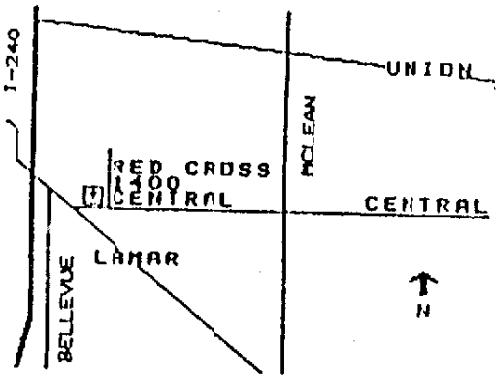
NOTICES

MEETING
7:00 P.M.
Thursday, October 16th
Red Cross Building
1400 Central Av.

WORKSHOP
9:00 - 12:00
Saturday, October 25th
at Richard Hiller's
5704 Maple Tree Dr.
Memphis, Tn 38115
Maps at meeting
or call 794-9945

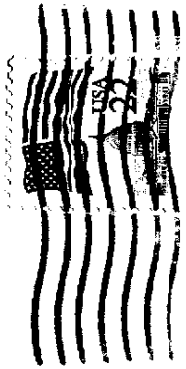


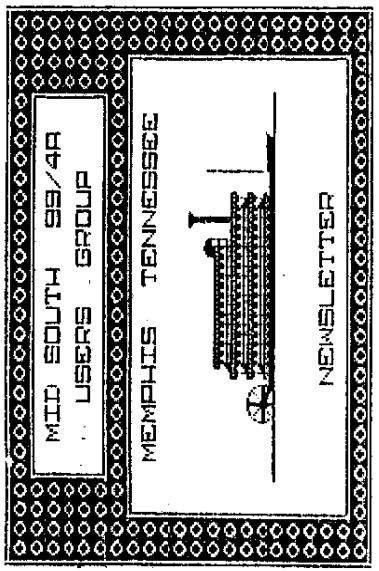
MEMBERSHIP APPLICATION

NAME _____ | | $15.00 FAMILY
ADDRESS _____ | | $10.00 JUNIOR (under 15)
CITY _____ ST ZIP _____ | | $10.00 ASSOCIATE (N/L only)
PHONE( ) - ; INTERESTS _____

EQUIPMENT, ETC. _____

Detach and mail with check payable to: Mid-South 99 Users Group, P.O. Box 38522, Germantown, Tn, 38183-0522.





P.O. Box 38522, Germantown, Tn 38183-0522

US 2/86
DALLAS TI USER GROUP
1221 MOSSWOOD
IRVING, TX 75061

Newsletter for the MID-SOUTH 99 USERS GROUP Vol 4, #10 October 86

TIDBITS

PRESIDENTS BIT

I really hope nobody else is having the same equipment problems that I am having. Let me tell you about equipment problems. FIRST I have three (3) P.E. boxes down with bad power supplies or bad transformers. SECOND I have two (2) 4/A consoles that won't work. THIRD I have a Gemini 10X that has a bad print head. FOURTH That same printer has an 8K buffer and the NLQ chip and it's gone nuts. you've never seen such print. FIFTH I have a 300/1200 Volksmodem getting nothing but garbage. SIXTH My Gram Kracker has a dead battery. SEVENTH I have a Cannon DS/DD disk drive that has gone bad. The good news is it's still in warranty, the bad news is I bought it from the National Assistance Group... So I don't want to hear about your troubles. In fact, I'm having to use a friends computer to type this PRESIDENTS BIT. The cost is about 300 dollars to get the TI equipment replaced. I sure hope it holds together for a while. What's the old song... "if it weren't for bad luck I'd have no luck at all".

The September Newsletter was another FANTASTIC Newsletter. Our hearty thanks go out to AL DOSS. As Newsletter Editor, Al is responsible for the format and content of the newsletter. I truly think I can speak for all the members in saying, "THE NEWSLETTER HAS NEVER LOOKED BETTER". Al has all the headaches and heartaches of putting together our monthly newsletter. Each month he has the responsibility of getting the information together and printing a test newsletter. Then based upon how it comes out, he has to change and move and re-test until he comes up with the final copy. He then gets stamps, coordinates getting member labels, getting paper, printing the newsletter, folding and stapling, attaching labels, and mailing the newsletters on the week of the monthly meeting. FOLK'S, I hope you are understanding what I am saying, This job is "THE BIGGEST JOB IN THE WHOLE USERS GROUP". Yes, there are others involved in the newsletter, but the person with the overall responsibility gets the blame if something is wrong and rightly deserves the credit when something is right. Many times he has to do it alone because he gets only token help from the club officers and members. I know for myself, I get to help very little. Sometimes our outside interests or business schedules leave little time to offer our services to the group.

Our Newsletter is one of the best, if not the best, in any TI Users Group. We all owe AL DOSS a well deserved round of recognition for that fact. Many times we overlook the hardest workers, but AL, you have my thanks and the gratitude of the whole group for making our newsletter what it is today. If it weren't for the dedication of people like AL, GARY, and PIERRE, who give their time month after month, our group would be missing much of the recognition it has received over the past years.

I would like for each and every member to make a valiant effort to

attend the October meeting. There will be new program demonstrations and a good time will be had by all. There might even be a suprise guest... ME..... See you there...Gerald Smith President

EMULATED NUMERIC KEYPAD

In the last two newsletters, David Cotner explained how to hard-wire a numeric keypad for the TI-99/4A. Being a complete hardware klutz, I decided to try to emulate a numeric keypad using the Gram Kracker.

By redefining 10 control characters, we can redefine the following keys to produce an alternate keypad similar to that of the Tandy Model 100 and certain laptop IBM-PC compatibles. The following keys are redefined as number keys when the control key is held down:

Normal Keypad
------ ------

U I O 7 8 9
J K L 4 5 6
M , . 1 2 3
space bar 0

To make the modifications to the Gram Kracker:

1. Load an operating system into Gram 0.
2. Switch Gram 0 and Loader On switches on. 3. Choose Gram Kracker option from main menu.
4. Choose option 5 to edit memory.
5. Search g1796.
6. Make the following changes:

Address	From	To
g1796	20	30
179D	8F	39
179E	8C	36
179F	9B	33
17A5	89	38
17A6	8B	35
17A7	80	32
17AD	95	37
17AE	8A	34
17AF	8D	31

Since the modifications are to the OpSys, the keypad will be available to all your cartridges. Since control characters are used with Terminal Emulators, the normal OpSys should be used with Terminal Emulators (This is not necessary with Fast-Term. I believe Fast-Term redefines its own control characters.)

