
other programs worthy of it, and I hope
never published before, at least in English.
The Games is just such a program. I found
it in a French newsletter from Montreal,
Le Ti-Mot, a few years back. The author,
Jacques GrosLouis, from Bathurst, New
Brunswick (but born and reared in Ot-
tawa), has been a member of the Ottawa
UG for many years. He was kind enough

to send me the original program, which
was written in English.

The Games is about two Olympic com-
petitions: track racing and swimming. It
has lots of graphics. Line 130 gives you an
idea of all the competitions available.
There can be up to four competitors and,
as the race is under way, you can “boost”
your favorite runner or swimmer by press-
ing its corresponding number key.

The only changes I have made is adding
a quit function and dividing a very long

(See Page 18)

Brashear takes over Asgard Software

Bobbitt to continue running peripheral division

Chris Bobbitt of Asgard Software has transferred ownership of that company to Harry Brashear as of Nov. 1.

Brashear has been subcontracting software production and order fulfillment from the company for the past 18 months.

Bobbitt continues to operate Asgard Peripherals, which deals in hardware and in cartridge software for the TI99/4A.

Bobbitt, who founded Asgard in 1983 when he was a teenag-

er, notes that at the time the company was one of approximately 100 software providers for the 99/4A.

New address for Asgard Software is 2753 Main St., Newfane, NY 14108. Phone number is (716) 778-9104.

Address for Asgard Peripherals, 1423 Flagship Dr., Woodbridge, VA 22192. No phone orders will be accepted, Bobbitt says, and all inquiries for Asgard Peripherals should be by mail.

THE GAMES—

(Continued from page 17)

string defined in line 200 into five lines, 200-204. It builds the crowd and two flags, Canada and USA.

Since I did not write the code, I will not try to explain it. Here are a few notes, however. Jacques used an old trick to make XB even faster. He replaced an often used constant with a variable name. If you look at line 110, you will notice that "@=a." So, wherever you encounter the variable "@" (short variable names save memory), it means "1." In line 140, the CALL PEEK is to test for the Speech Synthesizer with value (yes or no) put in S. The "TI=@" puts the computer in demo mode to start. If you are puzzled by the "IF SP=2" here and there, it refers to "Sport #2, Swimming."

Some lines are very long and won't fit in the normal five lines of the TI's editing mode. Type the first five lines, press enter (don't worry if the TI indicates a mistake at that point), then press Fctn-8 (Redo). The five lines will reappear. Bring the cursor to the end of all the statements and continue to type.

When you play, you will notice the very refined graphics designed by Jacques. If the runners look the same for the four races, 100, 400, 2000 and 5000 metres (although there are two white and two black runners, which is more than politically correct), the swimmers in the three competitions are designed to follow the real style of the swim: butterfly, back stroke and breast stroke. You might object that all competitors are men, at least that is what their costume tells us. There is a good reason for that: since all characters have to move at the same time, human

plus costume, it was easier to design a costume with only one character than with two!

There is one more thing you might notice: during the track competitions, the letters X, Y and Z in the text on the screen are shown in red instead of blue. This is because they use the same color set (8) as the ground. No problem in the swimming competitions, since the water also happens to be blue.

THE GAMES

```

100 ! THE GAMES BY J. GROSLO
UIS TI EXTENDED BASIC DECEMB
ER 1985 AMENDED NOVEMBER 198
7 / Ottawa UG, Sept. 1993 !1
17
110 G=138 :: E=130 :: @=1 ::
CALL SCREEN(15):: DISPLAY A
T(12,5)ERASE ALL:"SETTING UP
THE GAMES" :: OPTION BASE 1
:: DIM TR$(7),AT$(4),AW$(4)
!076
120 RESTORE :: GP=0 :: H=7 :
: FOR A=@ TO H :: READ TR$(A
),Z$ :: TR$(A)=TR$(A)&RPT$("
",14-LEN(TR$(A)))&Z$ :: NEX
T A :: GOSUB 170 !123
130 DATA 100 METRE,15,400 ME
TRE,35,2000 METRE,55,5000 ME
TRE,98,BACK STROKE,15,BUTTER
FLY,35,BREAST STROKE,55 !115
140 CALL PEEK(-28672,S):: CA
LL CHARPAT(42,Q$):: CALL CHA
R(64,Q$):: TI=-@ :: EV,Q,AA=
@ :: PAT=2 :: GOSUB 350 :: G
OSUB 400 !008
150 IF U=H THEN AU,U=0 !228
160 GOSUB 500 :: GOSUB 1340
:: GOSUB 1090 :: GP=GP+1 ::

```

```

CALL DELSPRITE(ALL):: GOTO 1
50 !245
170 T93$,T44$=RPT$("F",16)::
CALL CHAR(93,T93$):: P$="00
3C3C3C18FEFE00" :: P1$="003A
3A3A92FEFE00" !061
180 T41$="0103070F0F070301"
:: T42$="80C0E0F0F8FCFEFF" :
: T43$="0103070F1F3F7FFF" ::
T40$="80C0E0F0F0E0C080" ::
T45$="00000000183C7EFF" !251
190 T46$="00" :: T47$="FFFFFF
F000000FFFF" :: T59$="FFFFBB
FFFFFFBBFF" :: GOSUB 1210 !1
24
195 !==== RENUM... ==== !188
200 TI$=TI$&"...-...h.....
...h;;;///" !134
201 TI$=TI$&"...*,+...hTHE..
...h;;;///" !213
202 TI$=TI$&"...),,,(,,h.....
...h;;;///" !118
203 TI$=TI$&".....,h...G
AMESh////////" !216
204 TI$=TI$&".....,h.....
...h////////" !085
205 !==== renum... ==== !092
210 CALL MAGNIFY(4):: CALL C
HAR(91,"00"&RPT$("F",14))::
CALL CHAR(92,RPT$("FE",8))::
SC$="12345678" !126
220 SR1$=RPT$("0",17)&"10204
0810201"&RPT$("0",18)&"3FF97
503050905" !044
230 S1$="030301010F090909010
2040810204020808080008850200
000804020100A04" !175
240 S2$="0303010103050905030
305794101010180808000808080F
"&RPT$("0",15)&"8" !077

```

(See Page 19)

