YESTERDAYS NEWS

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30 Years Ago...

Historical Information taken From Bill Gaskills TIMELINE

MARCH 1987:

Access Engineering, a consortium made up of Jim Horn, Richard Roseen and Chris Bobbitt, announce ADOS, AMOS, AC-BASIC and AC-PASCAL for the Myarc 9640 computer.

Jeff Guide's DisK Only Software out of Lorton, Virginia releases XB:Bug and EPROM for the Horizon Ram DisK, both products created by J. Peter Hoddie.

EPYX 500XJ joysticK is introduced by TexComp as Super JoysticK III.

Font Writer II by J. Peter Hoddie is released by Asgard Software.

DataBioTics releases the JunKman Jr. and Star Runner game cartridges.

Wycove Forth v3.0 is released by Tim MacEachern, but with no documentation.

File Master and Home BanKing programs are released by E & M Software of Napa, Ca lifornia.

Ray Kazmer of Kazco International, closes the doors on his business.

The Bible Trivia game is released by Trinity Systems of Pittsburgh, PA.

Myarc's Advanced BASIC is announced and previewed by Walt Howe in CompuServe's TI Forum.

Triton Products Inc., the company chosen by TI in 1984 to handle the remaining stocK of 99/4A hardware and software, announces a PC Clone to the TI Community complete with an MG designed bridge box so that you can use your 99/4A Keyboard with the IBM clone. Both the Turbo XT clone and the bridge box idea are universally spurned in the TI Community.

MICROpendium receives a beta version of Myarc 9640, which is now a computer on card for the Peripheral Expansion Box rather than a full-fledged computer as originally planned.

Funnelweb v3.4 is updated with the March 30, 1987 release.

INSIDE INFORMATION

REVIEWED

DOOM OF MONDULAR

From Volume 1, Number 9 of National Ninety-Niner

Author: Symbiotech, Inc.

Review by John Phillips

"In the mystical land of Agnar there was a peaceful village called Mondular. The people of Mondular were a happy group until the wicKed wizard, ZarKa, using the magical ring from the Tower of Loom, cast a curse on the village which has lasted for the past hundred years.s

Your goal is to release Mondular from its doom by finding the Staff of Power in the Dungeon of Dread. Beware of the obstacles you have never encountered before.

In this game you are the leader of a four-player group of characters (2 warriors , a priest and a wizard). Each one provides their unique sKills to assist you in completing the quest."

SEE "DOOM", PAGE 4

REVIEWED

Part Three of Four Reviews Covering GRAM Devices

GRAMULATOR

REPORT CARD	
Performance... A	PRICE
Ease of Use... B+	$185.00
Documentation. A-	
Value..... A	
Final Grade... A	

Manufactured by:
CaDD Electronics

from MICROpendium Aug 1988
Reviewed by J. Peter Hoddie

Finding a place to start a review of The Gramulator from CaDD Electronics is a difficult task. TheGramulator is the 1988 incarnation of the GRAM emulator, one of the most exciting peripherals developed for the TI-99/4A. The Gramulator is the successor to MG's popular GRAM Kracker (*REVIEWED IN MARCH 1986 MICROpendium*) (*reviewed in Vol 2,No 1 Yesterdays News*). This review will attempt to cover all the details of The Gramulator while also offering some comparisons to the GRAM Kracker, which is the standard that many will judge it upon.

The basic idea

GRAM emulators such as The Gramulator, GRAM Kracker and GRAM Karte allow for a cartridge to be saved on disk and then loaded back into the device for use without the cartridge. Once the cartridge is residing in the emulator it can be modified because it is now contained in RAM memory. Thus a GRAM emulator allows for customization of cartridges. Further, TI Basic and a large portion of the "operating system" of the 9/4A are contained in GROM memory in the console, which The Gramulator is able to emulate. This allows for changes in the actual behavior of the 99/4A from the moment it is powered up.

