.....Ryte Data.....

Dedicated to 99/4A and 9900 Computer Systems

BOX 210 MOUNTAIN STREET
HALIBURTON, ONTARIO K0M 1S0
CANADA

VER 1.12(5)
MAY/JUNE

R/D COMPUTING NEWSLETTER

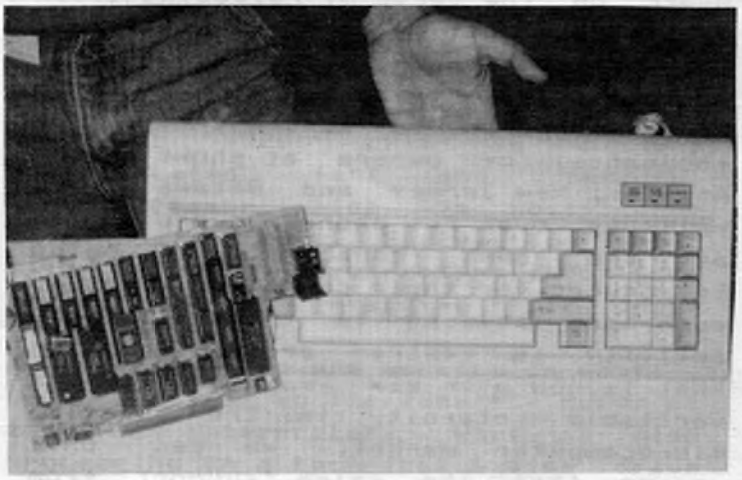
PROJECT OVERLOAD

Our new office is basically completed. After long hours planning, designing, building and moving it all, it's functional. This segment is being written from the newest workstation. The past two months have been more than full; an exercise in doing far too much with entirely limited resources. Demonstrating products at different shows, dealing with Mechatronic, rounding up certain information, trying to publish the newsletter (without getting too far behind) and stay current with the projects.... we hope you can understand. Better yet, submit an article for inclusion [on disk please!]!!! Support for the TI 99/4A is by no means an easy task.

GUERILLA MARKETING II

Last issue we asked for a market survey and referrals to other TI owners who would appreciate this newsletter effort. Well, thanks and thanks again! Several people have written us with appreciated comments. One very notable patron of the TI arts has decided to help the progress: Ron Albright has agreed to assist with a notice in Computer Shopper and to do a review on the Mechatronic hardware for Micropendium. Perhaps the essential 'critical mass' approaches!
This type of passing the word is key to expansion into a larger magazine format. Only subscribers will provide the fuel for expansion. Venture capital firms simply aren't interested in providing funding for an orphan computer - no matter how many new products are developed or how dedicated TI owners happen to be. We've even entertained the thought of a public

GOTO 10



MYARC 1986

As noted is last issue, Myarc has been busy showing their upgrade machine at several shows in the US and one here in Canada. The photo below is the 9995 based computer-on-a-card that Myarc has designed to fit the PE Box. Lou Philips noted that this approach will be easier to bring to market in a 'reasonable' timeframe.
I had the opportunity to examine the board at the Ottawa TI Show on April 26th. Everything is complete except for an I/O board to handle keyboard input from an IBM type keyboard. This aspect is expected to be completed fairly quickly.

The board carries 512k of main memory, the astounding 9938 video chip (with 128k of display memory), the expanded memory mapping circuit (to increase main memory to the two **megabyte** range), sound processing chip and assorted output circuits for a system monitor - RGB or composite displays.

Well gang, this is it! The machine **works**, is **very fast** and makes full use

GOTO 13

VANISHING PRODUCT SUPPLY

Over the past few weeks several major distributors have thrown in the towel. Unisource, Keystone and Amerisource (also known as C & R Distributors) have all decided to close out all TI specific products. This leaves the remaining retail dealers with even fewer sources of supply. This strikes us as unusual at this juncture. With Myarc on the verge of releasing their 9995 CPU, a host of new hardware and software being released, a "revival" mentality seems evident.

We have spoken to hundreds (if not thousands) of owners at shows in Los Angeles, New Jersey and Ottawa - as well as over the phone who are amazed at the new capabilities being introduced for their computer. What is even more amazing is that all this activity is centred around a design that is now over six years old... a veritable eternity in the VOLATILE microcomputer market. We can only assume that the sales 'support' from owners has ceased to be profitable for these companies. Some sources indicate that it is more complex on several fronts: dealings with Myarc, moving on to other machines, price wars and all that.