THE GAMES—

(Continued from Page 18)

```

250 S4$="030301010F090909010
204784000000808080000088502
0008040202020203" !216
260 S5$="0303010103050905030
101010101010180808000808080F
0008040204080008" !208
270 UR$=RPT$("0",17)&"101"&R
PT$("0",28)&"808" :: SW1$=RP
T$("0",17)&RPT$("10",8)&RPT$
("0",14)&"3FF1710101010008"
!207
280 SW2$=RPT$("0",42)&"1C1C1
C08F8080808" :: SW3$=RPT$("0
",57)&"8746261" !088
290 SW4$=RPT$("0",54)&"E080C
0C0C" :: SW5$=RPT$("0",23)&"
8040201"&RPT$("0",28)&"6060F
E" !139
300 SW7$=RPT$("0",16)&"FF8"&
RPT$("0",29)&"FF38" :: SW8$=
RPT$("0",25)&"20180FF"&RPT$
("0",25)&"810B0F" !200
310 SW9$=RPT$("0",28)&"80FF"
&RPT$("0",22)&"40404070FF" :
: SW0$=RPT$("0",28)&"80FF"&R
PT$("0",28)&"30FF" !041
320 SWA$=RPT$("0",58)&"60607
F" :: SWB$=RPT$("0",58)&"606
07C" :: SWC$=RPT$("0",58)&"6
0607" :: USS$=RPT$("0",31)&"3
"&RPT$("0",32)!228
330 OFF$="010101000103050911
01010101010101C4C8D0A0C0C0C0
C0C0C040404040404" !146
340 OFU$="010101000101010101
01000000000000C4C0C00040C0C0
C0C0C" :: RETURN !009
350 CALL CHAR(37,P1$):: SP=@
:: C1=16 :: C2=H :: CH=37 :
: GOSUB 720 :: GOSUB 1270 ::
GOSUB 1200 :: GOSUB 1210 !0
10
360 IF S THEN CALL SAY("THE1
,GAMES")ELSE DISPLAY AT(H,@)
:"NO SYNTHESIZER ATTACHED" !
150
370 GOSUB 820 :: SP=@ :: NP=
4 :: LLAP=15 :: GOSUB 1340 :
: CALL CLEAR :: CALL DELSPRI
TE(ALL):: GOSUB 1240 :: DISP
LAY AT(7,7):"INSTRUCTIONS" !
152
380 DISPLAY AT(9,@):"SPEED I
S SELECTED AT RANDOM TO CHAN
GE SPEED PRESS YOUR NUMBER K
EY": : " BE CAREFUL: AN OFFIC
IAL MAYDISQUALIFY AN ATHLETE
" !078
390 DISPLAY AT(15,@):"WITHOU
T EXPLANATION": : " TRY TO WI
N ALL EVENTS";"GOOD LUCK !!!
" :: GOSUB 1220 :: RETURN !1
48
400 FOR A=@ TO 4 :: AT$(A)=R
PT$(" ",26):: NEXT A :: AT$(
@)=" NAME" !104
410 CALL SCREEN(9):: DISPLAY
AT(2,5)ERASE ALL:"NAME ATHL
ETES" :: DISPLAY AT(4,3):"#
OF ATHLETES (2 TO 4)?:4" !06
5
420 ACCEPT AT(4,27)SIZE(-1)V
ALIDATE("234")BEEP:A$ :: NP=
VAL(A$):: CALL CHAR(124,OFF$
,120,OFU$)!180
430 CALL SPRITE(#8,124,12,14
0,29,#7,120,2,140,29,#6,124,
2,116,21,#5,120,16,116,21,#4
,124,12,92,15)!117
440 CALL SPRITE(#3,120,13,92
,15,#2,124,2,68,9,#1,120,14,
68,9)!176
450 FOR A=@ TO NP :: DISPLAY
AT(A*3+6,2+A):A :: DISPLAY
AT(A*3+6,5+A)SIZE(10):SEG$(A
T$(A),3,8):: ACCEPT AT(A*3+6
,5+A)SIZE(-7)VALIDATE(UALPHA
)BEEP:AT$(A)!171
460 AT$(A)=STR$(A)&CHR$(32)&
AT$(A)&RPT$(" ",26-LEN(AT$(A
))): : NEXT A !142
470 DISPLAY AT(24,3):"CHANGE
ABOVE (Y N)?:N" :: ACCEPT A
T(24,23)SIZE(-@)VALIDATE("YN
")BEEP:A$ :: IF A$="N" THEN
490 !022
480 DISPLAY AT(24,3):"CHANGE
# PLAYING? (Y N):N" :: ACCE
PT AT(24,27)SIZE(-@)VALIDATE
("YN")BEEP:A$ :: IF A$="Y" T
HEN 400 ELSE 450 !198
490 CALL DELSPRITE(ALL):: RE
TURN !125
500 AA,Q=@ :: LLAP=0 :: CALL
SCREEN(14):: DISPLAY AT(@,1
2)ERASE ALL:"EVENTS" :: GOSU
B 1240 !176
510 CALL COLOR(@,2,@):: IF A
U=-@ THEN CALL HCHAR(2,@,96,
384):: DISPLAY AT(5,H)SIZE(1
7):"IN AUTOMATIC MODE" !171
520 IF AU=-@ THEN U=U+@ :: A
$=SEG$(SC$,U,@):: GOSUB 1190
:: GOSUB 680 :: GOTO 590 !1
71
530 DISPLAY AT(2,3):"TRACK
TIME TO BEAT" :: FOR R=4
TO H :: DISPLAY AT(R,3):R-3
;TR$(R-3):: NEXT R !095
540 DISPLAY AT(9,3):"SWIMMIN
G" :: FOR R=11 TO 13 :: DISP
LAY AT(R,3):R-6;TR$(R-6):: N
EXT R :: DISPLAY AT(15,3):"8
STANDINGS" !100
550 DISPLAY AT(17,3):"9 STAR
T AGAIN": : " A AUTOMATIC
MODE": " Q QUIT" :: DISPLAY
AT(24,@):"YOUR CHOICE(A OR 1
TO 9)?:8" !147
560 ACCEPT AT(24,27)SIZE(-@)
VALIDATE("AQ123456789")BEEP:
A$ :: IF A$="9" THEN CALL CL
EAR :: GOTO 110 !015
570 IF A$="8" THEN GOSUB 680
:: GOTO 500 ELSE IF A$="Q"
THEN CALL CLEAR :: END !230
580 IF A$="A" THEN U=U+@ ::
A$=SEG$(SC$,U,@):: AU=-@ ::
IF U>H THEN U=@ !166
590 ON ASC(A$)-48 GOSUB 640,
650,660,670,640,650,660 !097
600 IF A$<"5" THEN SP=@ :: C
1=6 :: C2=H :: GOTO 620 !229
610 SP=2 :: C1=16 :: C2=5 !2
44
620 GOSUB 720 :: IF SP=@ THE
N EV1=EV*SP*2 ELSE EV1=(EV*S
P+4-EV)*2 !020
630 RETURN !136
640 LLAP=15 :: EV=@ :: RETUR
N !060
650 LLAP=35 :: EV=2 :: RETUR
N !249
660 LLAP=55 :: EV=3 :: RETUR
N !252
670 LLAP=98 :: EV=4 :: RETUR
N !004
680 CALL SCREEN(12):: DISPLA
Y AT(2,@)ERASE ALL:"STANDING
S EVENTS" :: DISPLAY AT(
4,11):"TRACK__ SWIM " !088
690 DISPLAY AT(6,11):"1 2 3
4 5 6 7 PTS" :: DISPLAY AT(2

```

(See Page 20)

THE GAMES—

(Continued from Page 19)

```

0,1):"POINTS #1=4 #2=3 #3=2
#4=1" :: GOSUB 1490 :: GOSUB
1530 !136
700 FOR R=@ TO NP :: DISPLAY
AT(R*3+6,@):AT$(R):: IF SEG
$(AT$(R),12,13)="1 1 1 1 1 1
1" THEN GOSUB 1250 !176
710 NEXT R :: CALL DELSPRITE
(ALL):: GOSUB 1220 :: RETURN
!129
720 CALL CLEAR :: CALL SCREE
N(C1):: CALL COLOR(@,H,16,2,
H,16):: FOR Z=3 TO H :: CALL
COLOR(Z,5,16):: NEXT Z !055
730 IF TI THEN DISPLAY AT(2,
@):TI$ ELSE CALL HCHAR(2,1,C
H,160)!237
740 TI=0 :: CALL COLOR(10,15
,15):: FOR A=2 TO 32 STEP 10
:: CALL VCHAR(2,A,104,5)::
NEXT A !187
750 CALL HCHAR(@,@,104,32)::
CALL HCHAR(H,@,104,32):: IF
SP=@ THEN CALL COLOR(9,13,1
3):: CALL HCHAR(8,@,96,64)::
CALL HCHAR(22,@,96,96)!003
760 CALL COLOR(8,C2,16):: CA
LL HCHAR(10,@,93,384):: CALL
COLOR(8,C2,16):: FOR A=11 T
O 21 STEP 2 :: CALL HCHAR(A,
@,91,32):: NEXT A !004
770 IF SP=2 THEN 790 !114
780 Y=0 :: FOR Z=SP+12 TO SP
+18 STEP 2 :: Y=Y+@ :: DISPL
AY AT(Z,5)SIZE(@):SEG$(SC$,5
-Y,@):: NEXT Z :: CALL VCHAR
(11,5,92,10)!040
790 IF SP=@ THEN DISPLAY AT(
8,3)SIZE(16):"TRACK ";SEG$(T
R$(EV),@,10):: DISPLAY AT(9,
3)SIZE(16):"TIME TO BEAT "&
SEG$(TR$(EV),15,3)!212
800 IF SP=@ THEN BEST=VAL(SE
G$(TR$(EV),15,3))!177
810 IF SP=2 THEN GOSUB 830 :
: RETURN !043
820 CALL DELSPRITE(ALL):: CA
LL CHAR(112,OFU$,116,OFF$,12
0,UR$,124,SR1$,128,S1$,132,S
2$,136,S5$,140,S4$):: RETURN
!248
830 FOR A=2 TO 4 :: CALL VCH
AR(10,A,104,12):: NEXT A ::
BEST=VAL(SEG$(TR$(EV+4),15,3
))!136
840 Y=0 :: FOR Z=14 TO 20 ST
EP 2 :: Y=Y+@ :: DISPLAY AT(
Z,6)SIZE(@):SEG$(SC$,5-Y,1):
: NEXT Z !166
850 DISPLAY AT(8,3)SIZE(23):
"SWIMMING ";SEG$(TR$(EV+4),@
,14):: DISPLAY AT(9,3)SIZE(2
3):"TIME TO BEAT "&SEG$(TR$(
EV+4),15,3)!116
860 CALL DELSPRITE(ALL):: CA
LL CHAR(124,SW1$):: ON EV GO
SUB 870,880,890 :: SP=2 :: R
ETURN !062
870 CALL CHAR(120,US$,128,SW
9$,132,SW0$,136,SW8$,140,SW0
$):: RETURN !008
880 CALL CHAR(120,UR$,128,SW
3$,132,SW5$,136,SW4$,140,SW3
$):: RETURN !005
890 CALL CHAR(120,UR$,128,SW
C$,132,SWB$,136,SWA$,140,SWB
$):: RETURN !062
900 ON NP GOTO 940,930,920,9
10 !124
910 CALL SPRITE(#8,124,12,72
,16,#7,120,2,72,16)!165
920 CALL SPRITE(#6,124,2,88,
16,#5,120,16,88,16)!179
930 CALL SPRITE(#4,124,12,10
4,16,#3,120,13,104,16)!042
940 CALL SPRITE(#2,124,2,120
,16,#1,120,14,120,16)!241
950 CALL SPRITE(#10,116,12,1
60,18,#9,112,2,160,18)!053
960 IF SP=2 AND EV=@ THEN CA
LL LOCATE(#8,88,16,#6,104,16
,#4,120,16,#2,136,16):: CALL
CHAR(124,SW2$)!189
970 IF S THEN CALL SAY("GET,
SET")ELSE DISPLAY AT(23,4)SI
ZE(7):"GET SET" !053
980 DISPLAY AT(24,5)SIZE(16)
BEEP:"ANY KEY TO START" :: I
F SP=2 AND EV<>@ THEN CALL C
HAR(136,SW7$)!125
990 GOSUB 1230 :: CALL SOUND
(100,110,0,130,5,34000,30,-8
,0):: IF SP=2 THEN CALL COLO
R(9,16,16)!138
1000 CALL HCHAR(23,@,96,64):
: ON NP GOTO 1040,1030,1020,
1010 !194
1010 CALL SPRITE(#8,136,12,7
2,35,#7,120,2,72,35)!170
1020 CALL SPRITE(#6,136,2,88
,35,#5,120,16,88,35)!184
1030 CALL SPRITE(#4,136,12,1
04,35,#3,120,13,104,35)!047
1040 CALL SPRITE(#2,136,2,12
0,35,#1,120,14,120,35):: IF
SP=@ THEN 1080 !082
1050 CALL CHAR(120,US$):: IF
EV=@ THEN CALL CHAR(136,SW8
$)!050
1060 IF EV=2 THEN CALL CHAR(
136,SW4$)!150
1070 IF EV=3 THEN CALL CHAR(
136,SWA$)!164
1080 FOR Z=10 TO 20 STEP 2 :
: CALL HCHAR(Z,@,93,5):: CAL
L HCHAR(Z+@,@,91,5):: NEXT Z
:: CALL DELSPRITE(#9,#10)::
RETURN !003
1090 CALL DELSPRITE(ALL):: G
OSUB 1190 :: FOR A=@ TO NP :
: CALL CHAR(CH,P$):: DISPLAY
AT(A+9,3)SIZE(16):A;AW$(A):
: CALL CHAR(CH,P1$):: NEXT A
!054
1100 IF S THEN CALL SAY("#GO
OD WORK#,NUMBER#&Z$)ELSE DI
SPLAY AT(23,2)SIZE(14):"GOOD
WORK "&# "&Z$ !083
1110 GOSUB 1220 :: RETURN !0
34
1120 IF AA THEN CALL VCHAR(1
1,29,92,11):: AA=0 !151
1125 Z=5 :: FOR P=H TO @ STE
P -2 :: Z=Z-1 :: P2=20-P ::
P3=128-8*P :: CALL COINC(#P,
P3,214,15,F)!194
1130 IF F=-@ THEN DISPLAY AT
(P2,28)SIZE(@):SEG$(SC$,Q,@)
:: GOSUB 1150 :: Q=Q+@ :: CA
LL DELSPRITE(#P,#(P+1))!154
1140 NEXT P :: RETURN !240
1150 AT$(Z)=SEG$(AT$(Z),@,EV
1+8)&SEG$(SC$,Q,@)&SEG$(AT$(
Z),EV1+10,37-EV1):: IF Q=@ T
HEN Z$=CHR$(Z+48)!023
1160 AW$(Q)=SEG$(AT$(Z),@,10
)&CHR$(32)&STR$(LAP-@):: BES
T=MIN(BEST,LAP-@)!082
1170 IF SP=2 AND Q=@ THEN TR
$(EV+4)=SEG$(TR$(EV+4),@,14)
&STR$(BEST)ELSE IF SP=@ AND
Q=@ THEN TR$(EV)=SEG$(TR$(EV
),@,14)&STR$(BEST)!202

