

ISSUE # 59 JULY 1990

by Frank N. Zic  
(Acting Secretary)

The June 19, 1990 meeting was called to order by President Mickey Schmitt at 7:00 PM. She thanked Jack Skinner for bringing in the GOODIES!! and Don McCalla for his cooperation between the PUG and WP99'ER groups. Lynn gave a favorable Treasurer's report. I had no corrections or additions to the minutes. Bob brought in the library and is resting for next month's large copying spree. Joe was at work. Joy sticks and a power strip have been added to the club's inventory. Mickey passed out ordered copies of TIPS (15 disks) and showed the booklet with all the pictures printed out. Gary gave an update on the BBS and said that Mickey has uploaded 6 new adventure games. There has been a new problem with the board shutting itself down. No fix is available yet. He also said that club member, Chris Pratt, now has for sale a new Hard Floppy Drive Control Card for \$225. This unit, by the way, was made on John and Scott's prototype board. Looking for a large group discount order, contact Gary Taylor.

Two VCR tapes will soon be available on the Lima Fiest. Many fairware and public domain disks were copied, thanks to the Lima group, and will soon be on the PUG BBS and in the libraries of both West Penn and PUG. Gary's demo at the fair of his TI CC40 portable system went well indeed. A new module box kit to hold the chips for 6 different modules was purchased. It will be a club project, contact Mickey if you would like to assemble the kit. John sent newsletters to the disbanded Airport TI user's group inviting them to join our club or the PUG. John came in late with his family and left early without his looked forward to comments. Identifile by Mike Dodd was mentioned to be a good program and to show its capabilities. A contest was held to show what the program handles. It sets up the running of almost any type of program format. The winner of the difficult contest was yours truly, of course. The prize was the (15) disk set of TIPS. TIPS was also the prize in the regular raffle, won by Richard Ohi. An official notice has been made that PRESS will not be completed. Sorry folks. There was simply too much to be done in too little space. You all know the 10 lb \_\_\_\_\_, 5 lb bag story. Looks like a shorter report this time. May the good 4's be with you.

WEST PENN 99'ERS CLUB INFORMATION

NEXT MEETING DATE: JULY 17, 1990
MEETING LOCATION: ST. STEPHEN'S BYZANTINE CATHOLIC CHURCH
JUST OFF ROUTE 30 BETHEL ROAD, NORWIN
TIME OF MEETING: 7:00 P.M.

LIST OF WEST PENN OFFICERS FOR 1990

PRESIDENT: MICKEY 335-0163
VICE PRESIDENT: SCOTT 523-3754
TREASURER: LYNN 835-4304
RECORDING SEC: ED 864-4924
CORRESPONDING SEC: GENE 829-0469
LIBRARIAN: BOB 863-5672
NEWSLETTER EDITOR: JOHN 527-6656

GENERAL ITINERARY OF THE CLUB'S MEETING

6:45 P.M. DOORS OPEN
7:00 P.M. GENERAL MEETING
7:45 P.M. DEMOS AND NEW INFO
8:45 P.M. HARDWARE & PRINTERS
8:45 P.M. INTRO TO ASSEMBLY
11:00 P.M. DOORS CLOSE

MEETING HIGHLIGHTS FOR THIS MONTH

T.I. PRODUCTS REPORT FROM THE LIMA SHOW

GIFFFY ( V.O.9 ) DEMO BY MICKEY SCHMITT
KARATE CHALLENGE GAME DEMO BY FRANK ZIC
COLUMN ATTACK GAME DEMO BY FRANK ZIC
WEST PENN LIBRARY DEMO BY BOB SADUSKY
LATEST SOFTWARE DEMOS BY JOHN WILLFORTH

RENEW YOUR MEMBERSHIP DUES!

\$15.00 PER YEAR FOR INDIVIDUAL / FAMILY
\$10.00 PER YEAR FOR JUST THE NEWSLETTER

DAY OF THE WEEK

BY ROBERT NEAL OF THE TI USERS GROUP OF WILL COUNTY
(REPRINTED FROM THE MICROPENDIUM)

THE PROGRAM WILL COMPUTE A DAY-OF-THE-WEEK FROM A DATE ENTRY MM,DD,YYYY. COULD EASILY BE MERGED AND USED IN ANY NUMBER OF EXTENDED BASIC PROGRAMS.

```
100 INPUT "ENTER MM,DD,YYYY: ";M,D,Y
110 A=Y-(INT(Y/28)*28):: B=A/4 :: E=A-(INT(B)*7)
120 C$="511462403513" :: IF E=0 THEN IF M<3 THEN C$="40"
130 E=VAL(SEG$(C$,M,1)):: IF Y<1900 THEN A=A+12
140 G=A+INT(B)+D+E :: F=G-(INT(G/7)*7)
150 DATA SUN,MON,TUES,WEDNES,THURS,FRI,SATUR
160 RESTORE :: FOR B=0 TO F :: READ C$ :: NEXT B
170 PRINT "THE DAY IS ";C$;" DAY"
180 PRINT
190 INPUT "DO ANOTHER? (Y/N) : ";YN$
200 IF YN$="Y" OR YN$="y" THEN GOTO 100
```

THE FOLLOWING IS BY THOMAS DEQUINCEY "MURDER CONSIDERED AS ONE OF THE FINE ARTS" (1827) PRINTED IN THE JOHNSON SPACE CENTER USERS GROUP (JUG), JUNE OF 1990.

