



MARCH '85
NEWSLETTER
STICC

Editor

SASKATOON TEXAS INSTRUMENTS COMPUTER CLUB

NEXT GENERAL MEETING AT:
SASKATOON REGIONAL COMMUNITY COLLEGE,
ROOM 114, 145 1ST AVE. N., 7:00PM

FEB 4TH, 1985

MAR 4TH, 1985

APR 1ST, 1985

MAY 6TH, 1985

WE DISCUSS AND REVIEW NEW PRODUCTS FOR THE TI 99, WHILE PROVIDING TECHNICAL SUPPORT FOR ANY PROBLEMS THAT A MEMBER MAY HAVE. WE ALSO SUPPORT A SOFTWARE LIBRARY AND HAVE REGULAR CONTACTS WITH OTHER GROUPS IN CANADA AND THE UNITED STATES. OUR MEMBERSHIP FEES ARE VERY REASONABLE FROM \$10.00/SINGLE TO \$12.00/FAMILY. IF YOU WOULD LIKE TO BECOME A MEMBER OR REQUIRE MORE INFORMATION, CONTACT:

FRANCIS X. GASTON 978-0182

DEAN JAMIESON 373-3548

HARRY CARUK 244-8379

KEN READ 384-2844 (BBS)

1985 EXECUTIVE COUNCIL

PRESIDENT: FRANCIS X. GASTON 978-0182
VICE PRESIDENT: DEAN JAMIESON 373-3548
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OUR BBS IS OPEN 24 HOURS A DAY, SEVEN DAYS A WEEK (WITH THE EXCEPTION OF DAILY MAINTENANCE), AND CAN BE CONTACTED AT (306) 384-2844. KEN READ IS OUR SYSTEMS OPERATOR, AND BARRING ANY PROBLEMS, CAN ALSO BE REACHED AT 382-2527 (VOICE). THE SYSTEM OPERATES AT SEVEN BITS, EVEN PARITY, AND ONE STOP BIT.

THE TELECOMMUNICATION FIELD. NEXT THING TO BEING THERE. (THERE GOES OUR DISCLAIMER!!).

PRESIDENT'S MESSAGE

HMMM... A TOPIC FOR THIS MONTH... WELL, I'LL LEAVE THAT TO YOU!! READ ON....

WELL, IT HAS REALLY BEEN A SUCCESSFUL YEAR FOR OUR CLUB. WE HAVE GAINED MANY NEW MEMBERS AND HAVE MET MANY NEW FRIENDS WORLD WIDE. THE TRADING OF INFORMATION AND SOFTWARE IS SURELY THE ONLY METHOD FOR OUR "HAPLESS, BELOVED, ORPHANED MACHINE". THERE IS NOT ENOUGH WHICH CAN BE SAID IN REGARDS TO THE AMOUNT OF INFORMATION ABOUT OUR MACHINE. NEWSLETTER TRADING AND BBS CAN ONLY CONTINUE AND EXPAND OUR NEW HORIZONS. MAGAZINE PUBLICATIONS AND PUBLISHED NEWSLETTERS HAVE ONCE BEEN THE ONLY MEDIA. NOT ANYMORE!!!

THERE HAS BEEN MANY RUMOURS IN REGARDS TO UPDATED COMPATIBLES FOR OUR TI 99/4A. YES, YOU HEARD RIGHT!!! COMPATIBLES!!! THERE HAVE ALSO BEEN TALKS OF A CONNECTION ("A LA CPM CARD") TO RUN EVEN IBM SOFTWARE. ALL YOU HAVE TO DO IS PICK UP A COPY OF "COMPUTER SHOPPER" AND "MICROPENDIUM" TO REALIZE THIS. THEY HAVE ALL THE "KNOW HOW" ON THE SO CALLED "99/8" AND MORE. SO COLUMN CARD??? NO PROBLEM!! (FOUNDATION), MOUSE AND WINDOWS? (CORCOMP), RAM DISK? (SCI TECK), REAL TIME CLOCK CARD?? (F J AND J), MORE??? OF COURSE! ! BUT I DO HAVE TO WARN YOU, SOME OF THESE ARE STILL SPECULATIONS!!! BUT IT IS A SAFE BET, THAT I WILL BE ONE OF THE FIRST TO PURCHASE ONE (ANOTHER SO CALLED **SPECULATION!!**)

WELL, HAVE YOU GUESSED WHAT THIS MONTH'S TOPIC IS ABOUT? YOU'RE RIGHT!! RUMOURS!! I RECEIVE MANY IN MY ENDLESS SEARCH FOR NEWS, WHETHER IT BE BBS, TELEPHONE CALLS, MAGAZINES, NEWSLETTERS, ETC., YOU WILL CERTAINLY HEAR THEM ALL!! BUT I HAVE TO ADMIT, MANY ARE NOT LOST LEADS. THERE REALLY IS AN RTC, RAM DISK, 99/8, ETC. BUT WILL THEY MANUFACTURE THEM OR NOT: IS

THE BASIC QUESTION.