GRAM devices allow for a complete backup of a cartridge library to be made to disk. This can provide some degree of security against damage to cartridges. While some might argue that a GRAM emulator encourages piracy of cartridges by allowing them to be freely copied, this is hardly realistic. Most TI users now own every cartridge they are likely to ever want, and the cost of cartridges is generally no more than $10 , and often less. With GRAM devices selling for over $150, buying such a device for piracy purposes hardly seems economical.

A GRAM device also reduces the wear on the console cartridge port. Once placed in the cartridge port, there is usually no reason to remove the device, and thus one of the most frequent causes of problems with the 99/4A (ever had Extended Basic lock up for no good reason?) is essentially eliminated.

Using a GRAM device a programmer can write programs in GPL (TI's proprietary Graphics Programming Language), which is nearly impossible without a GRAM emulator although using Monty Schmidt's clever GPL LinKer it is possible). There are several GPL assemblers and disassemblers available for those who wish to program the 99/4A in the language that most TI users chose for most of their cartridges.

The hardware

The Gramulator is a small black metal case, that slides into the cartridge port of the 99/4A console, and extends to fill the entire length and width of the cartridge port. There are two rubber "feet" to hold it level. In front of the cartridge port there is a connector to plug in a cartridge, and the battery which backs up the RAM memory when the console is turned off. The placement of the battery outside the case is a major improvement over the GRAM Kracker in terms of changing the battery. With the GRAM Kracker, this involves completely disassembling the case, as often as every six months. By locating the battery out of the case, even a technoKlutz can easily replace the battery in just a few seconds.

The Gramulator contains 96K of RAM configured to emulate the 64K of GROM/GRAM in the console and cartridges, 2 banks of 8K RAM/ROM that may also reside in a cartridge, and 2 extra banks of 8K for later expansion. There is also 8K of ROM which contains The Gramulator software. On the front are 7 two-position switches which control the device's operation. These switches control similar functions to those on the GRAM Kracker, with further operational details below.

With instructions available from CaDD, the Gramulator may be modified by the addition of a few chips to utilize the two extra 8K RAM banks to emulate the Milton Bradley MBX cartridges. The Gramulator is the first product available for modifying these unique cartridges.

The Gramulator comes with a three-month warranty on parts and labor.

The software

Built into The Gramulator is 8K of software which allows for loading and saving cartridges, TI Basic, and the operating system, in addition to setting many of the device characteristics that are also controlled by the switches. There are also options to save specific ROMs and GRAMS, not necessarily as part of a cartridge. In a cartridge , a GROM contains 6K of data, although it occupies an 8K block of memory. This extra 2K is extremely useful for programmers when modifying or enhancing cartridges, because it is never used in existing cartridges. When saving a complete cartridge the software saves "small GROMs" which take up 8 fewer sectors on disk than "large GROMs" which are saved when the option to save specific memory banks is used. In this way, the casual

user doesn't have to waste disk space on unused areas of memory, while a programmer has the ability to save these areas if necessary. The GRAM Kracker software saved in 8K banks to be safe.

The built-in software also contains a catalog routine (which handles floppy, RAM , and hard disks) to help locate files. Using The Gramulator system software, a memory editor may be loaded from disk. The memory editor features editing of both GRAM and CPU memory, editing and display in both ASCII and hexadecimal, string search, printer/disk dumps, and the ability to fill blocks of memory with a particular byte value.

Taken together, the system software and memory editor allow for nearly all the capabilities of the GRAM Kracker internal software with some welcome improvements, such as selective memory bank save, disk catalog and small GROM size. The software is not as "pretty" as the GRAM Kracker's and the memory editor resides on disk as opposed, to memory, which is not as convenient.

For those who wish to modify the system software or the memory editor, the source code is available for a nominal fee from CaDD. The code is well written and carefully commented.

Providing the source code for systems software is becoming a popular option with in the TI community (witness the success of the Horizon Ramdisk) and CaDD is to be commended for choosing this open policy.

Documentation

The manual provided with The Gramulator is entirely adequate. It clearly describes the functions of all the hardware switches, how to operate the system software and memory editor, some specific examples of modifying cartridges, some useful advice on using the device, and an excellent table of contents to make finding information fast. The manual is typeset, printed on 8 1/2 x 11 paper, and contains 36 pages.

