### NOTICES

MEETING 7:00 F.M. Thursday, FEBRUARY 19th Red Cross Building 1400 Central Av. WORKSHOP 9:00 - 12:00 SATURDAY FEBRUARY 21st Rick Glisson's 4570 Andrew Crossing Dr. Phone 336-1159

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EQUIFMENT, ETC.	

Detach and mail with check payable to: Mid-South 99 Users Group, P.D. Box 38322, Germantown, In, 38183-0522.

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Newsletter for the MID-SOUTH 99 USERS GROUP Vol 5, #2 FEBRUARY 87

# EL PRESIDENTES BIT

New regiem hacking somewhere in South central North America...

Thank you for electing me into such a visible office! And a sincere welcome to our new and recharged members! We have a strong group.

This year marks a real change in the evolution of our fiesty T1. New hardware, such as MG's IBM-TInterface and Myarc's Geneve 96-0 will certainly load the branches of this broad limb tree and plenty of new software will surely bud! Our meetings will also be going through some changes. The software library will be somewhat streamlined and program sessions will return back to the basics of programming. A revised listing of available programs will be at each meeting, mark the ones you want and the disks will be waiting for you at the next meeting. Also we hope to have the most popular programs already copied on discs.

Demos will be shortened and seperated by longer intermissions so that everyone will get a chance to ask questions. More time will be available to visit with the people that keep in touch with the II core. It pleased me to see Gary and Beer; published in MICROpendium and Pierre listed in Computer Shopper. DickO giving direction to the beginning C class planning a new Database program. Our faithful editor, Al, is churning out another fine Newsletter. Looks like Jonathan will be heading to the land of TOTO and will be missed but not forgotten. (That is IF his Geneve makes it here before they leave)

Yes, pleanty of fruit for us to harvest. But remember, group participation is what feeds the group. Without it, heartwood becomes deadwood. Express your interests, either via phone, letter or modem and be sure to speak up at the meetings... Dont be suprised if I write down your comments, and always be ready to GIVE YOUR NAME! ....Ready for spring..., Mac Swope

For sale: quantity of 5 new Toshiba ES/DD Disk drives, 1/2 height, low power, TI and IBM pc/at compatible, direct drive. orly \$75. each! (F,O.B. Memphis, TN) Contact Yvonne Morgan at 372-7002.

Wanted: Information concerning Oscars Data Bar Code Reader, Especially regarding the data formats on the header line. call collect: (901) 363-3880 ... Mac

# JUST FOR THE RECORD

After talking to several people who are either selling hardware or software for the TI-99/4A, a very alarming pattern is becoming apparent. Most of them are dying due to the lack of sales. This oss of sales takes many shapes.

- 1. Loss of potential buyers due to the increasing lack of interest.
- 2. Inability to meet production schedules due to outside circumstances.
- 3. Wholesale pirating of software
- 4. fsychological pressures and slander

We have no control over the second problem, but we are directly responsible for the other three. It is the task of all TI USERS GROUFS to keep members and potential members interested in all areas of software and hardware pertaining to the TI-99/4A. Each and every person who leaves a USERS GROUP becomes a prime candidate to put his/her TI-99/4A into the closet never to be used agair. So it is our responsibility to give assistance anytime we are called upon. It doesn't happen often, but when it does, be a valued USER 3ROUP member and help out if possible. At the least, pass the problem on to someone who can lend assistance.

during your daily endevors, you come upon a poor lost soul with a TI-99/4A and is not a member of our group, TALK US UP... It is of the utmost importance that each of us understand our situation. We are fighting for our lives. If our USERS GROUP fails, then each of us falls into the same catagory as the prime candidate I talked about earlier.

WE MUST NOT FAILTH WE CANNOT FAIL

With each members help, the TI-99/4A and the MID-SOUTM USERS GROUP can enjoy a long and happy relationship. And Folks, that bests the other option - Mands Down!!

About Piracy!!! Do you know what you are doing? YES! You are helping a software vendor go out of business. I know that's a little strong, but it is exactly what you are doing. If each of 10 people jot a FREE copy of a \$10.00 program, the net result would be a \$100.00 loss. Being that most software vendors are small businesses, they can hardly stand that loss. Now multiply that loss by the number of USERS GROUPS in existence and guess hat? One more "OUT OF BUSINESS" software vendor. I for one would hate to know I helped nail nails into my own coffin. PLEASE! Don't pirats software. It's all part of that fairness I often talk about.

Fairness... That leads to the next topic... Fairware vendors. For those who don't know, those are writers who trust us with

their software. If we like it, we should make a concerted effort to send them some money for their efforts.

GARY COX is one of the best known Freeware/Fairware writers around. He merkets a game program called "LAWNHOWER" and one of the most unique and extraordinary programs I have ever seen called "WEATHER FORCESTER". As of last count, I don't think Gary hat received over \$25.00 for his effort. He has put in many tedious months of research and programming in his work. We are very lucky to have him as one of the members of our group. He is one of those numbers in our group who, day in and day out, take an active roll in the preservation of our group. He's always available for answers to questions. He will help find answers when he is stuck. Don't you think he deserves some recognition. It doesn't have to he money, just a "pat on the back" and a "well done Gary" will have the same effect. Each and every one of us like to be told when we are doing a good job and Gary is no different. Next time you see Gary, let him know you appreciate his efforts to keep the TI-99/:A and our USERS GROUP from becoming a thing of the past.

People like Millers Graphics (MG), MYARC, TEXAMENTS, RYTEDATA, MEGATRONICS, CORCOMP and all other vendors have a great deal of time and effort in their products. I don't think it is in our best interests to "BHD MCUTH" any of them. They are our lifeblood. Their new hardware and software sharpen our interests in our computer. We should all thank them. We should all stand behind them. WE SHOULD ALL SUPPORT THEM!!! Without our continuing support they will all become vendors "GUT OF BUSINESS". No vendor is going to quit a lucritive environment, but a non profit operation leaves them little choice. They have to live also.

Our vendors work on the up and up. Lets keep our end of the relationship on the up and up. You wouldn't want someone taking advantage of you so let's treat our vendors the same way. "DC UNIO OTHERS AS YOU WOULD HAVE THEN DO UNTO YOU". Fairness is contageous. Let's start a good thing happening. Then... Let's keep it happening...Gerald Smith

## DISKASSEMBLER

The following article reprinted with permission through an exchange agreement from the January 1987 Micropendium. The article was written by J. Peter Moddie.