To use your new keypad, simply hold the control button down with

your left hand and use the keypad with your right hand. With very little practice the keypad placement will become second nature to you...Michael Dorman

MYARC

Well Gary has done it again. He's managed to finagle someone else into writing an article for the newsletter. By now, most of us are on to him and his sneaky ways of doing it, but he still manages to come up with new ones.
This time he blackmailed me into promising to write at least one article in order to get a copy of the latest version of Funlwriter. Even thought it was sent to him in DS/DD format which he can't read! (Maybe someday you'll upgrade from kidstuff to the real thing Gary).

Anyway he asked me to write it on the Myarc equipment that I have purchased. If you subscribe to Micropendium, you can probably skip this article as they have covered these items quite well and professionally. But for those of you who don't (and you really should subscribe to it!) and who missed the demo I gave a few months back, here goes....

First I'll discuss their disk controller card. The Myarc DC card comes like all of their cards that go in the Peripheral Expansion Box. It is mounted in a tan, plastic clamshell that looks like TIs cards. It fitted easily and securely in my PEB replacing the TI one that I now have as a backup, although I would be reduced to doing without Double Density. The plugs for hooking up the disk drives were also just like the TI card. The only difference immediately noticeable was that the indicator light was red instead of yellow. The manual that comes with it is just about a duplicate of the TI one except that it contains instructions on Double Density as well as Double Sided formatting, adjusting track-to-track access time, and the built-in commands that loading and running of DIS/FIX programs and cataloging a disk from command mode.

Also included is a disk that contains Myarcs Disk Manager program. This DM is definitely superior to TIs considering it was produced several years later than the DM 2 cartridge. Being on disk slows down access to it, but then a disk manager is not the most frequently used program and it allows for cheaper updates. Being able to load and run D/F programs from command mode deletes needing the E/A cartridge or another loader program. This can be quite handy as well as saving in time and cartridge swapping. But even more useful and exciting is the Disk Directory function. This can be invoked from command mode in either Basic or Extended Basic by typing in CALL DIR(X) or CALL RDDIR if you have a Ramdisk. I have used this function countless times and am most happy with it and its performance. No more need to plug in DM2 or load another disk manager! Upon booting up the Disk Manager you are presented with a picture of four disk drives, representing the DCs ability to handle up to 4 drives (another plus over the TI card), and a menu at the bottom. You may select any one of the commands by pressing the key corresponding with the commands first letter. This follows for all of the commands in whatever mode you

are in. They are: Edit, Setup, Catalog, Xecute, Utility and Goodbye.

Edit and Catalog are similar in that they catalog whichever drive you specify. Edit allowing you to immediately manipulate the files. If you already have a directory in memory, Edit will bring it up instead of asking for another drive to catalog. When in Edit mode you have 10 new choices: Copy, Move, Exit, Delete, Rename, Protect, Unprotect, Volume, Backup and See. Copy does just what it say copying the file you choose to another disk. Move will copy also but it will delete the file from the master disk so be careful! Exit simply takes you back to the main menu. Delete is self explanatory as is Rename. Protect and Unprotect apply or remove the protection that prevents over-writing a file. Volume allows you to rename the disk. Backup is a quite useful command in that with one keystroke you can tell it to copy ALL of the files on the disk. Very time saving. See is also quite useful in that it allows you to read any file saved in a Display format. This is mainly for reading D/V files (TI-Writer files) although you can read D/F files. Of course D/F files will be just assembled source code. I have used this a lot although it is scrunched into a 40 column format making it more difficult to read than with TI-Writer.

Upon choosing the Setup mode a new menu appears: Save, Exit, Change, Foreground and Background. Foreground and Background allow you to change the screen and text colors to any combination from the 16 colors available. Change lets you set the system defaults for the drive(s) and printer you are using. You may still change the setting to suit your need during your use of the DM. Save saves the default settings to the DM disk. You must have the write protect tab removed for this command to work! Exit again returns you to the main menu.

Utility gives you 6 more commands. They are: Tests, Clone, Format, Load/Run, Ramdisk and Exit. Tests allows you to choose any of the three standard disk tests; Non-destructive Quick Test, Destructive Quick Test and Comprehensive Disk Test. The latter test taking about 20 minutes to complete so I doubt many use this function. Clone reproduces not another computer, but copies your disk sector by sector rather than by file. This function is FAST! But caution should be exercised with this as it will format the copy disk EXACTLY like the master thereby destroying any data previously on the copy disk. Format does just what it says. You will be asked for the diskname, the number of tracks (40 is standard), whether single or double sided, single or double density and the interlace step. When choosing density, you may choose either 16 or 18 sector format. 16 is recommended by Myarc and also by TI and Wester Digital Corp. according to the manual. I used this setting for quite a while until talking with Michael Dorman who gave me some additional information about this. 18 format is actually the "true" double density format which is used by CorComp as well as other makers of computers. I have since switched to this format and have experienced no problems. This increased my storage space on a single sided disk from 640 sectors to 720 sectors. Quite a gain which I appreciate. Thanks Michael! The interlace step is a little hard for me to understand so I won't attempt to confuse you. This functions in connection with

whether you are formatting single or double density and whether you are using the older 20ms access drives or the newer 6ms access drives. The effect of this is to increase or decrease the speed with which the disk is formatted. To find out the optimum time, start with the default value and decrease it by one timing formatting with a watch. When the formatting slows down noticeably, back up one step and you will have your optimum step time. I found that with a 20ms drive, single density was fastest using 2 step and 3 step for double density. Load/Run allows you to load and run a D/F file if you don't have the E/A cartridge. Ramdisk is only usable if you have a ramdisk installed. The option allows you to set which drive you want it to emulate and partition the ramdisk for diskspace and printspooling. I can only verify that this function will work with the Myarc 128 or 512K cards as the manual states. I would hope that owners of other ramdisks would be able to use this function as it is quite useful. Disk drive emulation may be 1-5 or disabled completely although why anyone would want to do that is beyond me!

Well this "Myarcticle" has been quite long and I have yet to describe the 512K card or Myarcs Extended Basic II! I paid @ $170 for the Disk Controller Card/Disk Manager and I feel that they have been worth every penny. I have experienced no problems or bugs. The DM manual explains quite well all of the functions available so it didn't take me long to have it up and running. I have since added a DS drive, but even with only a SS drive, have double density "doubled" my storage space and I found the DM much handier and much more useful that the DM2 cartridge. This of course is due to the additional commands.

One more note on using the Edit command. You may use every function available in that mode without having to leave it and execute them one by one. That is you may tell it to rename the disk, rename one or more files; delete, unprotect or protect files and copy one or more files all at the same time. Then you may execute ALL of your choices ALL at the same time!