```

(See Page 21)

THE GAMES—

(Continued from Page 20)

```

1180 RETURN !136
1190 FOR A=10 TO 30 :: CALL
SOUND(-50,700,A,2100,A,4200,
A):: NEXT A :: RETURN !066
1200 CALL CHAR(37,P$,40,P1$,
41,P$,42,P1$,43,P$,44,P$,45,
P$,46,P1$,47,P$,59,P1$):: RE
TURN !139
1210 CALL CHAR(37,P1$,40,T40
$,41,T41$,42,T42$,43,T43$,44
,T44$,45,T45$,46,T46$,47,T47
$,59,T59$):: RETURN !198
1220 DISPLAY AT(24,3)BEEP SI
ZE(25):"ANY KEY TO CONTINUE"
!029
1230 CALL KEY(0,K,SS):: CALL
CHAR(CH,P$):: CALL CHAR(CH,
P1$):: IF SS=0 THEN 1230 ::
RETURN !071
1240 FOR A=@ TO 8 :: CALL CO
LOR(A,2,@):: NEXT A :: RETUR
N !154
1250 DISPLAY AT(21,R+1):"OUR
NEW GRAND CHAMP!!!!" :: R1=
R*24+57 !023
1260 CALL CHAR(120,OFF$,124,
OFU$):: CALL SPRITE(#10,120,
16,R1,12,0,11,#9,124,2,R1,12
,0,11)!223
1270 RESTORE 1310 !128
1280 READ DR,F !038
1290 IF DR=0 THEN RETURN !00
9
1300 CALL SOUND(DR*150,F,3):
: GOTO 1280 !152
1310 DATA 1,294,1,277,1,294,
1,330,1,349,2,392,1,440,2,44
0,5,440,1,294,
1,277,1,294,1,330,1,349,1,34
9,2,392 !235
1330 DATA 1,440,2,440,3,440,
1,349,1,392,2,440,2,392,1,34
9,1,349,2,330,2,294,2,220,1,
147,0,0 !080
1340 L1=LLAP-10 :: GOSUB 900
:: FOR LAP=@ TO LLAP :: GOS
UB 1400 :: DISPLAY AT(24,20)
SIZE(8):"TIME";LAP :: NEXT L
AP !218
1350 IF Q>NP THEN RETURN !10
7
1360 FOR P=H TO @ STEP -2 !0
66
1370 CALL POSITION(#P,ROW,CO
L):: IF ROW>136 THEN 1390 ::
Z1=INT((136-ROW)/16):: IF Z
1>4 THEN 1390 !169
1380 AW$(Q)=SEG$(AT$(Z1),@,1
0)&" D" :: AT$(Z1)=SEG$(AT$(
Z1),@,EV1+9)&"D"&SEG$(AT$(Z1
),EV1+11,37-EV1):: Q=Q+@ !05
4
1390 NEXT P :: GOTO 1350 !00
2
1400 T1=E-PAT :: CALL PATER
N(#2,T1,#4,T1,#6,T1,#8,T1)::
A=(RND*4)+2 :: B=(RND*4)+2
!016
1410 CALL MOTION(#8,0,A,#6,0
,B,#4,0,C,#2,0,D,#7,0,A,#5,0
,B,#3,0,C,#1,0,D)!115
1420 T2=G+PAT :: CALL PATER
N(#2,T2,#4,T2,#6,T2,#8,T2)::
PAT=-PAT :: IF LAP>L1 THEN
GOSUB 1120 !227
1430 C=(RND*4)+2 :: D=(RND*4
)+2 :: CALL KEY(0,K,SS):: IF
SS<>@ THEN RETURN !056
1440 IF K=49 AND D<H THEN D=
D+2 !124
1450 IF K=50 AND C<H THEN C=
C+2 !113
1460 IF K=51 AND B<H THEN B=
B+2 !111
1470 IF K=52 AND A<H THEN A=
A+2 !109
1480 RETURN !136
1490 FOR B=@ TO NP :: L1=0 :
: FOR A=11 TO 24 STEP 2 :: B
$=SEG$(AT$(B),A,1):: IF B$="
D" OR B$=" " THEN L1=L1+5 ::
GOTO 1510 !107
1500 L1=L1+VAL(B$)!038
1510 NEXT A :: L1=35-L1 :: I
F L1<10 THEN L1$="0"&STR$(L1
)ELSE L1$=STR$(L1)!155
1520 AT$(B)=SEG$(AT$(B),1,26
)&L1$ :: NEXT B :: RETURN !0
34
1530 IF GP>=7 THEN GP=7 ELSE
RETURN !167
1540 HI=0 :: FOR B=@ TO NP :
: PT=VAL(SEG$(AT$(B),27,2)) :
: HI=MAX(HI,PT):: IF HI=PT T
HEN WIN=B !237
1550 NEXT B :: GOSUB 1190 ::
DISPLAY AT(22,1):"THE WINNE
R IS "&SEG$(AT$(WIN),1,10);"
CONGRATULATIONS!!" :: RETUR
N !252

```

BUGS AND BYTES

Final MDOS mailing planned

In past years, the Geneve presentation at Chicago's TI fair was immensely popular, with standing-room-only crowds being common. This year's presentation, by Beery Miller of 9640 News, attracted only a handful of Geneve users. During the hour-long, informal discussion, Miller said that he plans a final mailing of MDOS by Christmas to registered buyers of the Geneve, but is still waiting for Lou Phillips of Myarc Inc. to provide the complete list of registered users.

Miller also noted that very little programming is being done for the Geneve. "The problem is that many people don't have the time to write code," he said. One bright spot, however, is the ex-

pected release of a new word processor for the Geneve.

Unusual tribute

Videotapes of the 1991 Lima Multi User Group Conference contain a segment showing Eunice Spooner, sponsor of the Oakland Computer Group for elementary school children in Maine, giving a demonstration of Logo to a six-year-old girl.