REPORT CARD

Performance......A
Ease of Use.....B+
Documentation....A
Value......A
Final Grade...A

Manufacturer: 16, 1475 W. Cypress Ave., San Dinas, CA 91773 (714-599-1431) -Cost \$19.95

Requirements: Console, Disk System, Memory Expansion.

773

Recently Millers Graphics, now called MG has released some of the most advanced products ever created for the TI99/4A, including Advanced Diagnostics, Explorer and Gram Kracker, MG's latest entry, DISKASSEMBLER, continues this fine tradition.

Skassembler what this means is that it takes the mess of numbers that the Assemblar preates from assembly source code and turns it back into code that is (more or less) readable by humans. The usual reasons for disassembling a program are to make modifications to the program and to learn how the program works. Therefore, a disassembler's performance must be judged on how easily the code it creates can be understood, modified, and re-assembled to yield a runable program.

There are dozens of disassemblers available, most in the public domain. What makes DISKASSEMBLER worth the \$20 price tag? One of the most unusual features is that you can disassemble a program that is in memory or or disk. This means the virtually any program can be disassembled. Most other disassemblers only work on a program in memory. This severely restricts what can be disassembled because both the disassembler and the program to be disassembled must reside in memory together, and often there is not enough room.

Next, DISKASSEMBLER adds lables to the disassembled code. This is also a rare feature and helps to make disassembled code easier to had and modify. DISKASSEMBLER also allows you to defind where in the code there are blocks of text and data that should not be disassembled as code.

Another exceptional feature is the ability to defind the number of data words following a BLWP statement. This can be very useful particularly when taking apart code written by Texas Instruments.

DISKASSEMBLER allows you to disassemble the code in the expansion box bards. Output of the disassembly is sent to screen and optionally to disk or printer. The speed at which the disassembly scrolls by on the screen is user-controlled, as are the screen and text colors. Most importantly, the output that DISKASSEMBLER creates can be re-assembled almost immediately to provide a runnabe program. No other disassembler can make this claim. Random tests of DISKASSEMBLER on many assembly programs produced flawless results.

DISKASSEMBLER breaks all output into 65-sector files for ease in later editing. It also put the filename as the first line of each file to let you know what file you are editing. It will also warn you if you are cut of lisk space so you can change diskettes. This feature saves the loss of long disassemblies because of lack disk space. DISKASSEMBLER is the first MG product to be fully compatible with all disk controlers, RAM disks and hard cisks.

However, as with almost any product, there are a few problems. Fortunately all them are minor. First, the program is on a copy-protected disk. This means that you can not make a back up or install it on a utility disk.

It would be nice if the program would resolve references to standard system addresses like FAC and utilities like UTBW when disassembling. The manual provides information on how to do this yourself, but it seems that the program sould be able to handle this, considering how much else it is capable of.

Please note that the reason this program received only a B+ ft ( "Ease of Use" is because disassemblers are in general not very easy to use effectively. However, among disassemblers, DISkASSEMBLER is certainly the easiest.

As with all NG programs, the manual alone is worth the purchase price. DISKASSEMBLER's is 56 pages long. In addition to a comprehensive description of DISKASSEMBLER S many features, there is an 8-page tutorial on using DISKASSEMBLER to take apart the SAVE utility on Editor/Assembler disk B. There is a brief tutorial on how to split a long program image file into smaller pieces, as DISKASSEMBLER car only handle a 48-sector PROGRAM file (but any length DIS/FIX 80 File). There are also 10 pages of memory maps which include th CRU base addresses for all peripherals and the addresses of the system utilities for Mini-Nem, Editor/Assembler, and Extended BASIC. The manual also contains a complete description of how the Editor/Assemblar Option 3 loader actually "links" programs together while loading.

If you have never used a disassembler before or are just starting, DISkASSEMBLER is ideal as the manual carefully walks you through all the necessary steps. If you are familiar with disassemblers then you'll appreciate the incredible amount of power, flaxabilit and reliability that DISKASSEMBLER provides...Gary Cox

## THEJOYOFPAINTING

No, this isn't going to be an article about how much fun you can have while painting your house. I've never done that yet, but it doesn't look like much fun to me! This article is going to be about the slickest, easiest to operate, most eye-catching graphics program yet to come out for the TI-99/4A.

I'm speaking of JOYPAINT 99!

Just what is JOYPAINI 997 Or rather, why do I speak of it in such glowing terms? This all goes back to when I first saw an ad for it in Micropendium (best magazine 1've seen yet for the 99). My First thought was, "Boy, that sure looks a lot like MacPaint!". Ever since I first played around with MacPaint, I've wished I had a graphics program like it. My second thought was "probably just another slick advertisement, no way could the actual product measure up to it". Also the price, at that time, of \$49.95 kind of put me off But since I didn't own GRAPHX or II-ARTIST, I we just too intrigued by the ad. So saving my pennies, I ordered i... when it went down to its present price of \$39.95. When it arrived about 1 1/2 weeks later, I rushed to my TI, though taking time to read the loading instructions plus a little bit more, and then loaded it in. It takes a little while to load in, as it consists of several files. But this is actually a benefit as once it is loaded, that's it. All functions are instantly available.

Further disk access is needed only for graphics saving and loading. I was pleased to find out that it can be loaded via II-Writer option #3, E/A option #5, or through XB using a Program File loader included on the disk. Included in the package are the main program disk, a companion disk with extra screens, fonts and gictures and the manual. The manual consists of 15 mineographed ges with a Table of Contents, an overview, the loading instructions a list of error codes for file handling, and a brief but clear and complete description of each function. The title screen is one of three, in different colors, that the program randomly chooses. A little touch, but interesting. Most of the features are accessed by using a jugstick of trackball. The keyboard is only needed a few times like typing in text and filenames. That is one of its good points. I started with a joystick, but quickly purchased a trackball after trying out a friends. A trackball gives you control that a joystick just cannot. After the title screen you are presented with the main working screen. The top, left and bottom borders are areas to where you move the cursor to access the main functions, extra commands and to choose from the 26 available patterns. One of the things that sets this program apart from the others for the "A is that the drawing area on the screen is not your whole palatte. Rather it is a window on the palette. This was a little hard to get used to at first, but this allows you to create drawings not possible with other programs.