Nothing is wrong with The Gramulator manual; unfortunately, it must be compared to the GRAM Kracker manual.

If there was one thing MG did better than anyone else, it was to write outstanding documentation. The GRAM Kracker manual, no exception, is packed with examples, hints, cartridge modifications, and technical and programming information. This manual makes a worthwhile addition to The Gramulator owner's reference library.

So what does it do for me?

The Gramulator moves any cartridge from ROM where it can not be edited, into RAM. This allows anyone to make changes in a cartridge. Changes can be simple - such as changing screen colors - to the more complex - such as adding new CALLS to Extended Basic, or modifying the TI title screen to include your name. Using the supplied memory editor it is easy to make simple modifications.

With the proliferation of large ramdisks and now hard drives, the ability to store large numbers of cartridges online becomes a reality. With these devices, a cartridge may be loaded in just a few seconds. No longer do you have to search for cartridges on your desk. The Gramulator sits in the cartridge port and you simply load the cartridge you need. Unlike the GRAM Kracker, loading a cartridge often requires no manipulation of switches on the device, which can save considerable time.

For those using an external Keyboard (such as produced by Rave 99), The Gramulator allows placement of the console completely out of the way since you no longer need to access the cartridge port. For most operations there is no need to manipulate the switches, so the console can be conveniently placed to one side.

Support

Because of the popularity of the GRAM Kracker, particularly in the programming community, a large number of articles were written explaining how to make changes to cartridges and the operating system. An excellent collection of these is Kracker Facts, edited by Mike Dodd, and available from the LA 99ers Computer Group. The vast majority of the material in this book is directly applicable to The Gramulator.

Programs are also available in the public domain and fairware circles which take advantage of The Gramulator. There are some particularly good articles written by Marty Kroll available on CompuServe and from several software libraries, including the Boston Computer Society.

A program I wrote called GRAM Packer, available from Genial Computerware, will work with The Gramulator, though at this time not all features are functional. For details see the review in the December 1986 MICROpendium.

Conclusion

Most people who purchased a GRAM Kracker wondered how they ever did without it. The Gramulator is a worthy successor to this legacy.

If you have ever considered purchasing a GRAM emulator product, now is the time. The Gramulator is a powerful addition to the 99/4A environment that will change the face of your computer.

HOW ACCURATE IS THE 99/4A'S SOUND CHIP?

From LIMA Newsletter October 1988

By Charles Good

Some of the musical programs in our user group's library sound just a bit off, with an occational sour note. This is particularly true of songs played as single notes rather than chords. You don't have to be a music expert to detect these sour notes. Either the programmer programs in the wrong frequency, or perhaps the sound chip is less than totally accurate.

Reading about the CALL SOUND statement in the Users Reference Guide maKes one believe that the sound chip is very accurate. The frequency portion of a CALL SOUND statement can have a frequency between 110 and 44733 hertz (cycles per second) suggesting that there are 44623 separate sounds possible! Of course, many of these frequencies are beyond the ability of most monitor speaKers or exceed the limits of human hearing, but these numbers suggest the possibility of great accuracy.

The User's Reference Guide on page III7 gives the frequencies for four octaves of of commonly used musical notes. In order to checK the accuracy of the musical frequencies listed on page III7 I wrote the following program:

```
100 PRINT "INPUT FREQUENCY"
110 INPUT F
120 CALL SOUND(4000,F,0)
130 GOTO 100
```

I entered various frequencies, including those on page III7 and then used an ARION HU8000 Micron Chromatic Tuner to measure the resulting sounds as they came out of the speaKer on my TI 10 inch color monitor. This chromatic tuner is used by musicians to tune stringed instruments, including pianos, and is quite accurate. I played around with different CALL SOUND frequency values and found those that, according to my Chromatic Tuner, were closest to being perfectly "in tune" for all of the notes listed on page III7. The results are shown in the table below. These data were identical on each of the two 99/4A consoles I checKed.