"IF ONCE A MAN INDULGES IN MURDER, VERY SOON HE COMES TO THINK LITTLE OF ROBBING, AND FROM ROBBING HE COMES NEXT TO DRINKING AND SABBATH-BREAKING AND FROM THAT TO INCIVILITY AND PROCRASTINATION.." AND EVENTUALLY TO MISSING THE MONTHLY TI MEETING! THANX

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HOUSEHOLD INVENTORY PROGRAM.....  
 BY BOB AUGUST FROM BUG NEWS (3 1990)  
 EXTENDED BASIC VERSION

THE PROGRAM IS A RECORDS TYPE PROGRAM TO RECORD YOUR HOUSEHOLD BELONGINGS. IT'S NOTHING FANCY BUT IT WORKS. YOU CAN ENTER UP TO 14 CHARACTERS FOR THE ITEM, 4 CHARACTERS FOR THE YEAR PURCHASED AND 7 DIGIT REPLACEMENT COST. IF YOU ARE USING A CASSETTE RECORDER FOR STORAGE THEN CHANGE THE TWO OPEN STATEMENTS TO OPEN #1:"CS1", INPUT AND OPEN #1:"CS1",OUTPUT.

```

100 ! HOUSEHOLD INVENTORY
110 ! IN TI EXTENDED BASIC
120 ! BY R.W. AUGUST
130 DIM ITEMS(100),YR$(100),
    COST(100):: N=0 :: T=0
140 DISPLAY AT(4,2)ERASE ALL
: "<< HOUSEHOLD INVENTORY >>
": : : "Press: " : " 1) To
Display items": : " 2) To
Enter new items"
150 DISPLAY AT(14,4):"3) To
Edit items": : " 4) To see
totals": : " 5) To Quit": :
: " Your choice [ 1 - 5 ]"
160 CALL KEY(0,K,S):: IF S=0
OR K=49 OR K=50 THEN 160 ::
CALL CLEAR :: ON K 48 GOSUB
1000,2000,3000,4000,5000
170 GOTO 140
180 ! LOAD DATA SECTION
190 DISPLAY AT(10,6)ERASE AL
L:"<< LOADING DATA >>" :: OP
EN #1:"DSK1.INV/DATA",INPUT
:: INPUT #1:N :: T=0
200 FOR I=1 TO N :: INPUT #1
: ITEM$(I),YR$(I),COST(I):: T
=T+COST(I):: NEXT I
210 CLOSE #1 :: RETURN
220 ! SAVE DATA SECTION
230 DISPLAY AT(10,6)ERASE AL
L:"<< SAVING DATA >>" :: OPE
N #1:"DSK1.INV/DATA",OUTPUT
:: PRINT #1:N
240 FOR I=1 TO N :: PRINT #1
: ITEM$(I):YR$(I):COST(I):: N
EXT I
250 CLOSE #1 :: RETURN
260 ! TITLE SECTION
270 DISPLAY AT(1,2)ERASE ALL
: "<< HOUSEHOLD INVENTORY >>
": : "HOUSEHOLD YEAR REP
LACE": "ITEM: PER: C
OST:"
280 DISPLAY AT(5,1):"-----
-----" :: RE
TURN
290 DISPLAY AT(24,2):"PRESS
ANY KEY TO CONTINUE"
300 CALL KEY(0,K,S):: IF S=0
THEN 300 :: RETURN
310 DISPLAY AT(12,6):"NO DAT
A IN MEMORY"
320 DISPLAY AT(14,1):"DO YOU
WISH TO LOAD OLD DATA": : "[
Yes or No] Y" :: ACCEPT AT(1
6,13)SIZE(-1)VALIDATE("YyNn")
:Y$

