
The Issue They Said Would Never Arrive...

TI*MES

Issue 53
Summer 1996

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All contributions for issue 54 must be submitted by September 1st 1996
You can use your modem to call the MOBB Bulletin Board on 01623 491282

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Disclaimer

All the views expressed by the contributors of this magazine are strictly their own, and do not represent those of the committee. Contrary opinions are very welcome and errors will be corrected on request.

'Where is TI*MES?' is a question I've heard an awful lot of late. And it is a tricky question to answer. The obvious, but unhelpful, response is 'In your hands, of course!' The actual response is somewhat more complex.

TI*MES is, of course, running very late. I'd intended to get it out before the AGM (like the issue before the Sandbach workshop) and much the mag as you now see it was complete by then. So what happened? Several things:

Dare I mention workload? As any of you who've tried to get hold of me and spoken to my wife will know (usually by the tone of her voice) the hours for my job are getting silly again - my working day starts at 7am and isn't usually over to 8pm, and there's a two hour round trip by car on top of that. But that's not the real reason...

The computer I use to prepare the magazine on decided it was time to pay a visit to the great god of obsolescence and went bang quite spectacularly. It may also have had something to me trying to fit a CD-ROM, losing my temper and bending some important pins... ahem... still, it was an excuse to get a PC I can use to work from home with. But that's not the real reason...

Another member who I was relying on to convert some TI files from my archives didn't, and hasn't (but then he has had problems of his own.) But that 's not the real reason...

So what is the real reason? The answer? You! Aside from four or five very active members, I hardly hear a peep out of you! TI*MES needs articles, listings, programs, anecdotes, anything you think would make interesting reading, or something neat you've got that you'd like to share with the rest of us; maybe a listing you typed in from Home Computer Weekly fifteen years ago that you still play with to this day, a household budgeting program you keep track of cheques with, something you wrote to keep the kids (or grandkids) amused, anything!

Without your input and ideas, TI*MES will wither and die, and with it your user group. I have enough archive material for a few more issues (and the Art Of Assembly goes on forever) but is this really what you want to read?

If recycled articles from the mid-eighties are what you want, then the disk library has a massive archive I can draw upon, but with the amount of members, and the huge amount of talent we have between us, surely we can produce some home-grown articles and programs?

If you disagree with something a TI*MES contributor says or writes then write to me and tell me - I'm strictly impartial and will print any letter sent to me (within reason.) TI*MES is a forum for member to air and share their views.

Rant mode off now, and on to something different, and more serious.

As you will see from the accounts in this issue, the group made a substantial loss last year. Part of this can be attributed to deferred payment for TI*MES for Gary meaning that this year we had to account for six issues rather than four.

The cost of producing TI*MES has also been going up - the printers have been increasing their prices every quarter (and refuse to print less than 100 copies every time) and postage has also increased, especially airmail. This has meant some difficult decisions have had to be made, and one of these is the manner in which TI*MES is produced. This issue has been produced without the aid of the printers by Ross and Christine. Let me know what you think.

The deadline for the issue is September 1st - so lets see some home grown listings...

Richard

Rambles

Greetings. Some interesting submissions to the puzzles set in the last issue to get your teeth into, with one solution gaining greatly from a facet of Extended Basic you will search hard to match in any other language!

Well, after a spell away from meetings I made it to Sandbach workshop - in between being in bed with flu and being in bed with food poisoning that is! Nice to see so many there. Can't tell yet if I'll make it to the AGM but we shall see....

Puzzle Solution One

First to restate the puzzle:

Simple puzzle- program required to solve it.

Hymn Numbers

The other Sunday the hymn numbers on the board appeared like this:

```
1 9 2
3 8 4
5 7 6
```

All of the digits were different! The second number is twice the first and the third number is the sum of the first two! Are there any other sets of three Three Digit numbers with these properties?

Taken from "Brainteasers for Basic Computers" by Gordon Lee, Shiva Publishing Ltd, 1983

Firstly, a submission from Walter Alum- I have simplified the listing just a little but made no changes to the operation...

```
130 FOR N=1 TO 329 ! SEE NOTE AT
END SJS
150 A(1,1)=INT(N/100) :: A(1,2)=
INT((N-100*A(1,1))/10)
170 A(1,3)=N-100*A(1,1)-
10*A(1,2)
190 FOR M=0 TO 9 :: PER(M)=M ::
NEXT M
210 IF (A(1,1)<>A(1,2))AND(A(1,1)
)<>A(1,3))AND(A(1,2)<>A(1,3))THE
N 240
220 GOTO 360
240 FOR J=1 TO 3 :: PER(A(1,J))=
99 :: NEXT J
```

```
280 FOR I=2 TO 3 :: FOR J=1 TO 3
300 A(I,J)=I*A(1,J)
310 NEXT J :: NEXT I
340 CALL CLEANUP(A(,),PER(,),N)
360 NEXT N
370 STOP
400 SUB CLEANUP(A(,),PER(,),N)
430 FOR I=2 TO 3 :: FOR K=3 TO 2
STEP -1
450 IF A(I,K)<10 THEN 490
460 Q=INT(A(I,K)/10) :: A(I,K)=A
(I,K)-10*Q :: A(I,K-1)=A(I,K-
1)+Q
490 NEXT K
510 IF A(I,1)>9 THEN 690
520 NEXT I
550 FOR I=2 TO 3 :: FOR L=1 TO 3
570 IF PER(A(I,L))=99 THEN 690
580 PER(A(I,L))=99
590 NEXT L
610 NEXT I
640 FOR I=1 TO 3 :: PRINT A(I,1)
;A(I,2);A(I,3)
670 NEXT I :: PRINT "----"
690 SUBEND
710 END
```

Look at the puzzle again - you are asked to supply solutions which employ numbers of three digits. Although zero is a digit, in puzzles of this kind the usual practice of suppressing leading zeroes applies, and the minimum 3 digit number is 100.

As given the above program will display all solutions in about 3 minutes 40 seconds, but by adjusting the opening loop (Line 130) to FOR N=100 TO 329 the time taken is cut to 2 minutes 37 seconds. There are a few other areas where time could be trimmed down a little.

My own solution looks a little different, with a different approach....

```
100 FOR H=1 TO 3 :: FOR=0 TO 9
120 IF H=T THEN 360
130 FOR U=0 TO 9
140 IF U=T OR U=H THEN 350
150 N=H*100+T*10+U :: A=N*2 :: B
=N*3 :: A$=STR$(A) :: B$=STR$(B)
```

```

200 IF LEN(A$)<>3 OR LEN(B$)<>3
THEN 350
210 C$=A$&B$ :: FOR M=1 TO 5
230 FOR L=M+1 TO 6
240 IF SEG$(C$,M,1)<>SEG$(C$,L,1
) THEN 260
250 GOTO 350
260 NEXT L :: NEXT M
280 N$=STR$(N) :: FOR M=1 TO 3 :
: FOR L=1 TO 6
310 IF SEG$(N$,M,1)=SEG$(C$,L,1)
THEN 350
320 NEXT L :: NEXT M
340 PRINT N$:A$:B$:"---":
350 NEXT U
360 NEXT T
370 NEXT H

```

My little effort runs in 2 minutes 20 seconds, and there is room there for some improvements in coding.

But check out this following code from Ross Bennett. The first number has three digits, and is one third of the last number which is three digits. Therefore the maximum number the first number can be using all different digits is 329. The minimum using all different digits is 123.

Next puzzle - why did Ross choose the particular numbers for his range?

Check out the superb use of the POS function to check that all digits in the three 3 digit numbers are different. Very impressive.

```

120 FOR A=192 TO 327 :: T$=STR$(
A) &STR$(A*2) &STR$(A*3)
130 FOR R=2 TO 9 :: W=POS(T$,SEG
$(T$,R-1,1),R) :: IF W THEN 150
140 NEXT R :: PRINT A:A*2:A*3:"-
--"
150 NEXT A

```

That superbly short piece of code runs in 34 seconds. Even if we start at 123 instead of 192, running time is still a very short 48 seconds.

For you newer programmers. IF W THEN 150 is not a printing error, but is a fast and memory conserving way of saying IF (W<>0) THEN 150. If POS fails to find a match it will return a value of zero and in this program go on to line 140 instead of jumping to 150.

So once more- which is the best way to speed a program up:

1. Talented coding or
2. Faster CPU clock?

Carefully crafted coding will ALWAYS yield the fastest (and often smallest!) program. Work that piece of code through manually if you will. A small gem.

Enquiry

Q: "How do I submit programs to the Editor on disk in a text format?"

A: The TI Extended Basic manual, page 114, "LIST" has the answer to this one, although it may not be totally clear, so here is a resume:

With your program in TI memory, you can send the program to a TEXT file on disk as follows:

```
LIST "DSK1.MYPROG"
```

The listing is then sent to disk in a Display Variable 80 file format, the standard that is used on the TI for text files.

You can also list a portion of a program using a colon and a minus separator as follows:

```
LIST "DSK1.MYPROG" : 100-200
```

Please note - the text file on disk has no line feeds, just carriage returns. If you need to edit it at all you should turn word wrap OFF otherwise your lovely program will end up as one large paragraph! and you will need to reload it from your disk file again.

Rambles

PLEASE NOTE that this use of LIST is also available in TI Basic. If you have a different version of Extended Basic (e.g. Triton Super Extended Basic) you may have additional options for LIST. There are also programs in the disk library (e.g. Neatlist) which can provide alternative layouts- although I suspect our editor would prefer a straight LIST! *[The editor would prefer anything members can send in! - Ed]*

Second Puzzle:

In the year 2083 the User Group has five members. They get together with all their modules with the intention of sharing them out equally. They went out to the pub. One at a time they came back to the module pile....

The first returnee separated the modules into five equal piles. There was one left over which he threw away. He took the modules in one pile, put them in his bag, and then pushed the remaining four piles back together.

The second returnee did the same thing- divided the modules into five piles, threw away one left over, put one of the five piles in his case, then pushed the other four back together. The third, fourth and fifth returnees did the same thing!

Now all the members return together, divide the pile into five piles, throw away the odd one left, each takes one of the five piles and they go off home.

Of course some have more modules than others...

The query is this: What is the MINIMUM total of modules to start with? A good maths student can solve this without a computer (and even produce a general formula!) but can you solve it with a computer? [The problem is old but has been taken from "Computers in Mathematics: A Sourcebook of Ideas" edited by David H Ahl, article by D T Piele and L E Wood, published 1979 by Creative Computing Press]

The puzzle is indeed a very old one and mathematicians will quickly identify it and tell you the answer, faster than anyone could write a program! But for us none mathematicians, can a program help us?

```
100 REM TOTAL PARTIES=S
110 S=5 :: A=1
120 K=A :: N=0
130 IF (S*K+1)/(S-1)=INT((S*K+1)/(S-1)) THEN 150
140 A=A+1 :: GOTO 120
150 N=N+1
160 K=(S*K+1)/(S-1)
170 IF N=S THEN 190
180 GOTO 130
190 PRINT "The least number of modules that ";S
200 PRINT "parties can begin with is ";S*K+1
210 PRINT "":"In the morning each party will receive ";A
220 PRINT "plus those he stashed away!"
```

If there are five members, and there are M modules left for each member in the final division, and at each division one module was discarded, the total number to be divided at the end is $5 * M + 1$.

This final pile of modules was produced by pushing together four equal piles. A key condition therefore is for $(5 * M + 1) / (4)$ to be an integer K where K is the number of modules removed by the last member from a pile of $(5 * K + 1)$ modules, and so on.

The above listing lends itself to having differing numbers of members to start with, but can be speeded up a trifle by taking out the variable S like this:

```
100 REM
110 S=5 :: A=1
120 K=A :: N=0
130 IF (5*K+1)/4=INT((5*K+1)/4) THEN 150
140 A=A+1 :: GOTO 120
150 N=N+1
```

```
160 K=(5*K+1)/4
170 IF N=5 THEN 190
180 GOTO 130
190 PRINT 5*K+1
```

Well that's my effort, but just a little faster (after shortening the equations a little!) is this one from Ross Bennett....

```
100 FOR A=1 TO 10^6
110 B=A*5+1
120 IF B<>INT(B) THEN 240
130 C=B*1.25+1 ! 1.25=5/4
140 IF C<>INT(C) THEN 240
150 D=C*1.25+1
160 IF D<>INT(D) THEN 240
170 E=D*1.25+1
180 IF E<>INT(E) THEN 240
190 F=E*1.25+1
200 IF F<>INT(F) THEN 240
210 ST=F*1.25+1
220 IF ST<>INT(ST) THEN 240
230 PRINT ST :: STOP
240 NEXT A
```

The limit set in line 100 is clearly a guess but is quite sufficient for this puzzle!!!

Thanks to Walter and Ross for their submissions. Any queries on these listings?

Want some more? OK.....

Puzzle Three

Taken from "Brainteasers for Basic Computers" by Gordon Lee:

Here are four numbers:

```
1731
5363
7179
9903
```

All you have to do for this puzzle is to find the LARGEST number which can be divided into these four numbers, leaving the same remainder for each one. Easy.

Looking for a program to do the work please! One clue to save you some time: the largest number is less than 1731!

Puzzle Four

Is from "Computers in Mathematics: A Sourcebook of Ideas" by David H Ahl:

Richard and Francesco go to a deli to buy some cheese. There are two whole cheeses on sale, one large and one small. The two cheeses together weigh 20 Kilos (Have you seen a whole cheese!). The small cheese sells for two pence a kilo more than the large cheese. Richard bought the large cheese for 2.96 while Francesco bought the small one for 82p (ah, the days of cheap cheese....).

What was the weight of each cheese? A program please! Plenty of alternative approaches here....

Ten Years Ago

Was the TI99/4A User Meet in LEEDS. What a place to drive round... and round... and round...

After the meeting there was this big rain storm, which a later news report - some years later-blamed for a radioactive hotspot nearby, as the rain cloud had come from over recently troubled Chernobyl... it is disconcerting to note that there remain numerous Welsh sheep which cannot be consumed due to that glow-in-the-dark effect.

Anyone have any queries on Basic / Extended Basic programming? Send 'em in!

New TI Programs

TERM 80 is a terminal program which displays 80 characters on a STANDARD TI screen without windowing or scrolling. How? By using characters 6x3 pixels without spaces between-not always easy to read! And you may wish to turn off the colour, or use a mono monitor.

TERM 80 supports ANSI characters, up to 19200 baud, XModem-1k; YModem Batch. ASCII.

Rambles

Reports vary significantly from very hard to use to very much easier than Telco. Telecommunications are a difficult area to play in so it is probably to be expected that some folks will prefer one program some the other!