The little girl, Megan Good, daughter of Lima MUG newsletter editor and MICROpendium columnist Charles Good, has been corresponding with Ms. Spooner ever since. In fact, Ms. Spooner recently acquired a new dog, and in honor of her friend in Lima, she named the dog Megan.

Chicago TI Faire

PC99 project shows improvement

By GARY W. COX

The 1993 Chicago TI Faire has come and gone leaving faire-goers with a variety of products both new and old.

One of the first items catching my eye was the progress of PC99 by Mike Wright and Mark Van Coppenolle of CaDD Electronics. PC99 is a project whereby an IBM compatible PC can emulate a TI99/4A. Stage 2 additions include the ability to emulate all sprite features, operate with joysticks, limited TI sounds, disk I/O, and RS232 and PIO emulation abilities.

The new release has somewhat faster system operations and adds several utilities. In the demonstration of PC99 I witnessed the operation of several TI modules, although execution speed remained slow and operations limited.

Wright has also released "The Cyc," described as "an encyclopedia of knowledge relating to the Texas Instruments TI99/4A home computer" intended to provide a starting point for an information search. The files are in Word Perfect format accessible only on a IBM compatible PC and contain reference material drawn from MICROpendium, 99'er Magazine, user group publications, *Computer Shop-*

per and many other sources. If, for example, you wish to look up an article in *Computer Shopper* you have the reference material on disk to locate the right issue. The Cyc costs \$20.

Richard Gilbertson of CaDD Electronics demonstrated V.5.57 of Supercharged XB (RICHXB), an impressive enhancement of Extended BASIC (GRAM device required)!

Beery Miller of 9640 News had copies of the final version of MDOS (new); 9640 News volumes 1, 2 and 3; and a variety of Geneve 9640 software products.

Ron and Ada Markus of Ramcharged computers had quite a variety of products, including a new game called "Mexican

UFOs" programmed using "the Missing Link" and described as a text and graphics type adventure game containing both animated graphics and TI-Artist quality still



Mike Wright, of CaDD Electronics, demonstrated the progress being made on PC99, a TI emulator that runs on a PC. (Photo by Gary Cox)

graphics. The game was described as simple enough for young children yet complex enough for adults. It sells for \$12.95.

Bud Mills of Bud Mills Services/Hori-
(See Page 23)

READER TO READER

□ Jim Dolvin, 1418 Osceola Hollow Rd., Odessa, FL 33556, writes:

I need the current address of Monty Schmidt who wrote Technical Drive.

I'm also trying to locate a copy of TI Publication #943441-9701, Model 990 Computer/TMS Microprocessor *Assembly Language Programmers Guide*.

Jim Uzzell, 518D Truman Annex, Key West, FL 33040-7560, writes:

Geneve users: I am attempting to compile a comprehensive "bug report" for MY-BASIC 3.00. If you are aware of any bugs and can provide detail of how the but was encountered, i.e. a copy of the program, this will narrow the search for the fix. I have spent many, many hours poring over the source code and identified many bugs (in my opinion about 90 percent of them). So, send me your bugs and maybe one or two more updates to MY-BASIC and we may have a finished product.

Arnold L. Stewart, 232 N. Ridgewood Ave. #20, Edgewater,

FL 32132, writes:

My Hewlett-Packard Think-Jet, model #2225C prints in Elite type only, no matter what I do, with minimum left and right margins of one inch. Furthermore, it doesn't seem to understand any printer codes (even from a TI)! HP's Tech Support people told me that moving DIP switch No. 5 to the "Up" position yields Epson MX emulation, but it ain't so! Anybody got any ideas?

Thomas P. Kirkpatrick, 433 W. Roscoe, Chicago, IL 60657-3649 writes:

I would be glad to pay the programming cost for someone to put the TI PRK program in Q-BASIC or GW BASIC so that I can use it on a PC. I am so used to this simple program that I would like to continue using it for all my record keeping.

Reader to Reader is a column to put TI and Geneve users in contact with other users. Address questions to *Reader to Reader*, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

CHICAGO TI FAIRE—

(Continued from Page 22)

zation computer had products including Digi Port, RAMdisks, P-Gram cards, Miller Graphics EPROMS and the SCSI controller card. Although the SCSI DSR is still not complete, Mike Maksimik got the SCSI card functioning on a primitive level with a CD-ROM drive and Bud had the card performing limited functions with a SCSI hard drive.

Larry Conner of L.L.Conner had a variety of programs and hard to find hardware and parts including chips, connectors and so on all specific to the TI99/4A.

Ted Kieper of Competition Computer had TI products including cartridges, PEBs, consoles and hard to find MBX systems.

Mickey Cendrowski and Mike Sealy of MS Express Software's products included a few new ones such as Adventure Database (database of TI Adventure games), Rattlesnake Bend (adventure game for the adventure module), Genealogy Plus (genealogy tracking assistant compatible with TI-BASE, TI-Writer and Personal Record Keeping formats).

Tim Tesch of S&T Software and Don Walden of Cecure Electronics distributed a list of U.S. and Canadian TI BBSes (See Page 16 — Ed.) as well as several programs, including VCLR 2.0, described as an MDOS color ANSI file viewer, and MDOS Polyport 2.0, which allows Geneve 9640 users to include digitized files (VOC and FX format files) in batch files. Tim also had available his TI BBS program.

Bruce Harrison of Harrison Software

held a sort of going out of business sale, with any software item in stock for \$5, as after Dec. 31 he will no longer accept orders. However, Bruce said he will continue to write public domain software.

Someone new this year was Meredith Adkins of Brukin Software who carried interesting software products ranging from utilities to games, many of which I haven't seen before!

Ken Gilleland of Notung Software again presented his varied products including many graphic oriented programs. Ken also had information on some of his paintings, many of which are on display at the Orlando Gallery in Sherman Oaks, California!

Berry Harmsen of the Dutch TI users group distributed his group's newsletters and was selling a special Dutch demo disk of programs by Tiers in his group! I saw many tables full of generic computer products from Linda of Disk N Dat. Tom Freeman of T and J Software was present with a variety of software products. Many user groups from the U.S. had tables as well.

James Schroeder, author of REDISKIT, received this year's John Birdwell award

for outstanding achievement in the TI community.

List of vendors

- 9640 News, P.O. Box 752465, Memphis, TN 38175, (901) 368-1169
- Berry Harmsen, TI Gebruikersgroep, le Oosterparkstraat 141E 1091 GZ Amsterdam, Telephone# 020-6941047
- Brukin Software, 7919 Mitchell Farm Lane, Cincinnati, OH 45242, (513) 984-8421
- Bud Mills Services, 166 Dartmouth Drive, Toledo, OH 43614-2911, (419) 385-5946
- CaDD Electronics, 81 Prescott Road, Raymond, NH 03077, (603) 895-0119
- Cecure Electronics Inc, P.O. Box 132, Muskego, WI 53150, (414) 679-4343
- Chicago TI Users Group, P.O. Box 578341, Chicago, IL 60657
- Competition Computer, 2219 S. Muskego Ave., Milwaukee, WI 53215 (800) 471-1600 or (414) 672-1600
- Disk 'N Dat, 14 S. River Street, Aurora, IL 60508 (708) 897-3337
- Hoosier Users Group, P.O. Box 2222, Indianapolis, IN 46206-2222
- Micropendium, P.O. Box 1343, Round Rock, TX 78680
- Notung Software, 7647 McGroarty St., Tujunga, CA 91042, (818) 951-2718
- Ramcharged Computers, P.O. Box 81532, Cleveland, OH 44181 (216) 243-1244 or (800) 669-1214.
- Program Innovators, 4122 Glenway, Wauwatosa, WI 53222, (414) 535-0133
- S&T Software, 3804 North 75th Street, Milwaukee, WI 53216, (414) 464-4946
- TI Users of Will County, P.O. Box 216R, Romeoville, IL 60441

T and J reissues MG Explorer

Miller Graphics "Explorer" written by Doug Warren has been re-released by T and J Software.

The program disappeared after the original run of copy protected disks was exhausted and briefly surfaced at a Los Angeles Fest-West several years ago, according to Tom Freeman of T and J Software. T and J is offering the authorized unprotected version, with full documentation ready to be printed, Freeman says.

He says Explorer can be run from any device including the

9640. Cost is \$20, including shipping and handling (California residents add 8.5 percent sales tax). When ordering, specify SSSD (eight disks), DSSD (four disks), DSDD (two disks) or 80-track (one disk). Send orders to T and J Software, 515 Alma Real Dr., Pacific Palisades, CA 90272.

Freeman says the company still has available Diskassembler V.1 (4A) or V.2 (9640), The Bugger (9640) and Hardback (both). He says users are invited to write for details.

Hidden Secrets of TI-Writer

TI-HIDE-IT lets you keep a secret in your documents

By **BARRY A. TRAVER**

©1993 B.A. Traver

Like many TI'ers, the program I use most on my TI is TI-Writer (or an equivalent, like Funnelweb, MY-Word, or RAG-Writer). In fact, I've always wanted to write a "hidden secrets of TI-Writer" article for MICROpendium, but have never done so ... until now!