Ottawa

The Ottawa TI Show held at Marivale High School April 26th was a simply smashing success... and quite different again. Sort of indicates the diversity inherent in the TI market. The show was very well organized and well attended.

Users groups from across Canada were in attendance with a certain showing from south of the border.

The Ottawa group went all out to accomodate vendors and groups coming to the show. We even had a rep assigned to help us out in getting anything necessary. This was a perfect touch. On the way to Ottawa we picked up a new disk from the post office of translated material (thanks again Henri!). We were able to do a print out at the show thanks to the efforts of Mike Taylor. Perfect!

In addition to Myarc being represented by Texaments of New York, John Klulow from the Horizon Users Group with their RAMDISK, Guy Gournay of MAXIMEM fame, Timeline, Easyware, G-Plus, Intelpro and other vendors were showing new products. One of the more interesting developments was shown at the Toronto Users Group booth (9T9). It was a 99/4A upgrade approach done by

Gary Bowser. The system has a set of new circuits, a full sized keyboard and an altered operating system programmed into the lower 8k memory bank. We expect some interesting work to come out of this. We'll keep you posted as Garys work has bearing on another project in progress elsewhere.

THE OTHER 9995 MACHINE

The report on another outfit having prototyped a 9995 computer-on-a-card seems to be slightly redundant right now (perhaps Myarc reads this?). An approach to have the card brought to production never came to fruition. The designers seemed to want a guarantee that the machine would be supported properly. Oh well.

Then again, Apple and IBM have how many(?) clones on the market. THE POINT BEING: having a 9900 family machine **in production** removes the "orphan" status from the TI 99/4A community. We belive that two CPUs on the market would work to everyones advantage.

Draw your own conclusions; save your pesos and tell other TI 99/4A owners that living in the orphanage has just improved!

GRAPHX Pictures

Announcing the latest advance in graphics companion products from the company that invented them on the TI-99/4A - GRAPHX Pictures! Unlike all others, this four-disk package of art work can be enjoyed without having to own any drawing program with the use of the revolutionary GRAPHX Slideshow program, commissioned from the master assembly programmer Paul Charlton (author of Fast-Term), that is included with this package.

GRAPHX Pictures contains 24 fully complete works of art, stored on disk in the popular GRAPHX format, and available for use by GRAPHX and TI-Artist owners in electronic greeting cards, as parts of business presentations, and for use within other art works. While other companion products give you little bits and pieces of art for use in your own work, GRAPHX Pictures contains full-size, hightly detailed drawings with literally hundreds of computer and non-computer applications. These works aren't just useful, they are also aesthetically some of the best art work ever created on the TI-99/4A, or on any computer for that matter. Each is a veritable gold mine of techniques and ideas for creating your own masterpiece. All will give you, and your friends that own Commodore's and Atari's, hours of enjoyment.

If this isn't enough, we've included our GRAPHX Slideshow, which allows you to simply and easily create high quality graphics presentations. This program gives you full control over the timing and order over your picture slideshow, but unlike other such programs, no programming knowledge is required to quickly and easily create complex business, commercial, home or school presentations.

The price for over 320K of artwork and a useful new assembly program by Paul Charlton? Only $16.50 with shipping included in the price! GRAPHX Pictures requires either the Editor/Assembler, Extended BASIC, or Mini-Memory cartridges, 32K and a disk system. Either GRAPHX or TI-Artist (v2.0) is required to alter or add to the pictures. This package is compatible with all disk drive controllers and RAM-disk peripherals.

$16.50

MasterCard

Asgard Software
P.O. Box 10306
Rockville, MD 20850

VISA

THE BRAIN

A press release concerning a very innovative product was received along with a demo disk from DATAX of Ridgewood, New York. Looks good so we'll quote verbatim.

This program is a real breakthrough in both capabilites and user friendliness. The program is probably the most easy to use product that is on the market, it has about thirty (30) help screens and it uses standard TI 99/4A commands such as BACK (FCTN 9).

As for the capabilities, you can see for yourself. The program works at assembly speed with accuracy of up to 12 decimal places when necessary. The program uses 40 column bit map display for the HELP and TABLE screens, and regular 32 column grapnics mode for data entry mode. A calculator window that copies the total line onto the curent input line is available in data entry mode. An escape key is provided, a PREVIOUS PAGE control key is available for the TABLE screens etc. The program is totally menu driven: there are about 20 (twenty) menus altogether. The error handling is excellent: plain English messages. The user can change the defaults without having any programming experience. Defaults that can be changed are: display color, HELP(Y/N), the TOTAL line copy of the calculator. To change the defaults all that the user has to do is enter RUN "DSK1.CHANGE/DEF" while in Extended Basic mode. The CHANGE/DEF program will ask for the new defaults and then it will save them to disk so that the BRAIN program will automatically read these defaults from disk while loading, thus saving wear on the user.