The full version of the program is US\$20 from Jeffrey Brown, 2111 Montreal Road, #102, Glouster, Ontario, Canada, K1J 8M8.

Don't ask to pay by credit card. Jeffrey is 13 years old. Email? bb737@freenet.carleton.ca or 73430.1546@compuserve.com

VIRUS ATTACK by Vern L Jensen. Written in c99 and reported by the author to be similar to Dr Mario, a fast paced thinking action game in the Tetris/Columns genre and yours for US\$20 from: Vern L Jensen, 910 Linda Vista Ave., Pasadena, CA, USA, 91103 Email? Jensen@pop.com

Net News

A version of Archiver for HFDC use is available for downloading from USA number (317) 782 9942, which is the Hoosier Users Group BBS. 8N1 9600 baud.

There is a TI web site. The reported address appears to be in error but is given as: <http://w3.gwis.com/~polivka/994apg.html>

Would someone check this out - perhaps searching for "polivka" or "994apg" and let us know! Should it start [//www.gwis.com](http://www.gwis.com)???

The squiggle ~ means it is also an email address if you vary the format a little - [polivka @ gwis.com](mailto:polivka@gwis.com)

Chris Bobbitt can be found at: <http://www.cais.net/fmg/bobbitt.clb.htm>

Chris Bobbitt was Asgard Software who in 1989 turned over sales of \$225,000 but left the TI Market by selling the various parts of the business to others in 1992.

Lima Ohio User Group. Charles Good- Email address good.6@osu.edu (When our local museum gave free access to the Internet last year I was able to turn up details of Charles Good by searching on C Good).

CD ROM- there is said to be a TI CD ROM available for US\$100 from : Millbrae CD ROM, P O Box 1388, Millbrae, CA, USA, 94030

No further data- anyone wish to check it out and report back? How do you connect a CD ROM drive to a TI?? via a PC? Data from cleveland.freenet.edu

(Mr Editor- please don't change upper and lower case letters in Web addresses as I gather they are important!).

Disk Library

TELCO 2.3 is now in the disk library and takes up two single sided disks. Disk library copes are available at one pound per side copied plus one pound post and packing, and send along blank 5.25" disks or an extra 50p per disk.

Is anyone writing anything worthy of sharing? Do you know of any worthy program to share with us? Drop me a line- or a disk! and help other members benefit from your work / discovery.

Never Released Modules

NEVER RELEASED OFFICIAL TI MODULES:

EDUCATIONAL MODULES

by Charles Good

Lima Ohio User Group

TI had a lot of irons in the fire when they suddenly stopped production of the 99/4A in 1983. A number of in house command modules were ready for production, and third parties under license from TI were writing their own module software. This article describes educational modules for elementary and high school levels. Many of the non-math modules have two parts, a learning part with a lot of text to read and a game part that is based on what you have learned from the text. As far as I know none of the modules described in this article have ever been offered for sale.

Number Bowling

Copyright 1983 by Scott Foresman. This module teaches decimals and fractions and can be used by 1 or 2 players. A question appears in the lower third of the screen, and an on screen timer starts. You type the answer and then press <enter>. Maximum 10 points are awarded (a strike) if you answer within 2 seconds. For each additional two seconds you lose a point.

If it takes you over 10 seconds to <enter> the correct answer you get 5 points. On the right side of the screen is the bowling lane.

When you press <enter> the ball is released and knocks over pins for your score, the longer you take to answer the fewer pins are knocked down. The score is displayed in bowling "frame" style in the upper left of the screen. You are given two chances to come up with the correct answer. After the second wrong answer, the correct answer is displayed and the bowling ball rolls down the gutter for zero pins.

There are three levels of play, AMATEUR, PRO, and CHAMPION. The difficulty of the questions increases with each level, but the "points per second" as described above remains the same at all levels. Two AMATEUR questions are: "Write the decimal seventy nine and seven tenths," and "Which is greater, 97.64 or 84.835?" An example of a CHAMPION question is "Write the decimal twenty eight ten thousandths."

Answers always require typing numerals and the decimal point. I find it almost impossible to get an answer typed and <enter>ed within 2 seconds for the maximum 10 points.

This module is not particularly sophisticated. It teaches only by indicating correct and incorrect answers (where it then displays the correct answer). Unlike many other TI modules, including MIGHTY MULTIPLICATION described in this article, the software does not really show HOW to solve the questions.

An Introduction To Plant Genetics

Copyright 1984 by Texas Instruments. This module uses the garden pea to illustrate basic genetic principals by describing experiments done by of the father of modern genetics, Gregor Mendel. Speech is an option. Since I am an Associate Professor of Botany and teach introductory genetics to college freshman, I am qualified to give expert commentary about the scientific and educational merits of this software. The first menu gives these choices, the first two of which are text and graphics to be learned and the third of which is a game:

Press 1 for What is genetics.

2 for How does it work.

3 for The Mendelian maze.

The first choice, #1, defines and/or illustrates each of the following vocabulary words. Each is pronounced if SPEECH is available, and the student has the opportunity to hear each word

Never Released Modules

pronounced as many times as necessary:

Adenine
Anaphase
Botany
Chromosomes
Cytosine
Deoxyribonucleic acid.
Dominant
Genes
Genetics
Genotype
Guanine
Heredity
Interphase
Metaphase
Mitosis
Phenotype
Prophase
Recessive
Telophase
Thymine
Traits

I find the definitions of Phenotype (trait that can be seen), and Genotype (traits, whether they can be seen or not) confusing although probably not actually wrong. I wouldn't define these two words this way to my own students.

Choice #2 briefly mentions Gregor Mendel and illustrates some of the monohybrid cross genetic experiments Mendel did with peas. Punnet squares are used to show the genetic combinations (genotypes) of the offspring. I take great exception to the genetic notation used in the software.

The module uses "X" for a dominant gene and "Y" for the corresponding recessive gene (allele). This is not the standard genetic notation used in all the text books. In standard notation, a capital letter is used for a dominant gene and the same small case letter for the corresponding recessive gene. Also, in standard genetic notation the letters "X" and "Y" are used in genetic problems involving sex linkage to designate the sex chromosomes of animals.

Students studying the genetics chapter of any introductory biology textbook (high school or college) will be very confused by the use of "X" and "Y" in this software. In its presentation of Punnet squares, the software sometimes refuses to accept some of the possible correct answers. This may be due to incomplete debugging of this never released module.

Choice #3 is a maze game. You enter Mendel's garden, the Mendelian Maze, and locate the four pea plants that are the offspring of the monohybrid mating shown at the top of the screen. Move through the maze, position the cursor over each of the offspring, and press the fire button. There are lots of other pea plants in the garden that are not offspring of the displayed mating. If you guess wrong you have to start over. When all four correct peas are marked, the secret exit of the maze opens and you can move there and get out.

I suspect that during most its development this software was not reviewed by a university professor. I can understand why it was not released in its present form.

Peter Pan's Space Odyssey

The title screen says "WALT DISNEY PERSONAL COMPUTER SOFTWARE DESIGNED EXCLUSIVELY FOR THE TEXAS INSTRUMENTS COMPUTER. Broken 1986 by the Master." What I have available to me is a group of EA5 files that only work with a supercart, or with a GramCracker (loader on, bank 1 on, EA module in grams 5&&6), or possibly a Geneve. I suspect that the actual copyright is 1984. I have no idea who "the Master" is.

This module teaches about the planets of the solar system, including facts about each planet and the relative location of the planets with respect to each other. Music graphics and speech are all used superbly. The first menu gives these choices:

1- Planet Chart

Never Released Modules

2- Game .

Pressing #1 you are given the choice of learning about the inner planets or the outer planets. These two sub menus give you the opportunity to read information about each planet. one planet at a time. It is a good idea to take notes because you need this information in order to play the game. Information presented is appropriate for junior high school or high school science classes.

Pressing #2 starts the game. Wendy says, "Help, help Peter Pan, help!" Captain Hook's ship arrives and carries Wendy off into space while the captain says, "You shall never find her Peter Pan." Peter Pan appears and replies, "Just you wait and see."

Captain Hook is going to move Wendy around from planet to planet. Peter Pan is given a clue to Wendy's current location and must fly to that planet. Often, by the time Peter Pan arrives at the correct planet Wendy has been moved to another planet. There are four levels of play with higher levels requiring Peter Pan to visit more planets before he finally catches up with and rescues Wendy. Clues include such phrases as "HAS KNOWN BIOSPHERE" and "STRONGEST MAGNETIC FIELD".

A graphic of the inner or outer planets orbiting the sun is shown. These two groups of planets are separated by the asteroids, which Peter Pan must fly through without getting hit in order to reach the other group of planets. Peter Pan flies to the orbit of the appropriate planet (joy sticks or arrow keys) and presses the fire button (or "Q") when he is over the planet. If he is correct he says "Got it!". An incorrect choice causes Peter Pan to say, "I'd better try again," or "The right one must be here someplace." Flying through the asteroid belt between the inner and outer planets is dangerous. Peter Pan is allowed four asteroid hits before the game ends without rescuing Wendy.

Excellent pictures of Peter Pan, Wendy, Captain Hook, and Tinker Bell are shown at various points in the game. Unlike PLATO educational

software for the TI. this module makes superb use of all the 99/4A's bells and whistles (music, bit map colour graphics, and speech). The game is easy to win IF you know your planetary facts. I give PETER PAN a high rating.

Von Drake's Molecular Mission

This is another Walt Disney "designed exclusively for the Texas Instruments Computer" module with a copyright 1984 date on the title screen. As with Peter Pan, there is excellent use of bit map colour graphics, music, and speech. This module is an aid in learning aspects of introductory high school chemistry. What I have available to me are a series of GramCracker module files that occasionally locks up the computer or refuses to accept correct input. Apparently the software was not fully debugged when Walt Disney withdrew from the TI computer market.

You are in Professor Ludwig Von Drake's chemistry laboratory and have a supply of forceps to manipulate pieces of chemicals. You must open the forceps and grab stuff with the open end. If you bump things with closed forceps or bump the wrong end of open forceps you lose the forceps and Von Drake says, "Lost another one." When you lose all your forceps, or run out of time, the game is over.

As time progresses the temperature on the displayed thermometer increases and Von Drake says, "Hmmm. things are heating up in here" in a German accent. The main menu gives these choices, each of which has a beginning, intermediate, and advanced level. Increasing levels of difficulty present more difficult chemical problems for solution. The starting number of forceps and the time allowed to solve the problem are the same at all difficulty levels.

1- Reading Chemical Formulas

2- Forming Compounds

3- Balancing Chemical Equations

From item #1 you are shown several kinds of atoms and their corresponding oxidation/reduction (valence) numbers. You have to make the simplest possible chemical compound from all the displayed kinds of atoms by grabbing the appropriate number of each kind of atom and dumping the atoms into the reaction pot. When the correct number of atoms are in the pot, you light the burner under the pot and cook the atoms into the compound. At this point you find out if you are correct.

Pressing #2 from the main menu displays several kinds of atoms and their oxidation/reduction numbers. Some of these atoms will not react with each other. You have to pick the correct number of atoms that will react with each other and make the simplest possible compound, as described for #1 above. This is harder than #1 because you have to know which atoms you can and can't combine to make compounds.

In #3 you are shown a chemical balance and a chemical equation of the form $\text{chemical1} + \text{chemical2} \rightarrow \text{chemical3} + \text{chemical4}$. You have to put the correct number of each chemical on the correct side of the balance so that the same number of atoms will be on each side of the chemical equation. You chase sprite numbers with your forceps in order to do this. For example, $\text{N}_2 + \text{F}_2 \rightarrow \text{NF}_3$ requires ONE molecule of N_2 and THREE molecules of F_2 on one side of the balance, and TWO molecules of NF_3 on the other side of the balance. At higher difficulty levels, some of these "to be balanced" equations can be quite tricky.

If you run out of time or cook the wrong stuff in the reaction pot the computer is also supposed to give an animated display of the correct answer, but in the files I have you get a lockup instead. I would give this module high marks if it worked properly. Even as it is, one can learn a lot of chemistry by playing around in Von Drake's laboratory.

Mecc Educational Software

These are described in the booklet TEXAS INSTRUMENTS HOME COMPUTER

PROGRAM LIBRARY ADDENDUM (copyright 1982 TI, publication number 1049706-1) that was packaged with a 99/4A computer I purchased new in the spring of 1983. In this booklet the MECC are all given official TI PHD numbers and each is described as follows:

"One of eleven math and science programs developed by the Minnesota Educational Computing Consortium (MECC) for grades one through eight. These programs are standard, in-school computer programs. Peripheral requirements: Disk-disk drive and controller required. Extended Basic command module is required. \$29.95"

The PHD numbers and MECC program names listed in the booklet are as follows:

| | |
|---------------------------|----------|
| Astronomy | PHD 5081 |
| Elementary Economics | PHD 5079 |
| Social Science | PHD 5085 |
| Exploring | PHD 5083 |
| Elementary Math & Science | PHD 5083 |
| Math Practice | PHD 5084 |
| Metric and Counting | PHD 5078 |
| Teacher's Tool Box | PHD 5088 |
| Natural Science | PHD 5086 |
| Word Beginnings | PHD 5082 |

Gary Taylor, of the Pittsburgh User Group wrote TI about the MECC software. According to Gary, "TI contracted with them to produce 10 educational programs but cancelled them during 1982 or 1983. The reason I was given for the cancellation was because there were too many other 3rd party software developers working on similar products."

Never Released Modules

I have seen them advertised in USER GROUP NEWS (Ed. note: This newsletter was sent by TI to its official user groups prior to black Friday). TI claims they do not exist!" But at least one MECC title does exist, and Gary Taylor sent it to me for evaluation.

Mecc Astronomy

The title screen shows a nice map of the state of Minnesota and says "Minnesota Educational Computing Consortium. Copyright 1982 Texas Instruments." It is written in extended basic, with three linked XB programs and a data file totalling 272 disk sectors. Although this software isn't in command module format, it was never released and therefore I consider it appropriate for this series of articles.

Pressing <enter> from the title screen brings up this screen: "M.E.C.C. presents TI 99/4 software in extended basic. Astronomy. 1- Solar Distance. 2- Ursa. 3- Quit." Notice that it says 99/4 without any "A".

If you press #1, you are given the opportunity to travel between earth and any other planet in the solar system, or the moon, or the sun. You are given your choice of the following modes of transportation: walk, tricycle, bicycle, motorcycle, car, train, plane, jet, or speed of light.

Once you select your destination and mode of travel a map of the solar system is displayed at the top of the screen with arrows indicating the earth and your selected destination. The graphics here are superb.