The only thing I miss in this whole setup is that when copying files, I don't know how many sectors I am copying, without adding them up as I go along, as you do with DM1000. Oh well, I guess I'll have to wait for the perfect disk system a while longer. Meanwhile, I'll continue to manage my disks all the while smiling!...J. Leslie

IN THE NEWS

This month I did not have much time (and it takes a lot!) to search high and low for information to put in my news article as extensive work at college has taken up most of my free time so you will probably see fewer articles in the newsletter by me for the next several months. I am not loosing interest just loosing time... Hopfully several new active members will take up some of the slack until I can get back into full swing.

I was going to have an article this month on how to connect disk drives but found that trying to explain how to do so was a bigger task than I had imagined. Several people in the group have connected 2 and even 3 drives to their system recently of which I

have spoken with and I found so may variables involved and possible difficulties that it would be impractical for me to cover it all. So instead I would just suggest calling one of the officers if you need help (or me) for information on what drives to buy and how to connect them etc.. That is one reason that we also hold the workshops. If you are having any equipment problems take your equipment to the Saturday workshop and we will do our best to isolate the problem and suggest means of repair...

The first item in the news is that we are quickly approaching the time for the Chicago TI Faire which will be held at Triton College located at 2000 Fifth Ave in River Grove, Illinois. The Faire will be held in the College Center Building on campus. (I will try to put a map elsewhere in the newsletter.) The Faire will be held November 1st from 9am to 6pm. For more information contact the Chicago users group or call their 24hr BBS for the latest Faire updates at (312) 966-2342. You may also contact Grant Schmalgemeir (voice) at (312) 477-0690 from 10:00pm to 11:30pm Central time. Sandra Bartels (Group Vice President and Faire Chariman) hopes that there will be enough interested visiting groups that they will be able to hold a forum to discuss problems facing user groups, such as fund raising, membership drives, local publicity etc... Last year more than 2000 people attended the Faire along with many third party hardware/software vendors...

Rick Glisson has said he definately will be going and there has been a lot of interest expressed by people on TIBBS of Memphis in going also. So I think the central person in our group to contact for more information or to see how to get a ride with someone up there would be Rick Glisson at (901) 386-1159 or call TIBBS at (901) 357-5425.

DataBioTics of P.O. Box 1194, Palos Verdes Estates, CA 90274 is offering "Introduction to Assembly Language for the TI Home Computer" and "Programs for the TI Home Computer" for $3.95 each or $7.00 for both + $1.50 shipping. These are the same books by Steve Davis which cost $20 or so a few years ago! DataBioTics is also offering a parallel printer interface for $69.95 + shipping which plugs directly into the side of the console (no PEB needed). This is just a parallel interface and does not have a serial port for modems. However for $69 it is not bad.

Another product offered by DataBioTics which may interest those especially with just consoles is a word processor in a cartridge called "Miniwriter III with built in printer interface." "Miniwriter III with built in printer interface" includes right in the cartridge a parallel interface allowing the user to connect it with any parallel printer (such as Gemini 10x, SG-10, NX-10...)! Price is now reduced to $25.00 for the cartridge, $13.95 for the cable and then of course you must find a printer which can be found very easily in the Computer Shopper at very reasonable prices (around $200 or so for a good printer.) Shipping is $3.50 for Miniwriter and $1.50 for the cable. The cartridge works with just a console and cassette recorder (32K, PEB, RS232, XB all NOT needed.).

Triton at 1-800-227-6900 is now offering Extended BASIC at a fantastic price of only $29! A great deal.

If you tried to call Risky Business (our new Techie BBS run by Beery Miller at (901) 726-5623) the past month you probably did not get an answer. The reason was because the modem went out and was under repair. Risky Business should be back up by the time this newsletter is printed. However, it will only be running at 300bd until problems with 1200bd can be solved.

Don't forget to call TIBBS of Memphis 300/1200bd at (901) 357-5425 and the Nashville TIBBS 300/1200bd Monday-Thursday 5pm to 6am and from Friday at 5pm to Sunday at 10pm at (615) 851-0427. Also a local non TI-BBS is supportive of TI users and Rick Glisson is SubSysop. Give Forum 80 a call at (501) 744-4180 300/1200bd. XMODEM file transfers are in the works so that we might upload/download from Forum 80 soon.

TIBBS of Memphis will soon have a 512K card which was approved for purchase by the membership at the last meeting. The 512K card will come none too soon as we the number of daily messages are increasing with almost 70 messages written in a 24 hour period recently with 30-40 usually written each day. The 512K card will provide us with a larger message base and the ability to have separate message bases pertaining to different subjects so callers do not have to read though subjects they are not interested in. Pierre (Sysop) will taking care of obtaining the 512K and will be doing extensive modifications to encorporate it into the program. Pierre, is also looking into alternatives to the 512K card which may work better for us (not to mention possibly cheaper) than the 512K so hopefully he will come up with what to get soon as he has been testing different equipment to see how it reacts with TIBBS...

GROUP INFO. So far we have had over 14,000 callers to TIBBS and over 7000 messages written. We also send out 160 to 200 newsletters each month to about 100 members and about 40 user groups that we exchange newsletters with. The rest of the newsletters are sent out to TI supportive businesses, prospective members (3 free list) and a few other miscellaneus places such as MICROpendium who sends us a free issue each month etc... I encourage everyone to check out the newsletters that we receive as all mail is available at each meeting for inspection. We get some very good newsletters!

Last but not least I would like to thank Ron Albright (author of the TI Forum column in the Computer Shopper) for his very kind mention of me and our users group! Check out the Computer Shopper (available at some bookstores) as he writes a very interesting TI column...Gary Cox

PROGRAM BIT

6:10 Doors open.

6:30 Library opens.

7:00-7:15 General discussion.

7:15-7:25 Demonstration of a new utility program written by club member Chris Gaskins.

7:25-40 Suprize demonstration!

7:40-8:00 Demonstration of Soun Digitizer by Data Force Incorporated. This program will digitize any scund by playing the sound into the cassette port. The computer will then reproduce the sound played into it. This is something quite unusual. This program may be the one responsible for the speech in the Ernie and Bert program that we have in our library. Sound Digitizer only requires the console, minimemory and a cassette recorder.

8:00-8:15 A flight with 4A/Flyer (a flight simulator in a cartridge for the TI) 4A/Flyer is not quite as great as I had expected. I did not write a review of it this time since the review has been covered quite well in the last several Micropendiums.

8:15-9:00 TO BE ANNOUNCED... Possibleible demonstrations could be the new Myarc XBII 2.1 and a new game...

10:30 Doors close...