Don't look now, but some of your TI-Writer files may contain some "hidden secrets." I'm talking about "hidden, secret" messages that don't show up when you look at the file in the TI-Writer editor or when you print out the file with the TI-Writer formatter. Before this article, few people knew how to hide such secret messages or how to unhide them later, but I will be sharing with you both secrets!

FOR YOUR EYES ONLY

If you want serious security for your text files, you should use encryption or some other serious technique. (See, for example, the routines in Subroutine Sandwich or More Subroutine Sandwich, two books written by J. Grillo and J.D. Robinson, the same authors who wrote the excellent book Data and File Management for the TI-99/4A.) That's not a topic I will be discussing here. What I do have for you is a fun, novelty program written in TI Extended BASIC — TI-HIDE-IT — which will allow you to "hide" from the TI-Writer editor and TI-Writer formatter (or their equivalents) a selected number of lines at the beginning of a D/V80 file, and then "unhide" the lines at a later time, if so desired.

Why would you want to use such a program? Well, I used it myself to "hide" comments in some files that I prepared for the TI RoundTable on GENie after I discovered that someone on a competing network was downloading the files, removing any reference to me from them, and uploading them to his own network. After I started using TI-HIDE-IT, people could still remove "visible" references to me from TI-Writer files that I had created, but I had at least the satisfaction of knowing that they would have more difficulty re-

moving the "invisible" references.

Again, TI-HIDE-IT is presented as a novelty program, and is not intended for the serious security of comments at the beginning of text files (they certainly won't be very safe and secure after the publication of this article!). The program is presented here primarily for fun. Besides, although the technique will protect your comments from the TI-Writer editor and formatter, it will not protect them from other ways of exploring the files (e.g., the comments will be seen if someone explores the file using a sector editor program such as DPATCH).

IT'S SIMPLE

How does the program work? Well, it's really rather simple. Did you ever notice a "garbage" line at the end of a message that someone may have uploaded to a BBS? Well, that line of garbage is there because the person used "SF" rather than "PF" to save the file to disk. The result is not a regular, plain vanilla, text (or ASCII) file, but a file with a "hidden" line at the end: a line which is "hidden" to the TI-Writer editor and formatter, but which is "unhidden" when uploaded as an ASCII file to a BBS. It usually looks something like this: " U)3=GUUUUUUUU U \$UUUUUUUUUUXX".

This line, normally "hidden" to the TI-Writer editor and formatter, really has a purpose, even though you don't normally get to see the line: it stores information for TI-Writer relating to screen margins and tabs. I won't take the space to analyze the line for you here; I will merely mention that the key to "hiding" a line from being seen in the TI-Writer editor or being printed out by the TI-Writer formatter is to make sure that the first character is CHR\$(128), and with TI-HIDE-IT we can use that same ability to hide lines for our own purposes!

From what has just been said, you can see that, since we need that special character at the beginning of the line in order to hide the line, and since lines can be a maximum of 80 characters long in D/V80 files, any lines that you want to hide

should be no more than 79 characters long, if you don't want to lose anything. With lines that are 80 characters long, the last character will be missing when the hidden lines are restored.)

Again, TI-HIDE-IT is presented here simply as a novelty program, at least in its present form, for you to enjoy. If you want, of course, you can experiment with the program, perhaps making it more sophisticated (e.g., by adding routines to encrypt the hidden lines), but the decision to go serious is entirely up to you.

Personally, one reason why I like the TI is that it's a fun machine, and my hope is that these "hidden secrets of TI-Writer" will provide some fun for you!

TI-HIDE-IT

```

100 ! TI-HIDE-IT COPYRIGHT (
C) 1993 by Barry A. Traver !
018
110 CALL CLEAR :: CALL COLOR
(0,16,1,1,16,1,2,16,1,3,16,1
,4,16,1,5,16,1,6,16,1)!182
120 CALL COLOR(7,16,1,8,16,1
,9,16,1,10,16,1,11,16,1,12,1
6,1):: CALL SCREEN(5)!218
130 CALL HCHAR(2,3,42,28)::
CALL HCHAR(21,3,42,28):: CAL
L VCHAR(2,3,42,20):: CALL VC
HAR(2,30,42,20)!185
140 DEF H$(N)=CHR$(N)!255
150 A$=H$(128)&H$(134)&H$(12
8)&H$(213)&H$(139)&H$(144)&H
$(149)&H$(159)&H$(169)&H$(17
9)!027
160 DISPLAY AT(5,10):"TI-HID
E-IT";:: DISPLAY AT(7,11):"V
ers. 1.1";!218
170 A$=A$&H$(189)&H$(199)&RP
T$(H$(213),8)&H$(128)&H$(134
)&H$(128)&H$(134)&H$(128)!07
0
180 DISPLAY AT(10,6):"(C) CO
PYRIGHT 1993";:: DISPLAY AT(
12,6):"by Barry A. Traver";!
065
190 A$=A$&H$(213)&H$(134)&H$
(141)&H$(146)&H$(164)&RPT$(H

```

(See Page 25)

TI-HIDE-IT—

(Continued from Page 24)

```

$(213),12)&H$(128)&H$(134)!0
89
200 DISPLAY AT(14,4):"835 Gr
een Valley Drive";: DISPLAY
AT(16,4):"Philadelphia, PA
19128";: DISPLAY AT(18,4):"
(phone: 215/483-1379)";!225
210 DISPLAY AT(24,1):"(Press
any key to continue.)" !089
220 CALL KEY(0,K,S):: IF S<1
THEN 220 !034
230 DISPLAY AT(4,1)ERASE ALL
:"The purpose of this progra
m":"":"is to ""hide"" lines
at the" !206
240 DISPLAY AT(8,1):"beginni
ng of a DV80 file":"":"from
the TI-Writer editor":"":"an
d TI-Writer formatter (or" !
072
250 DISPLAY AT(14,1):"their
equivalents, such as":"":"Fu
nnelweb and MYWORD), and" !0
06
260 DISPLAY AT(18,1):"then "
"unhide"" the lines at":"":"
a later time if so desired."
!048
270 DISPLAY AT(24,1):"(Press
any key to continue.)" !089
280 CALL KEY(0,K,S):: IF S<1
THEN 280 !095
290 DISPLAY AT(1,1)ERASE ALL
:"TI-HIDE-IT is presented as
":"":"a novelty program, and
is" !213
300 DISPLAY AT(5,1):"not int
ended for serious":"":"secur
ity of hidden comments" !029
310 DISPLAY AT(9,1):"in text
files.":"":"In other words,
the program" !085
320 DISPLAY AT(13,1):"is pri
marily ""for fun."" If":"":"
"you want to really protect"
!141
330 DISPLAY AT(17,1):"commen
ts in your files, you":"":"s
hould use encryption or" !02
340 DISPLAY AT(21,1):"other
similar techniques.":"":"(Press
any key to continue.)"
!157
350 DISPLAY AT(24,1):"(Press
any key to continue.)" !089
360 CALL KEY(0,K,S):: IF S<1
THEN 360 !175
370 DISPLAY AT(1,1)ERASE ALL
:"TI-HIDE-IT, Vers. 1.1" !13
8
380 DISPLAY AT(2,2):"(C) COP
YRIGHT 1993":" by Barry A.
Traver":" 835 Green Valley
Drive" !212
390 DISPLAY AT(5,2):" Phi
ladelphia, PA 19128":" (
phone: 215/483-1379)" !011
400 DISPLAY AT(9,1):"Which w
ould you like to do?":"":"
1. Hide beginning lines." !1
27
410 DISPLAY AT(12,1):" 2. U
nhide beginning lines.":" : "W
hat is your choice? 1" !202
420 ACCEPT AT(14,23)VALIDATE
("12")SIZE(-1)BEEP:CH !235
430 IF CH=1 THEN DISPLAY AT(
16,1):"How many lines to hid
e?" :: ACCEPT AT(16,26)SIZE(
3):N !017
440 ON CH GOTO 450,630 !044
450 DISPLAY AT(20,1):"Input
File: DSK": "Output File:DS
K" !220
460 ACCEPT AT(20,13)SIZE(-15
):I$ !122
470 ON ERROR 480 :: OPEN #1:
I$,INPUT :: ON ERROR STOP ::
DISPLAY AT(24,1):"" :: CALL
SCREEN(5):: GOTO 500 !123
480 ON ERROR 490 :: CLOSE #1
!013
490 CALL SCREEN(7):: DISPLAY
AT(24,3):"FILE ERROR - TRY
AGAIN!" :: RETURN 460 !002
500 ACCEPT AT(22,13)SIZE(-15
):O$ !130
510 ON ERROR 520 :: OPEN #2:
O$,OUTPUT :: ON ERROR STOP :
: DISPLAY AT(24,1):"" :: CAL
L SCREEN(5):: GOTO 540 !057
520 ON ERROR 530 :: CLOSE #2
!055
530 CALL SCREEN(7):: DISPLAY
AT(24,3):"FILE ERROR - TRY
AGAIN!" :: RETURN 500 !042
540 CALL SCREEN(13):: DISPLA
Y AT(14,10)ERASE ALL:"WORKIN
G..." !096
550 IF EOF(1)THEN 560 ELSE L
INPUT #1:B$ :: GOTO 550 !150
560 CLOSE #1 :: IF B$="" OR
SEG$(B$,1,1)<>CHR$(128)THEN
C$=A$ ELSE C$=B$ !181
570 OPEN #1:I$,INPUT :: PRIN
T #2:C$ !047
580 IF EOF(1)THEN 580 !116
590 FOR I=1 TO N :: LINPUT #
1:M$ :: IF LEN(M$)=80 THEN M
$=SEG$(M$,1,79)!173
600 M$=CHR$(128)&M$ :: PRINT
#2:M$ :: NEXT I :: PRINT #2
:C$ !208
610 IF EOF(1)THEN 620 ELSE L
INPUT #1:M$ :: PRINT #2:M$ :
: GOTO 610 !085
620 CLOSE #1 :: CLOSE #2 ::
CALL SCREEN(5):: GOTO 800 !1
89
630 DISPLAY AT(20,1):"Input
File: DSK": "Output File:DS
K" !220
640 ACCEPT AT(20,13)SIZE(-15
):I$ !122
650 ON ERROR 660 :: OPEN #1:
I$,INPUT :: ON ERROR STOP ::
DISPLAY AT(24,1):"" :: CALL
SCREEN(5):: GOTO 680 !229
660 ON ERROR 670 :: CLOSE #1
!194
670 CALL SCREEN(7):: DISPLAY
AT(24,3):"FILE ERROR - TRY
AGAIN!" :: RETURN 640 !183
680 ACCEPT AT(22,13)SIZE(-15
):O$ !130
690 ON ERROR 700 :: OPEN #2:
O$,OUTPUT :: ON ERROR STOP :
: DISPLAY AT(24,1):"" :: CAL
L SCREEN(5):: GOTO 720 !161
700 ON ERROR 710 :: CLOSE #2
!235
710 CALL SCREEN(7):: DISPLAY
AT(24,3):"FILE ERROR - TRY
AGAIN!" :: RETURN 680 !223
720 CALL SCREEN(13):: DISPLA
Y AT(14,10)ERASE ALL:"WORKIN
G..." !096
730 IF EOF(1)THEN 740 ELSE L
INPUT #1:B$ :: GOTO 730 !254
740 CLOSE #1 :: C$=B$ :: OPE
N #1:I$,INPUT !035
750 IF EOF(1)THEN 820 ELSE L