A sprite (walking man, tricycle, bicycle, etc.) moves from right to left across the centre of the screen and the computer displays the time it takes to reach your destination calculated to the nearest second and displayed in years, days, hours, minutes, and seconds. For example, the following times are given for travel from earth to the sun:

| METHOD | Years | Days | Hours | Minutes |
|--------|-------|------|-------|---------|
| Walk | 4242 | 102 | 10 | 23 |

| | | | | |
|---------|------|-----|----|----|
| Tricyc | 3535 | 54 | 9 | 22 |
| Bicycle | 1178 | 122 | 14 | 13 |
| Motorcy | 212 | 30 | 11 | 22 |
| Car | 176 | 260 | 23 | 43 |
| Train | 117 | 304 | 6 | 13 |
| Plane | 25 | 91 | 0 | 9 |
| Jet | 10 | 259 | 22 | 23 |
| Light | 0 | 0 | 0 | 8 |

If you select #2 from the main menu a large data file is loaded and you learn from text and diagrams about the north star Polaris and about the constellations Draco, Cassiopeia, Cepheus, Little Dipper, and Big Dipper.

You are taught how to find the north star. Then you are asked to input a date (month and day, not year) and an hour. The monitor then displays the orientation of these constellations at that particular time with the north star, of course, in the centre of the screen. You can then advance the time in one hour intervals and watch the constellations rotate around the north star. This apparent rotation of the constellations is, of course, due to the rotation of the earth.

If you select #3 to quit, the screen says "Happy Stargazing."

This software is strictly educational and not a game. It is, however, very interesting. For example, it may not be common knowledge that it takes over 8 minutes for light to reach the earth from the sun. Although speech and sound are not used, this is an excellent job of extended basic programming. The graphics are great, and the programming to display the location of constellations at any hour of the year is very sophisticated. The only software in the TI world that resembles MECC ASTRONOMY is STARGAZER 1-2-3.

Lasso

The title screen says "LASSO (tm). Copyright 1983 Texas Instruments." The word Lasso is drawn on the screen in script as you watch. Speech is optional but highly recommended.

You are a cowboy and your job is to catch all the loose sheep and shoot the coyotes. The

Never Released Modules

computer speaks to you in a western (cowboy) accent. The game starts with the computer saying, "Oh no, the sheep busted out!" The 4 sheep begin to rapidly move about outside of the corral.

If you are touched by a moving sheep or wandering coyote you lose a life, and the computer says, "Oh no, I'm a goner." You move the cowboy around with the arrow keys or joysticks. Pressing the fire button causes you to either shoot or to throw your lasso. The object of the game is to lasso all four sheep, and it isn't easy! You get points for catching sheep and for shooting coyotes. When you catch a sheep, computer yells "Yahoo!".

Games aren't really my thing, and I don't seem to get very far with this game. If I can get my kids interested in LASSO, they will probably show me how to do things properly. The speech with cowboy accent is really cute.

Milliken Class Student Management

This one is known to me only as a GramKracker module disk file. I find no reference to it in the literature. It is apparently designed to allow teachers to keep track of students as they progress through the Milliken Math series (ADDITION, SUBTRACTION, MULTIPLICATION, DIVISION, LAWS OF ARITHMETIC, etc.; PHM3090 - PHM3101).

The title screen is identical to that of the Milliken NUMBER READINESS SEQUENCE module (PHM3094, copyright 1982 by TI), but is not NUMBER READINESS. That is really strange. I suspect that this module was never completed and that a definite title had not been selected when development of the module ceased. The NUMBER READINESS SEQUENCE title screen was probably grafted onto the rest of the module with the anticipation that this title screen would be changed once a definite title had been selected.

When first booted DSK1 immediately turns on and the screen says LOADING DIRECTORY. If there is no disk in DSK1 you are given the

error message CHECK DISK SYSTEM and you must reboot the module. If an initialised disk is in DSK1, even a disk with no files, you are advanced to the next screen which has at the top in a rectangular black box "NAME -- CLASS -- PASSWORD". Below the box you are asked "YOUR NAME?". The black box and "YOUR NAME?" prompt are found at the beginning of all the Milliken math modules. When you <enter> a name you then get this display:

| | CLASSES | TEACHERS |
|----|---------|----------|
| 1. | , | |
| 2. | , | |
| 3. | , | |
| 4. | , | |
| 5. | | |

YOUR CLASS NUMBER?

No matter what I input for class number I am given the error message INCORRECT INFORMATION and am returned to the "YOUR NAME?" prompt. I can't get beyond this screen! The commas in the above screen suggest that the module expects two pieces of data in each record of the file that is booted when "LOADING DIRECTORY".

Examining with a sector editor the GramKracker files of this module, I can see that the module uses a I/F 17 file called STDIR, and another file called STDTA, both in DSK1. Some of the menus within the module, as revealed by reading sectors in ASCII are as follows:

ADD CLASS -- SHOW PASSWORD

A. Add a class

B. Print password of a class

\ SHOW TEACHER PASSWORD

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Class Name?

New Failure Level = %

and this menu:

New Minimum Problems per level =

ESTABLISH PRINT DEVICE

1. Thermal Printer
2. Other
3. None

This particular sub menu convinces me that this module is related to the other Milliken math modules. In these math modules a certain percent of correct answers at any difficulty level advances you to the next higher level. A different percent correct (much lower) drops the student to the next lowest level. These percentages can be somehow be altered from this sub menu.

another menu:

Your Name?

CLASS MANAGEMENT

Your Number?

1. Add a class

Your Password?

2. Delete a class

this menu leads to two other menus:

3. Make class assignments

MANAGER MENU

4. Delete all assignments

A. Student Management

5. List the classes

B. Class Management

6. Review class progress

STUDENT MANAGEMENT

7. Set Class Options

1. Add a student

selecting Set Class Options brings this menu:

2. Delete a student

SET CLASS OPTIONS

3. Make student assignments

CLASS DRILL

4. List the students

1. Animation Animation

5. Review student progress

2. Animation Text

6. Delete student password

3. Text Animation

selecting "Make Student Assignments" gives this:

4. Text Text

MAKE STUDENT ASSIGNMENTS

Name of student?

This Milliken software is apparently similar to CLASS DATA RECORDER of the 1981 Scott Foresman "School Management Applications" series, also never released. CLASS DATA RECORDER is described in Part 1 of this series of articles (BB&&P January 1990). Perhaps the Milliken software was cancelled to avoid

New Mastery Level = %

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duplication.

Some More History

This is an "official" description of WINGWAR contained in a booklet that was packaged in a TI module purchased in early 1984. The booklet says "copyright 1983 TI" and bears the number 1056414-1. "You're a great dragon in a world of primordial beasts, magic crystals, and powerful demons. Battle these menacing foes with fireballs, inner strength, and superior strategy. Speech Synthesis optional."

The SUMMER 1983 CONSUMER ELECTRONICS SHOW in Chicago, as described in the August 1983 issue of COMPUTE! may go down in history as the show where the most "orphans" were initially introduced. Computers first displayed for the public at this show include the Coleco Adam, the Atari 600XL 800XL 1400XL and 1450XLD, the North American version of the Sinclair ZX Spectrum called the Timex Sinclair 2048, and the Mattel Aquarius and Aquarius II. Some of these machines never actually made it to market.

The rest are now all orphans. The same August 1983 COMPUTE! article talks about the rumoured near release of the TI 99/4B. "The 99/4B, they say, will fall somewhere between the 99/4A and the 99/8 in features and price." COMPUTE! says that at this Summer 1983 show, "TI introduced.....six educational packages, including three games based on E.T. the Extra Terrestrial." What were these E.T. games? Were they really released, or just displayed, or perhaps only mentioned in promotional literature given out at the show? Read on.

This comes from page 35 of the June 1983 issue of 99ER HOME COMPUTER MAGAZINE. "The remaining 5 (educational) packages for 4th quarter release include 3 E.T. based educational software games from Looking Glass Software, and 2 vocabulary/grammar games from Development Learning materials Inc. All game and education cartridges carry a \$39.95 SRP." I wonder if one of these DLM modules is VERB VIPER, described in part 2 of this series. The

only Looking Glass Software educational game that I know of is ET AT SEA. The ET game module, described later in this article, is an in house TI game (non-educational) that does not mention Looking Glass software. Does anyone know anything about the other two Looking Glass "E.T. based educational software games"?

This quote concerning TI's own E.T. module is from the INTERNATIONAL 99/4A USER GROUP NEWSLETTER dated Nov. 15, 1982. "TI is expected to announce a new Command Module which will feature the familiar E.T. space creature. The new E.T. Command Module is due to be ready some time in the second quarter of 1983."

Pinocchio's Great Escape

According to the title screen, this is another "WALT DISNEY PERSONAL COMPUTER SOFTWARE DESIGNED EXCLUSIVELY FOR THE TEXAS INSTRUMENTS COMPUTER." No copyright date is indicated, but I suspect that the date would be 1983. This is a language arts module designed to teach children how to recognise and pronounce long and short vowel sounds in printed words. Speech Synthesis is optional but highly recommended.

Pinocchio is in a cage suspended from the ceiling. His friend Jimminy Cricket has to get him out by making a stairway to the cage, climbing the stairs, and unlocking the cage's padlock. Each correct answer adds one additional stair.

The first menu says:

CHOOSE THE VOWEL SOUND:

- 1) SHORT VOWEL SOUNDS
- 2) LONG VOWEL SOUNDS

Whichever choice you make, you are then advanced to the second menu:

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CHOOSE THE LEVEL OF GAME PLAY

- 1) BEGINNING
- 2) INTERMEDIATE
- 3) ADVANCED

When you make your choice of difficulty level, the game begins. If you choose long vowel sounds, Pinocchio suspended in his cage may say "Jimminy, choose the word with the long o sound, as in goal." Five words are then displayed, such as NIGHT BLACK TRUE FLASH and HOSE.

You move Jimminy next to the one correct word (using the EX keys or the joystick) and then press Q or the fire button. Jimminy touches the indicated word with his umbrella. If the guess is correct, Pinocchio asks for another vowel sound and 5 new word choices are displayed. You always get a different selection of 5 word choices because the module has a vocabulary of 1000 words, each 2-5 letters in length. I know this to be true because I used my GramKracker to display the contents of the GROMS in order to read and count the words.

For each game Jimminy gets 3 umbrellas. The game is over if all 3 are used up before Pinocchio is released from the cage. You get points for each correct answer, and another stair is added to the staircase leading to Pinocchio's cage. If Jimminy guesses incorrectly, you are told that the guess is incorrect and given unlimited additional opportunities to guess the correct word with no loss of points or umbrellas. Each attempt is timed, with a timer displayed at the top of the screen. If time runs out there is no loss of points or umbrellas. Instead, the correct answer is indicated and you are then presented with another problem complete with five new words from which to choose.

The three difficulty levels differ from each other in two respects. At each successive difficulty level there are increasing numbers of mice running around and they move faster. If

Jimminy touches a mouse while attempting to touch a word with his umbrella, he loses the umbrella.

This is the only way to lose umbrellas and possibly terminate the game unsuccessfully. Also, the word choices are more difficult at each successive difficulty level. At the BEGINNING level, there is only one word displayed that contains the correct vowel, so selecting the correct answer is a piece of cake. At INTERMEDIATE there are either two or three of the 5 displayed words with the correct vowel, but only one of these has the desired vowel sound. At the ADVANCED level all of the displayed words include the desired vowel but again only one of these words has the correct vowel sound.

After 6 correct answers the stairway is complete. Pinocchio says, "You did it Jimminy Cricket, you did it!" Jimminy climbs the stairs and unlocks the padlock. Pinocchio comes down to the bottom of the screen and dances to the music singing "I'm free! I'm free!" When you get tired of watching him dance press <enter>. Pinocchio bows, and you are given the opportunity to play another similar game or return to the first menu to select a different set of parameters for the next game.

This module truly is "self teaching". As long as the student is capable of reading the 2-5 letter words that make up the possible choices, the student should be able learn all about long and short vowel sounds from scratch without intervention from a human teacher. Remember, I said that when time runs out the correct answer is indicated and there is no penalty. Students unfamiliar with the concept of long and short vowel sounds can just sit in front of the monitor as the computer pronounces (using speech) vowel sounds and then correctly shows words that contain the just pronounced sound.

The module provides rewards for positive effort without penalising mistakes. The only way to mess up and terminate the game without rescuing Pinocchio is to allow Jimminy to touch

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too many mice while trying to guess the correct answer. This is strictly an eye/hand co-ordination thing unrelated to getting correct answers and learning about long and short vowel sounds.

I give PINOCCHIO'S GREAT ESCAPE my highest rating. Its use of colour bit map graphics, music, and sound are excellent. The game is fun. A lot of careful thought went into the "self teaching" design of this module.

Starship Pegasus

Copyright 1983 by Milton Bradley Co.

This game reminds me of some of the "junk extended basic" games that form part of the early history of the TI, games such as those in the early part of the libraries of the International Users Group or the Amnion Free Access Library. In speed, graphics, and the use of sprites. Starship Pegasus really does resemble an extended basic game rather than an assembly language game.

Your starship is in the middle of the screen and there it stays. You have guns top/bottom and left/right which you can shoot with the joysticks or arrow keys. If you shoot a second bullet before the previously fired bullet goes off the edge of the screen, than the previous bullet disappears! Only one of your bullets can be on the screen at a time. The bad guys, looking very much like magnified XB sprites, wander onto and off the screen using more or less random motion. They shoot at you and you shoot at them with your four fixed position guns firing outward from the centre of the screen. If you get hit with a bad guy bullet you explode and the game ends. You are then given the opportunity to play again.

BORING! I can understand why Milton Bradley never released this one. In fact, considering the neat stuff that Milton Bradley has produced for the TI (such as the MBX system and associated modules), I am surprised that the company would allow its name to be used with this game in the first place.

Magazine scanned 2022 by Stephen Shaw
- note- Original magazine had printing
glitches resulting in the loss of a
sheet of content (four pages).
Remaining content has been tidied
and pages renumbered.

Richard
Twynning

(Gen Sec)

My gear should be at the AGM on the 18th of May, and my dad says he's bringing his car so that I can take more gear along. If you want anything though, you will have to look through it in the car, because it's a bit of a waste of time unloading it all, and then reloading it all, especially if no one is interested in buying anything, but it will all be there, just in case.

As I said, at the meeting, we will be discussing the purchase of a SCSI card for use on the BBS. It will allow us to get much cheaper, more reliable, and larger capacity drives, and have a well supported interface, which the system needs if we are going to keep it going.

This also reminds me that I need to produce an agenda, so I'll have to get moving on that, or I'll find myself running out of time again.