MANY OF THE MANUFACTURERS ARE VERY UNSURE OF THE SO-CALLED DYING COMPUTER FAD. YES, A FAD!! MANY COMPUTERS HAVE BEEN THOUGHT OF, BOUGHT, THROWN IN THE CLOSET, AND FORGOTTEN. MANY COMPANIES HAVE LOST A LOT (SURELY NOT TI, EH??) TO THE DEMISE. SO THE COMPANIES ARE TRULY DEPENDANT ON OUR SUPPORT. AND OURS ONLY!! ONLY WE CAN DETERMINE THE DIRECTION OF THE HOME COMPUTER INDUSTRY. SO PLEASE SUPPORT THEIR EFFORTS. I FOR ONE WOULD LIKE THE PRICE OF FOUNDATION'S 80 COLUMN CARD REVERSED ONCE MORE FROM \$350.00 TO ~~\$159~~.00. EVEN IF IT IS IN U.S. FUNDS!! AND TAKE IT FROM ME, THIS IS NO REMOUR!!! LONG LIVE TI 99/4A AND THE HOME COMPUTER INDUSTRY!!!! PLEASE!!!!

FRANCIS X.

TID BITS

IF YOU HAVEN'T NOTICED, OUR CLUB IS NOW LISTED WITHIN THE STAR PHOENIX'S "SASKATOON CLUB CALENDAR" UNDER TEXAS INSTRUMENTS COMPUTER CLUB. CHECK SATURDAY, FEB 2, 1985 ISSUE.

AN INTERESTING CONCEPT HAS BEEN TRIED IN THE ST. CATHERINES TI CLUB. THEY RUN A LOTTERY ON VARIOUS ARTICLES FOR THE TI. A GIVEN EXAMPLE WAS THE LOTTERY FOR AN EXTENDED BASIC MODULE THEIR CHARGE WAS \$5.00 A TICKET OR 3 FOR \$10. ALTHOUGH YOU WOULD BE TAKING A CHANCE, IT STILL IS A CHEAP WAY OF OBTAINING A MODULE. YOUR COMMENTS OR SUGGESTIONS ON THIS CONCEPT WOULD BE APPRECIATED.

OUR ARCHIVE LIBRARY IS NOW IN FULL SWING. GORDON MILLHAM, OUR LIBRARIAN, WILL BE MONITORING THIS PART OF THE CLUB DURING THE MEETINGS. PLEASE SEE HIM FOR CURRENT UPDATES AND LISTING OF WHAT WE HAVE. NEWSLETTERS, MANUALS, AND CATALOGUES ARE JUST TO NAME A FEW.

NEED A FREE(...) SCREEN DUMP PROGRAM? MICHAL JAEGERMANN OF EDMONTON IS OFFERING HIS FOR FREE IF YOU SEND A DISK AND MONEY TO COVER POSTAGE AND HANDLING. ALSO DONATIONS TO THEIR CLUB (EDMONTON USERS GROUP) WOULD BE APPRECIATED IF YOU BELIEVE THE PROGRAM WOULD BE OF VALUE TO YOU. THE PROGRAM REQUIRES E/A AND EPSON COMPTIBLE PRINTER. ADDRESS IS E.U.G., PO BOX 11983, EDMONTON, ALT., T5J 3L1.

SOME COMPATIBLE DISK DRIVES: SHUGART 455A DS DD 1/2 HEIGHT, TEAC FC55B DS DD 1/2 HEIGHT, GUME 400... THESE MAY OR MAY NOT BE CORRECT SO PLEASE CONTACT ME, FRANCIS, FOR CORRECTINS OR UPDATES ON DRIVE MAKES AND MODEL NUMBERS. THANK YOU.

I HAVE JUST RECEIVED OUR COPIES OF CORCOMP CURSOR (NEWSLETTER AND BROCHURE). IT IS ALSO IN OUR ARCHIVE LIBRARY. CORCOMP IS OFFERING OUR GROUP A ONE TIME ONLY SPECIAL. PRICES ARE VERY REASONABLE EVEN WITH THE EXCHANGE. I WOULD SERIOUSLY SUGGEST THIS AS AN ALTERNATIVE FOR ALL USERS WHO WISH TO UPGRADE. AVAILABLE ARE: 32K CARD, RS232 CARD, DISK CONTROLLER CARD, PLUS STAND ALONES. CHECK OUT OUR ARCHIVE LIBRARY!!! (I - I HAVE THEIR RS232 CARD FOR OVER FIVE MONTHS NOW AND HAVE HAD NO PROBLEMS **WHATSOEVER**).

I HAVE JUST RECEIVED A COPY OF THE FEB 1985 MICROPENDIUM, THE CURRENT "TI PUBLICATION". IT IS FULL OF NEWS AND REVIEWS. A MUST FOR ALL MEMBERS INTERESTED IN THE TI FORE-FRONT. SUBSCRIPTION RATES ARE 18.50 FOR CANADIAN DELIVERY (US FUNDS) AND THEIR ADDRESS IS PO BOX 1343, ROUND ROCK, TS. 78680. FOR A LOOK AT THEIR EFFORTS, PLEASE INQUIRE FROM FRANCIS.

I HAVE ALSO RECEIVED A COPY OF THE FEB 85 COMPUTER SHOPPER.

IT IS CONSIDERED IN THE COMPUTER COMMUNITY AS "THE COMPUTER MAIL ORDER PUBLICATION". NOT ONLY THAT, YOU CAN ALSO READ ARTICLES FOR MAJOR MACHINES INCLUDING OUR BELOVED TI. FEB. ISSUE ARTICLES ARE ON THE 99/8, AND REVIEWS ON TI COPIERS (PRACTICALLY ALL OF THEM). YOU CAN OBTAIN YOUR COPY FROM VARIOUS OUTLETS IN THE CITY. SOME ARE CO OP ON 8TH ST., NORTHUMBERLAND CENTRE, CUMBERLAND... AND MORE.