```

(See Page 26)

TI-HIDE-IT—

(Continued from Page 25)

```

INPUT #1:M$ :: IF M$="" THEN
  890 !159
760 IF M$="" OR SEG$(M$,1,1)
<>CHR$(128) THEN 780 ELSE M$=
SEG$(M$,2,LEN(M$)-1):: PRINT
#2:M$ :: GOTO 750 !039
770 IF EOF(1) THEN 790 ELSE L
INPUT #1:M$ !143
780 PRINT #2:M$ :: GOTO 770
!144
790 CLOSE #1 :: CLOSE #2 ::
CALL SCREEN(5)!201
800 DISPLAY AT(13,11)ERASE A
LL:"Finished!" !183
810 DISPLAY AT(15,6):"Do ano
ther file? Y" :: ACCEPT AT(
15,24)VALIDATE("YNyn")SIZE(-
1)BEEP:R$ !083
820 IF R$="Y" OR R$="y" THEN
370 ELSE CALL CLEAR :: STOP
!096

```

MICRO-REVIEWS

Card File and Audio Calculator

By CHARLES GOOD

CARD FILE
by Bill Gaskill

Many data base programs exist, some full featured and complex and some simple and easy to use. Card File is in the simple easy category. It is written in Extended BASIC with 40-column assembly support and simulates a paper index card collection with "cards" that have information on both sides of the card.

Card File loads from a SSSD disk. You can easily alter drive number and printer defaults. You are presented with a freeform data entry screen on which you can type data any way you want. There is a text mode for data entry and a command mode. Text mode allows full screen cursor movement. Word wrap is included (coded in XB, so it is a little slow) as well as the ability to add solid vertical and horizontal lines to divide your card into sections and make it look good. Command mode lets you delete single lines or the whole screen, insert lines, display either "side 1" or "side 2" of your index card, print both sides of the card (direct screen dump or in a report format), save the card, load an existing card for viewing, display a disk directory or bring up the on-line help. I've said it before and I'll say it again: "all software should have on-line help screens" for those of us who don't remember all the commands.

Card File lets you load in templates, fill in the templates with your own custom data and save these filled cards back using

other file names. This template concept comes in handy, and Card File comes with a bunch of templates to get you started. These include part of a multi-year calendar, employee personnel record, auto insurance, birthday list, TI cartridge data sheet, personal information, phone list, golf score record, recipe, personal references, a "to do list," personal weight record, and motor vehicle service record. These templates are blank, waiting for you to enter the data. Other useful "cards" that come with Card File already have useful data, such as help screens for several TI word processors.

Card File is not a full-featured database, but it is nice for those with a minimal expansion system. You can't sort and you can't search. All you can do is find card files from a disk directory, load the card to display and alter the data, then print and/or resave the data.

Card File's cards are saved as D/V80 text files, and that is the key to Card File's usefulness. In my opinion, Bill Gaskill's card templates and word processing help screens are worth more than the software he has created to manipulate the cards. You can load any of the cards or handy blank card templates into an ordinary word processor for easy viewing and editing. I find this procedure quicker than using the Card File software itself, because text editing from a word processor at assembly speed is faster and usually more convenient. For searching you can use Funnelweb's Disk Review or Birdwell's DSKU to search a whole disk full of card files for key words quickly. You can also

quickly view a disk full of cards with Disk Review's V(iew) option.

Bill offers at extra cost two "libraries" of filled data cards. One will interest TI history buffs (like me), and the other has broad general interest. The CARTRIDGE LIBRARY is based on Bill's extensive TI command module collection. Cartridge name, product number, type, date released, manufacturer, release price and additional notes are included for each cartridge of the cartridge library. Of particular interest are the actual dates acquired and actual price paid for the cartridges Bill has.

The STATES card library is really interesting. I recommend its purchase to anyone. He evidently obtained this information from a good very recent atlas. I have a similar STATES database on my home MS-DOS machine's hard drive and I paid more for that than Bill is asking for his STATES library.

Each state card has the following information: total land area; highest point; lowest point; record high and low temperatures; list of natural resources; percent of land area that is federal; number of hazardous waste sites; 1990 population and percent change since 1980; population density; per capita cost of public education; average pupil/teacher ratio; annual deaths from cancer, heart disease and homicide each per 10,000; date and order of admission to Union; capital; governor; electoral votes; number of congressional representatives; average federal income tax per capita; number of police officers
(See Page 27)

MICRO-REVIEWS —

(Continued from Page 26)

and lawyers per resident; per capita income; number of farms, radio and TV stations and daily newspapers; area of national parks; and phone number of tourist board. This is useful interesting information.

Card File is fairware. If you just want to try it out I will send it to you for \$1. Better yet, send a fairware donation of any amount plus a disk and paid return mailer directly to Bill. The Cartridge and States libraries are not fairware. They are available only directly from Bill for \$7 each, which includes the SSSD disk and postage: Bill Gaskill, 2310 Cypress Ct., Grand Junction, CO 81506.

(Card File was also published in the October 1993 MICROpendium. — Ed.)

AUDIO CALCULATOR

by Larry Tippett

Lots of "me too" applications and games exist in the TI world, software that does the same things as previously available software. Newer software may be faster, more user friendly or just slightly different, but the game formats and types of applications don't seem to change much. You don't often find software that does something new and different, a type of computer task that nobody thought of before. Audio Calculator is new and different.

Audio Calculator is for use by those who transfer music from CDs and phonograph records to cassette tapes. The software will calculate (with emphasis on the work "calculate") the maximum number of song titles that will fit on each side of an audio cassette tape and then will print a tape box label. Yes, I know. Several public domain cassette tape box label printing programs exist, and you can use Bruce Harrison's Time Calc program to add up accurately the cumulative elapsed times of songs you add consecutively to an audio tape. Audio Calculator is different. It actually calculates the ideal fit of songs onto both sides of an audio cassette of any length so that you can squeeze the maximum number of songs onto the tape without leaving out part of the last song and with minimum unused tape time at the end

of the tape.

You start out by inputting into the computer a tape title and date (or other information in place of the date, such as the name of the artist). Then you enter the titles and durations of all the songs you want to squeeze onto your tape. Duration information can be read directly from a CD player or found on the CD's documentation. The program then asks you for an "autospace," a soundless time interval you will insert between songs. The default of four seconds usually works well. Finally you enter the tape length (e.g., enter "90" for a C90 tape), and Audio Calculator begins to calculate.

A suggested list of songs (title and individual durations) for side 1 and 2 of the tape, a statement of total used and unused time (after the last time) on each side, and a listing of which songs will NOT fit on the tape appear on screen. At this point you have the opportunity to edit your song entries. Maybe you have a lot of room left and want to put more songs onto the tape. Or maybe you really want to put some of the "won't fit" songs onto the tape and must delete some of the fitted songs to make room. When you finish editing, Audio Calculator will recalculate based on your new data.