I don't know, the trials and tribulations of being the general secretary!!!

On Saturday night (27-4-96) I had a call from a semi-member, Warren Bray. I say semi, because he was a member, but when he re-subscribed Alisdair Bryce left us in the lurch, and Warren was one of the members who's details were lost, and he though we had closed down!

I've assured him that we will make it up to him with the issues he's entitled to, and he's looking for a copy of the very first issue of TI*MES, so if someone's got one spare out there, then you could give it to Warren at the AGM, to which he says he should be able to attend.

Warren was enquiring about my CAD program because he's using AutoCAD at the moment and wanted to be able to experiment with CAD on the 4A. Somehow, he seemed to have the idea

that it was already finished, but it's a long way from being finished yet. My main priority is getting my life sorted out. I can't do anything much yet, because my software collection is in a complete state until I get a decent hard disk system in operation. That won't happen until I sort out my SCSI card, and until I can get the formatting software out of Bud Mills, then I'm stuck. I've seriously got to phone him and see where the program's got to that he promised me!

I have also neglected my article writing time lately, because I've been trying to write a new text editor for my organiser. I had to think of a decent name for it, so it will be called "Tex Edit", and as you will see from the example screen dump that I've included, it's even got a TI sign as part of the icon!

The organiser has quite a wide distribution now, so it's very likely that there are ex-TI'ers out there who have now bought organisers.

In the help file of the program I'm going to include quite an extensive advert for the group, and you never know, it could possibly attract some new members.

Well, I think that's about all I've got time to write at the moment. I am still dedicated to the 4A and GENEVE. After using Windows 95 I know that the TI is better, and we can still do most jobs quicker than a PC can.

It's no good grinding someone's hard disk away for twenty minutes, just to detect a new piece of hardware, which is what Windows 95 does.

I don't know if anyone saw that program called Triumph of the Nerds all about the microcomputer industry, but they never mentioned the 99/4A once. They provided the viewer with the "convenient history". Steve Jobs, the co-founder of Apple had the right idea, and said that Microsoft sells third rate products. That statement is more true now than it ever was.

Mr. General Secretary over and out.

See you at the AGM on the 18th in Derby.

[Which has now happened... Ed]

Minutes of the Annual General Meeting

1. Reports from Committee

1.1. *Opening Introduction from Mr. Chairman*

Trevor gave his thanks for continuing support for the group throughout the year. The only outstanding things that Trevor spoke about were the few enquiries that he has had about new members asking to join or re-join the group.

1.2. *Mr. Vice Chairman*

Absent.

1.3. *Mr. General Secretary*

Also very quiet, and some people enquiring about the group, mainly passed on to me via Trevor, and I have sent them information about the group, and sent them details of where to send their membership details and money. Still no news about the SCSI card. I will have to rattle Bud Mills' cage!

1.4. *Mr. Treasurer*

The bank balance of the group has dropped to around £3000 from £4000 and is therefore down £1000 on last year. Alan predicts that at the current rate, the balance will fall by between £500 and £600 per year.

This is not as bad as it sounds. Publication costs have risen dramatically, and the big batch of renewals have not happened yet, so the balance should rise again. Plus, the cost of running the BBS is coming out of that, but this is worth it because as Richard Speed says, the BBS does generate a lot of interest in the group.

1.5. *Mr. Editor*

Richard has had problems with the publishers, because they are unwilling to produce such a small publication run when we demand it, and we are getting shuffled around, so they are becoming erratic. Richard has also been left out of pocket because he has not been paid quickly

enough for the publication costs and one month couldn't pay his Poll Tax!

We need to look at other solutions for reducing publishing costs. I myself would welcome the group trying to find a cheap laser printer and producing the newsletter entirely ourselves, but for this quarter it has been decided to use a photocopying method.

Francesco can reduce the magazines from A4 to A5 and Christine Bennet says she is able to produce the full run of copies from that reduction, so this is the way that this quarter's newsletter will be produced. This may change next quarter.

1.6. *Mr. Membership Secretary*

Mark was absent so, since Richard Speed has the most up to date mailing list due to TI*MES distribution, he spoke about membership. There is still a problem of membership confusions, since everyone re-subscribes at different times depending when they first subscribed. Most members seemed to be unaware that the membership was handled this way.

Some members who's details have been lost in the Farquar Bryce confusion when he left us completely in the lurch with membership, have had their membership periods extended because all the details of how long their current membership lasted was completely lost. This however will soon finish, as most of these members renewals is in the next batch.

1.7. *Mr. Disk Librarian*

Stephen was absent, and sent his apologies for being unable to attend.

1.8. *Mr. Module Librarian*

1.9. *Mr. Cassette Librarian*

Francesco didn't really have much to report on these two libraries. He still has not been able to obtain the full cassette library from Mark Wills, and Trevor recommended a cage rattling session in the direction of Shrewsbury!

2.0. Group Discussions.

2.1. Committee Re-elections

Following the re-elections, these are the following positions:

| | |
|--------------------|---------------------|
| Chairman | - Trevor Stevens |
| General Secretary | - Richard Twynning |
| Treasurer | - Alan Rutherford |
| Editor | - Richard Speed |
| Membership | - Alan Rutherford |
| Disk Librarian | - Stephen Shaw |
| Module Librarian | - Francesco L. Lama |
| Cassette Librarian | - Francesco L. Lama |

2.2. The Group BBS

The Mansfield on-line Bulletin Board. Trevor requested payment towards the electrical requirements of the BBS.

The BBS does have problems with the hard disk system. The designers of the drives in use did not intend them to be run constantly as today's newer drives are, therefore it is strongly suggested that the group purchase a SCSI card for use with the BBS.

This is only on the condition that the SCSI card can be proved to be complete and working error free. It has already been decided that when I have obtained the formatting program I still need from Bud and have managed to get the SCSI card working, that if it tests out OK then it shall be a committee decision to go ahead with the purchase of a SCSI card, without any further group intervention as the BBS does provide a valued service to group members.

2.3. Group Membership

With the declining membership and rising costs, it has been decided that to compensate the membership costs will have to rise.

These are the new membership costs:

| | |
|-----|----------------------|
| £15 | - UK members |
| £18 | - Over seas - Europe |
| £22 | - World-wide Airmail |

Any other voluntary donations are of course welcomed and will be donated to the disk library.

INCOME and EXPENDITURE Statement up to 1st April 1996

| Income | 94 | 95 | 96 |
|--------------------|------------------|------------------|----------------|
| Subscriptions | £1,164.50 | £967.50 | £765.98 |
| Interest | £15.61 | £14.08 | £12.22 |
| Sales | £0.00 | £47.25 | £0.00 |
| Donations | £0.00 | £0.00 | £13.50 |
| Total | £1,180.11 | £1,028.83 | £791.70 |
| Expenditure | | | |
| TI*MES | £999.45 | £524.57 | £1,321.75 |
| Room Hire | £40.00 | £80.00 | £147.00 |
| Expenses | £8.66 | £14.90 | £41.33 |
| Bank Charges | £0.00 | £0.00 | £10.00 |
| Equipmen t | £105.50 | £614.16 | £127.81 |

News And Reviews

| | | | | |
|----------------|------------------|------------------|------------------|-------|
| Disc Library | £40.00 | £0.00 | £0.00 | <- *3 |
| Total | £1,193.61 | £1,233.63 | £1,647.89 | |
| Balance | £4,253.98 | £4,049.18 | £3,192.99 | |

Outstanding

| | |
|---------------|---------------|
| Hardware sale | £97.00 |
| | <u>£97.00</u> |

INCOME

| | | |
|---------------|--------|----------------|
| Subscriptions | May-95 | £52.98 |
| | Sep-95 | £503.00 |
| | Feb-96 | <u>£210.00</u> |
| | | £765.98 |

| | | |
|----------|--------|--------------|
| Interest | Jun-95 | £3.37 |
| | Sep-95 | £3.02 |
| | Dec-95 | £2.94 |
| | Mar-96 | <u>£2.89</u> |
| | | £12.22 |

EXPENDITURE

| | | | | | | |
|------------|--------|---------|--------|-------|----------------|----|
| TI*MES | Jan-95 | £134.52 | | <- *1 | £134.52 | 47 |
| 100 copies | Apr-95 | £183.87 | £40.00 | | £223.87 | 48 |
| | Jul-95 | £208.77 | £34.45 | | £243.22 | 49 |
| | Oct-95 | £180.70 | £77.71 | <- *2 | £258.41 | 50 |
| | Jan-96 | £192.48 | £53.30 | | £245.78 | 51 |
| | Apr-96 | £166.73 | £49.22 | | <u>£215.95</u> | 52 |
| | | | | | £1,321.75 | |

| | | |
|-----------|--|---------------|
| EQUIPMENT | Line Connect charge for BBS | £78.25 |
| | Phone Bill for BBS [Sep '95 - Nov '95] | £24.78 |
| | Phone Bill for BBS [Dec '95 - Feb '96] | <u>£24.78</u> |
| | | £127.81 |

| | | |
|------------------------|---------------------------------|---------------|
| ROOM HIRE/ EXPENSES | AGM 1995 - Room hire | £50.00 |
| | Workshop - Sandbach [April '96] | £50.00 |
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- *1 Mail costs for Issues 47 and 48 were handled together. Part is covered by the figure for issue 48; the rest is hidden in other expense claims.
- *2 The unusually large mailing costs for issue 50 are due to the inclusion of Disc Library listings which were sent out with this issue.
- *3 A payment of £80 has been made to the Disc Library from the 1996-97 budget.

The Birth Of A Computer

THE BIRTH OF A COMPUTER

Bill Gaskill

October 1992

In April 1984 Texas Monthly magazine published an article written by Joseph Nocera entitled "The Death of a Computer". It was among the most comprehensive accounts ever written on the events leading to the demise of the TI-99/4A computer.

Perhaps because of this, the article became so popular that only 2,000 copies of the April 1984 issue of Texas Monthly were available for sale a scant month after it hit the news stands. Mr. Nocera's work was the driving force behind this article because reading it made me realise that more effort has gone into writing about the demise of the TI-99 than has ever been invested in writing about its birth and life.

The reasons for such universally poor coverage of the TI-99 are a matter of debate, but my research leads me to believe that TI's policy of a closed architecture on the TI-99 may have been carried over to one of closed mouths when it came to talking about the machine. No matter what the reasons, it appears that a negative and non complimentary relationship between TI and the media cast a cloud over the 99/4 even before it's release.

Nevertheless, there are some choice tidbits lurking around in the printed media of the late '70's and early '80's which help to piece together the days before, during and after the 99/4's birth. Because I have access to so many back issues of Byte, and because it is the oldest computer magazine still in existence, I chose it as the main source of information for this article.

The material chosen from the many issues of Byte that I read through is presented in time line format so one can pick up the chronology of events easier. It is the sequence of events like the RF modulator hassle with the FCC and the production problems with the TMS 9900 chip

that to some extent explain why Texas Instruments was so late with its entry into the personal computer market. Lastly, you will notice that I have thrown in a few items not related to the TI-99.

Most are what I consider significant developments in the personal computer industry that I thought would add some flavour to the article and perhaps a little perspective for the reader about the world that the TI-99/4 was born into. For other historians of the TI-99 I've also provided notations as to the source/location of the information used in the time line.

Although not presented according to Turabian, I think someone might find the references useful. I hope you enjoy reading.

** LIFE BEFORE THE TI-99 **

1974

Jonathan Titus creates the Mark 8 microcomputer and advertises it for sale as a kit in Radio Electronics magazine. This becomes the first programmable microcomputer made available to the general public. (YOUR OWN COMPUTER, Waite/Pardee, p.15).

1975

The MITS Altair 8800 microcomputer is introduced and it becomes the first company or corporate venture into microcomputers for sale to the general public. (YOUR OWM COMPUTER, Waite/Pardee, p.17). 1976: Explosive growth hits the industry when companies like Apple, Cromemco, Imsai, Digital and others introduce microcomputers. (YOUR OWN COMPUTER, Waite/Pardee, p.19).

1977

The Radio Shack Division of Tandy Corporation and Commodore Business Machines both join the competition for personal computer dollars with the introduction of the TRS-80 and Pet 2001 respectively. The year 1977 also sees the birth of the computer publications industry when a host of new magazines such as Creative Computing, Kilobaud, Personal Computing,

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Intelligent Machines Journal (now Infoworld) all appear, trying to break in on some of the profits already being realised by Carl Helmers and Virginia Peschke who had created Byte Magazine back in mid-1975.

Aug 1977

The TRS-80 is released on August 3rd. It comes with 4K Ram and carries a retail price of \$599.95. (Byte, Apr 1978, p.49).

Oct 1977

Commodore enters the market with the Pet 2001. It retails for \$495 with 4K of Ram or \$795 with 8K of Ram. (Byte, Feb 1978, p.190).

Jan 1978

The PLATO computer aided instruction system is developed at the University of Illinois. (Byte, p.184).

Feb 1978

UCSD Pascal is introduced by the Regents of the University of California at San Diego. Price is \$200. (Byte, p.46).

Mar 1978

Texas Instruments begins recruiting personal computer specialists by running full-page ads entitled "Your experience with personal computers is going to open an unlimited career at TI." In trade magazines. (Byte, p.13).

Mar 1978

RAMBLING RUMORS ABOUT TI letter to the editor appears in Byte Magazine with a Q and A. Question: "What will TI do to enter the personal computer market?" Answer: TI is a very aggressive company with the desire to make lots of money by filling the needs of the marketplace. When the bonafide need for a new product arises, if it is in TI's area of expertise, TI will be there, front and centre..." (Webb Simmons in Byte Magazine, Mar 1978, p.133).

Apr 1978

TI releases a recreational Solid State Software Leisure Library module for the TI58 and 59 programmable calculators. The module sells for

\$35 and includes such applications as golf handicapping, craps, NIMS, Acey-Duecy and 16 other games or recreational programs. Is this perhaps a predecessor to the Solid State Software Command module that would be touted as a reason for buying the TI-99/4? (Byte, p.194).

May 1978

Texas Instruments introduces the TMS3064 charge coupled device memory chip. (No significance to the TI-99/4, but it shows that TI was still involved in other computer developments besides the 99/4 Home Computer. (Byte, p.180).

Oct 1978

The Exidy Sorcerer is released with 8K of Ram, a 64 column by 30 row screen and the ability to use plug in modules which are the size of 8-track tapes. Price is \$895. (The significance of this computer's release is that four years later Texas Instruments would use it as one of the home computers which offered cartridge software, that the 99/4A competed against for market share). (Byte, p.81).