```

```

330 IF Y$="Y" OR Y$="y" THEN
GOTO 180 ELSE RETURN
1000 ! DISPLAY ITEMS SECTION
1010 IF N=0 THEN GOSUB 310 :
: IF Y$="N" THEN RETURN
1020 GOSUB 260 :: A=0 :: B=0
1030 FOR I=1 TO N :: A=A+1 ::
: B=B+1 :: DISPLAY AT(A+5,1)
: ITEM$(B):TAB(16):YR$(B):TAB
(21):"":STR$(COST(B))GOSUB
A=17 THEN 1050
1040 NEXT I :: GOSUB 290
RETURN
1050 GOSUB 290 :: A=0 :: CAL
L HCHAR(6,1,32,505):: GOTO 1000
2000 ! ENTER ITEMS SECTION
2010 IF N=0 THEN GOSUB 310 :
GOSUB 310 :: DISPLAY AT(6,1)E
RASE ALL:"WARNING! IF YOU
D NOT LOAD": "DATA, ALL DAT
A NOW SAVED"
2020 DISPLAY AT(12,1):"WILL
BE DESTROYED!" :: GOSUB 320
2030 GOSUB 260 :: DISPLAY AT
(6,1):"ENTER END TO QUIT"
2040 FOR I=1 TO 16 :: N=N+1
:: ACCEPT AT(I+6,1)SIZE(14):
ITEM$(N):: IF ITEM$(N)="END"
THEN N=N-1 :: GOSUB 220 ::
RETURN
2050 ACCEPT AT(I+6,16)SIZE(4
):YR$(N):: ACCEPT AT(I+6,22)
SIZE(7):COST(N):: T=T+COST(N
):: NEXT I
2060 GOSUB 290 :: CALL HCHAR
(7,1,32,572):: GOTO 2040
3000 ! EDIT SECTION
3010 IF N=0 THEN GOSUB 310 :
: IF Y$="N" THEN RETURN
3020 GOSUB 260
3030 DISPLAY AT(12,1):"ENTER
NAME OF ITEM TO EDIT" :: AC
CEPT AT(14,1):HI$
3040 FOR I=1 TO N :: IF ITEM
$(I)=HI$ THEN 3060
3050 NEXT I :: DISPLAY AT(16
,1):"NO MATCH FOUND" :: GOSU
B 290 :: RETURN
3060 DISPLAY AT(6,1):ITEM$(I
):TAB(16):YR$(I):TAB(21):"":
STR$(COST(I)):: ACCEPT AT(6
,1)SIZE(-14):ITEM$(I):: ACCE
PT AT(6,16)SIZE(-4):YR$(I)
3070 ACCEPT AT(6,22)SIZE(-7)
:COST(I):: GOSUB 290 :: RETU
RN
4000 ! Totals Section
4010 IF N=0 THEN DISPLAY AT(
12,6):"NO DATA IN MEMORY"
: " PRESS ANY KEY TO CONTINUE"
:: GOSUB 300 :: RETURN
4020 DISPLAY AT(1,2)ERASE AL
L:"<< HOUSEHOLD INVENTORY >>
"
4030 DISPLAY AT(10,1):"TOTAL
": : "NUMBER OF ITEMS:"N: :
"COST OF ITEMS: "STR$(T)::
GOSUB 290 :: RETURN
5000 ! EXIT SECTION
5010 CALL CLEAR :: END

```

# FRACTAL EXPLORER V.3

PROGRAM by MARK SCHAFFER  
BLUEGRASS 99 COMPUTER SOCIETY, INC.

REVIEW by WESLEY R. RICHARDSON  
NORTHEAST 99ERS, CLEVELAND, OH

FRACTAL EXPLORER version 3.00 is an Assembly language program which allows you to enjoy the beauty and complexity of the Mandelbrot set on the TI-99/4A. You do not need to understand the mathematics of fractals, but for those who are interested, a brief explanation is given at the end of this article in the appendix.

The minimum system requirements for running FRACTAL EXPLORER are a SSSD disk drive, 32K memory and either the Editor Assembler module, or an E/A #3 loader such as Funnelweb. A printer and color monitor are desirable, but not required.

Examples of two fractal images are shown on the following page, although on screen the images are displayed in multicolor mode with 48 by 64 positions. The program options include creating new fractals, loading previously saved images from disk, printing images, and the most fun, zooming. With a fractal on the screen, whether previously created or loaded from disk, pressing Z for zoom will cause a small corner cursor to appear on the fractal. This cursor is set to the upper left corner of the area you wish to zoom in on, and then another cursor is used to set the remaining three corners of the zoom area. The program will then calculate the new fractal, displaying on the screen as it goes. Each zoom will reveal new features, depending upon your position and magnification size.

Mark Schaffer, author of FRACTAL EXPLORER version 3.00, has increased the speed of the program by 2.5 times over that of version 2.00, and nearly 5 times that of Steve Langguth's version 1.00. Mark has also added many features and refinements to the program. The most impressive to me was Mark's writing of the binary fixed point routines for the calculations instead of the TI floating point routines. The binary fixed point increases the accuracy of the calculations as well as the speed, and is based on an article by Steve Garcia in Byte magazine.