The BRAIN is the only program of its kind in the TI market. We feel that there is a very good market for it. We included Number Base conversion routines, ASCII tables, color code tables, TMS 9900 Instruction Set tables to make the program desired by programmers. There are routines such as Math and Calculus, Electrodynamics, Trajectories, Conversions, Physics, Vectors and tables of elements and trigonometric functions that make the program very attractive to engineers, students and teachers. There are also Annunites and Compound amounts for financial computations and general conversions that make the program very attractive to almost any segment of the market.

The actual program comes with full documentation enclosed in a hard cover binder. Honestly now, we feel that the program is so easy to use and the HELP screens are so good that the manual will probably never be read by the user.

The program comes with a lifetime warranty, that is, we will replace the program anytime if the disk is accidentally damaged.

Anyway, why don't you run the program so that you can see for yourself how good it is. You can order the BRAIN package from us for $49.95 per copy.

Available from:
DATAX
1923 Linden Street,
Ridgewood, New York 11385
(718) 417-0165

GRAMKRACKER REVIEW

This article is based on the excellent device available from Millers Graphics. The GRAM KRACKER is very similar to MAXIMEM and the GRAM Card hardware. People ask what the differences are: each device has its own set of strengths - according to your needs and the price spread. This is reflected in the amount of memory accessible to the user: 48k for MAXIMEM, 80k for GRAMKRACKER and 128k to 512k for GRAM Card.

The GRAMKRACKER plugs into the module port of the console. It is a solid metal enclosure with five switches on the front and a module holder on the top. You plug in a module for use or downloading vertically into the units module connector.

Each unit comes with both on-board software to control the device and a disk of utility programs.

Documentation for the entire package is very well done. The small

book is spiral bound, very clear and complete in explaining the features and use of the GRAMKRACKER. This is one of the areas where Craig Miller and team excell. GOOD documentation.

Same is true of the utility programs supplied with the package. There are both examples and useful routines that flex the capabilities of the device.

One program allows you to move the TI Writer Editor and Formatter into the GRAMKRACKER for instant loading... no more waiting for the disk access to load. Same with the Editor and Assembler programs. Another utility alters EXPLORER to work with different types of GRAM (Graphics Random Access Memory). You can also have TI Writer or the Editor Assembler loaded into the unit along with Extended Basic or another module of your choice.

Yet another utility file adds new CALLS to Extended Basic: CALL NEW, CALL BYE, CALL CLSALL, CALL CLOCK (CLKOFF) plus CALL CAT. You can also write TI Basic programs to function as modules; accessed from the main menu screen stored in the GRAMKRACKER. Finally there is a file to install a new character set into the operating system (true lowercase or altered uppercase etc.) so all screens have a more legible appearance.

The manual goes on to describe several interesting things you can do such as chaining assembly language programs, making changes to the operating system, altering operating characteristics of modules (ie: TE II @ 1200 baud, printer ports to PIO etc.) colour changes, autostart modules etc.

You get the idea here! This is a very powerful and flexible extension of the TI 99/4A. I understand that there is a "CRACKER HACKERS" SIG on Compuserve. Now that people can play with the inside of the operating system and the contents of old module software, all sorts of interesting things can be done. As usual, the more people that have a hardware device, the more useful it becomes.

The one major difference (advantage) that the GRAMKRACKER has over the Gram Card is that the GRAMKRACKER locks out the operating system. You are then running your console directly from the GRAMS contained in the unit. No 'cross reach' can occur and you can make numerous changes to the operating system. The Gram Card can also download and alter the operating system but it does not prevent the console from reaching into existing GROMs. Very experienced programmers might not have any trouble with dealing with this cross reach, but Millers device takes care of this completely.

GRAMKRACKER is available from Millers Graphics, 1475 W. Cypress Ave., San Dimas, CA 91773 USA Earth.

c99 UPDATE

Version 2.0 of c99 from Clint Pulley is now available. The following is a notice received:

I am pleased to announce the immediate availability of c99 version 2.0. Among it improvements and new features are:

- faster compilation generating more efficient code;
- correct pointer arithmetic;
- for, do/while & switch/case/default constructs;
- initializers on global declarations;
- meaningful error messages on screen;
- file I/O supporting all modes, including relative, for display files;
- printf, fprintf and printf formatted I/O routines;
- the capability of running from E/A simulators such as FUNLWRITER 3.0 and BEAXS
- function libraries for graphics (character and bitmap), floating point, string manipulation, speech, an

alternate I/O library supporting display and internal files;

- an improved RUNOFF text formatter with file chaining and 132 printer width;

and much more.

c99 version 2.0 is available on one disk (SS/DD) or two (SS/SD). To get your copy, send me two disks (or one if you can read double density) and $1.00 for return postage. If you are in contact with other c99 users, I would appreciate "group orders" to reduce the amount of time spent copying disks. In this case, please let me know the names of all recipients so I can keep my database up to date.