If you have something new, unusual, entertaining or educational that you could demonstrate please contact me... Any suggestions welcome...Gary Cox

(Questions and Answers)

NOTE: Send any questions or answers to: John Craig, RT.1 Box 86-A1, Atoka,TN 38004. If you don't desire your name printed with the question or answer, state so and we will designate an I.D. for it. Q/A's must be received before the end of the month to be published in the next month's newsletter. 'Keep those cards and letters coming folks !

THANKS - to Harry Allston of Reedley, CA for his offer to help with the Organizer - Outline Editor program. This problem was solved locally in our User's Group. But thanks again.

We have received a complicated question from Fred Mills of Manistee, Michigan. It discusses problems converting a program for other computers into one for the TI. The major problem areas are ARRAYS, DIM, and SEG$'s. We are continuing to investigate the problems. John Craig has a copy of the original and "converted" programs. Anyone desiring to help, please contact him...John Craig

HORIZON RAMDISK REVIEW

In our never ending struggle to obtain articles from members for the newsletter we have gone millions of miles away this time to our overseas member Dirk A.C. Cokart who lives in Kraafontein, South Africa who submitted the following brief review of the Horizon RAMDISK.

A RAM DISK is just like a disk drive in some respects as it acts like a disk drive but it is much faster because it pulls the data from memory chips instead of a floppy disk. Several companies currently market a RAM disk for the TI. The Horizon ramdisk can

be bought in kit form or as a fully assembled version with a 90 day's limited guarentee. The kit or assembled ramdisk can be ordered from Horizon computer ltd, PO box 554 Walbridge, OH 4365 . At $53 US for the kit, or $165 US for a 360 sector unit. While a 720 sector unit will come to $210 US. I ordered the ramdisk kit which I assembled myself. The kit consist of a very good qaulity PC board, a very detailed operating, instruction manual, and a very well written step by step construction guide and parts list. The kit also comes with three disks. Two disks contain the source codes, and the third disk contains the operating system, DM1000 and a memory test program.

If you live in the US, there is a mail order firm, Bud Mills services 165 Dartmouth Dr., Toledo, OH 43614. They will supply all the parts for a 360 sector ramdisk for $72 US, or a 720 sector for $105 US if you order the kit form where you put it together yourself and must buy the parts separately. Living outside the US it was a nice challange to shop around and try to find the correct parts. The only trouble I experienced was with germanium diodes.

The thing that really impressed me about Horizon computer was, after writing to David Romer, one of the partners in Horizon computer, he send me the correct diodes (free off charge) and a updated Version of the ramdisk operating system, which auto loads on selecting XB. Now there is also a operating system in public domain, and it is a improvement. It does away with the TI colorbar routine and gives you a menu with nine options to choose from. This project is a very good opportunity to learn more about your computer. To build the ramdisk is not to difficult, as one is guided step, by step. The tools needed are a low wattage soldering iron, a small pair of longnose pliers, and a cutter to cut the diodes, capacitor and resistor leads to the correct length. On the operating system disk Horizon computer's suplies a program to check all the IC's you have installed, if it finds a fault it even gives a clue where to start looking.

This about sums it up as I think that the Horizon RAMDISK is a nice piece of hardware well supported by the people who sell it as they are only a phone call away when you have a problem. I think it should specially appeal to people who own a system with just one disk drive. Mine has been running for a coupple of day's now and it performs very well and I am very happy with the Horizon RAMDISK... Dirk A.C.Cokart.

SHOPPERS CORNER

FOR SALE:

For $2 a piece, Parsec, TI Invaders, Munch Man, Hunt the Wumpus, Tombstone City, Household Budget Management, Home Financial Decisions and for $5 a cartridge carrying case. Contact Gary Cox at (901) 358-0667.

Each meeting usually has a lot of items for sale at the for sale table where anyone may bring anything they have for sale and place it on the table in hopes of someone buying it. Someone even had an Expansion Box last month.

Games "N" Gadgets in the Mall of Memphis still has a lot of good software. They have such software for $29 such as Multiplan, TI-Logo, TI-Writer, Atari compatibe software, TI brand and more...

Looking for a deal on a printer or modem? Check the Computer Shopper.

Those of you that have direct connect modems (ones connected directly irto the phone line) I would encourage you to purchase a phone line surge protector. I know several people who have had their modems and computers blown by a power surge on the phone line which most people do not suspect. Radio Shack will soon have phone line surge protectors for $12.95 which is a good price. I would recommend a surge protector for your power line also which can be obtained at almost any place that carries electronics. You may have to pay a little now but it will save a lot of money in the future not to mention promote a longer and healthier life for your computer. Before I bought a surge protector a power surge blew my printer which then sold me on surge protectors! Nothing is 100% but something is better than nothing...Gary Cox

EXTENDED BASIC TUTORIALS

from

FUNNELWEB FARM ((049) 52 3162)
(The HV99'ers of Australia)

I. INTRODUCTION

These Tutorials were originally written several years ago to try to improve the abysmal standard of programming apparent in magazine and User Group Newsletters, and even commercial game programs at the time. The standard of published programs written in XB has on the whole improved since then. Also XB is no longer the prime language on the TI-99/4a, but it is still a very expressive and powerful language, with features that have only been caught up with in recent times on newer and more pretentious computers. Still, there does seem to be some demand for tutorial material on XB, so I hope this series will still be of value to beginning programmers. This issue of the Tutorials represents a mild going over of the original files, mainly to remove some of the outdated topical material. Now that TI's dead hand is off the 99/4a the prime focus of advanced programming has moved on from XB, but a proper appreciation of XB is still worthwhile.

The aim of this series on TI Extended Basic was always to concentrate on those features which had not received due attention in User-group newsletters or commercial magazines. In fact most of the programs published in these sources up to the original time of writing had made little use of that most powerful feature of XB, the user defined sub-program, or of some other features of XB. Worse still were the many programs which were object lessons in how to write tangled and obscure code. A much neglected source of help is TI's Extended Basic Tutorial tape or disk. The programs in this collection are unprotected and so open for inspection and it's worth looking at their listings to see an example of how

sub-programs can give an easily understood overall structure to a program.

Well, what are we going to talk about then? Subjects covered are:

(1) User-defined sub-programs
(2) Prescan switch commands
(3) Coding for faster running
(4) Bugs in Extended Basic
(5) Crunching program length

Initially the discussion will be restricted to things which can be done with the console and XB only. Original intentions were to cover LINKing of assembly routines but the series petered out before that. Actually, for most game programming in pure XB with no assembler help, the presence of the memory expansion doesn't speed up XB all that much as speed still seems to be limited by the built-in sub-programs (CALL COINC, etc) which are executed from GROM through the GPL interpreter. The real virtue of the expansion system for game programming, apart from allowing longer programs, is that GPL can be shoved aside for machine code routines in the speed critical parts of the game, which are usually only a very small part of the code for a game. Even so careful attention to XB programming can often provide the necessary speed. As an example, the speed of the puck in TXB is a factor of 10 faster in the finally released version than it was in the first pass at coding the game.