Although they currently are only a mathematical curiosity, I am fascinated by fractals and perhaps you will be too. Mark Schaffer has done a great

job in improving FRACTAL EXPLORER and making the enjoyment of fractals available to the TI community.

The FRACTAL EXPLORER program is available from:

Mark Schaffer  
539 Whitaker St.  
Morehead, KY 40351

Requests for copies of FRACTAL EXPLORER must include 2 formatted diskettes (SSSD), a diskette mailer, return postage, and a suggested donation of \$10.00. You will receive the program, documentation, several fractal images, and the complete documented assembly source code. Instructions for modification of the source code for printers other than the Gemini 10X is also given.

## APPENDIX

The next two paragraphs are a brief explanation of fractals and the Mandelbrot Set. A fractal can be described as a mathematical concept for shapes which are best defined as having a fractional dimension. A plane has two dimensions, and a volume has three dimensions, but a fractal may have 1.3154... dimensions, for example. One characteristic of a fractal is that as you increase the magnification with which you examine the shape, the complexity continues to increase. Physical objects reveal additional features and detail with increasing magnification, thus fractals may one day be used to model nature.

The Mandelbrot Set is a specific fractal developed by Benoit Mandelbrot. To generate this fractal set, a point on the complex plane is selected, represented by Z. The Z value is squared, a constant, C, is added, and the distance to the origin is determined. If the distance is greater than 2, then stop the iteration process and color the point based on the number of iterations completed. If the distance to the origin is less than 2, then set the new Z value equal to  $Z^2+C$  and increase the loop count. If the loop counter reaches some arbitrary value, say 100 before Z reaches a distance of 2, then color the position black. In this manner, each point in an area of interest is colored according to the number of times the loop is completed for each point. The FRACTAL EXPLORER documentation further explains the mathematical concept of fractals and how the calculations are done.

900427WR



ROOT FINDER

Lucie Dorais published this very neatly programmed routine in the news letter of the Ottawa User Group. It will find any root, from square root to 9th root, of any number, by a brute force method, and show you its calculations on screen.

```

90 CALL CHARFAT(121,CH$):: C
ALL CHAR(33,CH$)
100 DISPLAY AT(1,1)ERASE ALL
:" ROOTS b! Lucie Dorais":
To find an! root from cube
root to 9th root"
110
120 ON WARNING NEXT :: PR$="
PIQ"
130 L$=RPT$(" ",28):: E$=RPT
$(" ",168):: S$=RPT$(" ",8)
140 CALL CHAR(120,"000000000
002050F",121,"1F102020404080
80",122,"018182C2C4646830",1
23,"0B0101",125,"FF")
150 DISPLAY AT(5,9):"x3y"&RP
T$(" ",10):S$&"(z" :: GOSUB
280
160 ACCEPT AT(6,12)VALIDATE(
NUMERIC)BEEP:N :: IF R>2 THE
N 180
170 IF R=1 THEN AV=N :: GOTO
220 ELSE AV=SQR(N):: GOTO 2
20
180 LD=0 :: HI=SQR(N)
190 AV=(LD+HI)/2 :: T=AV^R
200 IF OAV=AV THEN 220 ELSE
OAV=AV :: DISPLAY AT(12,8):A
V
210 IF N<T THEN HI=AV :: GOT
O 190 ELSE IF N>T THEN LD=AV
:: GOTO 190
220 AN=AV :: DISPLAY AT(12,8
)BEEP:"=";AN
230 DISPLAY AT(22,1):L$:" [A
Inoher [C]hange root [F
]rint [Q]uit"
240 CALL KEY(O,K,S):: IF S=0
THEN 240 ELSE K=POS("ACFQ",
CHR$(K),1)
250 IF K=0 THEN 240 ELSE ON
K GOTO 260,260,270,290
260 DISPLAY AT(7,12):E$:E$:E
$ :: IF K=2 THEN GOSUB 280 :
: GOTO 160 ELSE 160
270 OPEN #1:PR$ :: PRINT #1:
S$&" ----- ":S$&" "&ST
R$(R)&"/" :: PRINT #1:S$&"\
":N;TAB(26);"=";AN:"" :: CL
OSE #1 :: GOTO 240