The main options available from the loft side of the screen include text, freehand pencil, apraypaint, brush, times, circles, brushles, fill, eraser and screen movement. The bottom horder atsplays 13 of the 26 batterns with the other 13 displayed by activating cursor control. The top border area allows you access to the extra commands via a "pull down" window. These extra commands include file handling, graphics controls, two viewing commands and an "UNDO" function that is a real blessing! One more interesting extra command is "OWNER" which when activated displayed on the screen the name and address of the registered owner of the program. This is specially encoded by Great Lakes Software and is an excellent hedge against pirating. I know I don't want my name wandering around on illegal copies!

I won't describe every function as that would take too long, but I will say that they all work excellently and just as described in the manual. And once you try out each function referencing the manual, you can almost throw the manual away. But I don't recommend that! Unless you are in a special function or mode you are automatically put in the drawing or freehand mode. This is signified by the cursor in the shape of a puncil. In other modes the cursor shape and size is determined by whatever mode you are in. Also the screen and foreground colors can be chosen from among A set combinations. That is one of the few complaints, flour as it is, that I have about this program. I wish the proground and screen colors were user selectable from among all 16 available on the TI.

The spraycan works just like the real thing. The pattern, light at first, fills in more the longer you spray over that area. The brush stroke has 8 different patterns to choose from and some very interesting could be created from them. The lines function works

on the rubber band principle with long lines slowing down the speed of the cursor. The cursor, by the way, has only one speed which did not bother me evan after using BitMac with its multiple cursor speeds. The circle and rectangle functions are very versatile allowing you to draw ovals and odd rectangles as well as perfect circles and squares. The method by which this  $17\sqrt{2}$ accomplished was described in another review that I read but )))) won't repeat it as it was hazu to me at best. I can only say that it takes some practice to place the rectangles and especially the circles where you want them in your drawing. But with the UNDO feature, if it's not right just activate the UNDO and you're back to before your illplaced graphic. I appreciate the program authors for thinking of us beginner artists! Choosing the FILL command places the word "FILL" with a dot below it on the screen. Just move the dot to the area you want to fill and press the fire button. Make sure you have the area completely sucrounded or the pattern will bleed out to fill whatever the adjoining area is, even if it is the whole screen! But if that happens, Just activate the UNDO command immediately and you're back safely. Once you press the fire button to "FILL", sit back and watch the action! The area perimeter is scanned, the area is filled, and the perimeter is once more scanned with any touch up being done. It is simply fantastic I have not seen any fill furction work better than this one. It not only is fast, but completely filles and area no matter complex it is. When I first tried it out, I spent 5 or 10 minutes just making ares to fill and trying out the different patterns to observe the effect. Even after 4 nonths, it still fascinates me.

To move the screen window around on your palette, position the cursor over the head or shaft of the arrow that corresponds to the direction you want the "window" to move, not the palette. Hovement is quick and l've yet to lose a pixel. Speaking of pixels, let me speak glowingly of the zoom or "FATPIXELS" option of the extra commands. This function is indispensible for producing quality, detailed work. It has helped me achieve just the look I wanted many times.

Complex drawing can be made easier by using the extra commands from the "pull down" window. These allow you to flip horizontally or vertically, rotate, invert, magnify, cut, paste and copy either your whole drawing or just parts of it. The ROTALE, MAGNIFY, CUT and CUPY commands are limited to an area of the screen 10,000 pixels in size. If you need to manipulate an area larger than this, you can do it a part at a time. It takes care, but it will work. I didn't use these functions much at first, but am finding more uses for them all the time. Faul they involve saving me time and effort. By "cutting and pasting" the fonts and graphics available on the companion disk, you can quickly create a sign, certificate or card that would have taken nours otherwise.

Although a "reduce" function is missing here, it is present on the JouPaint Pal disk, available separately. Also available on the Pal disk are functions to create rew pain: patterns, print out to Axiom or Epson compatible printers, and the ability to load or save to other graphics programs formats. This is especially useful as it opens up to you hundreds of other programs pictures, fonts and graphics.

Printing your "creation" is just as easy as all of the other functions although you are limited to Epson compatible printers. As I think most TI owners have one of these, it is not a big problem at least as far as the TI community as a whole. You can enter your printers configuration each time or set a default with basic program on the disk. Then you are asked whether you want be picture to be normal or double sized and normal or double density. A normal sized picture prints out bigger than with other programs, but that is due to the larger size of the picture you can create using the whole palette. If you choose double sized, then the picture will print out sideways with some distortion. Also the detail is a little more "plock" looking as though the pixel size was enlarged giving it a look a little like the early daminished.

Although you may be used to seeing computer-created graphics and pictures, try them out on your friends, relatives and associates who aren't. I think it will please you when they express their amazement as mine have. If you like drawing pictures or making your own greating cards, then I highly recommend this program. I know you won't be disappointed.

Although I can't really convey how neat this program is or how excited I am about it, I hope this article has gone some way to convincing you of the merits of owning JoyPaint 99. It was \$40.00 well spent for me. If you get a chance to see it demonstrated, by  $\mathbf{1}$ I means don't miss it\...Jonathan Leslie

### MODEM BIT

I know several club members recently purchased modems so I thought I would give some VERY important tips on making your first calls. Even if you do not have a modem yet be sure to save this article for when you do get one.

The first tip is to always make your first call to a TI board using Terminal Emulator II (TE2 for short) or FAST-TERM. Orly those two programs send the necessary codes for a TI BBS to recognize you as a TI user! If you do not call using one of those two programs it could limit your access on the system or delay registration.

Unless otherwise stated all BBS's operate 24 hours a day seven days a week and are accessable by anyone with any brand computer. TIBBS and Risky Business will operate at both 300 and 1200 band according to what speed you modem will operate.

you use TE2 you must use CTRL'H to backspace. However, most ther terminal programs will allow the use of FCTM S (back arrow).

In order to download programs off of a BBS (transfer a program from the BBS to your system and onto disk) you must use a program with XMODEM transfer protocal. FAST-TERM and MASS-TRANSFER both have this protocal. TER motocal is no longer supported on most BBS's. XMODEM protocal is much faster than TER and it essier for

the Sysop to work with.