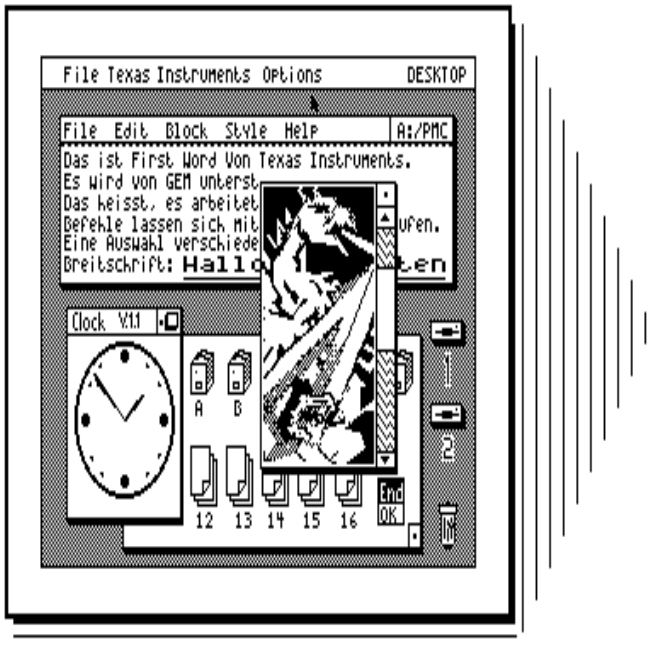
Not all frequencies listed on page III7 actually produce the desired note. These are noted in the COMMENTS section of the table. The inaccurately published frequencies are in fact the theoretically correct values, but they are one hertz too large to give the correct sound from the TI sound chip. Music programmers taKe note! This may be the source of some of the "off" sounds in some of the songs in our group's software library. It is possible that these frequency errors are due to the speaKer used in the test rather than the TI sound chip. Maybe a high quality speaKer would maKe these errors disappear, but I doubt it.

For some notes, it is not possible to get a sound that is perfectly in tune. This is particularly true of the higher notes. Values shown in the table show which CALL SOUND frequency gives the closest approximation of a note, and the percent error from perfect "in tune". Again, a better quality speaKer might maKe these apparent errors disappear, but I doubt it. It is possible, however, that the magnitude of the high frequency errors (10-15% off true "in tune") would be reduced with a better speaKer.

Beginning with E above middle C (330 hertz) more than one adjacent frequency number produces EXACTLY the same sound. Thus the apparent tremendous accuracy of the TI sound chip with its 44623 different sounds is a myth. The number of possible sounds is much less. This particular characteristic of the TI sound chip would not be affected one way or another by a higher quality speaKer. For A above high C (theoretically 880 hertz) any frequency number between 878 and 884 in a CALL SOUND statement produces the EXACT SAME in tune sound. If you go one higher to 885 you get a distinctly higher sound. You don't need a sound meter to detect this change of sound between 884 and 885. The difference can easily be heard with normal hearing. The above small BASIC program lets you input a new frequency before the old one quits playing so you can listen to frequencies bacK to bacK with only an instantaneous pause in between. Try it. Type in the program and RUN it. Input frequencies 878, 879, etc up to 884 and they all sound EXACTLY the same. Then try 885 and notice the difference.

Hopefully the data in this article will help music programmers to appreciate some of the limitations built into the TI sound chip and correct some of the sour notes published on page III7 of the Reference Guide.

See Page 4 for the Music Note Table



CALL SOUND frequency, as reported on page III7 of Users Reference Guide.

Actual measured CALL SOUND that generate this note in tune.