II. SUB-PROGRAMS in OVERVIEW

Every dialect of Basic, TI Extended Basic being no exception, allows the use of subroutines. Each of these is a section of code with the end marked by a RETURN statement, which is entered by a GOSUB statement elsewhere in the program. When RETURN is reached control passes back to the statement following the GOSUB. Look at the code segments:

```
290 ....
300 GOSUB 2000
310 ....
2000 CALL KEY(0,X,Y):: IF Y= 1 THEN RETURN ELSE 2000
```

This simple example waits for and returns the ASCII code for a fresh keystroke, and might be called from a number of places in the program. Very useful, but there are problems. If the line number of the subroutine is changed, other than by RESequencing of the whole program (and many dialects of Basic for microcomputers aren't even that helpful) then the GOSUBs will go astray. Another trouble, which you usually find when you resume work on a program after a lapse of time, is that the statement GOSUB 2000 doesn't carry the slightest clue as to what is at 2000 unless you go and look there or use REM statements or tail remarks. Even more confusingly the 2000 will usually change on RESequencing, hiding even that aid to memory. There is an even more subtle problem -- you don't really care what the variable "Y" in the subroutine was called as it was only a passing detail in the subroutine. However, if "Y" is used as a variable anywhere else in the program its value will be affected. The internal workings of the

subroutine are not separated from the rest of the program, but XB does provide four ways of isolating parts of a program.

(1) Built-in sub-programs
(2) DEF of functions
(3) CALL LINK to machine code routines
(4) User defined BASIC sub-programs

The first of these, built-in sub-programs, are already well known from console Basic. The important thing is that they have recognizable names in CALL statements, and that information passes to and from the sub-programs through a well defined list of parameters and return variables. No obscure Peeks and Pokes are needed. The price paid for the power and expressiveness of TI Basic and XB is the slowness of the GROM/GPL implementation.

DEF function is a primitive form of user defined sub-program found in almost all BASICs. Often its use is restricted to a special set of variable names, FNA,FNB,... but TI Basic allows complete freedom in naming DEFed functions (as long as they don't clash with variable names). The "dummy" variable "X" is used as in a mathematical function, not as an array index.

```
100 DEF CUBE(X)=X*X*X
```

Doesn't clash with or affect a variable of the same name "X" elsewhere in the program. "CUBE" can't then be a variable whose value is assigned any other way, but "X" may be. Though DEF does help program clarity it executes very slowly in TI Basic, and more slowly than user defined sub-program CALLs in XB.

CALL LINK to machine code routines goes under various names in other dialects of Basic if it is provided (eg USR( ) in some). It is only available in XB when the memory expansion is attached, as the TI-99/4a console has only 256 bytes of CPU RAM for the TMS9900 lurking in there. All we note now is that the TI does it in a very civilised fashion, LINKing by name to relocatable assembly routines.

You should have your TI Extended Basic Manual handy and look through the section on SUB-programs. The discussion given is essentially correct but far too brief, and leaves too many things unsaid. From experiment and experience I have found that things work just the way one would reasonably expect them to do (this is not always so in other parts of XB). The main thing is to get into the right frame of mind for your expectations. This process is helped by figuring out, in general terms at least, just how the computer does what it does. Unfortunately most TI-99/4a manuals avoid explanations in depth presumably in the spirit of "Home Computing". TI's approach can fall short of the mark, so we are now going to try to do what TI chickened out of.

The user defined sub-program feature of XB allows you to write your own sub-programs in Basic which may be CALLed up from the main program by name in the same way that the built-in ones are. Unlike the routines accessed by GOSUBs the internal workings of a sub-program do not affect the main program except as allowed by the parameter list attached to the sub-program CALL. Unlike the

built-in sub-programs which pass information in only one direction, either in or out for each parameter in the list, a user sub-program may use any one variable in the list to pass information in either direction. These sub-programs provide the programming concept known as "procedures" in other computer languages, for instance Pascal, Logo, Fortran. The lack of proper "procedures" has always been the major limitations of BASIC as a computer language. TI XB is one of the BASICs that does provide this facility. Not all BASICs, even those of very recent vintage are so civilised. For example the magazine Australian Personal Computer in a recent issue (Mar 84) carried a review of the IBM PCjr computer just released in the US of A. The Cartridge Basic for this machine apparently does not support procedures. Perhaps IBM don't really want or expect anyone to program their own machine seriously in Basic. You will find that with true sub-programs available, that you can't even conceive any more of how one could bear writing substantial programs without them (even within the 14 Kbyte limit of the unexpanded TI-99/4a let alone on a machine with more memory).

The details of how procedures or sub-programs work vary from one language to another. The common feature is that the variables within a procedure are localised within that procedure. How they communicate with the rest of the program, and what happens to them when the sub-program has run its course varies from language to language. XB goes its own well defined way, but is not at all flexible in how it does it.

Now let's look at how Extended Basic handles sub-programs. The RUNning of any XB program goes in two steps. The first is the prescan, that interval of time after you type RUN and press ENTER, and before anything happens. During this time the XB interpreter scans through the program, checking a few things for correctness that it couldn't possibly check as the lines were entered one by one, such as there being a NEXT for each FOR. The TI BASICs do only the most rudimentary syntax checking as each line is entered, and leave detailed checking until each line is executed. This is not the best way to do things but we are stuck with it and it does have one use. At the same time XB extracts the names of all variables, sets aside space for them, and sets up the procedure by which it associates variable names with storage locations during the running of a program. Just how XB does this is not immediately clear, but it must involve a search through the variable names every time one is encountered, and appears to trade off speed for economy of storage.

XB also recognizes which built-in sub-programs are actually CALLed. How can it tell the difference between a sub-program name and a variable name? That's easy since built-in sub-program names are always preceded by CALL. This is why sub-program names are not reserved words and can also be used as variable names. This process means that the slow search through the GROM library tables is only done at pre-scan, and Basic then has its own list for each program of where to go in GROM for the GPL routine without having to conduct the GROM search every time it encounters a sub-program name while executing a program. In Command Mode the computer has no way provided to find user defined sub- program names in an XB program in memory even in BREAK status. XB also establishes the

process for looking up the DATA and IMAGE statements in the program.