#### QUESTIONS:

What are BBS's? BBS stands for Bulletin Board System. They are usually a one phone line system operated on a micro-computer (home computer) accessible by modem. They are a sort of electronic "Computer or electronic mail where someone calls in and leaves a message continuous them I call in and read all the messages left since I last called and then in turn I can reply to any of the messages. When the author of the message replied to calls in he will be notified that I left him a message and he will in return reply if necessary and so on. BBS's are a way to carry or conservations with other people in the club and with other people with other brand computer systems etc... The BBS also carries information files which may be read and programs which may be downloaded (transfered from the BBS disks to your disk).

What do I need to call a BBS? You can call most any BBS using any brand computer as most modem—communications as far as we are concerned are conducted in ASCII (a standard format). The equipment needed on the TI is an RS232, a modem—and a terminal program such as FAST-TERM. A TI will be needed though to download any programs.

what is wrong with using IE2? Nothing, but it's capabilities is UERY. Limited and many systems will not allow downloading with the TE2 because the TE2 does not have XMODEM protocal. FAST-TERM and MASS-TRANSFER has all kinds of FANTASTIC capabilities that F(y) exceed TE2!!!!!! Both are available as FREEWARE and are in C(y) groups library.

Should I have a copy of both FAST-TERM and MASS-TRANSFER? Yes. FAST-TERM has some capabilities that MASS-TRANSFER doesn't have and MASS-TRANSFER has some capabilities that FAST-TERM doesn't have. It would take several pages to list the capabilities and differences so I will just say it depends on what you are planning on doing as to which one to use. Remember to always make your first call with TE2 or FAST-TERM though!

What if my system locks up while I am on line? Very quickly reload your terminal program. You modem will stay connected with the system even though you do not have a communications program loaded as no program is needed for your modem to stay connected... However, most BBS's will disconnect you if it gets no response from you within several minutes. If you are quick enough you could even change terminal programs while you are online.

What kind of problems might I expect to have with BBS's? You will probably be very confused at first. I was! Each different brand BBS has a different look and a different way of doing things. You must just learn by practice. After a few months of constant practice you will be jumping through everything very easily. You have any problems you may always give me or Al a call and we will be glad to help you out. Another frequent problem is a tusy signal. Just keep trying until you get through. If you have an auto dial modem you can have it dial until it gets through. The harcest time to get through is usually between ipm and lipm (prime

time). There are quite a few BBS's in town so if one is busy try another one and come back to the first one later. A list of BBS's are available on each BBS's in the text file section.

Where are the BBS's located? They are located usually located in peoples homes or sometimes when a computer store operates them in their place of business.

Now long does it take to download (transfer) a program? That depends or the size of the program and the baud rate you are calling at. 300 baud is slow and you probably would not want to download arything over 100 sectors. You might compare the speed of downloading at 300 baud to that of loading a program off of cassette tape as ooth are slow. 1200 baud is four times as fast but you still would not want anything over 250 or so sectors. BBS's usually do not have files over this size as it ties the system up too long with one person downloading that large of a file.

Does the system ever go count? Yes. Maintaince must be done on the BBS each week. Buring this time you will also get a busy signal. Mouever, because of power failures you may not get an answer or you might get an answer and nothing happens as the computer may have had an error or lost its memory due to a power failure so try calling back later... Sometimes you might get garbage on the screen. This may be because of a bad connection or if you are using an acustic modem it could be noise the modem is picking up from your environment or your phone that is in the handset is not reproducing the tones correctly in which case try another phone. Direct connect modems will eliminate most problems with garbage though.

Now do I make my first call? Dialing the number depends on the type of modem you have. Consult the instructions for your nodem for details. Nowever, if you have an acustic or direct connect (non-smart modem) first dial the number. When you hear the tone connect your modem (make sure you modem is in FULL DUPLEX and in DRIGINATE mode if it has these settings). If you are using an auto dial modem (a modem that dials the number for you) you just simply tell it to dial the number and it connects itself. All other instructions will be displayed to you on the screen by the BBS. The BBS may give you an ID number (depending on the BBS) and you pick a password that you can remember. The password is to protect you so that someone can not log on as you leaving messages under your name etc...

Is there any fee for access to BBS's? Not usually and if so it is very small. IIBBS and Risky Business are open as FREE access to everyone. The BES will tell you if there is a fee before you log on.

What besides BBS's are there? Many services are available such as Compuserve, Genie, and many others who provide news etc... For a certain charge per hour connect time. Usually the Fee is \$6 an hour at 300bd. During off hours 6 pm-8am. Most of these services provide a BBS like section on a national basis...

For a FREE demonstration of Composerve dial the local Composerve

number (locally 452-8530) 300/1200. When connected type the following answers to the following questions:

MOST CIS 1D # 77770,10111 PASSWORD FREE-DEMO

For a FREE demonstration of Genie set your modem or terminal program to MALF DUPLEX and dial 1-800-638-8369. When connected type WHM and hit ENTER. At U# type SJM11961, GENIE and hit ENTER twice and you are on.

Another service available for people with modems is PC Pursuit by GTE. This is an after prime time hour network (6pm-6am) where you may have unlimited long distance calls VIA NODEM only using their network. This allows you to call long distance BBS's all you want. The service is available at a flat rate of \$25 a month. For more information or to join call the PC Pursuit 105 at 1-800-835-3001 (24hrs) or call the voice number Mon-fri Bam-5pm at 1-800-368-4215. The only disadvantage is that only a limited amount of cities can be accessed. You can call out from nearly any big city but you can only call into certain cities (usually the larger ones such as Chicago etc...). Unfortunately no on can call into Hemphis yet on the network but at least we can call out...

How to I download a program using FAST-TERM on TIBBS or Risky Business? First read the download catalog on the BBS and write down the manes of the programs that you want. Then select D to download. Now type in the rame of the file you wish to download. The EBS will now inform you if it found the program. Now select CRC error checking (always select CRC). Next quickly type FCIN N and type in DKSn.FILENAME where n is the drive number and "FILENAME" is the name of the program once again. Next type FCIN SHIFT X while holding down each of those keys as you press them. Type R to receive and type Y in answer to CRC error checking. If you did everything correctly and you have enough room on your disk the file transfer will begin. You may run the program after you log off the BBS. Henu's are displayed throughout the BBS to help you. If you get stock somewhere try pressing ENTER.