```

```

280 ACCEPT AT(5,10)VALIDATE(
"123456789")SIZE(-1)BEEP:R :
: RETURN

```

Later on, Lucie found and published this mathematical method, which is faster but not as much fun to watch.

```

90 CALL CHARFAT(121,CH$):: C
ALL CHAR(33,CH$)
100 DISPLAY AT(1,1)ERASE ALL
:" ROOTS b! Lucie Dorais":
To find an! root from cube
root to 9th root"
110 !REVISED VERSION USING T
HE FORMULA AN=N^(1/R)
120 ON WARNING NEXT :: PR$="
PIQ"
130 L$=RPT$(" ",28):: E$=RPT
$(" ",168):: S$=RPT$(" ",8)
140 CALL CHAR(120,"000000000
002050F",121,"1F102020404080
80",122,"018182C2C4646830",1
23,"0B0101",125,"FF")
150 DISPLAY AT(5,9):"x3y"&RP
T$(" ",10):S$&"(z" :: GOSUB
280
160 ACCEPT AT(6,12)VALIDATE(
NUMERIC)BEEP:N :: IF R>2 THE
N 180
170 IF R=1 THEN AN=N :: GOTO
220 ELSE AN=SQR(N):: GOTO 2
20
180 AN=N^(1/R)
220 DISPLAY AT(12,8)BEEP:"="
;AN
230 DISPLAY AT(22,1):L$:" [A
Inoher [C]hange root [F
]rint [Q]uit"
240 CALL KEY(O,K,S):: IF S=0
THEN 240 ELSE K=POS("ACFQ",
CHR$(K),1)
250 IF K=0 THEN 240 ELSE ON
K GOTO 260,260,270,290
260 DISPLAY AT(7,12):E$:E$:E
$ :: IF K=2 THEN GOSUB 280 :
: GOTO 160 ELSE 160
270 OPEN #1:PR$ :: PRINT #1:
S$&" ----- ":S$&" "&ST
R$(R)&"/" :: PRINT #1:S$&"\
":N;TAB(26);"=";AN:"" :: CL
OSE #1 :: GOTO 240
280 ACCEPT AT(5,10)VALIDATE(
"123456789")SIZE(-1)BEEP:R :
: RETURN