Well then, what does XB do with user sub-programs? First of all XB locates the sub-program names that aren't built into the language. It can do this by finding each name after a CALL or SUB statement, and then looking it up in the GROM library index of built-in sub-program names. You can run a quick check on this process by entering the one line program:

```
100 CALL NOTHING
```

TI Basic will go out of its tiny 26K brain and halt execution with a BAD NAME IN 100 error message, while XB, being somewhat smarter, will try to execute line 100, but halts with a SUBPROGRAM NOT FOUND IN 100 message.

The XB manual insists that all sub-program code comes at the end of the program, with nothing but sub-programs after the first SUB statement (apart from REMarks which are ignored anyway). XB then scans and establishes new variable storage areas, starting with the variable names in the SUB xxx(parameter list), for each sub-program from SUB to SUBEND, as if it were a separate program. It seems that XB keeps only a single master list for sub-program names no matter where found, and consulted whenever the interpreter encounters a CALL during program execution. Any DATA statements are also thrown into the common data pool. Try the following little program to convince yourself.

```
100 DATA 1
110 READ X :: PRINT X :: READ X :: PRINT X
120 SUB NOTHING
130 DATA 2
140 SUBEND
```

When you RUN this program it makes no difference that the second data item is apparently located in a sub-program. IMAGEs behave likewise. On the other hand DEFed functions, if you care to use them, are strictly confined to the particular part of the program in which they are defined, be it main or sub. During the pre-scan DEFed names are kept within the allocation process separately for each subprogram or the main program. Once again try a little programming experiment to illustrate the point.

```
100 DEF X=1 :: PRINT X;Y :: CALL SP(Y) :: PRINT X;Y
110 SUB SP(Z) :: DEF X=2 :: Z=X :: DEF Y=3
120 SUBEND
```

This point is not explicitly made in the XB manual and has been the subject of misleading or incorrect comment in magazines and newsletters. A little reflection on how XB handles the details will usually clear up difficulties.

TI BASICs assign nominal values to all variables mentioned in the program as part of the prescan, zero for numeric and null for strings, unlike some languages (some Basics even) which will issue an error message if an unassigned variable is presumed upon. This means that XB can't work like TI LOGO which has a rule that if it

finds an undefined variable within a procedure it checks the chain of CALLing procedures until it finds a value. However, unlike Pascal which erases all the information left within a procedure when it is finished with it, XB retains from CALL to CALL the values of variables entirely contained in the sub-program. The values of variables transferred into the sub-program through the SUB parameter list will of course take on their newly passed values each time the sub-program is CALLed. A little program will show the difference:

```
100 FOR I=1 TO 9 :: CALL SBP R(0):: NEXT I
110 SUB SBPR(A) :: A=A+1 :: B =B+1 :: PRINT A;B
120 SUBEND
```

The first variable printed is reset to 0 each time SBPR is called, while the second, B, is incremented from its previous value each time. Array variables are stored as a whole in one place in a program, within the main program or sub-program in which the DIMension statement for the array occurs. XB doesn't tolerate attempts to re-dimension arrays, so information on arrays can only be passed down the chain of sub-programs in one direction. Any attempt by a XB sub-program to CALL itself, either directly or indirectly from any sub-program CALLed from the first, no matter how many times removed, will result in an error. Recursive procedures, an essential part of TI LOGO, are NOT possible with XB sub-programs, since CALLing a sub-program does not set up a new private library of values.

All of this discussion of the behaviour of TI Extended Basic comes from programming experience with Version 110 of XB on a TI-99/4a with 1981 title screen. Earlier Versions and consoles are not common in Australia, but TI generally seems to have taken a lot of trouble to keep new versions of programs compatible with the old. On the other hand TI has also been very reticent about the details of how XB works. The Editor/Assembler manual has very little to say about it, less by far even than it tells about console Basic.

Another simple programming experiment will demonstrate what we mean by saying that XB sets up a separate Basic program for each sub-program. RUN the following

```
100 X=1 :: CALL SBPR :: BREAK
110 SUB SBPR :: X=2 :: BREAK :: SUBEND
```

When the program BREAKs examine the value of variable X by entering the command PRINT X, and then CONtinue to the next program BREAK, which this time will be in the main program, where you can again examine variable values.

We will now summarize the properties of XB sub-programs as procedures in complete XB programs, leaving the details of joining up the various procedures to the next section.

(a) XB treats each sub-program as a separate program, building a distinct table of named (REFed) and DEFed variables for each.

(b) All DATA statements are treated as being in a common pool equally accessible from all sub-programs or the main program as

are also IMAGE statements, CHARacters, SPRITEs, COLORs, and File specifications.

(c) All other information is passed from the CALLing main or sub-program by the parameter lists in CALL and SUB statements. XB does not provide for declaration of common variables available on a global basis to all sub-programs as can be done in some languages.

(d) Variable values confined within a sub-program are static, and preserved for the next time the sub-program is CALLed. Some languages such as Pascal delete all traces of a procedure after it has been used.

(e) XB sub-programs may not CALL themselves directly or indirectly in a closed chain. Subject to this restriction a sub-program may be CALLed from any other sub-program.

(f) The MERGE command available in XB with a disk system (32K memory expansion optional) allows a library of XB sub-programs to be stored on disk and incorporated as needed in other programs.

(To be continued next month...)

GK UTILITY I

The GramKracker family has now been blessed with a utilities disk that is surpassing each and every endeavor by Miller Graphics. The author of this disk, Danny Michaels, has modified extended basic and the editor/assembler module to be a single unit when using the GramKracker produced by Miller Graphics. In a further effort to reduce costs and to cut time to deliver the product, a 22 page manual has been enclosed on disk in TI-Writer format thus saving editing, publishing cost etc.

This new disk requires that you have a GramKracker with the 80K option, the editor/assembler disk, 32K memory expansion, extended basic, and a disc drive system. The documentation includes all information in eight easy to follow steps on how to set your system up. The disc does not contain the modified EXB-EA modules due to obvious copyright laws, but has a utility that moves GRAM, ROM, Ram around such that all of the bytes will fit together in a sequential order to minimize memory usage.

There are some features immediately noticed once the configuration process has been completed and the system booted. Extended basic has had new screen and character colors changed, along with a new character set that gives true lower case with descenders. Also, instead of a blinking rectangular cursor, an underline symbol has replaced this. Have you ever been typing in a program and accidently hit the FCTN-Quit key by accident... well this has been resolved and you no longer have it active unless you turn the feature back on with a CALL QUITON. Another feature is the option of stopping the search for DSK1.LOAD when you first enter EXB. Just simply depressing any key on the board prevents the search for the disk file. CALL INIT, a command that loaded more data into RAM than was necessary has been modified to actually give you more RAM than previous when using assembly programs in EXB.