Oct 1978

Technico Inc. of Columbia, MD releases the SS-16, which is based on TI's TMS9900 chip. Here again, no direct impact upon the 99/4, but evidence that TI was trying to push the 16 bit chip in places other than their own home computer. Four months later Byte would offer a look at the success of 16 bit chips industry wide and tell us that it was not well accepted by the industry. (Byte, p.200).

Dec 1978

Over 14 million microprocessors are manufactured during the year, with TI's 4 bit TMS-1000 chip leading the way. Most are used in calculators and games, but sales in the game market appear to be slowing down. (Byte, July 1979, p.99).

**** THINGS ARE REALLY HEATING UP ****

Feb 1979

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TI's NEW PERSONAL COMPUTER - Rumours are flying about Texas Instruments' impending entry into the personal computing market.

The unit will reportedly use the TMS 9900 processor with 40K of read only memory circuits, will generate 20 lines of 40 characters on a standard television, will have provisions for accommodating video disk players and video tape recorders, and will have sophisticated sound production. Sources predict a mid-1979 unveiling. (Byte, p.63).

Feb 1979

Atari enters the personal computer market by announcing (but not yet delivering) the 400 and 800 model home computers. The 400 is a non-expandable 8K Ram computer which sports a touch audio feedback keyboard, a single cartridge slot and a cassette I/O port. It also has 16 colour capability and 8 luminance levels. The suggested retail price is \$500.

The Atari 800 is an 8K Ram computer expandable to 48K Ram and it comes with a cassette recorder, it has additional colour features, a full keyboard, *K BASIC built in, high resolution graphics, and it supports two cartridge ports. The 800 carries a suggested retail price of \$1000. Both machines will use the 6502 chip. Limited quantities are scheduled to be available in August, with full availability in the Fall. (Byte, p.63).

Feb 1979

The future of the 16-bit microprocessor comes into question when its lack of acceptance by the industry is pointed out in Byte. The 8-bit 6502 chip used by Apple, Commodore and others is fast becoming the most popular microprocessor of the day. (Byte, p.63).

Although this is supposition on my part, it appears that TI was under a great deal of pressure to join in the personal computer fray. They would probably have done so anyway, but the level of "expectation" seems to have been extremely high and may have driven them to

produce and release a product before they were actually ready to do so. The lack of availability of the TI-99/4 even after it's official debut in January 1980 seems to add some credence to this.

Mar 1979

Despite its seemingly unpopular position in the market, Byte Magazine runs an extensive article on mapping the instruction space of the TMS 9900 microprocessor. (Byte, p.14).

Mar 1979

FCC serves a cease-and-desist order on all personal computer manufacturers who fail to receive FCC approval on their products prior to making it available for sale. (Byte, p.108).

Mar 1979

Tandy Corporation begins marketing their TRS line of personal computers through their own direct sales stores. Several other makers of personal computers withdraw their products from the shelves of department stores after meeting with poor results. (Byte, p.108).

Mar 1979

Texas Instruments announces the new Speak and Spell learning aid for children. It is based on the TMS 1000 chip and two 128K dynamic read only memory chips, each with the capacity to store over 100 seconds of speech. (Byte, p.246)..

Apr 1979

Publishing giant McGraw-Hill purchases Byte and on Computing magazines, adding further credence to the escalation of the personal computer market. (Byte, p.14).

Jun 1979

TI AND HP PC SYSTEMS RUMOURS - Texas Instruments and Hewlett Packard continue to maintain tight lips on their rumoured personal computer systems.

As TI said, "TI will not discuss products that have not yet been announced." However, information has leaked out on these units which are expected to have a tremendous impact on the

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personal computer market. Several rumours have been reported in previous Byte columns. The latest is that TI will introduce their entry at either the NCC (National Computer Conference) show in June or the Consumer Electronics Show in July. In either event, it is expected to be ready for the 1979 Christmas market.

Both HP and TI are expected to have \$500 list prices for the basic unit. Key retailers have already been approached by both TI and HP to set up for selective distribution. It is rumoured that they will favour selected personal computing stores that can do justice to software requirements. (Byte, p.129).

Jul 1979

Milton Bradley begins advertising for "Creative Electronic Engineers, Microcomputer Programmers and Technicians" to accommodate their expansion into the personal computer arena. (Byte, p.51).

Jul 1979

FCC asks Apple, Atari, Commodore, Heath, Southwest Technical Products and Radio Shack to submit their perso for a waiver, provided that the modulator unit met the standards.

Dec 1979

SubLogic releases its first Flight Simulator dubbed FS1. It is available for the Apple II and TRS-80 computers for \$25. (Byte, p.133).

Jan 1980

TI RF MODULATOR FCC WAIVER GRANTED-The Federal Communications Commission (FCC) has granted Texas Instruments a waiver which permits TI to connect its personal computers to home colour television receivers using a radio frequency (RF) modulator. TI originally petitioned the FCC for approval of the RF modulator system in February 1979. The petition was rejected since the regulations require that the complete system be submitted for approval: TI submitted only the RF modulator for approval. Subsequently, Texas

Instruments applied for a waiver, provided that the modulator unit met the standards.

The FCC asked other personal computer system manufacturers to comment on the TI request. Radio Shack, Apple Computer, Commodore, Mattel, and Atari.

Despite the fact that the TI-99/4 was "officially" available in January 1980, it was in short supply as evidenced by the following ad in the January 1980 Byte Magazine, page 88:-

AN OPEN LETTER ON THE TEXAS INSTRUMENTS TI-99/4 HOME COMPUTER

"Its a fact that the new TI-99/4 is the most sought after home computer on the market today. However the demand far exceeds the factory's ability to produce them, so they will be in short supply, for all dealers, for the foreseeable future..."

In between the excitement of TI's much anticipated entry into the personal computer market in 1979 and its decision to abandon that very same market in October 1983, lies the story of a thousand and one mistakes in corporate strategy, the creation and release of hundreds of exciting new products for the TI Home Computer, the appearance of some of the most talented personalities the community would ever produce and ultimately the heart rending disappointment users felt when the bottom dropped out.

But that's another story.

Never Released Peripherals

The WAFERTAPE DIGITAL TAPE DRIVE was supposed to be a step up from cassette data storage. The device is totally under the control of the computer (no manual rewinding or keeping track of cassette counter numbers). A directory on the tape allows the computer to automatically advance the tape to the beginning of any desired file.

Recording data digitally (as 1 or 0, on or off) rather than as part of a continuous spectrum of sound frequencies as is done on a regular sound cassette recorder, such as TI's Data Recorder, was supposed to be a more reliable way of recording and retrieving data.

Had this device been released in 1983 after its debut in January of that year, it and the also never released HexBus interface would have formed an inexpensive mass storage upgrade (compared to using a cassette recorder) for the 99/4A at a time when a new full PE box (SSSD drive, 32K, disk controller) cost anywhere from \$550-\$1200. The last 99/4A catalogue published by TI in the fall of 1983 lists the Wafertape drive for \$139.95 and the HexBus interface for \$59.95.

The Wafertape drive was shown at the Consumer Electronics Show in January 1983 together with the first showing of the CC40. It was to be the major mass storage device for the CC40, and is described and pictured in the user guides that come with most CC40 software and peripherals. Unfortunately these user guides now also come with an addendum sheet that states "The Wafertape Digital Tape Drive is not available." The non release of the Wafertape Drive left the CC40 totally without a mass storage device until the 1986/1987 introduction of the Mechatronic HexBus Quickdisk drive. This lack of a mass storage device probably killed most consumer interest in the CC40.

I purchased for \$100 a working Wafertape Drive, serial number 0000007, ATA3883. It is my understanding that the ATA number is a date code, indicating in this case manufacture in the 38th week of 1983. Most 99/4A hardware and software modules have an ATA number. If my

understanding of ATA numbers is correct, my Wafertape Drive was not one of those shown at the January 1983 exhibit. I personally know of one other working Wafertape drive, serial number 0000095. I have been told that there are about 10 or 11 working Wafertape Drives in private hands and others that don't work.

The Wafertape Drive is comparable in size to other TI HexBus peripherals, measuring about 11.5cm wide, 14.5cm deep and 3.5cm tall. It is designed to be stacked with the HexBus RS232, modem, and Printer/Plotter. It is battery powered with 4 AA cells. You can also use an AC adapter.

The front has an on/off switch and a slot for inserting the wafertape. On the back are two HexBus ports, an AC adapter jack, and a rotary switch for setting the device number. The switch on mine has positions 0-9. However, only positions 0-7 work, corresponding to devices 1-8. By accessing each HexBus peripheral individually by number, a single CC40 could control up to 8 Wafertape Drives, if one could somehow gather that many working drives together in one place.

Wafertapes come in a cartridge measuring 68x40x5 mm, about as big as the miniature cassettes sold these days for small tape recorders. The top is clear plastic and the bottom is black plastic. T.I. calls these cartridges "wafers". They fit easily and snugly into the slot in the front of the Wafertape Drive. Inside the wafer a dark coloured magnetic tape 1.7mm wide (very thin) is wound in a continuous loop, in the same manner as the tape of an "8 track" music cartridge. The tape moves only in one direction and its ends are attached to each other with a piece of reflective silver tape.

Never Released Peripherals

To compare the speeds of the Quickdisk and Wafertape drives, I timed the SAVE and OLD of a 15300 byte text file from Memo Processor using a newly FORMATED wafer and disk. Wafertape: SAVE, 4 min 25 sec; OLD; 3 min, 10 sec. Quickdisk: SAVE, 2 min 15 sec; OLD, only 38 seconds.

Why wasn't the Wafertape Digital Tape Drive ever officially released? It just did not meet TI's standards for reliability. It does not work well on battery power. Even with four newly installed, fresh alkaline AA batteries, you almost always get an I/O error 25 (low batteries in peripheral) when you try to load something, and you often get the same error when you try to SAVE while on battery power.

The Wafertape Drive only works with much reliability when operated with the AC adapter. Apparently the speed at which the tape crosses the Wafertape Drive's read/write head is critical, and variations in this speed are not tolerated. With any battery, continuous power drain results in a voltage decrease compared to the initial voltage put out by the battery. Such a voltage decrease slows down the drive motor. Also, as the Wafertape Drive operates it turns itself on and off several times as it loads or stores data.

Starting an electric motor requires an immediate surge of extra current compared to the current needed to keep the motor operating at constant speed once it has started. It is possible that the Wafertape Drive's AA batteries are not able to maintain constant voltage with all the required on/off cycles. In addition to the battery problem, it is sometimes possible to write data beyond the end of the wafertape and wipe out the directory on the other side of the reflective end/beginning of tape marker. This renders all files on the tape useless.

I have managed to overwrite the end of a wafertape on two occasions. At other times, when I deliberately tried to do this, the CC40

would not let me write past the end of a wafertape. I sometimes get I/O error 6 (device error, try again) with the Wafertape drive for no reason I can determine.

Sometimes trying again doesn't work. I never get these error messages when using my Quickdisk drive. Finally, I suspect that wafertapes are not as durable as disks. The tape is very tiny and is subject to a lot of physical movement and twisting as it moves within the wafer.

I suspect that with time the tape may break. I know for example that I have had a higher percentage of my "8 track" music tapes break compared to my reel to reel cassette music tapes. Let me quote from a letter received recently from Tony McGovern of Australia, senior author of FUNNELWEB.

"Wafer-tapes were always a disaster area! I think they appeared in one of Sinclair's UK machines. The other place they appeared, also in the UK, was in an abomination produced by ICL sold here, a computer phone - a combination of low end PC with modem/phone all built in- but no disk drive, only the wretched unreliable wafertape. Telecom Australia probably has a warehouse full of these things that they would rather not be reminded of. They had a great marketing campaign to sell these several years ago and no one wanted the turkeys."

I do use my Wafertape drive. It isn't that unreliable. I have a little briefcase in which I can keep my CC40, the Wafertape Drive, my HexBus printer/plotter, a power strip, and all the necessary AC adapters all plugged in and ready to go. I can open the briefcase and plug in the power strip and use the peripherals as they sit in the briefcase. I can also use the printer/plotter and CC40 while still in the briefcase using battery power, but I have given up trying to use the Wafertape Drive with battery power.

Romox was a Campbell, CA firm that specialised in manufacturing modules for home computers like the TI-99/4A and others in the same or lower price range.

In 1983 Romox announced a new idea in marketing computer game programs that would allow the user to buy their new reusable Edge Connector Programmable Cartridge (ECPC) only once, and have it re-programmed each time a new game was desired. Initial purchase price for the ECPC was around \$25 and a new game could be "burned in" for less than \$10. The Romox plan for the ECPC was to put Romox "Software Centres" in retail outlets like 7-11 to allow easy access to new programs. The user had only to bring their ECPC to any outlet with a Romox Service Centre, place the ECPC in the correct cartridge slot, choose the game they wanted, pay the new game fee and the clerk would activate the Service Centre.

The Software Centre was an off-white coloured plastic cabinet and monitor that looked a lot like a computer. It was approximately 18" wide by 6" high with a colour monitor approximately 12" wide by 8" high. There were ten slots on the front panel of the cabinet for different types of computer cartridge connectors and a membrane covered key pad for typing in the catalogue number of the program to burn in to ECPC's re-programmable chip. The user pressed any key to start the Software Centre, selected a program from the screen or the Romox Catalogue, paid for the new program and a clerk would activate the Software Centre. The machine would notify the user when the new game was ready to go. That was all there was to it. Only 5 of the 10 slots in the Service Centre front panel were used, probably because Romox already had the major players in cartridge software business covered, but they built the machine for the possibility of new machines in the future. I know the Spectravideo SV-318 and the Coleco Adam both came with a cartridge port and there might have been a couple of others, but the "big guns" were already on the panel.

Going from left to right while facing the Service Centre, the slots were dedicated to: TI-99/4A, Commodore Vic 20, Commodore 64, Atari 2600 VCS, Atari 400/800, Atari 600/800XL, Atari 1200XL.

TI-99/4A games housed in the Service Centre were Ambulance, Anteater, Cave Creatures, Character Crayons, DataBase Sort Utility, Driving Demon, Henhouse, Hen Pecked, Princess and the Frog, Rabbit Trail, Rotor Raiders, Schnoz-ola, St. Nick, Topper, Typo II, and Video Games.