FROM MICROPENDIUM, IN CHECKING YOUR DISK DRIVE SPEED. ALL YOU REQUIRE IS A FLOURESCENT LAMP (* - PROBABLY US VOLTAGE) AND A SCREWDRIVER. WRITE UP IS IN THEIR FEEDBACK COLUMN.

MICROPENDIUM - FOUNDATION IS PRODUCING THE 80 COLUMN CARD BUT IS RAISING THEIR PRICES FROM \$159.95 TO \$309.95 AS OF FEB. 1, 1985. REASON IS DUE TO MANUFACTURING COSTS. THEIR ADDRESS IS 74 CLAIRE WAY, TIBURON, CA. 94920. (415) 388-3840.

MICROPENDIUM - DRAGONSLAYER'S AUTO SPELLING CHECKER NOW HAS AN UPDATED, FASTER VERSION(1.1). IT IS NEARLY 4 TIMES FASTER THAN THE ORIGINAL. INFORMATION CAN BE OBTAINED FROM DRAGONSLER, 2606 PONDEROSA DR., OMAHA, NE 68123.

MICROPENDIUM- CALL TRACE WITHIN A PROGRAM BY USING CALL INIT:: CALL LOAD (-32699,16) FOR TRACE ON, (-32699,14) FOR TRACE OFF, -32699,15 FOR TRACE OFF AND NUM COMMAND ISSUED AFTER PROGRAM STOPS RUNNING. GOOD, EH??

DONT FORGET THAT WE HAVE A DISCOUNT OF 10% FROM OLYMPIC SOFTWARE, 153 KING STREET, ROOM 104, ST. CATHERINES, ONT., L3B 7J8. 416-682-3446. A COPY OF THEIR CATALOGUE IS IN OUR ARCHIVE LIBRARY.

ALSO ANOTHER AD IS **IN** OUR ARCHIVE LIBRARY FROM INFORMATION ASSOCIATES, PO BOX 2207, OAK GROVE BRANCH, ACWORTH, GA. 30101, (404) 428-9050.

COMPUTER SHOPPER - RANDY HACOMBS'S POPULAR "THE INNERMOST SECRETS OF THE TI 99/4A" IS NOW IN BOOK FORM. IT IS AVAILABLE FROM COMPUTER SHOPPER, PO BOX F, TITUSVILLE, FL 32781. PRICE IS A LOW \$5.95 (US). SEND FOR YOURS TODAY!!!

FROM CIN-DAY U.G. A NEW TI PUBLICATION CALLED SOFTEX AVAILABLE FROM SOFTEX MAGAZINE, 59 LANDSTRAN QUADRANT, KILSYTH. 3137. VICTORIA. AUSTRALIA. IT IS PRODUCED BI-MONTHLY FOR \$37.00(US). (* - I SUGGEST YOU INQUIRE FROM THEM FIRST. REVIEWS ARE FAVOURABLE BUT PRICE IS A LITTLE HIGH EXPECIALLY AT AN ISSUE EVERY TWO **MONTHS** AND AT A PRICE OF \$8.00 PER ISSUE IN CANADIAN FUNDS. BUT THEN IT IS ANOTHER PUBLICATION!!!).

CIN-DAY - AS OF SEPTEMBER 24, 1984. NO ONE HAS YET SOLVED CHALLENGER SOFTWARE INTERNATIONAL'S GAME. "SPY'S DEMISE". FOR THOSE WHO DO SOLVE IT, YOU WILL RECEIVE FREE SOFTWARE. BUT YOU WILL HAVE TO FULFILL THE FOLLOWING CRITERIA: FIRST TWO PEOPLE IN EACH STATE, EACH CANADIAN PROVINCE, AND EACH OTHER COUNTRY.

MICROPENDIUM ADS: "GRAPHIC CONSTRUCTION KIT". AN E/A GRAPHIC PACKAGE WHICH CAN: WRITE ANOTHER PROGRAM BASED ON YOUR "PICTURE"; CREATE, SAVE AND EDIT CUSTOMIZED CHARACTERS; ROTATE CHARACTER 90 DEGREES; FLIP CHARACTERS UPSIDE DOWN OR SIDWAYS; MOVE CHARACTERS A SPECIFIED NUMBER OF PIXEL LOCATIONS; CHANGE FOREGROUND AND BACKGROUND COLORS; USE INVERSE VIDEO; SAVE AND LOAD FROM DISK AND MERGE. AVAILABLE FROM INFOSOFT, PO BOX 1484, GROTON, CT., 06340 FOR \$29.95 (US).

COMPUTER SHOPPER - ANOTHER PUBLICATION CALLED SUPER 99 MONTHLY IS AVAILABLE. MONTHLY FOR IS \$12.00 US FROM BYTEMASTER COMPUTER SERVICES, 171 MUSTANG STREET, SULPHUR, LA, 70663.

WINNIPEG U.G. - BORLAND INTERNATIONAL, THE PRODUCERS OF TURBO PASCAL (* - FOR OTHER COMPUTER), MAY PRODUCE A VERSION FOR THE 99/4A IF ENOUGH RESPONSE IS RECEIVED. IT WOULD NOT REQUIRE A P-CODE CARD AND WILL REQUIRE A FULLY EXPANDED SYSTEM. SO PLEASE WRITE YOUR INTENTIONS TO BORLAND INTERNATIONAL, 4113 SCOTTS VALLEY DRIVE, SCOTTS VALLEY, CALIFORNIA, 95066.