Now do I download with MASS-TRANSFER off of IIBBS or Risky Business? First type 0 to download. Then type in the file name you wish to download. You will be informed if the BBS finds the program. Now select CRC error checking. Next type FCTN 7 and type X. Typo in DKSn.FILENAME where n is the drive number and FILENAME is the name of the program once again. Then select CRC error checking again and then R to receive. For a more detailed explaination or questions on what is going on just ask me as it would take soveral pages to go into it all. You may also leave a message on the BBS if you have questions as usually someone can answer your questions.

Hopfully the above information will assist you in your BBS operations...Gary  $\mathsf{Co}\mathsf{>}$ 

# IN THE NEWS

I would like to start off by mentioning a few new programs to acrive in our library. Among the programs is Best Songs #2, Forthwrite Word Processor written in FORTH, Forthplan which is a preadsheet program written in FORTH. Forthplan is a good iternative to Multiplan if you do not have fultiplan! Another program is TI SORT which will sort TI Writer Files in columns... Then last but not least we have received version 4.1 of MASS-TRANSFER! It would be an understatement to call MASS-TRANSFER FANTASTIC! MASS-TRANSFER is a terminal program for use on communicating VIA modem. Version 4.1 has several new features including an expanded built in auto dialer for those with auto dial modems, a print spooler, disk cataloger and more features while still maintaining all the features in earlier versions. I have been using MASS-TRANSFER for the past few months and this new update really makes it an outstanding program. Then last but not least new versions of FASTIRAN, (budget management program) and Creative Filing System (Database). Please support the authors of FREEVARE programs by sending in a donation if you use the program!

Looking toward the news fuerc has announced that the Geneve computer will be on dealers shelves this month. In short, the Geneve is a computer in a card that fits into the PFB and is a separate computer in itself using most of your existing aquipment. The capabilities of the Geneve are outstanding as I saw the machine in operation at the Chicago II Faire! The Gameve will till run most of your II software as well as software that is Inder development for the Geneva Itself. If everything works like it should and it looks like it will, according to what I saw in Chicago, this card will make the II so powerful that it will blow the chips off IBM clones! There must be something good in it as rumors have been floating around that a large computer corporation is trying to buy out Myard! A lot of people also seem very interested in it as well. Expected price of the Geneve is in the \$400 dollar range. For more details of the Geneva take a look in MICREpendium.

M6 (Millers Graphics) has now announced their rew IBM compatible expansion for the Ti99/4A of which Triton will be marketing the product. The system is a Turbo XI system which interfaces with your TI console. It will run IBM compatible programs as well as your TI Software. The unit which sells for \$499 comes with one DS/UE drive, 256K RAM (expandable to 640K), MS-DOS operating system, 8083 Microprocessor, composit and RGB output, 8 standard user accessible IBM PC card slots. A bridge box is provided to switch between XI and 4A mode, for information on IBM compatibility for the TI call Triton at 1-800-227-6900 and they can send you a information flyer on IT.

DT-Polyoptics of P.O. Box 4443, Woodbridge, VA 22191 (703) 491-5543 says it will have its assembly language flight simulator program on the market this month! This will be the first true flight simulator for the TI99/4A and I will be the first in line to purchase a copy.

MICROpendium of P.O. Box 1343 Round Rock, TX 78680 (512) 255-1512 is still offering a FREE sample issue of their magazine

just for writing with no obligation to subscribe. MICROpendium is written exclusively for the TI99/4A home computer. I think it would be well worth your time writing to get a sample issue! They also offer a FREEWARE listing which lists programs currently available as FREEWARE for \$1.50.

Texcomp announced that "by special arrangement with the Australia.") manufacturer," all Graphx programs sold by Tex-Comp after Oct 15, 1986 will be equipped with a new high speed loader and a new Flip and Rotate command, which, according to Jerry Price, vice president of Tex-Comp, "greatly increases the flexibility and capability of this already great program." Price says current Graphx owners car obtain this upgrade with documentation by sending the original disk (only) and \$5 to Tex-Comp, P.O. Box 33004, Granada Hills, CA 91344.

I just got a correction to a file on CSGD3 on the CWRITE/PGM program. Change on the Epson version:

560 PRINT #2:Es :: NEXT D :: IF K THEN GUSUB 560 ELSE PRINT #2:TS :: X=1

Change on Prowriter Version:

560 PRINT #2:E% :: NEXT D :: IF 6 THEN GOSUB 570 ELSE PRINT #2:S% :: U-1

The bug occurred in the Doc: Printer file when you selected two columns with NO page numbers. Make the correction on a backut copy and try it out before you modify the original version!!!

A local BBS called TBBS T.J.G. is supporting the TI99/4A with a Texas Instruments computer sig. T.U.G. (TB3S Deers Group) is operated on a Radio Shack Model 1 with a 10 MEG Hard Drive (makes the BBS operate very fast!) giving a lot of room for downloads etc... The heard which operates 24hrs a day at 300/1200 baud also has sigs for most brand computers including IBM, Commodore, Radio Shack and more... A Weather Sig is also available where you can leave questions about the weather to Dave Brown (local TV weatherman). A \$10 fee is required for access to the BBS to help pay for equipment additions and expenses as the 38S is operated by just an individual. Now until April 1st you can have partial FREE access to the system for viewing purposes by just calling and membership is only going to be taken until May 15th. For more information give TBBS T.U.G. a call at 358-TBBS (or 358-8227). By the way operate the II Sig on the board.

Just as I was finishing this article I had a call from Boo Teague of the Moste City IIIII/IA Users Group in Nashville, Tenessee asking for help in organizing the second Music City II Fair! The tenative date and place for the fair Is May End and 3rd at ti Cumberland Museum in Nashville, I believe Bob is also going to contact the K-Town 99 ers in Knoxville. Tenessee for assistance in organizing the fair as well. Nopfully we can combine the efforts of these Three major Tenessee T199/4A Users Broups together to form a great TI Fair. I will have more information on the fair next month and at this months/meeting. Saxy Cox

165-24798489-5852 homes 3rd tuelay) " 800-251-1852

### OOPS

Upon reading over my article about Myarc's 512K bard in last months newslatter, I find I made an omission. Near the beginning of the article I mentioned a jack on the back of the card and said "more about that later". Well I didn't mean this much later! I just forgot to get back to it. Anyway, that jack is there so the 516K card can have an external power supply hocked up to it. That means that files that you load into the Ramdisk, will stay there even after you turn off your console and PEB! Of course you're always at risk of a power outage or a line spike. For the latter, I strongly recommend that the power supply be glugged into a line surge/spike protector as with all of your other computer equipment.