NOTE			COMMENTS
A.....	.110	..NA.....	Volume too soft to meter.
A#.....	.117	..NA.....	Volume too soft to meter.
B.....	.123	..NA.....	Volume too soft to meter.
C(low C)..	.131	.131.....	
C#.....	.139	.138.....	Off by 1HZ, also 5% flat.
D.....	.147	.147.....	
D#.....	.156	.156.....	5% sharp
E.....	.165	.165.....	
F.....	.175	.175.....	5% sharp
F#.....	.185	.185.....	
G.....	.196	.196.....	
G#.....	.208	.207.....	Ref Guide high by 1HZ.
A.....	.220	.220.....	5% sharp
A#.....	.233	.233.....	
B.....	.247	.247.....	
C(mid C)..	.262	.261.....	Ref Guide high by 1HZ.
C#.....	.277	.277.....	
D.....	.294	.293.....	Ref Guide high by 1HZ.
D#.....	.311	.311.....	
E.....	.330	.329-330.	
F.....	.349	.349-350.	
F#.....	.370	.369.....	Ref Guide high by 1HZ.
G.....	.392	.392-393.	
G#.....	.415	.415-416.	
A.....	.440	.440-441.	
A#.....	.466	.466.....	
B.....	.494	.491-491.	Ref Guide high by >=1HZ.
C(high C).	.523	.522-523.	
C#.....	.554	.553-555.	
D.....	.587	.584-587.	
D#.....	.587	.584-587.	
E.....	.659	.656-659.	
F.....	698	.697-701.	
F#.....	.740	.738-743.	
G.....	.784	.780-784.	
G#.....	.831	.826-831.	
A.....	.880	.878-884.	
A#.....	.932	.929-935.	
B.....	.988	.986-994.	
C.....	1047	1041-1050	
C#.....	1109	1102-1112	
D.....	1175	1172-1183	5% sharp
D#.....	1245	1236-1249	
E.....	1319	1309-1323	
F.....	1397	1389-1406	
F#.....	1480	1462-1481	10% flat
G.....	1568	1565-1586	5% sharp
G#.....	1661	1657-1681	10% sharp
A.....	1760	1734-1761	15% flat

DOOM CONTINUES...

The previous three paragraphs are the printed introduction to a wonderful adventure/quest game by Symbiotech called Doom of Mondular. Let me first say that this particular product for the TI-99/4A Home Computer is nothing less than professional. From the detailed design on the front cover to the cassette and disKette labels, we're talKing a class act, folKs.

This packKage requires the use of the DisK Memory System, a Memory Expansion, and a cassette storage system. The Extended Basic module is also required. As far as I can tell, this is the only drawbacK to the game. Those of you into Tunnels of Doom or Adventures will surely love this product.

As mentioned before, you are the leader of a group of 4 characters wandering aimlessly through a dungeon. A graphic depiction of hallways and doors are represented on the screen. The group always moves together and can never be split up. You may enter rooms at your will by using the arrow Keys on the Keyboard.

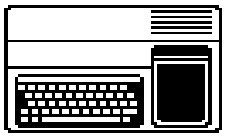
Rooms can hold a lot of surprises. Chests (similar to "Castle Wolfenstein") contain treasures or boobytraps, which wound the character attempting to open the chest. However, the ultimate goal, the Staff of Power, is hidden in one of the chests, so you'll have to taKe your chances. Other "goodies" found in the chests are shields, helmets, armor, and weapons.

All the afore-mentioned items are used in your protection from and your attacK on various monsters found in the rooms. Each of your controller characters taKes his crack at the monster(s). They may hit a monster with their weapon or cast spells (if the wizard or priest is attacKing). Or, if you feel lucKy, you may pass.

Each character contains certain information about himself. There are numerical values that control the life expectancy of the character. For example, each character may only receive so much hit damage from monsters or booby traps before he becomes "dead" (believe me, I Know how to reach that state). Other states your characters may reach are poisoned, held, asleep, and silenced. There are several other factors that control how well a player fights, but too numerous to mention here.

Although I never found the Staff of Power, let me assure you that it will be a thrilling experience. The dungeon is quite extensive, so you have a long quest ahead of you. Never fear, you can save your game on cassette tape for later retrieval. Very professional (and necessary) in my opinion.

So D&D fans, a new one is out for the 99/4A and it is a winner. Out of 5 stars, this one gets a 4. If it weren't for the heavy hardware requirement, it would be a five-star all the way. Enjoy!