Although the TI-99/4A was first in the front panel slot position it occupied, it was dead last in the number of programs available to the ECPC owner. As you can see a total of sixteen programs were offered for the 99/4A owner. Compare that to: Atari 2600 VCS - 49, Atari (all others) - 39, Commodore Vic 20 - 51, Commodore 64 - 26

As far as I can determine, the IUG (International User Group, Bethany, now long since liquidated) was the first to announce a product using the Romox ECPC when they announced the immediate availability of D-Station in November 1983. The John Phillips game was offered for \$24.95 with promises of an extensive library of other programs to come, all available at a reasonable \$9.95. No other programs were ever added to that "library" though. Although I've never actually seen any of the Service Centres, TexComp's Jerry Price told me that he saw one at the Jan '84 Consumer Electronics Show in Las Vegas, NV. Romox was jealously guarding their catalogues at the time but Jerry was able to obtain one as a volume dealer of TI-99 products. According to Mr. Price, the Service Centre idea never really got off the ground, although the reason why is not known.

In the UK BLANK Romox modules were sold to TI owners by Peter Brooks. No documentation is held to confirm if any of these were ever subsequently programmed.

From The Chairman's Chair

still have the code in the editor and you do not lose it.

However with the LBL the code is lost. As you can see editing can awkward on the LBL. So planning your program is VERY important. When we write in the LBL or EA we refer to all number as HEX or DEC. HEX is Hexidecimal or number base 16. DEC is Decimal which is number base 10.

So HEX counts like this: 0123456789ABCDEF

DEC counts like this: 0123456789

BINARY like this: 01

BEWARE: There is a thing called a number base. This animal counts 0 as the first number so in HEX it will be 0 to 15. This is how the 16 bit registers are counted. See below....

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Right now the numbers in hex are referred to by the symbol > before the number like >7FEE however they are referred to without this > when the memory counter is displayed.

Memory Counters.

When we assemble a program, you data is placed into memory. Each block of memory is addressed by it own number. Like your house number. So if you ask the postman to post a letter at your house he looks for the number. So does the computer. When the computer LBL program starts you see:

7D00 045B ũ

7D00 is the Memory location, or House number
045B is the contents of the memory, or the letter the postman put in.

The above is the default start location for the LBL The contents 045B is part of the LINES program which is loaded with the LBL. When you write your program you over write the LINES program. Just for those interested 045B means CLR R5

The Four Fields.

No we have no gone to farming, what we are talking about here is the INPUT fields of the LBL and EA.

| | |
|-----------|--------------------------------|
| 1st Field | The Label Field |
| 2nd Field | The Instruction (opcode) Field |
| 3rd Field | The Operand Field |
| 4th Field | The Comment Field |

These fields are moved to by pressing the space bar. Some are needed some are optional. We will see in a bit which does what.

1st Field

In LBL you are only allowed two letter Labels. ie LN FB GH etc. These Labels are there as a start point to a small routine. So its like a procedure that you call. This is an optional field ie 7D02 C101 AQ (AQ is the Label)

2nd Field

This is the instruction area that you tell the computer what to do. These instructions are numerous. I will later on give a listing of all these. However in this case we will us LI. LI means Load Immediate. So... 7D02 C101 AQ LI Means Label AQ Load Immediate.

3rd Field

This is the maths end. Here is where you make it all happen. In this field the maths operations happen. hence (Operands). The values here are used and calculated to get certain results. This field is optional as some instructions in the 2nd Field work alone. If you use more than one operand then you separate them with a , (comma). ie 7D02 C101 AQ LI R5,2 (R5 and 2 are the operands)

4th Field

The comment field is where you can put your comments, the computer ignores this field. This is like a REM line in Basic. ie 7D02 C101 AQ LI R5.2 This is an example

From The Chairman's Chair

So to recap the fields look like this when you view them on the screen.

```

1st  2nd  3rd      4th
AQ  LI   R5, 2    REMARKS

1st  2nd  3rd      4th
    LI   R5, 2
    
```

Note the fields left out

CORRECTING ERRORS.

The errors on the editor assembler can be sorted via your text editor after you have found them so there is no problem there at all. The LBL error checks as you enter. You will get one of two messages. *ERROR* or *R-ERROR*

The *ERROR* indicates to you that there is a syntax error, such as writing a nonexisting instruction in the opcode field, (the 2nd field), or forgetting your correct spaces. When this message appears hit Fctn 3 (ERASE) and start over again.

I mention spaces. These are very important when you input your line in both EA and LBL. so if you miss out say the 1st field you have to put a space into the line BEFORE you type.

```

          SPACE
          :
IE 7D00 04C5 - CLR R5
    
```

There is another way of doing a erase in the LBL by typing the correct label after the wrong one. The LBL thinks in only two letters. So if you input the following.

```
7D00 045B  AWNMG1
```

The LBL will return only G1. This method applies to Hex numbers. However it now remembers the last four numbers ie 7D00 045B DF AORG >7FFAA7FFF equals 7FFF The > sign tells the LBL what type of input it is. In this case it tells the LBL that it is a HEX NUMBER, and remember 4 places of characters/numbers.

I however find it easier to erase the lot then you are sure you have got it correct.

If you get the *R-ERROR* this tells you, that you are trying to jump to a memory location too far away. Don't panic about this I will discuss how to get over this problem later in the series.

Before we go any further I think we should be having a look at the difference between memory WORD and memory BYTE. A memory word is a four digit hexadecimal number ie 7FFF = a word. A word is formed by two bytes. In this case 7F and FF. The MOST SIGNIFICANT byte is on the left as you read it (7F) and the LEAST SIGNIFICANT on the right (FF). Remember we are talking HEXIDECIMAL NUMBERS. Many of the instructions use by the LBL or EA use these words and do things to them.

IE If you had the word 5C97 and you used the SWPB (SWaP Bytes) instruction on it. The result would be 975C. Oddly enough these instructions are called BYTE INSTRUCTIONS. Can't think why can you???? The maximum value that can be represented by a byte is >FF which is 255 in decimal. So the maximum a word can be is, wait for it FFFF 65535 in decimal.

USING YOUR REGISTER

No we are not at the cash till now. What we are talking about here is workspace registers. Because your computer is 16bit it has 16 of the registers. Instead of using variables to store values, as in basic or EXbasic, in assembly we use the described registers. In each of these registers you can store one word values. So for your example we want to load the value 7FFC into Register 7 then we would do it like this.

```
7D00 045B      LI R7,>7FFC      Load
Immediate R7 with >7FFC You can load
decimal numbers in the field and they will be
converted by the LBL or EA into HEX. These
values can be added subtracted, multiplied and
divided. As with all maths. These values have to
```


From The Chairman's Chair

be stored some place in memory. The usual place in the LBL is >70B8 to >70D7. However you can put them else if you wish but you must not write over them in your program. This is done with the LWPI (Load Workspace Pointer Immediate). All you do is tell the LWPI where to start and away you go. However the more you put in the more memory you use up and the memory table will climb toward another bit in memory and may interfere with your program. So watch out!! Also make sure your program does not over write the table you have set up.

```
IE 7D00 02E0 LWPI>70B8
```

INSTRUCTIONS AND DIRECTIVES

In the opcode field of a line you can write instructions or directives. Instructions only do one operation. IE LI (load Immediate) Directives are different. These perform preprogramed functions. The LBL has seven, the EA has 28.

In the next issue we will look at these and discuss them. However if you are still curious look them up in the Mini Memory Book and the Editor Assembler Book.

We will be going on next time to doing some of your first programs. So hang on to next quarter!!!

```
Memory Full !!!!!  
Fctn Quit
```

The first 50 issues of TI*MES are safely stored on Archive.org and can be found at <https://tinyurl.com/tiuguktimes>

or if you prefer:
<http://web.archive.org/web/20221115195821/http://ftp.whtech.com/user%20groups/TI-MES-England/Times/>

or easier:
<http://web.archive.org/web/2023/http://ftp.whtech.com/user%20groups/TI-MES-England/Times/>

All issues of TIHOME Tidings are at:
<https://tinyurl.com/tihometidings>

Listings

```
100 GOSUB 2210
120 DIM RW(7,3),CL(7,3),CR(2),B(
8),A(10,10)
130 RANDOMIZE
140 GOSUB 1890
150 FOR I=1 TO 8
160 B(I)=7
170 NEXT I
180 FOR I=1 TO 7
190 FOR H=1 TO 3
200 READ X,Y
210 RW(I,H)=X
220 CL(I,H)=Y
230 NEXT H
240 NEXT I
250 CR(1)=1
260 CR(2)=2
270 GOSUB 1040
280 REM *****
290 FOR I=1 TO 28
300 IF (I=1)*(KY=50) THEN 660
310 GOSUB 1360
320 IF B(J)=0 THEN 310
330 A(B(J),J)=1
340 GOSUB 1480
350 FL=1
360 GOSUB 740
370 B(J)=B(J)-1
380 FL=2
390 IF COM=1 THEN 480
400 GOSUB 1360
410 IF B(J)=0 THEN 400
420 A(B(J),J)=2
430 GOSUB 1460
440 GOSUB 740
450 B(J)=B(J)-1
460 GOTO 690
470 REM *****
480 FOR J=1 TO 8
490 CT=0
500 IF B(J)=0 THEN 520
510 GOSUB 740
520 SC(J)=CT+1
530 NEXT J
540 REM *****
550 GOSUB 950
560 IF B(J)<2 THEN 660
570 B(J)=B(J)-1
580 FL=0
590 GOSUB 740
600 B(J)=B(J)+1
610 IF (CT>1000)*(X1=1) THEN 620
ELSE 660
620 SC(J)=0
630 GOSUB 950
640 GOTO 560
650 REM *****
660 A(B(J),J)=2
670 GOSUB 1460
680 B(J)=B(J)-1
690 NEXT I
700 X$="A DRAW"
710 REM *****
720 GOTO 1590
730 REM *****
740 CT=0
750 X1=0
760 FOR K=1 TO 7
770 K1=A(B(J)+RW(K,1),J+CL(K,1))
780 IF (K1=0)*(B(J)<7)*(B(J)>2)*(
J>1)*(J<8) THEN 2160
790 IF K1=0 THEN 870
800 IF K1=A(B(J)-RW(K,1),J-
CL(K,1)) THEN 900
810 FOR L=2 TO 3
820 IF A(B(J)+RW(K,L),J+CL(K,L))
<>CR(K1) THEN 860
830 NEXT L
840 IF FL=K1 THEN 1540
850 X1=K1
860 CT=CT+(L^5*(K1+RND))
870 NEXT K
880 RETURN
890 REM *****
900 CT=CT+256
910 IF (K1=A(B(J)-RW(K,2),J-
CL(K,2)))+(K1=A(B(J)+RW(K,2),J+C
L(K,2)))=0 THEN 860
920 CT=CT+1024
930 GOTO 840
940 REM *****
950 X=0
960 FOR K=1 TO 8
970 IF SC(K)<=X THEN 1000
980 X=SC(K)
990 J=K
1000 NEXT K
1010 IF X=0 THEN 1540
1020 RETURN
1030 REM *****
1040 CALL CHAR(99,"000000FF")
1050 CALL CHAR(100,"010101010101
0101")
```

Listings

```
1060 CALL CHAR(98,"8080808080808080")
1070 CALL COLOR(9,1,1)
1080 CALL COLOR(3,1,1)
1090 CALL COLOR(4,1,1)
1100 CALL CLEAR
1110 FOR H=49 TO 56
1120 CALL HCHAR(24,(H-47)*3,H)
1130 NEXT H
1140 FOR H=8 TO 26 STEP 3
1150 CALL VCHAR(1,H,98,22)
1160 NEXT H
1170 FOR H=1 TO 23 STEP 3
1180 CALL HCHAR(H,5,99,24)
1190 NEXT H
1200 CALL VCHAR(1,4,100,22)
1210 CALL VCHAR(1,29,98,22)
1220 CALL SCREEN(12)
1230 CALL COLOR(9,2,1)
1240 CALL COLOR(3,2,1)
1250 CALL COLOR(4,2,1)
1260 CALL COLOR(10,7,1)
1270 CALL COLOR(11,16,1)
1280 CH$="0000183C3C7E7EFF"
1290 CH1$="FF7E7E3C3C18"
1300 CALL CHAR(104,CH$)
1310 CALL CHAR(105,CH1$)
1320 CALL CHAR(112,CH$)
1330 CALL CHAR(113,CH1$)
1340 RETURN
1350 REM *****
1360 CALL SOUND(200,900,15)
1370 CALL KEY(0,KY,ST)
1380 IF ST=0 THEN 1370
1390 IF (KY<49)+(KY>56)<>0 THEN
1360
1400 KY=KY-48
1410 CH1=112
1420 CH=113
1430 J=KY
1440 RETURN
1450 REM *****
1460 CH=105
1470 CH1=104
1480 IF B(J)<1 THEN 1580
1490 CALL HCHAR(B(J)*3,J*3+3,CH)
1500 CALL HCHAR(B(J)*3-
1,J*3+3,CH1)
1510 IF CH<>105 THEN 1520
1520 RETURN
1530 REM *****
1540 IF FL<>2 THEN 1580

1550 GOSUB 1460
1560 X$="RED WINS"
1570 GOTO 1590
1580 X$="WHITE WINS"
1590 CALL SOUND(200,200,2)
1600 CALL SOUND(400,400,2)
1610 CALL SOUND(600,600,2)
1620 CALL SOUND(800,800,2)
1630 CALL SOUND(2000,1000,12)
1640 GOSUB 2110
1650 FOR J=1 TO 8
1660 FOR K=1 TO 8
1670 A(J,K)=0
1680 NEXT K
1690 NEXT J
1700 FOR J=1 TO 8
1710 B(J)=7
1720 SC(J)=0
1730 NEXT J
1740 COM=0
1750 FOR D=1 TO 700
1760 NEXT D
1770 CALL CLEAR
1780 CALL SCREEN(1)
1790 GOSUB 1890
1800 GOTO 270
1810 END
1820 REM *****
1830 DATA -1,1,-2,2,-
3,3,0,1,0,2,0,3,1,1,2,2,3,3,1,0,
2,0,3,0
1840 REM
1850 DATA 1,-1,2,-2,3,-3,0,-
1,0,-2,0,-3,-1,-1,-2,-2,-3,-3
1860 REM
1870 REM
1880 REM
1890 PRINT TAB(6);"FOUR IN A ROW
":TAB(6);"=====": : : :
:
1900 PRINT "CHOOSE OPTION.": : :
: :
1910 PRINT "TWO PLAYER GAME ?
(1)": : : "AGAINST COMPUTER ..
.":"COMPUTER PLA
YS FIRST ? (2)": : :
1920 PRINT "AGAINST COMPUTER ...
": "YOU PLAY FIRST ? (3)": : :
: :
1930 PRINT "QUIT ?
(4)"
1940 CALL SCREEN(6)
```