I muself have found a perfect use for this in that I keep my Myarc XB II KOS files in it so when I choose XB II, the 120K3S is loaded from the Ramdisk instead of a floppy. And with Myarc's new 128KDS file. I am up and ready to go in just 2 seconds after choosing the XB II option! I also keep my DM level III in it to be loaded in just a few seconds. The power transformer I was recommen ded to use was a 150 300mA unit with a subminiature positive tip. I purchased one from Radio Shack, part # 26-1175, for about \$8.00. This included 3 separ ate tips for various uses, as well as allowing you to set the tip positive or negative. I strongly urge that you make sure you have the tip set to positive to avoid any unfortunata damage that might occur as a result of an improper set ting. Myard has not officially andorsed doing this since they do not want to be responsible for any possible damage, so be warned Sthat you would be doing this at your own risk! However, I have had mine hooked up this way for 2 months now and am quite happy with it. If you decide to do this too, I hope that you will be just as happy...Jonathan leslie

### P SYSTEM BRIEF

The UCSD P-SYSTEM is still around and doing what it was intended to do... run on any brand of computer....(in must cases).

Like most computers, the T.I. P-System is programmer dependent and programmers don't always consider other brands of machines when they are doing their bit of magic. That is somtimes the case with the P-code programs... The programmer was long on RAM and SHORT on consideration. This is not the usual case though since one of the major attributes of P-Code is that it compiles, (yes...compiles) to a very small machine code Psuedo file that executes faster than BASIC.

The national user's group for the P System is USUS, P.O. 80X 1148, La Jolla, CA, 92038 and the Secretary at that address will be glad to take your \$2S annual memphorship fee and grant your membership rights .... which are: to receive their quarterly newsletter and use of the diskette public domain library. My experiences with the group proper have been limited. I sent a letter requesting info. ...a year later ( new officers)... I

months passed and I received their newsletters... yept..3 at one time and nothing since. From the rewsletters, I gleaned that they had had another annual meeting (the date had already passed before they published)... So I don't know what is happening now with the new officers. Their group is composed of members all over the country and they conduct business via compuserve for other modem. If intrested, evedrop on CONPUSERVE GOSS 24 hrs. with bull section time for I.I. 99 user's. Someone check them out. You don't have to be in the P-system mode to talk.

The individuals that I have talked to on the phone were all very helpful and more knowledgeable than myself. A tunch of experienced 'hackers' that can be helpful when I plea ignorance in my southern accent.

I am sending a photocopy of their newsletter (which contains an article on the T.1 99) to Gerald Smith for his review and inclusion in the library.

The T.I. Distributor for the P-Code Library is/was Kent Gestring, 4643 W. Oberlin Place, Derver, CO, 80236, Ph. (h) 303-797-6739, (w) 303-694-8797. He downloaded and is making some adaptations so that the programs run on T.I. 99/4A. Super Guy !! \$10 buys you 2 DSSD diskettes full of programs....if you are a member.

# XB TUTORIAL FIVE

BY
Funlweb Farm
of
Australia
(continued from last month)

VII. ACCEPT AT and other RAMBLINGS

TI Extended Basic is a very substantial language. The XB cartridge contains 12K of ROM and 3 and a bit (the 4th one isn't full) GROMs at 6K apiece. This is on top of the 8K of console ROM and whatever parts of the 3 console GROMS are still used in XB. The tragedy of the TI-98 is that GROMS and GPL were ever invented. I guess it was TI's way of trying to keep the software market sew up. The end result as we all know is that they shot themselves inboth feet with uncamny accuracy. Instead of using the TMS9900 CRU addressing to bank switch plain ordinary ROMs or even just using GROMs only as sources of code to load into RAM, they sould have had a machine that did justice to its CPU, a real home minicomputor . . . . . that's all past history now.

I have been pondering on what II should have done was back when the 99/4 was first designed, that could have been easily done at the time (or even wher it was updated to the 39/4a). My conclusion is that the machine should have been given 'K' of fast 16-bit CPU RAM instead of a measly 256 bytes. There would have ween plenty of room with a little rearrangement and/or better Deceding of memory-mapped devices (UDP, sound, speech, GROMS), This would have meant that Basic and XB system areas, sprite tables, full screen buffers, string buffers, value stack, and so on could have been in fast RAM, and even console Basic could have had full scope for character and sprite definitions (as in TI-1060 for instance). Their cartridges could then have easily been a lot better, and let's face it, many of the earlier ones were pretty hopeless, and the later ones are all limited by lack of homest CPU RAM. The only cartridges which have stood the test of time are those that use the 32K RAM expansion. Il would then have never been dragged into that marketing war to the death (TI's that was) with that vastly inferior machine, the UIC-20. I have a suspicion that the 256 bytes happened because part of II management wanted to protect their existing evaluation board and smaller minicomputer business.

The immediate improvement really needed in XB sub-programs is a means of examining variable values in any sub-program when program execution is helted by BREAK or errors. II should have done it in XB by retaining the EDIT command of console Basic, allowing it to access user subprograms by name. Anyone listening out there? If so add single command array operations, full syntax checking on intry, 80 column display capability with formatting power to match, bit-map screen functions, fast program execution and anything else will then be gravy. Then II-99/4a owners will be most pleased to join in. The bad news is that II is starting to cut back on support for the 9900 family despite its excellent qualities, and so it is becoming less attractive for new designs.

Enough ramblings and back to the tutorials ! What then is the most powerful feature in XB after SUB and CALL? A good candidate is the file system but as this is already built into the console ! will stick with commands specific to XB. The prime candidate is ACCEPT AT and its qualifying clauses (even Just plain ACCEPT has some interesting improvements over [NPUT but that has been treated elsewhere). This was emphasized by the recent appearance (mid-84) in a computer magazine of a long article or machine code for adding this function to IBM PC Basic (which doesn'nt have sub-programs either). ACCEPT AT is very useful and powerful, but has some undocumented features as well as some subtle and treacherous bugs, and is well worth talking about in this series.

The simplest level of ACCEPT AT combines the INPUT routine with its access to editing features, with cursor positioning on the lisplay screen by the Af clause. So far this is just the input ersion of DISPLAY AT. The difference from INPUT is that there is no provision for prompt strings, but a DISPLAY AT soon fixes that. It also accepts input to a single variable only, and not to a whole variable list. As ACCEPT AT and DISPLAY AT do not scroll the screen, their repeated use can give a much better effect than INPUT when graphics elegance is important. Construct your own examples here or work the KB manual examples. Remember that the

cursor is in XB color group O if you are trying to dress up the graphics.