JUST RECEIVED QUALITY 99 SOFTWARE'S UPDATED AD. THEY ARE HAVING A LIMITED TIME OFFER OF 10% OFF ALL THEIR PRODUCTS IF ORDERED PRIOR TO MARCH 31, 1985. THEIR ADDRESS IS 1584 COLUMBIA RD. #500, WASHINGTON, DC, 20009, (202) 667-2574. SOME HIGHLY PROFILED PROGRAMS ARE: DRAW 'N PLOT, DISK MANAGER III, DATABASE 99, SDUMP, CHARTMAKER, AND QS WRITER. MORE LISTED. CHECK IT OUT IN OUR ARCHIVE LIBRARY.

IF YOU HAVE ANY QUESTIONS ON ANY OF THE ABOVE TID BITS, I PLEAD WITH YOU TO WRITE THEM DOWN ON PAPER, (SO YOU WONT FORGET) AND PRESENT IT AT THE NEXT MEETING. ALSO IF YOU DO SUBSCRIBE OR PURCHASE ANY OF THE ABOVE, PLEASE MENTION OUR NEWSLETTER, STICC, AS A REFERENCE. YOUR EFFORTS WILL CERTAINLY BE REWARDED!!!

CHICAGO'S COMPUTER FAIRE

EDITED FROM WINNIPEG U.G.
ORIGINALLY FROM MICROPENDIUM
AUTHORED BY DAVID WAKELY

ON NOV 10, 1984, THE CHICAGO TI U.G. HELD ITS SECOND ANNUAL 99/4A COMPUTER FAIRE. 21 VENDORS WERE ON HAND AND ABOUT 1,500 PERSONS PASSED THROUGH. DOOR PRIZES, FREE COPIES OF MICROPENDIUM, ZENITH MONITORS, ETC. WERE GIVEN AWAY.

INTRODUCTIONS, REVIEWS, AND TUTORIALS WERE WELL ATTENDED. BUT THE BEST YET!! A NEAR LEGENDARY TI 99/8 WAS DISPLAYED BY SOFTMAIL INC. DON BYNUM, FORMER HEAD OF THE TI'S COMPUTER HOME DIVISION, AND NOW LEADING SOFTMAIL, STATED ONLY 250 OF THEM WERE BUILT AND ALL ^{given to} THE DESIGN TEAM, EXECUTIVES AND PRODUCTION LINE EMPLOYEES. IT HAS 64K CPM RAM AND 16K VDP RAM. A BUILT IN P-CODE SYSTEM, A TI-9995 CPU, AND BUILT IN BASIC, COMPATIBLE TO EXTENDED BASIC ^{WITH} ADDITIONAL COMMANDS. IT IS WIDER AND DEEPER THAN THE 99/4A AND FULL "SELECTRIC" STYLE KEYBOARD LAYOUT. AN OPTION SCREEN OFF "SLOW" (99/4A - 3.5 MH) PROCESSOR SPEEDS.

WHEN QUESTIONED AS TO WHY TI NEVER BROUGHT THE 99/8 TO MARKET, BYNUM STATED THAT SOME TI EXECUTIVES DOUBTED THAT THE PUBLIC WOULD BE INTERESTED IN A HOME COMPUTER WITH A SUGGESTED RETAIL PRICE OF \$6.00. HE ALSO STATED THAT RELEASE OF THE DESIGN BY TI WOULD BE "PRACTICALLY NIL" NOTING THAT THEY WOULD PROBABLY NOT WANT TO SEE SOMEONE ELSE MAKE MONEY ON A PRODUCT THAT TI NEVER SAW FIT TO MARKET. BUT BYNUM DID EXHIBIT A GUARDED OPTIMISM ABOUT FUTURE OF THE 99/4A.

OTHER FAIRE ATTRACTIONS WAS UNISOURCE ELECTRONICS DISPLAY OF THE 9900 MICRO EXPANSION SYSTEM FROM CORCOMP INC., TUTORIALS BY SAM PINCUS ON CONTROL CODES AND THE TI-WRITER, AND LEN ROUNER'S INTRODUCTIONS TO MICROSOFT MULTIPLAN. IT WAS ALSO STATED THAT 24 MILLION 99/4A UNIT WERE SOLD, MAKING IT BY FAR THE LARGEST SELLING COMPUTER OF ANY KIND.

WARPED DISK AWARDS

FROM OTTAWA U.G. AS PRINTED IN
THE DEC ISSUE OF POPULAR COMPUTING

1. THE HONOURABLE MENTION TO THE TI 99/4A FOR THE UNDERDOG CATEGORY.

2. THE LEAST PORTABLE COMPUTER AWARD WAS THE TI PORTABLE COMPUTER WEIGHING IN AT A HERNIATING 44 POUNDS.

3. THE MOST OVERRATED COMPUTER WAS THE IBM PC. OTHERS MENTIONED WERE MACINTOSH, ADAM, COMMODORE 64, IBM PCJR, APPLE IIC AND IIE.