```

REPRINTED FROM THE SPIRIT OF 99  
MAY, 1990

# AVIATION PROGRAM

AVIATION2 BY A MCLELLAN

```

100 REM *****
110 REM * AVIATION PROGRAM *
120 REM * BY A. MCLELLAN *
130 REM *16 ROBERT ALLEN DR *
140 REM * HALIFAX N.S. *
150 REM * CANADA B3H 2V7 *
160 REM * 26 JAN 90 *
170 REM *****
180 CALL CLEAR :: C=PI/180 :: CALL SCREEN(12):: DISPLAY AT(2,6):"Aviation Program"
190 CALL HCHAR(3,8,45,16)
191 DISPLAY AT(4,13):"by" :: DISPLAY AT(6,9):"A. McLellan"
185 DISPLAY AT(8,2):" This program performs all computations using trigonometry and therefore is completely accurate."
190 DISPLAY AT(17,6):"1 - Flight Plan" :: DISPLAY AT(19,6):"2 - Astronomical"
200 DISPLAY AT(23,3):"Select Program 1 or 2:1"
200 ACCEPT AT(23,25)SIZE(-1)BEEP VALIDATE("12"):K :: IF K=2 THEN GOTO 205
AR :: CALL SCREEN(4)
210 PRINT " Flight Plan Program" :: PRINT "
I " This program gives track,
220 PRINT " heading, distance, ground " :: PRINT " speed, time, and
:: PRINT " each of the legs, and the " :: PRINT " fuel for the entire flight,
230 PRINT " total time and total fuel " :: PRINT " for the entire flight,
:: PRINT " as many as ten geographic " :: PRINT " departure and destination
235 PRINT " positions (including both " :: PRINT "
:: PRINT " points). "
236 PRINT " Also gives latitude where "
240 PRINT " tracks cross intermediate " :: PRINT " longitude. Positions must
:: PRINT " be entered in degrees and " :: PRINT "
245 PRINT " minutes of latitude and " :: PRINT " longitude. All entries to
:: PRINT " be complete, with leading "
250 PRINT " zeros if required to fill " :: PRINT " all cues." :: GOSUB 900
260 CALL CLEAR :: DISPLAY AT(12,3):"Enter Number of Positions (Max 10):"
:: ACCEPT AT(14,18)BEEP VALIDATE(DIGIT):X
270 FOR I=1 TO X
280 CALL CLEAR :: DISPLAY AT(8,6):"Enter Position";I :: CALL HCHAR(9,8,45,16)::
DISPLAY AT(11,1):"LAT: 00 Deg 00 Min N N/S"
290 DISPLAY AT(13,1):"LONG: 000 Deg 00 Min W E/W" :: ACCEPT AT(11,8)SIZE(-2)BEEP
VALIDATE(DIGIT):LTD(I)
300 ACCEPT AT(11,15)SIZE(-2)VALIDATE(DIGIT):LTM(I):: ACCEPT AT(11,22)SIZE(-1)VAL
IDATE("NS"):LTI$
310 ACCEPT AT(13,7)SIZE(-3)VALIDATE(DIGIT):LGD(I):: ACCEPT AT(13,15)SIZE(-2)VALI
DATE(DIGIT):LGM(I):: ACCEPT AT(13,22)SIZE(-1)VALIDATE("EW"):LGI$
320 GOSUB 510
330 NEXT I
340 CALL CLEAR :: DISPLAY AT(10,1):"Enter TAS (Knots):" :: DISPLAY AT(12,1):"Ent
er Fuel (Lbs/Hr):" :: ACCEPT AT(10,22)BEEP VALIDATE(DIGIT):TAS
350 ACCEPT AT(12,22)BEEP VALIDATE(DIGIT):FF
360 FOR I=1 TO X-1
370 CALL CLEAR :: DISPLAY AT(14,1):"Enter Leg";I;"Wind: 000/000" :: ACCEPT AT(14
,19)SIZE(-3)BEEP VALIDATE(DIGIT):WD(I)
380 ACCEPT AT(14,23)SIZE(-3)BEEP VALIDATE(DIGIT):WS(I)
390 NEXT I
400 GOSUB 550
410 CALL CLEAR :: TT=0 :: FOR I=1 TO X-1 :: TT=TT+T(I):: NEXT I :: TF=TT*FF
420 FOR I=1 TO X-1
430 PRINT "Leg":I :: PRINT USING "Dist:#####m":D(I):: PRINT USING " TR:###":T
R(I):: PRINT USING " TH:###":HDG(I)
440 PRINT USING "G/S: ###K":GS(I):: PRINT USING " Time:## Hr":INT(T(I)):: PRI
NT USING " ## Min":(T(I)-INT(T(I)))#60
450 PRINT USING "Fuel:##### Lbs":F(I):: PRINT
460 IF I=4 THEN GOSUB 900
470 NEXT I
480 PRINT :: PRINT USING " Total Time:## Hrs":INT(TT):: PRINT USING " ## Mins"
:(TT-INT(TT))#60 :: PRINT
490 PRINT USING " Total Fuel:##### Lbs":TF :: PRINT :: INPUT " Find LAT where T
R crosses intermediate LONG (Y/N)?:":T$
500 IF T$="Y" THEN 630 :: IF T$="N" THEN 630
505 PRINT :: INPUT "Return to Main Menu (Y/N)?:":N$ :: IF N$="Y" OR N$="y" THEN
600 :: END
510 REM CONVERT TO RADIANS AND HEMISPHERIC SIGN CONVENTIONS
520 LT(I)=LTD(I)+LTM(I)/60 :: IF LTI$="N" THEN 530 :: LT(I)=-LT(I)
530 RL(I)=LT(I)#C :: LG(I)=LGD(I)+LGM(I)/60 :: IF LGI$="W" THEN 540 :: LG(I)=-L
G(I)
540 RLG(I)=LG(I)#C :: RETURN
550 REM COMPUTE TR, DIST, G/S, TIME, FUEL
560 FOR I=1 TO X-1
570 A(I)=SIN(RLT(I))*SIN(RLT(I+1))+COS(RLT(I))*COS(RLT(I+1))*COS(RLG(I)-RLG(I+1))
):: D(I)=60*(-ATN(A(I)/SQR(ABS(-A(I)*A(I)+1))))+PI/2)/C
580 B(I)=(SIN(RLT(I+1))-(SIN(RLT(I))*COS(C#D(I)/60)))/(COS(RLT(I))*SIN(C#D(I)/60))
):: TR(I)=(-ATN(B(I)/SQR(ABS(-B(I)*B(I)+1))))+PI/2)/C
590 IF SIN(RLG(I)-RLG(I+1))>=0 THEN 600 :: TR(I)=360-TR(I)