As an example of what can be done; I took a favorite CD and typed in the names and durations of all its 13 songs, specified a four-second "autospace" and a C30 (15 minutes on each side) tape length. Audio Calculator told me it could put six of my songs on each side of the tape with unused time of 29 seconds on side 1 and 45 seconds on side 2. One song with a duration of 3 minutes 24 seconds would not fit.

When everything is set up as you wish you can print either a full 80 column listing or a cassette label to cut out and put in the cassette box. Each printout includes the tape title and date plus information about song duration and unused tape space. Each label contains room for a maximum of 25 songs per tape side. Then comes the hard part. You have to use your audio equipment manually to transfer music onto the tape in the sequence specified by Audio Calculator, which is not necessarily the same sequence you used to input the song titles. Don't forget to leave the

"autospace" between songs manually. Wouldn't it be nice if this could be done automatically under computer control!

Audio Calculator is written in Extended BASIC and comes in 40- and 80-column versions, both of which come on the same SSSD disk and are almost functionally identical. The 80-column version (requires a Geneve or a 99/4A 80-column device such as TIM or AVPC) is written using Alexander Hulpke's X80. I am grateful for another really useful 80-column application for my 99/4A. Not many of them exist.

I highly recommend Audio Calculator to anyone who makes backup cassette music tapes. It is fairware, and the requested donation is only \$5. If you just want to try it out before sending Larry his money, I will send it to you if you mail me a buck (pays for the disk and return postage). Why not save some time and postage by getting it directly from the author? Send the \$5 fairware donation AND a disk with paid return mailer to Larry Tippett, 5826 Buffalo St., Sanborn, NY 14132.

It has been 10 years since "Black Friday," and the Micro-Reviews column proves that new really useful software is still being created for our trusty old 99/4A.

Please continue to send new material my way for a quick Micro-Review. My address is P.O. Box 647, Venedocia, OH 45894. My evening phone is (419) 667-3131.

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USER NOTES

Author recognized

The author of the User Note "Hardware fix for shadows," which appeared in September 1993, is Bob Larson of the Long Island 99ers.

Chili today ...

The following item was written by John Boldand appeared in the newsletter of the Users Group of Orange County (California).

... and hot tamale. That's the Mexican weather front coming in.

Have you noticed (on bank buildings or other displays) the hourly temperature reports are given in Celsius? Celsius is okay, but I was reared on Fahrenheit. When I see these Celsius figures, I don't know whether to put on my ear muffs or take off my sweater.

Going back to my reform school days, I recalled the conversion factor. Subtract 32 from the Fahrenheit value and multiply by five-ninths. I also remembered that water freezes at 32 degrees F. That's pretty warm when you consider the same water won't

freeze until it gets to zero degrees if you are reading Celsius!

I decided to do something about this by writing a little READ/DATA program in BASIC using 10 pieces of data built around the freezing point of water.

```
10 REM WEATHER
15 PRINT "FAHRENHEIT CELSIUS"
20 FOR TEMPERATURE=1 TO 10
30 READ FAHRENHEIT
40 LET CELSIUS=5/9*(FAHRENHEIT-32)
45 LET CELSIUS=INT(CELSIUS+.5)
50 PRINT FAHRENHEIT,CELSIUS
60 NEXT TEMPERATURE
70 DATA 93,-20,32,212,1
80 DATA 81,14,50,40,-10
```

When you run this list, you'll get two nice columns of figures, one in Fahrenheit and one in Celsius. Notice that line 45 has an integer, used for rounding off to the nearest decimal. You may also change the Fahrenheit DATA statements in lines 70 and 80 or put them all on one line.

This little program should help you with any little weather problems. Carry a pair of rubber boots in the trunk of your car,

just to be safe.

Importing text files into Page Pro

The following was written by Eunice B. Spooner and appeared in the newsletter of the Oakland Computer Club of Oakland, Maine. The club started its seventh year of operation in September.

First, I load my word processor and set the tabs to no greater than 59 columns. I like to set the right tab at 39 so the text will remain on screen. Then I press enter and start typing the text I want to use in my Page Pro layout.

When I have finished, making sure I have not exceeded the 66-line limit of Page Pro, I make note of the number of lines I used so I will know where the text will fit on my Page Pro screen. I save this text with the Save File command in case I need to make changes or corrections.

The best way to save the text for importing into Page Pro is with the Print File command. I type PF and press enter.

(See Page 29)

COMMENTS

(Continued from Page 5)

"It's going to be a lot of skull sessions yet before we've got something I'm willing to release."

Bruce Harrison demonstrated his BASIC compiler for the TI. Noting that the compiler "is not a true compiler because it doesn't convert one language entirely into another," he ran several programs that gave an indication of how much a compiler can speed up BASIC. The compiler works on the slower commands and functions in Extended BASIC while leaving the faster aspects of XB untouched. The compiler "switches back and before from assembly language to Extended BASIC." In one demo, the program, written entirely in Extended BASIC, took 2 minutes to run. In the compiled version, the same program ran in 17 seconds. This program filled the screen with ASCII characters 32-126. He also ran a program that used sprites and sound. He credited Harry Wilhelm with the ideas that made the compiler possible and a special high memory loader.

The PC99 emulator project spearheaded by Mike Wright showed considerable progress over the past year. PC99 is a program that runs on a PC and provides software emulation of a TI99/4A. The emulator runs most cartridge software that can be saved to disk, as well as BASIC, XBASIC and other programs. However, even on a 486-66 MHz PC many cartridges run slower

on the PC than on a TI. This is particularly true of programs that make heavy use of graphics, such as Parsec. TI-Writer and Funnelweb, among others, work normally. The emulator can support joysticks through a game card and printers are supported through the PC's com ports.

The trade floor, though somewhat smaller than in the past, was crowded throughout the day. There were numerous deals to be had and a lot of difficulty to find hardware and software. And it's one of the few places at which you can talk to the programmers who keep the TI and Geneve going. ~If you're interested in the TI or Geneve but have never attended a TI fair, whether in Chicago, Lima, Utah, or elsewhere, you're missing a lot.

GENEVE WRITER WANTED

MICROpendium is looking for a Geneve user who'd like to write a column about the Geneve. We're not necessarily looking for a programmer but someone who enjoys the Geneve and can keep our readers informed about the computer and how to get more out of it. This would include updating readers on available software, whether shareware or commercial. Previous writing experience is a plus. If you're interested, send us a writing sample and an outline of how you would handle a Geneve column.

—JK

USER NOTES

(Continued from Page 28)

When PIO appears, I type over the PIO with C DSK1.FILENAME, using a different file name than the one I used for Save File, and press enter again. This method saves the file without any carriage returns or other printer codes.

I load Page Pro and put the cursor in the row and column where I want the text to start, making sure there is room for my text.

Next, I press CNTL and F and select 3, the number to import text.

To import or load the text I saved using the PF command, I type DSK1.FILENAME and press enter, which will then load my text.

A different small font may be loaded if you want your text file in a different font.

From here on it will be up to you to add any pictures or lines to your page before printing it.

the easiest to make. The windows are just a bit more interesting. It helps to have graph paper laid out to represent your screen, which is 193 dots (or pixels) high and 241 wide. Graph paper with one-quarter inch squares, with each square representing six dots, works very well for me.

Most of us who are not mathmatically, or geometrically, inclined will look at the sample on page 7 of the TML manual and say, "Huh?" The first time I typed that line in — 10 CALL LINK("WINDOW"[row1 ,column1,row2,column2,1]) — I did everything wrong. In the first place, the left bracket isn't supposed to be typed in, only the parentheses. Also, somehow I missed the ",1" at the end, which resulted in a blank screen.

Now, thinking of your screen as a grid of 193x241 dots, or 46,513 dots, let's begin, making it as simple as possible. A window requires only two dots on your graph or screen, and the program will do the rest. So, we want to make a window in the upper left-hand corner, say 20 dots high and 40 dots wide. To make it easy, let's use one for the row and one for the column. That's our first dot.

Now, the second dot. Row two will de-

termine the height, so we punch in 20 and, for column two we punch in 40. And that's all there is to it.

Your program will look like this:

```
10 CALL LINK("WINDOW",1,1,20,40)
```

Add a second line: 20 GOTO 20. This will keep the image on the screen for your viewing pleasure. After loading The Missing Link, run the program.

If you want to send the image to your printer, press the FCTN and CTRL keys simultaneously.

Below is an exercise in windows. A large window is assembled with four smaller ones.

```
10 CALL LINK("WINDOW",10,20,20,200,1)
```

```
20 CALL LINK("WINDOW",20,20,170,30,1)
```

```
30 CALL LINK("WINDOW",20,190,170,200,1)
```

```
40 CALL LINK("WINDOW",170,20,180,200,1)
```

If you would like to have a sheet of graph paper with the squares numbers which can be duplicated using a photocopier, send \$2 to cover the shipping and handling to Jim Leshar, 722 Huntley, Dallas, TX 75214.