Listings

```
1950 CALL SOUND(-80,200,25)
1960 CALL KEY(0,KY,ST)
1970 IF (KY>48)+(KY<53)=-
2 THEN 1980 ELSE 1950
1980 IF KY=52 THEN 2090
1990 IF KY=49 THEN 2030
2000 COM=1
2010 IF KY=51 THEN 2030
2020 J=INT(RND*4+3)
2030 CALL HCHAR(24,24,79)
2040 CALL HCHAR(24,25,46)
2050 CALL HCHAR(24,26,75)
2060 CALL HCHAR(24,27,46)
2070 CALL SCREEN(11)
2080 RETURN
2090 CALL CLEAR
2100 STOP
2110 FOR I=1 TO LEN(X$)
2120 CODE=ASC(SEG$(X$,I,1))
2130 CALL HCHAR(1,5+I,CODE)
2140 NEXT I
2150 RETURN
2160 IF A(B(J)+RW(K,2),J+CL(K,2)
)=0 THEN 870
2170 CT=CT+10
2180 IF A(B(J)-RW(K,1),J-
CL(K,1))<>A(B(J)+RW(K,2),J+CL(K,
2))THEN 870
2190 CT=CT+256
2200 GOTO 870
2210 REM**
2220 CALL SCREEN(1)
2230 CALL COLOR(9,1,1)
2240 CALL COLOR(10,1,1)
2250 REM **
2260 CALL CHAR(96,"1010101010101
010")
2270 CALL CHAR(97,"0000000000000
OFF")
2280 CALL CHAR(98,"8142241818244
281")
2290 CALL CHAR(99,"8040201008040
201")
2300 CALL CHAR(100,"010204081020
4080")
2310 CALL CLEAR
2320 PRINT TAB(9);"S O F T W A R
E":TAB(13);"(1982)",,,,,,
2330 FOR J=7 TO 18
2340 CALL SOUND(-
900,J*16,0,220,0)
2350 CALL HCHAR(J,7,104,22)
2360 NEXT J
2370 CALL HCHAR(8,9,97,9)
2380 CALL VCHAR(9,13,96,8)
2390 K=19
2400 I=26
2410 FOR J=9 TO 16
2420 CALL SOUND(-900,400-
J*16,0,220,0)
2430 CALL HCHAR(J,I,100)
2440 CALL HCHAR(J,K,99)
2450 K=K+1
2460 I=I-1
2470 NEXT J
2480 CALL SCREEN(11)
2490 CALL COLOR(9,2,4)
2500 CALL COLOR(10,4,4)
2510 FOR D=1 TO 2000
2520 NEXT D
2521 CALL CLEAR
2530 CALL SCREEN(1)
2540 CALL COLOR(9,2,1)
2550 CALL COLOR(10,2,1)
2560 RETURN
2570 END
```

Listings

```
120 CALL CLEAR
130 CALL SCREEN(12)
140 PRINT "'CARS & CARCASSES'"
160 DATA 600,131,1,450,131,1,150
,131,1,600,131,1,450,156,1,150,1
47,1,450,147,1,1
50,131,1
170 DATA 450,131,1,150,123,1,600
,131,1,600,9999,30
180 DATA 600,156,1,450,156,1,150
,156,1,600,156,1,450,196,1,150,1
75,1,450,175,1,1
50,156,1
190 DATA 450,156,1,150,147,1,600
,156,1,600,9999,30
200 DATA 300,262,1,300,233,1,300
,208,1,300,196,1,600,196,1,600,1
56,1
210 DATA 300,262,1,300,233,1,300
,208,1,300,196,1,600,196,1,600,1
56,1
220 DATA 600,131,1,450,131,1,150
,131,1,600,131,1,450,156,1,150,1
47,1,450,147,1,1
50,131,1
230 DATA 450,131,1,150,123,1,600
,131,1,600,9999,30
240 FOR I=1 TO 48
250 READ M,N,O
260 CALL SOUND(M,N,O)
270 NEXT I
280 CALL CLEAR
290 CALL SCREEN(15)
300 PRINT "SPACE MONSTERS,FRANKE
NSTEINS,AND DRACULAS HAVE INVADE
D YOUR CITY!"
310 CALL SOUND(4250,9999,30)
320 PRINT "BUT DON'T WORRY! YOUR
CAR CAN RUN THEM OVER."
330 CALL SOUND(4250,9999,30)
340 PRINT "PRESS ANY KEY AND YOU
R CAR TURNS LEFT."
350 PRINT "IF YOU HIT A TREE YOU
R SCORE WILL SUFFER!"
360 CALL SOUND(4250,9999,30)
370 PRINT "THE GAME ENDS AFTER Y
OU MAKE TOO MANY TURNS, OR IF YO
U GO OFF THE E
DGE."
380 CALL SOUND(4250,9999,30)
390 CALL SOUND(4250,9999,30)
400 CALL SOUND(4250,9999,30)
```

```
410 CALL CLEAR
420 Q=0
430 S=0
440 T=0
450 RR=0
460 CALL SCREEN(4)
470 CALL COLOR(1,16,16)
480 CALL COLOR(2,7,16)
490 CALL CHAR(152,"1C1C1C141C1C1
C00")
500 CALL CHAR(153,"2070F87C361F0
E04")
510 CALL CHAR(154,"0000FEEEF000
000")
520 CALL CHAR(155,"040E1F367CF87
020")
530 CALL CHAR(96,"1898FF19183C24
66")
540 CALL CHAR(104,"3C5AE77E3CA46
806")
550 CALL CHAR(112,"2418EFC76E2C1
83C")
560 CALL CHAR(144,"1038543854BA5
492")
570 CALL COLOR(9,7,16)
580 CALL COLOR(16,2,16)
590 CALL COLOR(10,5,16)
600 CALL COLOR(11,2,16)
610 CALL COLOR(15,13,16)
620 RANDOMIZE
630 FOR I=1 TO 50
640 A=INT(RND*24)+1
650 B=INT(RND*30)+3
660 F=INT(RND*4)+1
670 ON F GOTO 680,700,720,740
680 EN=96
690 GOTO 750
700 EN=104
710 GOTO 750
720 EN=112
730 GOTO 750
740 EN=144
750 CALL GCHAR(A,B,PK)
760 IF PK<>32 THEN 810
770 CALL HCHAR(A,B,EN)
780 IF EN=144 THEN 810
790 Q=Q+1
800 Q2=Q
810 NEXT I
820 F=1
830 Y=10
840 X=30
```

Listings

```
850 CAR=152
860 LK=32
870 IF Y>24 THEN 1440
880 IF Y<1 THEN 1440
890 IF X>32 THEN 1440
900 IF X<1 THEN 1440
910 CALL GCHAR(Y,X,H)
920 IF H=32 THEN 1030
930 IF H>112 THEN 990
940 CALL HCHAR(Y,X,42)
950 CALL SOUND(100,-6,0)
960 T=T+1
970 RR=RR+1
980 GOTO 1030
990 IF H>144 THEN 1030
1000 CALL SOUND(100,-7,0)
1010 T=T-1
1020 LK=144
1030 CALL HCHAR(Y,X,CAR)
1040 CALL SOUND(-500,110,10,-
6,10)
1050 CALL HCHAR(Y,X,LK)
1060 LK=32
1070 CALL KEY(0,KEY,STATUS)
1080 IF STATUS=0 THEN 1140
1090 S=S+1
1100 IF S>=150-10*TRY THEN 1440
1110 F=F+1
1120 IF F<9 THEN 1140
1130 F=1
1140 ON F GOSUB 1160,1190,1230,1
260,1300,1330,1370,1400
1150 GOTO 870
1160 Y=Y-1
1170 CAR=152
1180 RETURN
1190 Y=Y-1
1200 X=X-1
1210 CAR=153
1220 RETURN
1230 X=X-1
1240 CAR=154
1250 RETURN
1260 Y=Y+1
1270 X=X-1
1280 CAR=155
1290 RETURN
1300 Y=Y+1
1310 CAR=152
1320 RETURN
1330 X=X+1
1340 Y=Y+1
1350 CAR=153
1360 RETURN
1370 X=X+1
1380 CAR=154
1390 RETURN
1400 X=X+1
1410 Y=Y-1
1420 CAR=155
1430 RETURN
1440 CALL CLEAR
1450 CALL SCREEN(8)
1460 CALL SOUND(250,440,2)
1470 CALL SOUND(250,660,1)
1480 CALL COLOR(2,2,1)
1490 PRINT "THE GAME IS OVER"
1500 PRINT "YOUR SCORE IS ";(50-
(Q-T))*5-S
1510 RS=RS+(50-(Q-T))*5-S
1520 PRINT "TOTAL RUNNING SCORE
IS ";RS
1530 IF RR<>Q THEN 1620 ELSE 155
0
1540 IF T<>Q THEN 1620
1550 PRINT "CONGRATULATIONS! YOU
HAVE":" RUN OVER EVERY THING":"
THAT MOVES!"
1560 FOR I=1 TO 16
1570 CALL SCREEN(I)
1580 CALL SOUND(100,(I*131),1)
1590 NEXT I
1600 CALL SCREEN(8)
1610 GOTO 1690
1620 IF T<(Q-7) THEN 1650
1630 PRINT "RATE YOURSELF A PRO!
":" YOU HAVE KILLED":" PRACTICAL
LY EVERYTHING!"
1640 GOTO 1690
1650 IF T<(Q-14) THEN 1680
1660 PRINT "YOU ARE":" AN AVERAG
E KILL-PERSON."
1670 GOTO 1690
1680 PRINT "YOU CAN DRIVE":" BET
TER THAN THAT!":" GO OUT AND GET
'EM NEXT TIME!"
1690 INPUT "TRY AGAIN? (Y OR N)"
:RQ$
1700 IF RQ$<>"N" THEN 1730
1710 PRINT "BYE-BYE"
1720 BREAK
1730 TRY=TRY+1
1740 GOTO 410
1750 END
```

Listings

```
100 CALL CLEAR :: CALL SCREEN(16
):: DISPLAY AT(3,8):"THE '37' GA
ME" !by Jim Pete
rson
110 DISPLAY AT(5,1):" We will ta
ke turns picking":"a number from
1 to 5, but":"n
ot the number that was just":"pi
cked."
120 DISPLAY AT(10,1):" The numbe
rs we pick will be":"added to th
e total count."
130 DISPLAY AT(13,1):" Whoever r
eaches 37 is the":"winner, but i
f you go over":"
37 you lose."
140 CALL SHOW(20,1,"Press any ke
y to start")
150 CALL KEY(0,K,S):: IF S=0 THE
N 150
160 DATA 4,11,17,24,30,37
170 DATA 262,330,392,523,523
180 DATA 1047,784,659,523,523
190 C,P=0 :: CALL CLEAR :: CALL
MAGNIFY(2):: R=10 :: FOR J=1 TO
5 :: CALL SPRITE
(#J,48+J,5,R,10):: R=R+30 :: NEX
T J
200 CALL SHOW(24,1,"(Y)ou or (M)
e first?"):: ACCEPT AT(24,22)VAL
IDATE("YM")SIZE(
1):Q$ :: DISPLAY AT(24,1):"
210 IF Q$="Y" THEN CALL SHOW(22,
8,"I pick 4"):: CALL COLOR(#4,1)
:: P=4 :: C=4 ::
CALL SHOW(3,10,"COUNT=4")
220 CALL SHOW(20,8,"Pick your nu
mber"):: ACCEPT AT(20,26)VALIDAT
E("12345"):N ::
IF N=P THEN 220
230 IF P>0 THEN CALL COLOR(#P,5)
240 CALL COLOR(#N,1):: P=N :: C=
C+N :: CALL SHOW(3,10,"COUNT= "&
STR$(C)):: IF C=
37 THEN 320 ELSE IF C>37 THEN 34
0
250 RESTORE 160
260 READ X :: IF C<X THEN B=X-
C ELSE IF X<37 THEN 260
270 CALL SHOW(22,8,"I'm thinking
..."):: FOR Y=1 TO 700 :: NEXT Y
```

```
280 IF B>5 AND B/2=INT(B/2)THEN
B=B/2
290 IF B>5 OR B=P THEN B=1-(P=1)
300 CALL SHOW(22,8,"I pick "&STR
$(B)):: CALL COLOR(#P,5):: CALL
COLOR(#B,1):: P=
B :: C=C+B :: CALL SHOW(3,10,"CO
UNT= "&STR$(C))
310 IF C=37 THEN 340 ELSE IF C>3
7 THEN 320 ELSE 220
320 RESTORE 170 :: FOR J=1 TO 5
:: READ F :: CALL SOUND(100,F,5,
F*1.03,5):: NEXT
J :: CALL SHOW(12,8,"YOU WIN!")
330 CALL SHOW(15,8,"Play again?
(Y/N)"):: ACCEPT AT(15,26)VALIDA
TE("YN"):Q$ :: I
F Q$="N" THEN STOP ELSE 190
340 RESTORE 180 :: FOR J=1 TO 5
:: READ F :: CALL SOUND(300,3000
0,30,30000,30,F,
30,-
4,5):: NEXT J :: CALL SHOW(12,8,
"YOU LOSE!"):: GOTO 330
350 SUB SHOW(R,C,T$):: FOR J=1 T
O 10 :: DISPLAY AT(R,C):" " :: D
ISPLAY AT(R,C):T
$ :: NEXT J :: SUBEND
```

```
1 DISPLAY AT(12,9)ERASE ALL:"2-
LINE GAME":" by Jim Peterso
n":" - use S&D ke
ys to paint the white line on th
e highway" :: FOR D=1 TO 1000 ::
NEXT D
2 !if it is too easy, changethe
6 in A$=RPT$(CHR$(143),6) to 5 a
nd the 5 in C>T+
5 to 4
100 CALL CLEAR :: A$=RPT$(CHR$(1
43),6):: CALL COLOR(14,2,2,2,16,
16):: CALL SCREE
N(4):: T=11 :: C=14 :: CALL HCHA
R(22,C+2,42):: RANDOMIZE
110 T=T+INT(3*RND-1)+(T=21)-
(T=1):: PRINT TAB(T);A$ :: CALL
KEY(3,K,S):: C=C+(K=
83)-
(K=68):: CALL HCHAR(22,C+2,42)::
IF C<T OR C>T+5 THEN STOP ELSE
110
```