```



```

600 RWD(I)=WD(I)*C :: E(I)=WS(I)*SIN(RWD(I)-(TR(I)*C))/TAS :: HDG(I)=TR(I)+(ATN(
E(I)/SQR(1-E(I)*E(I))))/C
610 GS(I)=TAS*COS(HDG(I)*C-TR(I)*C)-WS(I)*COS(RWD(I)-TR(I)*C):: T(I)=D(I)/GS(I):
:F(I)=T(I)*FF
620 NEXT I :: RETURN
630 REM COMPUTE LAT TR CROSSES INT LONG
640 CALL CLEAR :: DISPLAY AT(10,3):"Latitude At Which Track" :: DISPLAY AT(12,3)
:"Crosses Given Longitude" :: CALL HCHAR(13,5,45,23)
650 DISPLAY AT(18,1):"LONG: 000 Deg 00 Mins W E/W" :: DISPLAY AT(18,1):"LONG bet
ween Position" :: ACCEPT AT(16,7)SIZE(-3)BEEP VALIDATE(DIGIT):MDL
660 ACCEPT AT(16,15)SIZE(-2)VALIDATE(DIGIT):MML :: ACCEPT AT(16,23)SIZE(-1)VALID
ATE("EW") :: ACCEPT AT(18,23)BEEP SIZE(-1)VALIDATE(DIGIT):P
670 ACCEPT AT(18,27)SIZE(-1)VALIDATE(DIGIT):Q :: RML=(MDL+MML/60)*C :: IF M$="W"
THEN RML=-RML
680 RMLTAN=(TAN(RLT(P))*SIN(RML-RLG(Q))-TAN(RLT(Q))*SIN(RML-RLG(P)))/SIN(RLG(P)
-RLG(Q)) :: IF SGN(RMLTAN)=-1 THEN T$="S" ELSE T$="N"
690 RMLTAN=ABS(RMLTAN) :: PRINT USING "TR Crosses LONG at ##":INT(RMLTAN):: PRINT USI
NG "##":(RMLTAN-INT(RMLTAN))*60 :: PRINT T$ :: PRINT
700 INPUT "Other Int Points (Y/N)?:N$ :: IF N$="Y" THEN 630 :: IF N$="y" THEN
630
705 PRINT "Return to Main Menu (Y/N)?:N$ :: IF N$="Y" OR N$="y" THEN 1
00 :: END
710 REM ASTRO PROGRAM
720 CALL CLEAR :: CALL SCREEN(10):: DISPLAY AT(12,7):"Astro Program" :: CALL HCH
AR(13,9,45,13):: PRINT :: PRINT
730 PRINT "Gives computed Altitude (HC) & Azimuth (ZN) of celestial body, given a
ssumed position of an observer and Greenwich"
740 PRINT "Hr Angle (GHA) & Declination (DEC) of the body." :: GOSUB 900
750 CALL CLEAR :: DISPLAY AT(5,3):"Enter Time: 0000Z" :: ACCEPT AT(5,15)SIZE(-4)
BEEP VALIDATE(DIGIT):TIME
760 DISPLAY AT(7,3):"Enter Assumed Position:" :: DISPLAY AT(9,1):"LAT: 00 Deg
00 Min N N/S" :: DISPLAY AT(11,1):"LONG: 000 Deg 00 Min W E/W"
770 ACCEPT AT(9,8)SIZE(-2)BEEP VALIDATE(DIGIT):ALTD :: ACCEPT AT(9,15)SIZE(-2)VA
LIDATE(DIGIT):ALTM
780 ACCEPT AT(9,22)SIZE(-1)VALIDATE("NS"):ALT$ :: ACCEPT AT(11,7)SIZE(-3)VALIDAT
E(DIGIT):ALGD :: ACCEPT AT(11,15)SIZE(-2)VALIDATE(DIGIT):ALGM
790 ACCEPT AT(11,22)SIZE(-1)VALIDATE("EW"):ALG$ :: DISPLAY AT(14,3):"Enter:" ::
DISPLAY AT(16,1):"GHA: 000 Deg 00 Min"
800 DISPLAY AT(18,1):"DEC: 00 Deg 00 Min N N/S"
810 ACCEPT AT(16,6)SIZE(-3)BEEP VALIDATE(DIGIT):GHAD :: ACCEPT AT(16,14)SIZE(-2)
VALIDATE(DIGIT):GHAM
820 ACCEPT AT(18,7)SIZE(-2)BEEP VALIDATE(DIGIT):DECD :: ACCEPT AT(18,14)SIZE(-2)
VALIDATE(DIGIT):DECM
830 ACCEPT AT(18,21)SIZE(-1)VALIDATE("NS"):R$ :: RALT=(ALTD+ALTM/60)*C :: IF ALT
$="N" THEN RALT :: RALT=-RALT
840 RALG=(ALGD+ALGM/60)*C :: IF ALG$="W" THEN RALG :: RALG=-RALG
850 RGH=(GHAD+GHAM/60)*C :: RDEC=(DECD+DECM/60)*C :: IF R$="N" THEN R60 :: R
DEC=-RDEC
860 G=SIN(RALT)*SIN(RDEC)+COS(RALT)*COS(RDEC)*COS(RALG-RGH):: RHCD=ATN(G/SQR(1-
G*G))
870 J=(SIN(RDEC)-(SIN(RALT)*SIN(RHCD)))/(COS(RHCD)*COS(RALT)) :: ZND=(-ATN(J/SQR(
1-J*J))+PI/2)/C :: IF SIN(RALG-RGH)>0 THEN 880
875 ZND=360-ZND
880 HCD=RHCD/C :: PRINT USING " HC = ## Deg":INT(HCD):: PRINT USING " ## Mi
n":(HCD-INT(HCD))*60 :: PRINT
890 PRINT USING " ZN = ### Degrees":ZND :: PRINT :: INPUT " Calculate Anoth
er (Y/N)?:S$ :: IF S$="Y" THEN 750 :: IF S$="y" THEN 750
895 PRINT :: INPUT "Return to Main Menu (Y/N)?:S$ :: IF S$="Y" THEN 100 :: IF S
$="y" THEN 100 :: END
900 PRINT " (Press ENTER to continue)"
910 CALL KEY(0,KEY,STATUS):: IF KEY<>13 OR STATUS<>1 THEN 910 :: RETURN