4. HOW ABOUT THE HONESTY IN ADVERTISING AWARD TO A T AND T FOR SELECTING THE DEATH-STAR AS ITS CORPORATE SYMBOL.

5. THE MOST UNPRONOUNCEABLE ACRONYM AWARD GOES TO NAPLPS. A GRAPHICS TRANSMISSION STANDARD KNOWN IN FULL AS NORTH AMERICAN PRESENTATION LEVEL PROTOCOL SYNTAX (FRIENDS CALL IT NAP-LIPS)

6. THE MOST OVER USED COMPUTER TERM... USER FRIENDLY FOLLOWED BY INTERFACE.

7. THE HARDEST GAME TO WIN AWARD GOES TO THE ZORK SERIES FOLLOWED BY ZAXXON, DINO EGGS, WITNESS, MICROBE AND FLIGHT SIMULATOR.

8. FINALLY ANOTHER SPECIAL FOR TI, A DISGRUNTLED TI AFICIONADO NOMINATED TI FOR A SPECIAL WARPED DISK AWARD FOR "EFFORTLESSLY CHANGING OVER 2 MILLION OF THEIR POPULAR TI99/4A COMPUTERS INTO WHITE ELEPHANTS AT THE FIRST SNIFF OF A PEANUT."

CALL LOADS

EDITED BY DENNIS HANCOCK

CALL LOADS is a regular column in SUBFILE99 featuring various CALL LOADS and CALL PEEKS that can be used on the TI Home Computer. In order to use these LOADS and PEEKS you must have the ED/ASSM, X-BASIC or MINI-MEMORY Modules and 32K Memory Expansion. Do you have interesting LOADS or PEEKS that you have found? Why not send them in to SUBFILE99 (TI5361) and share them with your fellow TI'ers?

GETTING A LINE ON YOUR PROGRAM

Have you ever wondered how your TI console stores and reads the BASIC program you type in? Well, I have! It all started when I began to have problems with one of my consoles. Every time I EDITed an existing line, other lines got "messed up" or even MOVED to some other part of the program! Eventually, I had to have the console replaced, but it didn't keep me from becoming curious. I was determined to figure out how this could happen. When I finally found the answer, I learned a great deal about how the TI keeps track of the program we type into it. Below is some info that you can use to get "computer's-eye-view" of the program you have typed in.

IT TAKES TWO TO TANGO

Any BASIC operating system has to keep track of every line of code you type in. It not only has to keep track of the program data, but it also has to keep track of the line numbers, too! The TI BASIC system uses two different areas for this; 1) the Line Number Table and 2) the Program Area.

All this info is stored in the highest memory available to the console. For TI BASIC that will usually be

somewhere around address 14228 and for X-BASIC with MEMOR EXPANSION, somewhere around address -28. This all depends on the number of files open (as in CALL FILES(1)) and whether the disk drives are attached, etc.

PROGRAM FIRST

The actual lines of program code are stored first. Each line of code is stored in a series of bytes. Most all reserved words like PRINT, INPUT, REM, etc., are stored as a single byte value called a TOKEN. For instance, the TOKEN values for the the above three words are 156(9C), 146(92) and 154(9A). TI BASIC also keeps track of variables, constants and jump references in a similar way. Each line is preceded by a length byte and, at the end of each line, the value 0(zero) is placed to indicate the end of the line.

As each line is typed in, the BASIC operating system translates it into these byte values and stores it at the top end of the available memory. When you EDIT a line or INSERT a new line between existing ones, that new line is stored at the "end" of the Program Area, not inserted into the middle. This is important to remember when trying to locate a line of code! Note also that the line numbers (i.e. 100,110,120,etc.) are NOT stored with the line of code. This allows the TI system to easily RESequence your program, and allows the system to place lines at any available memory location instead of in execution order only. So where are the line numbers? In the Line Number Table, of course!

THE LINE NUMBER TABLE

After all the lines of code are stored, the Line Number Table begins. Each line of code has 4(four) bytes of information in the Line Number Table; two bytes for the line number (>0064=line 100), and two bytes for the memory address where the line of code is stored (>FFE7--28). When th BASIC interpreter is running the program it looks at the Line Number Table, gets the line number and the line address, branches to the address, gets the actual program line and THEN performs the line of code! Not so simple, eh?.

Since the Line Number Table is stored at the end of all the program lines, each time you add a new program line, the entire table has to be "shifted" downward into lower memory. This is why, especially in a long TI BASIC program, it takes quite a while for the cursor to "come back" after you have EDITed a line. The operating system must code the line, shift all the line numbers and addresses downward and then insert the new line number and address into the table. That would take anybody a little time!

PEEKING AROUND

Let's look in on the operating system as it does all this stuff! Here's what we'll do:

1) Enter X-BASIC (or TI BASIC with ED/A or MINIMEM module) and type:

```
100 PRINT "THIS IS A TEST"
```

2) Find Line Number Table:

To find the Line Number Table, PEEK into the CPU RAM PAD at address -31950; get two consecutive bytes; convert these bytes to decimal; subtract 3 bytes (overhead) and, if your are using X-BASIC with MEMORY EXPANSION, subtract 65536; you now know the address where the line table starts!

```
CALL PEEK(-31950,A1,A2)
LT=41*256+A2-3-65536
```

In X-BASIC, the value should be -47 and in TI BASIC it should be 14273. As each line of code is typed in, the table will move farther down into memory.