Several assembly features have been modified or added. Ever forget to type CALL INIT before doing a CALL LOAD, well this has been taken care of. You now don't have to type CALL INIT any more. Several features that could be found in EA-BASIC such as CALL POKE, CALL PEEK, CALL PEEKV, CALL POKEV, CALL PEEKG, CALL POKEG, have been added so that you can now probe the CPU, VDP, and the GPL area all from EXB.

Several editing features have been added that appear may rival the EXTENDED BASIC LEVEL 4, VERSION 2.1 From Myarc and some even surpass it. Cursor movement while editing a line is now possible vertically, horizontally, or from the beginning or end of the line. Another feature involved in editing a line is the ability to either copy or move portions of your program around with the initial line number changing. Also added is the ability to RESEQUENCE only a potion of your program if you find that you need to add some lines between two line numbers. Another important feature is the ability to list only portions of the program out to printer up to 132 columns. For some programs that I use and modify, this disk could almost pay for itself in the amount of paper I would save.

One of the most important features that I like about this has been the introducton of the TRACE commant to output the line number to printer instead ofthe screen where it often destroys any pictures or data that I need. For programs that involve 40 column display while running through an assembly CALL LINK statement, when the error is incurred during a program, most of the time th program will end up in bit-map mode and you are unable to read the error message or the bad line number. Now this is possible with it being connected to the printer instead of the screen. One other important editing feature that I like is a DEL statement. This will simply delete all of the line numbers between two that you specify in a matter of seconds. I personally have deleted a hundred lines on several occasions to shorten a program that was initially on cassette, and it took hours, literally.

All of the old CALL statements that were supported by the GramKracker with the first disk such as CALL NEW, CALL BYE, CALL CLSALL, CALL CLOCK, CALL CLKOFF, and CALL CAT are still supported. The CALL CAT has been modified to provide a better display.

When exiting from EXB, and you want to go to the editor/assembler, you can type CALL EA and immediately be moved to the E/A module. One slight problem is that once you hit enter, you lose all of your program in EXB. Just make sure you save it to a disk before you issue this command as it does not contain a "Are you sure(Y/N)?".

Once you are in the editor/assembler module, several cosmetic changes have been made for appearance. The filenames entered are now remembered even after you exit and turn your computer off since these names are stored in the GRAM of the GramKracker. All of the function keys such as delete character, delete line, auto-repeating, are available. The editor and the assembler files are now stored in the GramKracker which provide ram speed access. Three new options have been included in the editor/assembler module. One is the ability to return back to extended basic

without returning to the main startup screen. Apparently Danny Michaels has the Myarc Ramdisk because he has also included theRamdisk Format commands. I have found one problem with this in that it does not support the Formatting of the Myarc Ramdisk with the new eprom for Extended Basic Level 4, V2.1. This is of nothing major because I do not consider it a chore to type CALL PART(128,300,84)::CALL EMDK(4). The last feature that has been added is a catalog routine that will catalog all devices with a standard catalog routine. I have found this valuable since the release of a new operating system for the New Horizons Card that does not permit cataloging the radisk unless you issue a CAKK EXEC(36) which on my system turns on CorComp Disk Controller off (it is not really off, but due to some other card in my system not identified yet, it will bank switch the CorComp card to bank 2 and lose the system. Fortunately with two ramdisks in position, I can copy files from one to another without using a disk controller. DM1000 supports this feature.

One other item left to mention is the technical information that Danny Michaels has been willing to include in the documentation. He has specified all locations that he has changed for each GRAM chip and what available memory is left for any other additional changes that someone may wish to persue.

As with all disks, Miller Graphics has protected this one too. However not with any fancy loading programs, but with the honesty and integrity of its users. This disk is one of several to be by users that could turn the TI into even a greater system than before, so don't go passing copies around as it could spoil it for everyone. One disk in particular rumored to be marketed depending upon the sale of this disk is a GPL Assembler-Disassembler. At only $10.00 including shipping and handling, this disk can be purchased through Miller Graphics at 1475 W. Cypress Ave., San Dimas CA 91773...Review by Beery Miller

SATURDAY WORKSHOP

The September Saturday workshop at Rick Glisson's apartment was without a doubt one of the best this group has seen. There were so many of us, that we could barely move. Of course, there weren't enough chairs to go around; but no one seem to mind the inconvence as we all had a great time. There were several new programs brought and demonstrated by our members, but the greatest treat was the showing of Myarc's new computer named the Geneve. This computer was brought to town by a member of Chicago's User's group, Bobby Trapp. Mr. Trapp also brought along their group's library of disks. He was kind enough to let us copy almost any of those we wanted, as what he had with him were public domain programs. Many of them were new or updated programs. One of the programs, written for the Geneve, was a disk manger and copy program. It runs similar to the turbo programs out now but takes into account Geneve's ability to access up to six drives. The program will copy up to five disks at at time, sequentially. After loading the program and telling it what drives have the blank disks, it copies the disk in the main drive to the other specified drives. Any drive can be used as the main drive, it dosen't have to be drive one. We only had five disk drives

available at the meeting. Therefore, we could only make four copies at a time! It was beautiful to see those drives clicking away one after the other and have all the copies done in under two minutes. That was for double sided double density disks. With the software already available, this new machine is something else. By the way, it will be able to run MS-DOS programs too (i.e. IBM PC programs). And at a much greater speed than what computers are out there now. Myarc has also built in a expansion possibilities that include a controller that could access two hard disk drives. That's upwards of 40 megabytes. All I can say is WOW ! WHAT A MACHINE!! All of us who were there can't wait until we can have one of own. Other programs were demonstrated; including an updated version of TI Writer. It is 80 columns wide, no windowing, and can go from editor directly into format without reading from disk. For those of you who missed this workshop all of us who were there can only say we're sorry. Also, in closing some of us would like to thank Mike Dorman (publicly) for loaning us some blank disks, so that we could get copies of the programs we wanted. Thanks from Berry Miller, Jonathan Leslie, and myself. Also thanks to Rick Glisson for use of his home.

TRICK OR TREAT

If you read the previous article you may have gotten the trick. That is, the Geneve has not been released to the public as of this writing; and Mr. Trapp is not Bobby but booby trap. If I caught you, I'm glad. It was for a very good reason. The Treat! The treat is what you can get. Yes you can get something and it dosen't cost you but a little of your time. Wait now hear me out. I'm not asking you to give me or anyone else anything, but you will get something every month if you come to the meeting and to the workshop. This is the time you have to give, it is to youself not to anyone else. "And what do I get in return?", you ask. Well let me tell you what I get. I get what I can learn about my computer (the great TI), programs I can run on it, and help with working with it. I also get friends, some old, some new, but all who share an interest with me, our computer.