If you already have sent me the suggested donation in support of c99, please note that further monetary contributions are NOT expected. I feel quite strongly that your donation entitles you to the finished product. If you really want to send something more, I am always pleased to receive the software which many of you have included on your disks. If your disk has files on, please mention this in your note.

In closing, I would like to thank all of your whose donations I was unable to acknowledge individually. Your generous support provided much of the incentive for me to keep working on c99. I hope you feel the results are worthwhile.

Clint Pulley
38 Townsend Ave.
Burlington, Ontario L7T 1Y6

NEWS AGAIN C99

"C" is one of the mainstream industries most popular programming languages. The code is easy to develop and 'port' to other systems. It is modular, similar to Pascal, compiles for high speed operation and is fully supported from one machine to the next. Lotus 1-2-3 is written in C as are other major packages.

We got a call today from one very dedicated TI loyalist who has a KERMIT program listing written in C. For those of you who are familiar with KERMIT as a communications protocol this is very exciting. Look for release in the near future!

INCREASE YOUR CONSOLE CLOCK SPEED

An article by Peter Machule of Vancouver, British Columbia, Canada details how you can make your 99/4A console 'tick over' a little faster! This little gem was downloaded from the White Rock BBS in Burnaby (604) 531-6423 by Bob Boone of the Ottawa Users Group.

TO SPEED UP A STANDARD TI CONSOLE BY 19% (approximately) DO THE FOLLOWING: OBTAIN A 14.318 Mhz CRYSTAL, a one pole - 2 position switch, 3 pieces of wire about 6 inches long and a soldering iron. Unsolder one lead of the existing 12 Mhz crystal and solder in one of the wires. This wire will be the 'pole' wire ie. it goes to the CENTER connection of the 3 connections on the switch. Solder another wire to the bare lead of the 12 Mhz crystal.

One lead of the 14.3 Mhz crystal is soldered to the last wire, the other lead is soldered on the 12 Mhz's lead that is connected to the PC board. In other words all that's being done is a switch from one crystal to the other via the switch. The two wires coming from the crystals are simply soldered to the switch so that in one position the 12 is selected and in the other the 14.3 Mhz crystal is selected. SIMPLE HEH? It turns out that the wire length, type etc. is not critical. I used 22 guage solid wire 6 inches long and a mini toggle switch. HERE COMES THE NEAT PART: IT IS POSSIBLE TO SWITCH CLOCK SPEED WHILE THE PROGRAM IS RUNNING!!! (at least in BASIC as that's all I've tried so far... this modification was done only 10 minutes ago). The hardest part is finding a good location for the switch. I placed mine peeking out of the cooling slots on top of the console. GOOD LUCK AND LEAVE me a message as to your results.