3) Get the line and address:

Using the start of the Line Number Table, get the first line of code and the address where it is stored. In X-BASIC this is stored in MEMORY EXPANSION so you use the following:

```
CALL PEEK(LT,L1,L2,A1,A2)
LN=L1*256+L2
LA=A1*256+A2-65536
LT=Line Table Address (-47)
LN=Line Number (100)
LA=Line Address (-42)
```

In TI BASIC, the program is stored in the console itself, therefore you must look into the VDP area with the command PEEKV:

```
CALL PEEKV(LT,L1,L2,A1,A2)
LN=L1*256+L2
LA=A1*256+A2
LT=Line Table Address (14273)
LN=Line Number (100)
LA=Line Address (14278)
```

4) Get the line length:

Each line of program code is PRECEDED by a length byte. This tells the system how many bytes to interpret. To find the line length, read the byte PRECEDING the Line Address:

```
X-BASIC: CALL PEEK(LA-1,LL)
TI-BASIC : CALL PEEKV(LA-1,LL)
```

In both cases, LL=18.

5) Read the Program Line:

Now all we have to do is read in 18 bytes of code starting at the Line Address (LA):

```
X-BASIC:
CALL PEEK(LA,A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,
PRINT A;B;C;D;E;F;G;H;I;J;K;L;M;N;O;P;Q;R
TI-BASIC:
CALL PEEKV(LA,A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,
PRINT A;B;C;D;E;F;G;H;I;J;K;L;M;N;O;P;Q;R
```

In both cases, the values A-R will equal: 156 199 14 84 72 73 83 32 73 83 32 65 32 84 69 83 84 0

```
156 - Token value for PRINT
199 - indicates a string value
14 - length of string
```

The rest of the bytes are ASCII values for the string

(S4=T, 72=H, 73=I, 83=S, etc.).

POKING AROUND

Now let's see if we can't reverse the process. This time we'll do a few POKES into memory that will make the computer think you typed in a line of code! Here's what we'll do:

- 1) Clear memory and type CALL INIT.
- 2) Set up line Table:

The system needs to know where the line table starts, so:

```
CALL LOAD(-31950,A1,A2)
```

```
X-BASIC: A1=255, A2=220
```

```
TI BASIC A1= 55, A2=204
```

- 2) Insert line # and address:

Next we need to fill up the line table with line and address data:

```
X-BASIC:
```

```
CALL LOAD(-39,0,100,255,222)
```

```
TI BASIC:
```

```
CALL POKEV(14281,0,100,55,206)
```

- 3) Insert line length and line code.

Now all we need to do is insert the line data:

```
X BASIC:
```

```
CALL LOAD(-35,10,156,109,6, 72,69,76,76,79,33,0)
```

```
TI BASIC:
```

```
CALL PEEKV(14285,10,156,199,6, 72,69,76,76,79,33,0)
```

- 4) LIST YOUR PROGRAM!

Because the system has not been properly informed as to where the program ENDS, this is not "RUNable" code. But at least you can see your work!

EXAMPLE PROGRAM

Below is a program that will "read itself." Using the tools we learned above, this routine will read the Line Number Table, and find the Line Address and Line length. After each line is found, the program waits for you to hit a key before it reads the next line.

NOTE: This program is written for TI BASIC with ED/A or MINIMEM modules. To use it with the X-BASIC and MEMORY EXPANSION you need to make a few changes:

- 1) Line 220 - add -65536 to the end of the line.
- 2) Line 260 - change PEEKV to PEEK.
- 3) Line 290 - add -65536 to the end of the line.
- 4) Line 330 - change PEEKV to PEEK.

ONWARDS!

Armed with this info, you can begin to learn more about how the TI system works and you can use these tools to help read AND write your own programs. A number of programmers place routines like this into their programs as a way of "protecting" valuable code sequences or algorithms from prying eyes. It's usually called "imbedded code." You can also use routines like this to translate a text line into program format once you learn to decode all the token values!

```
120 REM ***** 130 REM *PROGRAM PEEKER * 140
REM ***** 150 REM 160 REM 11/84 170 REM
SUBFILE99 180 REM 190 CALL INIT 200 CALL CLEAR 210 REM
220 REM *FIND LINE TABLE* 230 REM 240 CALL PEEK(-31950,A1,A2)
250 LT=A1*256-A2-3 260 REM 270 REM *GET LINE & ADR* 280 REM
290 CALL PEEKV(LT,L1,L2,A1,A2) 300 LN=L1*256+L2 310 IF LN=0
THEN 570 320 LA=A1*256+A2 330 REM 340 REM *GET LINE LENGTH*
350 REM 360 CALL PEEKV(LA-1,LL) 370 REM 380 REM
***** 390 REM *PRINT THE DATA* 400 REM
***** 410 REM 420 PRINT "LINE";LN 430 PRINT
"ADDR";L 440 PRINT "LEN ";LL 450 PRINT 460 CALL
SOUND(150,1400,0) 470 CALL KEY(0,K,S) 480 IF S=0 THEN 470 490
REM 500 REM *UPDATE LT* 510 REM 520 LT=LT-4 530 GOTO 290 540
REM 550 REM *END* 560 REM 570 PRINT "END OF PROGRAM" 580
PRINT 590 END
```

LIBRARIAN REPORT

This is the first of what I hope is many reviews of the programs that S.T.I.C.C. has on disk and on tape for the members of the club. I have looked at the programs on DISK #1 and below you will find a brief description of each program on that disk:

BEETHOVEN'S 9th by S.Tucker in 99'ER MAGAZINE, Extended BASIC language. Date of issue not given. This is a pleasant rendition of Beethoven's well known melody using CALL SOUND statements. The graphics consists only of a title screen. However the music could be merged into your own program to provide a musical background or interlude.