```



Allan McLellan retired after 37 years in the RCAF and Canadian Forces. He was an Air Navigator, flying in the C119 North Star, Dakota, Argus and Aurora aircraft. He spent several years as a trainer of navigators and was Base Commander of CFB Greenwood and the Commander of Maritime Air Group during a long and distinguished career. He now lives in the City of Halifax and we are privileged to have him as a member of IINS. This is the first of (we hope) many contributions to our newsletter



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DAVID PADWEE  
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**ATTENTION ALL TI USER GROUPS  
AND CASSETTE USERS**

The popular series, "Getting The Most From Your Cassette System," written by Mickey Schmitt for the cassette-based user, is now available directly from the author in an all-new format.

**What is this all-new format?**

This all-new format is a 52-page, professional typeset, loose-leaf booklet (without the holes), containing all of the original articles which first appeared in the West Penn 99'ers newsletters (though all have since been updated, corrected, and improved). In addition, new material that surfaced since the release of the original series has been added, making this booklet as complete as possible for the TI cassette-based user.

**Why the loose-leaf pages (without the holes)?**

This particular format was chosen specifically so that user groups who purchase a copy of this booklet, directly from the author, could use their copy as a "master copy," making additional copies as needed for their own club's membership. Thus, a user group need only purchase one copy of the cassette booklet, the author will benefit by the sale to the user group, and the user group's members will all be able to benefit by their club's purchase.

**What more can be said about this new cassette booklet?**

This cassette booklet provides an excellent opportunity for all user groups to provide a source of help to those club members who are still using a cassette-based system, as well as providing a source of help to those who are just joining a user group. The future existence of all TI user groups is dependent upon meeting the needs of the membership. This booklet is intended to fulfill one of those such needs.

To order your copy directly from the author, please send \$9.95 plus \$2.50 shipping and handling in the USA, or \$9.95 plus \$4.00 shipping and handling outside the USA (in US Funds) to:

**Mickey Schmitt  
196 Broadway Avenue  
Lower Burrell, Pa 15060**

**Please Note: This copying agreement is not offered to any commercial company, nor are user groups given permission to distribute copies of this booklet outside their own membership.**

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AUTOMOBILE AND LIGHT UP A CIGARETTE!

ONE OF THE PROBLEMS THAT A GOOD MANY OF US HAVE IN THIS COUNTRY, IS THAT WE DON'T KNOW HOW TO DISTINGUISH BETWEEN RISK AND ANXIETY. DAVID PADWELL, THE CHAIRMAN OF HYDROGENICS, STATED IT VERY WELL. HE SAID, "WE KNOW THE SURGEON GENERAL TELLS US THAT 150,000 DIE EVERY YEAR FROM SMOKING CIGARETTES BUT WE'RE NOT AFRAID OF SMOKING". WE CLIMB INTO OUR AUTOMOBILES SEVERAL TIMES EACH DAY IN SPITE OF THE FACT THAT OVER 50,000 PEOPLE DIE EACH YEAR IN AUTOMOBILE ACCIDENTS. YET WE HOLD NO FEAR FOR THIS FUNDAMENTAL RIGHT TO DRIVE.

WHAT WE'RE REALLY AFRAID OF IS SHARKS! ACCORDING TO PADWELL, THE MEDICAL STATISTICS BOARD DOESN'T EVEN KEEP RECORDS OF PEOPLE BITTEN OR KILLED BY SHARKS. THEY CAN TELL HOW MANY DIE OF CANCER, HEART ATTACKS AND EVEN BEE STINGS, BUT SHARKS NO RECORD!

HOWEVER CONSIDER THIS SCENARIO. YOU'RE AT THE BEACH ON A HOT SUMMER DAY AND ALL OF A SUDDEN SOMEONE SHOUTS OUT --SHARK!-- SHARK! JUST ABOUT EVERYONE WOULD RUSH OUT OF THE WATER, JUMP INTO THEIR



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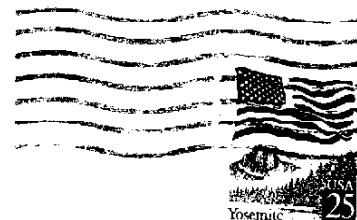
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- Basic CALL routines add an extra dimension to TI Basic

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ISSUE NUMBER 59  
JULY-1990



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NEXT MEETING

TUESDAY THE 17th OF JULY.