(See Page 30)

Creating windows with The Missing Link

This comes from Jim Leshar, another in a continuing series of items having to do with The Missing Link. He writes:

As mentioned before, the circles are

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USER NOTES

Another naming system for disks

This comes from Bill Gaskill, of Grand Junction, Colorado. He writes:

In the January 1992 issue of MICROpendium, Paul Scheidemantle showed us how to create a disk/file name scheme for organizing floppy disks loaded with TI-Writer files. Among other benefits offered, Paul's method allowed the user to annotate file names to describe the contents of a file, thereby mitigating the 10 character file naming limitation that has helped me to locate files on a variety of floppy disks.

I name and label 26 disks A through Z. This works for me because I save my correspondence by the recipient's last name. For example, if I were writing a letter to Jim Peterson, I would save the file under PETERSON1. That way, I always know to look at the floppy disk labeled "P" to look up a previous letter to Jim Peterson.

The next thing I do after saving a file is to load DM1000 and then press FCTN 3 to change the printer name to DSK1.CATALOG.

Then I use DM1000 to catalog the disk and press FCTN 7 and it writes a D/V80 file named CATALOG to the floppy that I can then load into TI-Writer or Funnelweb and edit.

The CATALOG file loads left-justified, with the usual information about file name, size, type and protection status. I edit the file so that size and type contain the creation date — MM/DD/YY — then Protection Status and the unused columns to the right of it are used to describe the contents of the file.

CATALOG is then saved back to the same disk, but now it contains all of the information about a particular file that I need to help me decide if it is the one I want to load.

A solution for modem interruptions

This item has appeared in several user group newsletters. The author is unknown.

Have you ever been on-line to a BBS when someone picks up an extension phone and leaves you with nothing but garbage?

Here's an idea that might help. All you need is a switch, a long piece of two conductor wire, two LEDs (Radio Shack 270-036 blinking LED), two AA batteries, a battery holder and a 100 ohm resistor.

Run the wire from the extension phone to the computer. Solder the wire at the phone end to one of the LEDs (observe polarity, the flat side is negative) and the wire at the computer end to the other LED with the 100 ohm resistor in series to help balance the current load. Hook the wire to the battery through the switch. The LED at the computer end should have the 100 ohm resistor and the remote LED should be hooked directly to the battery through the switch.

If the LEDs don't light, reverse the battery leads.

Now when you call a BBS, just turn on the switch and the blinking red light will tell everybody not to pick up the phone, at least not if they know what is good for them.

Command mode plus

The following item was written by Jerry Keisler of the Paris (Texas) 99/4A User Group.

Most of us use command mode to type in programs. Also to load, save and run programs.

But, did you know that you can execute almost any program command in the command mode while in the middle of a program? You can even view and change variables. Viewing variables can assist you in determining why a program crashed. Also, long Extended BASIC lines can be written and executed without destroying the current program. When done, type "CON" and press enter. The program will continue to run using any changes you made to the variables.

The disadvantages to this are that all graphics will be lost and the screen will scroll unless it is refreshed by a program command.

Try it. Type in the following program:
100 FOR I=1 TO 100

```
110 A=1+A
120 PRINT I;A
130 NEXT I
```

Run the program. Before "I" reaches 100 press FCTN-4 to break.

Type PRINT I;A and press enter.

You should see the current value of "I" and "A."

Now type A=888 and press enter.

The count on the screen will continue from 888 or 889, depending on where you broke the program. You could set "I" to a lower number or higher number before typing CON. See what happens when "I" is outside the 1 to 100 range.

When the program ends, *READY* appears.

Type PRINT I;A and press enter.

You should see the exit value of the variables.

Let's try another one.

```
100 C=1
110 A$="START OVER"
120 DIM X(40)
130 FOR I=1 TO 40
140 X(I)=INT(RND*200)+C
150 PRINT I; X(I)
160 NEXT I
170 PRINT A$
180 GOTO 130
```

This program will put a number between 1 and 200 in variables X(1) through X(40). Run the program and press FCTN-4 when "I" reaches or passes 40.

Type FOR B=1 TO 40 :: PRINT X(B) :: NEXT B and press enter.

You should get a list of what is in X(1) through X(40) listed to the screen. If you have a printer and want a printout of X(), assuming you typed the FOR B line, press FCTN-8 to retrieve the last line you typed and edit to read:

```
OPEN #1: "PIO" :: FOR B=1 TO
40 :: PRINT #1: "N"; B; "=";
N(B); :: NEXT B :: CLOSE #1
```

Your printer will print X1=186 X2=192, etc. Use RS232 in place of PIO if required by your printer.

Type CON and press enter.

The program should continue where left off.

Try FCTN-4, type C=1000, press enter. Type CON, press enter.

Try FCTN-4, type A\$="END OF
(See Page 31)

USER NOTES CLASSIFIEDS

(Continued from Page 30)

LINE", press enter. Type CON, press enter.

Do not change any line numbers or anything in any line of the program if you want to use the CON command.

If the program crashed with an error statement, you can still view current values.

Change line 120 to:

```
120 DIM X(30)
```

and press enter. Type RUN and press enter. The program will run for a while and then say "BAD SUBSCRIPT IN 140."

Type 140 and press FCTN-4. Here's what you should see:

```
140 X(I) = INT(RND 0) + C
```

Press enter. Print the values of all variables in this line by typing PRINT C; I; X(I) and press enter.

You should see the current values of C, I and BAD SUBSCRIPT. "I" equals 31 but our DIM statement said DIM X(30). There is no X(31). We either have to increase the DIM statement, or reduce the FOR I statement.

You can review any program line using line numbers and FCTN-X before viewing or changing variables.

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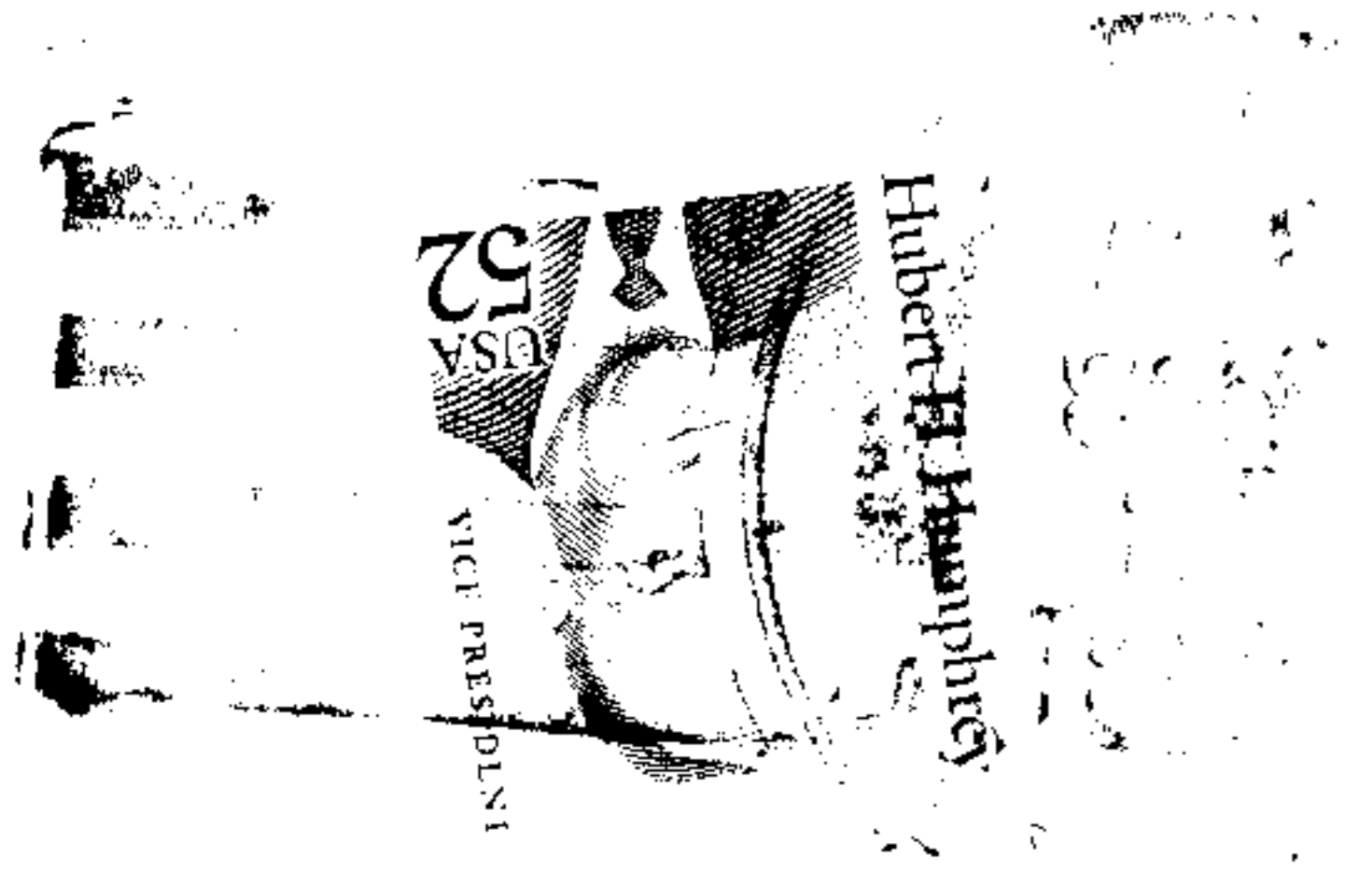
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