CYBER-DICE by Curt Garcia also an Extended BASIC program from 99'ER MAGAZINE, and again the issue is not given in the REMS. This is a dice game for 1 to 6 players. It is based on the principle of Yatzee. The computer keeps track of your moves and allows each player to play on any one of 3 games for each roll. There are some minor bugs in it up to the point where the game really begins, then a major bug pops up - I can't make it work. End of game! If you can make it work, please tell me - and other Newsletter readers, what I did wrong. I am sure that your contribution to the newsletter will be appreciated. This is an example of how putting the full credits into the REM statements would help. If the issue were given, it would be easier to start looking for the error.

GOLDRUSH by W.K.Balthrop, 99'ER MAGAZINE, XBASIC. This is a graphics game (with fairly neat graphics, by the way) in which the player apparently tries to get to the gold, but since it does not have any instructions and I don't know which issue of the magazine it came from, there is no way that I could get the gold - and I was going to use it to buy each of the club members a new VIC-20 computer - or maybe an Adam. Tough luck folks!

SHERLOCK by James West. An XB text game - no graphics whatever and only a few notes of sinister(?) music when the game begins. It is a whodunnit mystery story that requires the player to remember the character's names, and the locations (rooms) and from that to ask questions until he/she can deduce who dun it. However the question format is multiple choice and completion. eg: Question #1- 1 Ask question about time. 2 Ask question about place. 3 Ask question about people. 4 Solve mystery. 5. Give up mystery. ENTER NUMBER __ If you choose #3 it asks "who to question" and you have to remember the names that were listed at the beginning in order to enter a name - spelled correctly.

SPACEBLAST. Another James West game. And would you believe it - I don't have my notes on this one. Maybe they self-destructed because it was the same as the last. Oh, well. Just another mystery for you to solve.

SPRITECHASE, by Ron Binkowski. From 99'ER MAGAZINE in XB. This game is really intended merely to give a novice programmer a lesson in using sprites and related statements, such as CALL MOTION, CALL MAGNIFY, and CALL COINCIDENCE. It could be used as a learning game for a young child if the sprites were slowed, and a subroutine added that used the

speech synthesizer to voice the next letter or number to be chased. (There's a challenge for you!) This program can also be found in "Best of 99'er Vol.1"

Also on Dist #1 is the Librarian's CARDFILE which allows the user to browse through the selection of programs from the club's disks. A description of the use of CARDFILE was printed in the last Newsletter - - WHAT! YOU THREW IT AWAY! Shock!! utter disbelief!!! etc. etc. !!!!! Well! I guess I know who not to write for next time! Anyway, it's your turn next month. Please. 'Bye for now.

GORDON HILLMAN

EA COLOR CHANGE

CHANGING COLORS IN THE EDITOR ASSEMBLER

by Terry Atkinson with thanks to Tom Freeman, who inspired this article.

Some time ago, Tom Freeman provided me with a method whereby the color defaults on the EA EDIT1 program could be changed by using the TI-FORTH disk-fixer. Not being "handy" with using this elusive (to me) language, I decided to attempt to accomplish the same end by using a standard disk-fixer. It worked!

Why change the colors? Well, some of us are using green/orange monitors, or black & white TV's and white letters on a blue background do not show up that well. Others may just want a CHANGE.

The theory provided by Tom, is that every bit of memory space is required by the editor program and data generated by the user. Hence, he used an area of the program utilized by TI to display their copywrite. In this space, he wrote a little assembly language sub-utility to produce the color change, and is, in essence, a VWTR to change VDF reg 7.

Here's how to do it.

First, transfer the EDIT1 file over to a freshly initialized disk. Then boot up your favorite disk fixer. If you don't have one, DISKO, the TI in-house disk fixer is available from the TINS library for a nominal charge (although use of that version will not coincide exactly with what I am about to put forth).

Once the fixer is booted up, call in sector 22. This sector is headed by words; 0000 1700 2000 55AA. Ensure you got the right sector. Now locate the word at 0024. It should read 2843 Using the (A)lter command, change this, and the next consecutive 15 words to read:

```
2020 C800 C01E 0200 8717 06C0 D800 8C02  
06C0 D800 8C02 C020 201E C020 FFDS 045B
```

Write sector 22 back to the disk, and call in sector 24. This sector is headed by words; 0014 0420 2D82 1000. Again, check to ensure you have the proper sector loaded. Now locate the word located at 00B8. It should read C020. Change this and the next word to read; 06A0 2020. Write sector 24 back to the disk and that's it. You're done!!

Check out your work by loading the EA using the EDIT utility. You should now have a cyan screen with black lettering. If you don't like that color combination, there is

morning stopping you from selecting your own colors. Merely load sector 22 back in and change the word at 0020 which now reads 8717 to read 87XX, where XX is equal to your own preferred color combination. (See the EA manual, page 330). Write the out.

Now, one for you. How about some different colors in the TI-Writer? Can it be done? If so, let me know how. I don't particularly like all the color combinations in that utility either!!

For the curious, I have the source code for the above routine. Although it is not very useful, you can have it for the asking. Also, if you don't think yourself capable of doing the chore, I can do it for you. Just send me a disk with the EDIT1 program on it, along with your preferred color combination and a couple bucks for postage & I will make the changes & get it back to you.