Listings

```
100 !BY TORSTEN NIEMIETZ, MARBAC
HER WEG 3,D-
2800 BREMEN 1,WEST GERMANY
110 FOR J=1 TO 10 :: READ T(J)
120 NEXT J :: E=330 :: A=440 ::
H=494 :: C=554 :: K=659 :: F=740
:: G=831
130 DISPLAY AT(3,8)ERASE ALL:"S
- O - L -
O": :TAB(10);"MIT OOMPAH": :RP
T$
("=",28): : "BY:" TORSTEN NIEM
IETZ": : "mit Oompah by Tigercub"
140 DISPLAY AT(18,1):"MAKE UP YO
UR SOLO WITH": "KEYS 1 TO 9 ... C
OME ON !!!"
150 FOR S=1 TO 2 :: CALL SOUND(2
00,E,3,H,3):: CALL SOUND(200,E,3
,H,3)
160 CALL SOUND(200,E,3,C,3):: CA
LL SOUND(200,E,3,H,3):: NEXT S
170 M=E :: N=H :: O=C :: D=8 ::
GOSUB 210 :: M=A :: N=K :: O=F ::
: D=4 :: GOSUB 2
10 :: M=E :: N=H :: O=C :: GOSUB
210 :: M=H :: N=F :: O=G :: D=2
180 GOSUB 210 :: M=A :: N=K :: O
=F :: GOSUB 210 :: M=E :: N=H ::
O=C :: GOSUB 21
0 :: M=H :: N=F :: O=G :: GOSUB
210
190 FOR X=10 TO 3 STEP -
1 :: CALL SOUND(200,E,3,H,3,T(X)
,0)
200 NEXT X :: CALL SOUND(800,E,3
,H,3,K,0):: GOTO 150
210 FOR X=1 TO D :: FOR Y=1 TO 2
:: GOSUB 280
220 CALL SOUND(200,M,3,N,3,T(R-
48-(R=48))* .9375,30,-4,0)
230 NEXT Y :: GOSUB 280
240 CALL SOUND(200,M,3,O,3,T(R-
48-(R=48))* .9375,30,-
4,0):: GOSUB 280
250 CALL SOUND(200,M,3,N,3,T(R-
48-(R=48))* .9375,30,-4,0)
260 NEXT X :: RETURN
270 DATA 587,659,784,880,988,117
5,1319,1568,1760,44733
280 CALL KEY(0,R,S):: IF S<>0 AN
D R>48 AND R<58 THEN RETURN ELSE
R=57 :: RETURN
```

```
100 CALL CLEAR
110 PRINT " WILDWOOD FLOWER
": : " on the hammered dulcime
r": : : : : :
:" by Jim Peterson"
120 DIM S(26)
130 F=262
140 FOR N=1 TO 25
150 S(N)=INT(F*1.059463094^N)
160 NEXT N
170 READ N
180 C=S(N)
190 D=S(N)
200 CALL SOUND(-350,S(N),0)
210 RESTORE 350
220 FOR J=1 TO 63
230 GOSUB 260
240 NEXT J
250 GOTO 200
260 READ N
270 CALL SOUND(-350,S(N),0)
280 X=1^100
290 CALL SOUND(-350,S(N),0,C,9)
300 X=1^100
310 CALL SOUND(-
350,S(N),0,C,9,D,19)
320 D=C
330 C=S(N)
340 RETURN
350 DATA 5,6,8,8,10,13,5,5,6,5,3
,3,5,3,1,1
360 DATA 5,6,8,8,10,13,5,5,6,5,3
,3,5,3,1,1
370 DATA 8,13,17,17,17,15,13,13,
8,8,10,10,13,10,8,8
380 DATA 1,1,1,3,5,5,8,5,3,3,5,3
,1,1,1
```


Listings

```
100 CALL CLEAR
110 CALL SCREEN(16)
120 PRINT TAB(9);"KALEIDOSCOPE"
140 PRINT "IF YOU WANT TO FREEZE
E THE PICTURE,(AT THE END OF A
COLOR SEQUENC
E) PRESS ANY"
150 PRINT "KEY AND HOLD IT DOWN,
TO":"CONTINUE RELEASE THE KEY."
160 PRINT "CHOOSE THE COLORS YO
U WOULD LIKE TO USE IN YOUR":"KA
LEIDOSCOPE FROM
THIS LIST:: : "2-BLACK",
170 PRINT "3-MED.GREEN":"4-
LT.GREEN", "5-DARK BLUE":"6-
LT.BLUE", "7-DARK RED":"8-C
YAN", "9-MED.RED":"10-LT.RED",
180 PRINT "11-DK.YELLOW":"12-
LT.YELLOW", "13-DK.GREEN":"14-
MAGENTA", "15-GRAY":
190 PRINT "LIST 8 NUMBERS IN TH
E ORDER YOU WANT THE COLORS":"WI
TH COMMAS BETWEE
N"
200 INPUT A,B,D,E,F,G,H,J
210 INPUT "DURATION:(CHOOSE A NU
MBER FROM 10 TO 100) ":T
220 REM SET CHARACTERS AS BLOCKS
230 FOR K=97 TO 153 STEP 8
240 CALL CHAR(K,"FFFFFFFFFFFFFF
F")
250 NEXT K
260 CALL CLEAR
270 C=97
280 REM START OUTER LOOP
290 FOR I=1 TO T
300 CALL COLOR(10,B,B)
310 CALL COLOR(11,D,D)
320 CALL COLOR(12,E,E)
330 CALL COLOR(13,F,F)
340 CALL COLOR(14,G,G)
350 CALL COLOR(15,H,H)
360 CALL COLOR(16,J,J)
370 CALL COLOR(9,A,A)
380 IF C<154 THEN 410
390 C=97
400 REM START INNER LOOP-
ONE COLOR CYCLE
410 FOR Y=1 TO 12
420 REM LINE 430 CAN BE X=I*Y O
R X=I*(SIN(Y)+1) FOR DIFFERENT P
ATTERNS
430 X=I+Y
440 REM CHECK VALUE OF X TO KEEP
IN WITHIN LIMITS
450 IF X<=12 THEN 480
460 X=INT(X/3)
470 GOTO 450
480 IF X>1 THEN 510
490 X=X+1
500 GOTO 480
510 CALL HCHAR(Y+11,X+5,C)
520 CALL HCHAR(Y+11,29-X,C)
530 CALL HCHAR(13-Y,X+5,C)
540 CALL HCHAR(13-Y,29-X,C)
550 CALL HCHAR(X+11,Y+5,C)
560 CALL HCHAR(X+11,29-Y,C)
570 CALL HCHAR(13-X,Y+5,C)
580 CALL HCHAR(13-X,29-Y,C)
590 NEXT Y
600 C=C+8
610 CALL KEY(0,KEY,STATUS)
620 IF STATUS<>1 THEN 650
630 CALL KEY(0,KEY,STATUS)
640 IF STATUS=-1 THEN 630
650 NEXT I
660 REM FINISHED -
ASK IF REPEAT DESIRED
670 CALL SOUND(200,380,2)
680 M$="PRESS Y FOR ANOTHER"
690 GOSUB 840
700 CALL KEY(0,KEY,STATUS)
710 IF STATUS=0 THEN 700
720 IF KEY<>89 THEN 800
730 LET M$="PRESS Y FOR SAME COL
ORS"
740 GOSUB 840
750 CALL KEY(0,KEY,STATUS)
760 IF STATUS=0 THEN 750
770 CALL CLEAR
780 IF KEY=89 THEN 210
790 GOTO 160
800 LET M$="BYE,COME PLAY AGAIN"
810 GOSUB 840
820 STOP
830 REM SUBROUTINE FOR PRINTING
STRING AT SPECIFIC LOCATION
840 FOR I1=1 TO LEN(M$)
850 CALL HCHAR(24,1+I1,ASC(SEG$(
M$,I1,1)))
860 NEXT I1
870 RETURN
880 END
```

Listings

```
100 CALL CLEAR
110 BSCORE=600
120 GOSUB 1540
130 PRINT "          PEN THE PIG"
: : : : :
140 PRINT "          BY DAVE HAMILT
ON"
150 PRINT "          & MIKE O'REGA
N": : : : : :
160 PRINT "I FOR INSTRUCTIONS":
:
170 GOSUB 1580
180 CALL HCHAR(1,1,30,32)
190 CALL HCHAR(24,1,30,32)
200 CALL VCHAR(1,1,30,24)
210 CALL VCHAR(1,32,30,24)
220 CALL KEY(0,K,S)
230 IF S<1 THEN 220
240 IF K=73 THEN 1410
250 CALL CLEAR
260 PRINT "CHOOSE LEVEL": : "1 E
ASY          2 DIFFI
CULT": : : :
270 CALL KEY(0,K,S)
280 IF (S=0)+(K<49)+(K>50)THEN 2
70
290 IF K=50 THEN 320 ELSE 300
300 CALL COLOR(11,2,1)
310 GOTO 330
320 CALL COLOR(11,1,1)
330 CALL CLEAR
340 IF K=89 THEN 1410
350 CALL CLEAR
360 RANDOMIZE
370 MX=INT(RND*28)+2
380 MY=INT(RND*15)+5
390 DMX=1
400 DMY=1
410 YX=INT(RND*28)+2
420 SCORE=0
430 CALL COLOR(2,16,1)
440 CALL COLOR(13,7,7)
450 YY=INT(RND*15)+5
460 CALL CHAR(96,"FFFFFFFFFFFFFF
FF")
470 CALL CHAR(104,"FFFFFFFFFFFFFF
FFF")
480 CALL CHAR(112,"FFFFFFFFFFFFFF
FFFF")
490 CALL CHAR(128,"FFFFFFFFFFFFFF
FFF")
500 CALL CHAR(42,"3C7EFFFFFFFF7E
3C")
510 CALL HCHAR(4,1,96,3)
520 CALL HCHAR(2,2,128,2)
530 CALL HCHAR(3,2,128,2)
540 CALL HCHAR(1,1,96,32)
550 CALL HCHAR(24,1,96,32)
560 CALL VCHAR(1,1,96,24)
570 CALL VCHAR(1,32,96,24)
580 CALL HCHAR(21,30,96,2)
590 CALL HCHAR(22,30,128,2)
600 CALL HCHAR(23,30,128,2)
610 CALL HCHAR(MY,MX,42)
620 CALL HCHAR(YY,YX,96)
630 CALL KEY(1,KEY,STAT)
640 SCORE=SCORE+1
650 IF STAT=0 THEN 860
660 IF KEY=11 THEN 1210
670 DYX=0
680 CALL SOUND(50,YY*110,2)
690 DYY=0
700 IF YY=1 THEN 730
710 IF KEY<>5 THEN 730
720 DYY=-1
730 IF YX=32 THEN 760
740 IF KEY<>3 THEN 760
750 DYX=1
760 IF YY=24 THEN 790
770 IF KEY+1<>1 THEN 790
780 DYY=1
790 IF YX=1 THEN 820
800 IF KEY<>2 THEN 820
810 DYX=-1
820 YX=YX+DYX
830 YY=YY+DYY
840 CALL HCHAR(YY,YX,104)
850 CALL HCHAR(YY,YX,112)
860 CALL GCHAR(MY+DMY,MX,TEST)
870 CALL SOUND(100,MY*110,2)
880 IF (TEST<>96)*(TEST<>104)*(T
EST<>112)THEN 920
890 CALL SOUND(50,-5,2)
900 DMY=-DMY
910 CALL SOUND(50,-5,2)
920 CALL GCHAR(MY,MX+DMX,TEST)
930 IF (TEST<>96)*(TEST<>104)*(T
EST<>112)THEN 960
940 CALL SOUND(50,-6,2)
950 DMX=-DMX
960 CALL GCHAR(MY+DMY,MX+DMX,TES
T)
```

Listings

```
970 IF (TEST<>96)*(TEST<>104)*(T
EST<>112)THEN 1010
980 CALL SOUND(50,-5,2)
990 DMX=-DMX
1000 DMY=-DMY
1010 CALL HCHAR(MY,MX,32)
1020 MY=MY+DMY
1030 MX=MX+DMX
1040 IF MY<=23 THEN 1060
1050 MY=MY-1
1060 IF MY>=2 THEN 1080
1070 MY=MY+1
1080 IF MX<=31 THEN 1100
1090 MX=MX-1
1100 IF MX>=2 THEN 1120
1110 MX=MX+1
1120 CALL HCHAR(MY,MX,42)
1130 IF (MX<=3)+(MX>29)*(MX<32)T
HEN 1160
1140 T=0
1150 GOTO 630
1160 IF (MY<=3)+(MY>21)*(MY<24)T
HEN 1190
1170 T=0
1180 GOTO 630
1190 T=T+1
1200 IF T<10 THEN 630
1210 CALL CLEAR
1220 CALL SOUND(1000,3000,0,3100
,0,3200,0)
1230 PRINT "GAME OVER": : : :
1240 PRINT "YOUR SCORE WAS";SCOR
E;
1250 IF KEY=11 THEN 1260 ELSE 12
70
1260 PRINT "WHEN YOU ABORTED": :
:
1270 PRINT : : :
1280 IF KEY=11 THEN 1290 ELSE 13
00
1290 SCORE=SCORE+500
1300 IF SCORE<BSCORE THEN 1310 E
LSE 1320
1310 BSCORE=SCORE
1320 PRINT "BEST SCORE THIS SESS
ION:";BSCORE: : :
1330 PRINT "ANOTHER GO?"
1340 PRINT "PRESS N TO STOP"
1350 PRINT "OR ANY OTHER KEY TO
CONTINUE"
1360 CALL COLOR(10,2,1)
1370 CALL KEY(0,K,S)
1380 IF S=0 THEN 1370
1390 IF K=78 THEN 1400 ELSE 240
1400 END
1410 CALL CLEAR
1420 GOSUB 1540
1430 PRINT "CATCH THE CRAZY ""PI
G"" BY TRAPPING IT IN ONE OF
THE"
1440 PRINT "RED ""PENS"" IN THE
DIAGONAL CORNERS, BY BOXING IT
IN WITH YOUR
WALL.":
1450 PRINT "YOU CAN BUILD ONLY V
ERTICAL OR HORIZONTAL WALLS. . .
. USE THE E S
D OR X KEYS": :
1460 PRINT "WATCH OUT THOUGH -
IF YOU GET THE PIG TOO HARASS
ED IT WILL BREAK O
UT THROUGH YOUR WALL!": :
1470 PRINT "IF YOU CHOOSE LEVEL
2 THEN YOUR WALLS WILL BECOME
INVISIBLE FO
RCE FIELDS!!!": :
1480 PRINT "IF YOU'VE HAD ENOUGH
THEN PRESS 'T'(TERMINATE)": :
1490 PRINT "PRESS ANY KEY TO STA
RT"
1500 GOSUB 1580
1510 CALL KEY(0,K,S)
1520 IF S=0 THEN 1510
1530 GOTO 250
1540 FOR I=1 TO 10
1550 CALL COLOR(I,1,1)
1560 NEXT I
1570 RETURN
1580 FOR I=1 TO 10
1590 CALL COLOR(I,2,1)
1600 NEXT I
1610 RETURN
```

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