BEEF allows an audible prompt with only one program byte (we'll talk about program length later on if it keeps going long enough). Of course constant repetition of beeps can get a little wearing. The ERASE ALL clause provides an alternative to CALL CLEAR for clearing the screen. As compared with CALL CLEAR, ERASE ALL is slower to execute, (it seems to be line at a time) but takes less program space. Its effect is slightly different also. This little program which uses ERASE ALL with DISPLAY will make both speed and screen effects easy to see.

100 CALL CLEAR :: CALL COLOR (0,3,3)
110 FOR I=1 TO 100 :: CALL C LEAR : NEXT I
120 FOR I=1 TO 100 :: DISPLA Y ERASE ALL :: NEXT I
130 CALL SCREEN(11):: FOR I= 1 TO 1000 :: NEXT I

That's the simple pieces of ACCEPT AT -- now it starts to get interesting. VALIDATE allows the programmer to decide what characters are acceptable in a response. The computer honks (that's the word in TI-FORTH) at unacceptable inputs. Three predefined types are available. UALPHA accepts only upper-case alphabetic characters -- very useful for filenames and suchlike. This is not quite the same as depressing the alpha-lock way as it it only accepts latters, and so is incompatible with input to a numeric variable. If you are in the habit of verifying wat paint signs by touch, try that for a change. The DIGIT type toes just what its name implies, and NUMERIC allows the input of any floating point number as well as plain positive integers. As with NPUT, all numbers are acceptable to a string variable, but numeric variables are fussion.

Now what if these predefined types aren't right for what you want ? Suppose only digits 1 to 4 are acceptable, as in a menu choice of 4 items labelled 1 to 4. In console Basic extra lines of code would be needed to check the input, but ACCEPT AT handles this with the clause VALIDATE("1234") or VALIDATE(1 LIKE\_IT\$) where the string variable has previously been set to "1234". To put it more formally, only the characters in the string argument of VALIDATE can be entered at the keyboard to be ACCEPTed.

The SIZE clause allows ACCEPT AT to be used with almost no interference to screen displays. It blanks out the specified number of characters, providing an input window of finite length, and if the length specified is negative, the characters already in the window are not erased, and form an immediate input for ACCEPTance. This is very handy for making default choices obvious to the user Let's enter a little program to get at the essentials.

- 100 CALL CLEAR :: DISPLAY AT (12,1):RPT% " ",28)

200 ACCEPT ATC12,20SIZE(3):A \$

300 EISPLAY AT(15,2): AS; LENC AS)

100 CALL KEYCO, K, S): IF S>O THEN LOO ELSE 400

You most likely have the Alpha-lock depressed. If so let it off, and MUMI our little program. Just preps ENTER the first time

round, next time hit <space> First, and Finally <space> First before hitting another key. This shows that <space>s after the last honest character entered are ignored. In some VALIDATEs here too, if you wish. Now with the program as given, alter 5IZE(3) to 5IZE(-3). It row ACCEPTs whatever is in the was or is aced in that 3 character input window.

Now that's all very simple, but it brings us to the edgs of the undocumented wilderness. Alter the CALL KEY(C,K,S) in the last line to CALL KEY(3, K,S) and RUN the program again, this time entering letters. Observe what happens the second time around. This answers the guestion of what keyboard mapping ACCEPI AI uses -- like CALL KEY(0,K,S) it uses the last one, whatever that was. Try split keyboard units in the last line. At the machine code level. a particular bute in the CPU scratchpad RAM has to be set to the keu unit before calling the SCAN routine. I interpret the behaviour as showing that in the XB modules of my experience that ACCEFT AT does not alter this byte. The XB manual however does not cocument this behaviour at all. If XB weren't a deal language that would be a caution signal. It does need to be watched in your programs, if your last CALL KEY wasn't the key unit you want For ACCEPT AI. On the positive site you can control ACCEPT AT with a prior dummy CALL KEY to ease input for the user. An example is when a program requests input of a filename, setting the key unit to 3 makes letters come out as upper-case while still allowing other characters. Brian RutherFord of HU99 first brought the enomalous behavior to my attention.

VALIDATE ("123") clause in the ACCEPT AT and RUN the program. No problems there with SIZE(3), but SIZE(-3) is trickier. You can't enter invalid characters from the keyboard but unaltered "\_"s slip through. The VALIDATE appears to be exercised as characters are entered from the keyboard, and not as the edit buffer contents are transferred into the target variable. The decision to ignore trailing blanks in the input window is taken then however. Presumably a negative SIZE pre-loads the edit buffer with the screen window contents without doing a VALIDATE check. Ultimately this is not a real problem since the programmer can control what is or the screen before ACCEPT AT is invoked. Once again, the XB manual does not bind ACCEPT AT to work this way.

This behaviour does leave a weak spot in ACCEPT AT which can only be considered as a bug, but not an intractable one. Suppose you have a menu choice of items, say 1-4 by number, with default 1 pre-loaded in the SIZE(-1) window, and a VALIDATE("1234") clause to ersure proper entry for a numeric variable. What can possibly go wrong? An evil-minded program tester would immediately delete the default using FCTN-1. An attempt to enter the blank will then rause the screen to scroll with a WARNING message. This is not a stal error, but might as well be if your background is a carefully composed graphics screen. The workeround for this problem is not difficult, but the best one also resolves an even suppression of error trapping or warning messages by global ON ERROR or ON WARNING to be poor programming practice. The best sefety net is one that is never used, only tested.

Now go back to the original sample program and change every every AS to an array element AS(2). Defacit dimensioning will do. Nothing changes. Next alter your AS(2) in the ACCEPT AT to AS(1+1). Now it works only if there is also a VALIDATE clause, but the SIZE window is disabled and input can even spill over into the rext line. No, it's not useful as a multiline ACCEPT I THE solutions to this and the previous problem are the same --- alway-ACCEPT into a temporary supple string variable, and then process the return, and do not ACCEPT a numeric directly or ACCEPT into an advay element with computed index. Both of these problems were acray element with computed index. Both of these problems were turned up by my testing craw during the ariting of TEX-BJUNCE, and served as a reminder that program testing should never be left to languages!