SOURCE CODE Here it is. begins.....

```
-----
AORG >22B2      TWO WORDS TO BE REPLCED, TO BRANCH OUT OF
PROGRAM
BL @ 2020      THE WORDS REPLACED ARE >C020, >FFD8
ACRG >201E
MOV 0,@>201E   TO SAVE REGISTER 0 WHICH NEEDS TO BE USED
LI 0, 8717    FIRST NYBBLE MUST BE8, 2ND IS THE REGISTER
TO BE CHANGED      THIRD IS FG COLOR AND 4TH IS BG
COLOR
SWPB 0        NEED TO WRITE LSB FIRST
MOVB 0,@>8C02  VDP WRITE ADDRESS(AUTO INCREMENTS)
SWPB 0
MOVB 0,@>8C02 THIS COMPLETES CHANGING VDP REG 7
MOV @>201E,0  PRESERVES THE PREVIOUS WS REG 0
MOV @>FFD8,0  THESE ARE THE BYTES REPLACED BY THE BL
INSTRUCTION
RT            RETURN TO ORIGINAL PROGRAM
(* - TERRY'S ADDRESS IS: )
Terry Atkinson
28 SAVONA CT.
DARTMOUTH, N.S.
CANADA B2W 4R1
(902) 434-1346 VOICE
(902) 434-3121 TIBBS
SOURCE ID TI6450
```

MICKEY MOUSE FROM THE CIN DAY U.G. BY MEMBER DAVE ROSE

```
100 REM MICKEY MOUSE 110 REM 120 REM WRITTEN BY: 130 REM 140
REM DAVE ROSE 150 REM 160 REM CIN DAY USER GROUP 170 REM 180
CALL CLEAR 190 CALL SCREEN(16) 200 FOR A=1 TO 14 210 CALL
COLOR(A,2,1) 220 NEXT A 230 FOR B=35 TO 138 240 READ AS 250
CALL CHAR(B,AS) 260 NEXT B 270 RESTORE 600 280 FOR C=2 TO 13
290 FOR D=13 TO 19 300 READ E 310 CALL HCHAR(C,D,E) 320 NEXT D
330 NEXT C 340 FOR F=18 TO 20 350 FOR G=6 TO 26 360 READ H 370
CALL HCHAR(F,G,H) 380 NEXT G 390 NEXT F 400 CALL KEY(O,I,J)
410 IF J=0 THEN 400 420 CALL CLEAR 430 END 440 DATA
0000000000000001,00000000073F7FFF,00000000S0F0FSFC,0000000
73FFFFFFF,00C0F0FCFEFEFFFF 450 DATA
0002070707070707,FFFFFFFFFFFFFFFF,FEFFFFFFFFFFFFFFE,0000000
30303E1FFE3C1,FFFFFFFFFFFFFCFS 460 DATA
07030301,FFFFFFFF7F1F,FFFFFFFFECE1C1C3C,C3S11820200E112,8C9
,FF7738381C1C1E1E,F0C 470 DATA
3C3C3E3E3F3F301,202026272712S001,011939391100FSFC,1E3E3E3E
804040,2020202110100SC7 480 DATA
014181404020100F,FCFCFSF0000106FC,402050818204186,40408,00
F,000FFFFF7FE7EFD 490 DATA
C2F1FFFEFFFFFFFF,2409F3078FFFFFFFF,8000008080C0C0E,0F0F0604
387878787161,1F070060F0F0F0F 500 DATA
FFFFFFFF7B3B131F0F,E0E0F0F0F8F8FCFC,08080808040404,0101,F0
C10101,F0E0E08,0808080403 510 DATA
0010080402EF1F0F,0000000000FF7FBF,101008080830CEC1,0000000
0000001F608,0703010100C03CD3
520 DATA BFDFDFEFEF77B71B,C0C0E0E0E0F0FSFC,1F,00F806010101063S,0001010
530 DATA S000000000008040,000C020101,1F0B080C0AS94804,FBF8F00000S10204
08,000000C0300S0404,20180403
540 DATA 000000807F,040A1960S,081000C020180601,00000000000002FC,040464
FCFCFC2038383C,0303030300010103
550 DATA F0F0F0F0C0C0C0C0,307878300000007,000000000000003E,1C1C1C04040
0000000000FS,000000000000001F
560 DATA 000000000000007C,343633333131FCFC,02060C0C9898F363,C0C0C0C0C0
010101010107C,7F7F41404040417F
570 DATA 040404050604041F,FSFS60S04060307C,7F7F41417E40417F,1F1F040402
C1010202040C,FCFC,6303,F0F0
580 DATA 7C7C,7F3E,1F1F,0000000000030303,8C80808080E0E0E0,00000000000
000000007,7F7F41414141417F
590 DATA 1C1C0S080S080S0F,71712121202021F9,FCFC0400FS0404FC,0F07,F9BS.
600 DATA 35,36,37,32,38,39,40,41,42,43,44,45,42,46,47,48,49,50,51,52,5
610 DATA 32,32,54,55,56,57,58,32,32,59,60,61,62,63,32,64,65,66,67,68,3
620 DATA 32,69,70,71,72,73,32,32,74,75,76,77,78,32,32,79,80,81,82,83,5
630 DATA 32,84,85,86,87,88,89,90,91,92,93,94,95,96,32,97,98,99,100,101
640 DATA 103,104,105,106,107,108,109,107,110,111,32,32,32,103,104,105,
1,109,107
650 DATA 112,113,114,115,116,117,118,119,120,121,32,32,32,112,113,114,
4,115,119
660 DATA 122,123,124,125,126,127,125,126,128,129,32,32,32,122,123,124,
7,128,126
```