Every month we have a meeting and a workshop. For those of us who go we learn much of what our computer can do, what is available for it in the way of hardware or software, ard, as you can see, what is in the future for our machine. The Geneve is not a dream; it will be released next month, at Chicago's TI Fair. It may not do all that I stated above, but may do even more. It will be TI compatible and is scheduled to be able to run MS-DOS at a later date with an upgrade. We are indeed anxiously waiting to get our hands on one, to see what it can really do. That will be exactly what will happen. Someone in our group will be the first to buy one and he/she will want to show it off. They'll bring it to a meeting and demonstrate what it will do. And if we can talk them into it, they'll bring it to the workshop and we'll get to try it ourselves. Each time there has been a new piece of hardware, or a new or upgraded program, or another way to do something, we see it at one of the meetings or workshops. If we have a problem or question about our computer, or program, or what software or hardware is available, there is always someone in the group that can answer our question, or can find the answer. You by reading this have paid your dues or are thinking about joining our group.

Get what is there for you. It cost you nothing more than the time to come and enjoy what there is. The previous article was only half true. There were more people at the workshop than normally come, and we did have a good time. Just ask those mentioned in the article what they thought. We saw a couple of new (to me) programs, and we did solve two members problems. One whose modem wouldn't work, and another's who had trouble with a disk controller card. I learned how to use a program I already had, but didn't know what to do. I also got two disks full of other useful programs, one of which I'm now using to write this article. We that come and participate have gotten more than we could ever get on our own. Now you see what the USER GROUP is all about! The time shared with others with our interest is both enjoyable and beneficial.

This month's meeting and workshop, as always, are open to anyone who wants to come. So come and learn what your machine, and maybe yourself, are capable of doing. You'll never really know what you might miss unless you are there! See the back page for the meeting times and places. This month's workshop is at my house. I'm looking forward to seeing YOU there. Come, we will have a great time!...Richard Hiller

STRANGE MEMORY PROBLEMS

Some of you that have upgraded to a disk system may have found that you can not load a few cassette programs anymore (or even some disk programs.). You may get an I/O ERROR 02. What has happened is that when you went to a disk system the DOS (disk operating system on the controller card) took up about 2 or 3K of memory therefore, the computer will not let you load a program that it thinks will not fit into the memory. There are two things you can do to solve the problem. One thing is you can type the following statements and they may free enough memory to load the program.

```
CALL FILES(1)
NEW
```

This frees approximately 2K of memory. However, this can not be used if the program you are planning on running uses more than one disk data file IE OPEN #1... (you will recieve an error message when you run the program.)

The above will work with or without 32K to load your old cassette program again. (just those will not load as most will load with no problem when you go to a disk system.) Now if you want to save the program you just loaded from cassette to disk you will need to do the following to avoid having to type CALL FILES(1) and NEW each time you want to load the program. The reason for the problem is that the disk system took 3K of console memory for it's own use. Programs that exceed the console memory when you have 32K requires that the program to be saved in a different manor which the computer does on it's own. However, the cassette program was not saved in this manor and now that the disk system is attached 3K of console memory is gone so the cassette program can not load into the computer even if you have 32K because it is the wrong format for the 32K memory to use it. Typing the CALL

FILES(1) and NEW and then loading the program will get the program into memory but you will now want to make sure the program is saved to disk in the correct format so you do not have to CALL FILES (1) and NEW each time you want to load the program off of disk. By doing the call files you released enough memory to load it in but the computer now thinks it can save it in regular format again and not in a format for the 32K so here is what you need to do below.

Type:
```
CALL FILES(1)
NEW
```

Then load the program. (you must use extended basic.) Now save it back out to disk in merge format. Like this:

```
SAVE DSK1.PROGRAM,MERGE
```

This will take a few minutes to do. Now exit back to the title screen to cancel the CALL FILES(1) and go back into extended basic. Now load the program that you saved in the merge format back into memory using the following command.

```
MERGE DSK1.PROGRAM
```

This will take a little time to do so. When the program is back into memory now save it out to disk the normal way.

```
SAVE DSK1.PROGRAM
```

The computer will save the program back out to disk in a different format compatable with the 32K memory. You must use extended basic with 32K to load the program again. I would suggest using the first method if you plan on giving the program to someone who does not have 32K. However, each time you wish to load the program you must type those two statements...

If you wish to reverse the process (change the program that is in 32K format back into regular format as it was before) you do the following.

```
CALL FILES(1)
NEW
```

Load program back into memory and then save it out again to cassette or disk. It is now in it's original form. You would want to do this as a program that requires the 32K memory can no longer be saved to cassette as cassette can not write in the format required by the 32K. It was hard for me to put my thoughts to words on this one so it may not be too clear but if you have problems understanding this article just ask me... Gary Cox

PROTECTION

There are strong FEDERAL LAWS against duplicating copyrighted programs. Please do not break these laws!

24hr TIBBS BULLETIN BOARD
901-357-5425 300/1200 baud

DISCLAIMER

The Mid-South 99 Users Group is not affiliated, sponsored by or has any relationship with any company implied or otherwise. Any mention of a company or product is not an endorsement of either the company or the product.

NEWSLETTER INFO

Visitors and potential members may receive 3 free issues of TiDbits while they decide if they wish to join (no obligation). A GREEN newsletter and/or dollar signs ($$$) indicate that your dues are due. Please pay your dues to be able to continue to receive the newsletter and other benefits of the group. You will note a letter and date on the top of your address lable. The letter indicates if you are a member and the date indicates the last time you paid your dues. One year from the date your dues are due!

PLEASE NOTE LARGE TYPE IS AVAILABLE PH. 743-6781

CALENDAR

MEETINGS: October 16, November 20, December 18 (3rd Thursday!)
WORKSHOPS: October 25 November 29, December 27 (4th Saturday!)

OFFICERS

Gerald Smith	President	901-363-6273
Dick Vandenberg	Vice-President	901-274-1892
Ralph Wilson	Secretary	901-382-0795
Mac Swope	Treasurer	901-363-3880
Pierre LaMontagne	Chairman - Library and Sysop	901-357-8110
Adolph Butler	Chairman Cassette Library	901-948-0732
Al Doss	Editor #1 - Newsletter	901-743-6781
Gerald Smith	Editor #2 - Newsletter	901-363-6273
Gary Cox	Chairman - Program	901-358-0667
Gary Cox	Information and Assistance	901-358-0667
Mac Swope	Chairman - Equipment	901-363-3880

GROUP MAILING ADDRESS

Mid-South 99 Users Group
P.O. Box 38522
Germantown, Tn. 38183-0522