Might as well keep on going with the entomology lesson. The sub-program CALL ERR fails to clear errors when the DSR routine cannot find the external device, as in attempts to access an empty disk drive. The work-around this problem is to have a second bash at CALL ERR after further trying for a file on the device which failed to OPEN. The OPEN cannot be CLOSED without crashing the program or invoking this extra step to flush out the Peripheral Access Block.

The instruction ON BREAK NEXT is useful, particularly in games, for disabling the FCTN-4 (BREAK) key action. However a CALL SOUND with duration greater than 33 over-rides that. Just why is not so far obvious to this outside observer.

(to be continued next month)

# TIPS

Often members ask me what kind of printer do I recommend purchasing so I thought I would mention here what I think so that those who may be thinking of purchasing a printer in the future will have this article for reference. First of all the requirements for a printer is a RS232, connecting cable and of course the printer. A program to access the printer is also meeded such as a word processor like II Writer. However, you can write your own commands to access the printer through 3ASIC and a few other programs have a printer option built in... In BASIC you would just redirect output to "PIO" which stands for parallel input/output port. Thus if you wanted to list your program to the printer you would type LIST "PIO". To print something on the printer from a running program you would first open the printer and print to it like in the following example:

10 OPEN #1:"PIO" 20 PRINT #1:"This is a test."

Line 10 opens file #1 for output to the printer and the PRINT #1 is just like a regular print statement but it sends the output to the printer instead of the screen. For like Il-Writer you would give your printer the name of PIO when asked for an output device. By the way the word LISI reminds me of a little trick with the TE2

module. Did you know that you can type LIST "SPEECH" when in BASIC with the IE2 module plugged in (Speech Synthesizer required) and the computer will speak out the program listing? Kinda neat?

However, if you just have a console and no PEB or no RS232 you can have a word processing cartridge that has a PIO interface Let into it so that an RS232 is not needed. DataBioTics sells such a device called MIN WRITER III+ and is available through Tenex for \$44.95 + shipping. However, this just limits you to word processing with the one word processor cartridge but if all you want to do is word processing that might be a good alternative to buying ar RS232... The printer cable is included with MINI WRITER III+ so you just need a parallel printer (Gemini 10x, SG-10, NX-10...) But an addition advantage to buying an RS232 carf is you have both a parallel and serial poot. Parallel printers are connected to the parallel port and modems are connected to the serial port so you have a two in one device which will run both a printer and a modem...

The type printer a TI99/%A owner should always get is an Epson compatible printer. Nearly all programs written for the TI are written to access features that can only be found in the Epson compatible printers. These special features include graphics and other special functions. Although most dot matrix printers will do graphics only Epson compatible printers will understand the graphics codes send to it by most programs written on the TI99/%A. However a few programs will work with the GP-100 and the Uniter...

So what is dot matrix? Dot matrix refers to the type print head on the printer. A dot matrix print head uses small dets to make up the latters in comparison to a daisy wheel printer which uses a strike head like on typewriters which strike the paper. The disadvantage of a dot matrix is that you can usually tell that a computer printed it because you can see the dots whereas on a daisy wheel it looks just like a typewriter did it. However, a daisy wheel can only type letters where with dot matrix printers you can design your own characters and print graphics. (Dot , matrix print leads use pine that fire into a ribbon to create letters made of dots made by the firing pins.) furthermore many dot matrix printers today have what is called "NEAR LETTER QUALITY" which will allow the printing of letters that are of such good quality that it looks like a typewriter did it. Only by very close examination can someone tell that a computer printed it. The STAR SG-10 and NX-10 both have this letter quality print mode and it really looks good! Those with Semini 10x printers can however, purchase a chip (\$50) which will cause their printer to do the same thing. (Talk to Gerald Smith about that chip as he has one.) Other great Epson compatible printers are also available by 1 am only familiar with the Star series so that is all that I hentioned here.

If you have any questions on where to get the best deal on a printer or need help getting started on using your printer feel free to give me a call. Several programs are available in our library for use with your printer. Such programs include funluriter (A FREEWARE version of II-Writer which runs in XB and is VERY good) and NEATLIST. For graphics MAX/RLE and SCREENDUM?

are good...Gary Cox

## PROGRAM BIT

6:00pm - Doors Open

7:00pm - 7:15pm General discussion

 $7:15\,\mathrm{pm}$  -  $7:45\,\mathrm{pm}$  Demonstration of several TAX programs possibly including using Multiplan to do your taxes...

7:45pm - 8:15pm Modem demonstrations. We will have several different types of modems on display and we will be getting online with some services showing how modems work and what is available.

B:15pm - ..... We will be running one of the video tapes we received about the Chicago II faire which was held November 1st 1986. The tape goes through each tooth at the faire and shows the entire Geneve demonstration by Lou Phillips and the GREAT Music demonstration by Peter Hoddie... This tape was filmed by someone in the Bostor Computer Society and I would like to thank Genial Computerware for providing me with a copy of the tape... By the way in viewirg the tape I saw several people from our group on tamera. The video tape filmed by the Chicago Users Group still has not arrived. Hopfully it will come in soon!

### \* ETON \*

Hember Jonathan Leslie has received a letter from Texaments stating that "it appears that the deveve will be shipped this month". If the Geneve Model 9640 Computer-in-a-card does arrive a demonstration of it will replace some of the above demonstrations. However, the chances are SLIM that the Geneve will arrive in time for this months meeting so if you are coming to the meeting just to see the Geneve you can give me a call at 901-358-0667 a few days before the meeting to see if it has arrived... You can also check Risky Business and TI385 for messages as I am some there will be plenty of messages talking about the Geneve if it arrives before meeting time.

11om - Doors close.

As always the newsletter table and disk library will be open as well so I will see you at this months meeting... Gary Cox

Coming next month a video taped demonstration by Texas Instruments on how chips are actually made. It is a very interesting and simply amazing how so many components can be placed onto a small silicon chip...Gary Cox

### PROTECTION

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

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### NEWSLETTER INFO

Visitors and potential members may receive 3 free issues of TiDbits while they decide if they wish to join (no obligation). A Dollar sign (\$) 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 Y 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!

### CALENDAR

MEETINGS: February 19, March 19, April 16th (3rd Thursday!) WORKSHOPS: February 21, March 28, April 25th (4th Saturday!)

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