Yesterdays News Information

Yesterdays News is a labor of love offered as a source of pleasure & information for users of the TI-99/4A & Myarc 9640 computers.

TI-99/4A HARDWARE

BlacK & Silver computer
Modified PEB
WHT SCSI card with SCSI2SD
Myarc DSQD FDC
Myarc 512K Memory Card
Horizon 1.5 meg RamdisK
TI RS232 card
Corcomp Triple Tech Card
1 360K 5.25 floppy drive
1 360K 3.50 floppy drive
1 720K 5.25 floppy drive
1 720K 3.50 floppy drive
80K Gram KracKer
Samsung Syncmaster 710mp

TI-99/4A SOFTWARE

PagePro 99
PagePro Composer
PagePro FX
PagePro Headline MaKer
PagePro Gofer
TI Artist Plus
GIFMania

PC HARDWARE

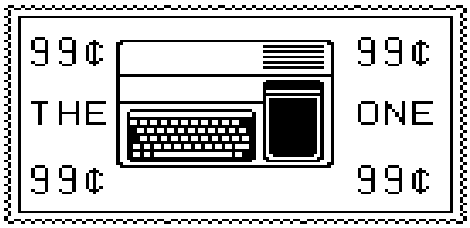
Compaq Armada 7800 NotebooK
Compaq Armadastation
Samsung Syncmaster 710mp

PC SOFTWARE

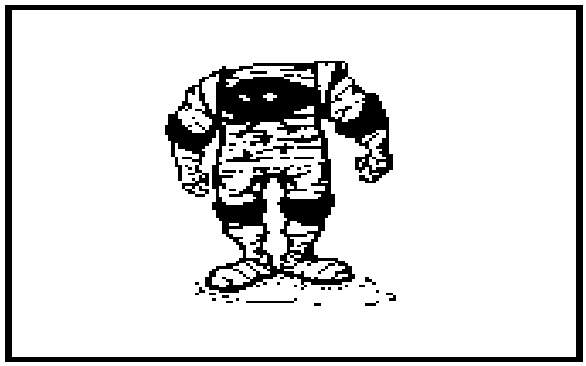
Dead,Dead,Dead Windows 98se
FileCap
prn2pbns
Irfanview
Adobe Distiller
Adobe Acrobat

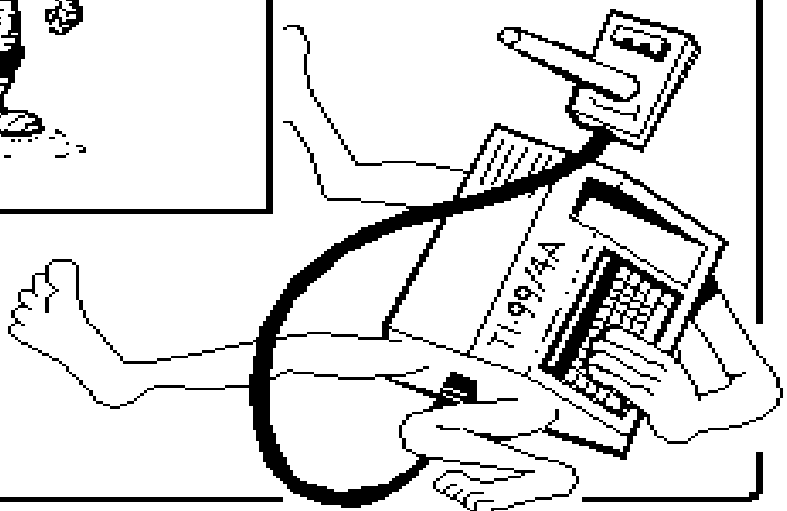
Yesterdays News is composed entirely using a TI-99/4A computer system. It consists of 11 PagePro pages which are "printed" via RS232 to PC to be published as a PDF file.

Yesterdays News
c/o SparKdrummer
AtariAge forum
Phoenix, AZ. 85027



FIRST CLASS MAIL





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