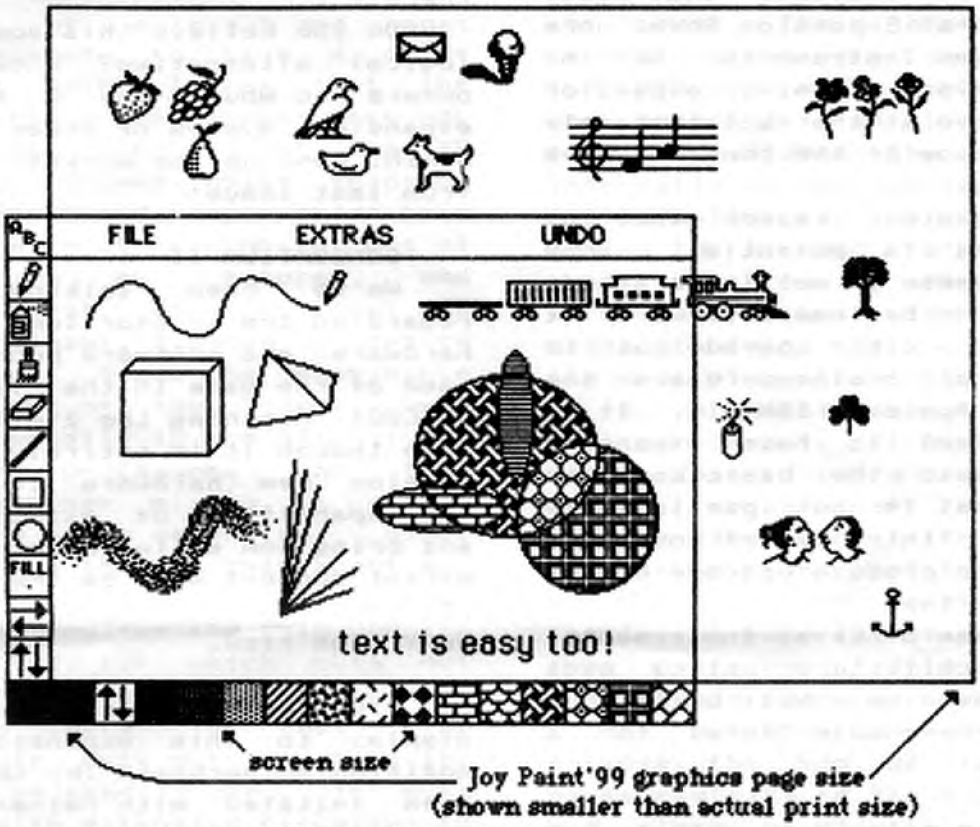
EXPANSION SYSTEM II

Millennium Computers has agreed to

NEW! FROM THE CREATORS OF BANNER '99 AND EXTENDED BUSINESS GRAPHS.....

JOY PAINT '99

ENTIRELY JOYSTICK CONTROLLED!!



92% MORE GRAPHICS SPACE THAN PREVIOUS TI GRAPHICS PROGRAMS!!

THE SCREEN ACTS LIKE A WINDOW!

USE TOOLS, SUCH AS PENCIL, ERASER, PAINT BRUSH CIRLCE, OVAL BOX, LINE & TEXT!

Our all new 100% assembly language program features graphic capabilities found in no other software application. Use JOY PAINT '99 to create signs, charts, diagrams, advertisements, or graphics of any type. JOY PAINT '99 is sophisticated, yet simple to use. In fact, the user never needs to touch the keyboard; all functions are joystick controlled. There are no complicated function keys to remember, just simple on-screen TOOLS. JOY PAINT '99 allows circles and ovals to be drawn with incredible speed and precision. Lines, boxes and rectangles can also be quickly drawn! Additionally, the FILL, PAINT BRUSH, and SPRAY-CAN tools allow filling and painting in any one of twenty six selectable PATTERNS! JOY PAINT '99 also feature 8 different brush shapes!

A 'pull down window' contains many more features that make creating and manipulating graphics fun and easy. Any object can be INVERTED, ROTATED, FLIPPED VERICALLY or HORIZONTALLY, COPIED, MOVED, OR STORED ON A CLIPBOARD! A MAGNIFY feature allows graphics to be increased. A ZOOM OPTION, called FATPIXELS, allows fine single dot editing.

JOY PAINT '99 also contains dozens of features not found in any other graphics application. For instance an 'UNDO' feature that instantly 'takes back' the last portion of work the user performed! Its DIRECTORY feature can catalog your diskettes! JOY PAINT '99 CONSERVES DISK SPACE, by not saving the redundant blank areas in your graphics! Printouts can be made directly in normal, or double size, and in single or double density! Be among the first to experience this unique and practical program; ORDER YOURS TODAY.....$49.95 POSTPAID.

REQUIRES

TI-99/4A, 32K, Disk drive, Joy Stick, and one of the following: Extended Basic, Editor/Assm, or Mini-Memory.

Epson compatible printer such as Gemini 10x or 15x, TI impact, etc. is optional.

(soon other printers too!)

COMING SOON:

JOY PAINT '99 COMPANION!

With hundreds of pre-designed graphics!

GREAT LAKES SOFTWARE

804 E. Grand River Ave., Howell, MI 48843

bring a new powerful expansion system to market. With all the card based hardware being produced, this project is a logical choice.

Out of the 2.8 million TI 99/4A computers sold, approximately 10% - 12% have been fully expanded. Some research figures indicate that about 200,000 Peripheral Expansion Boxes were produced by Texas Instruments. Add the CorComp and Myarc mini- expansion systems to arrive at the fact that only a small percentage of the consoles have been expanded.

THIS is another 'reason' that the 4A never reached its potential. Some things made sense in selling a stand-alone console for beginners... but it did not leave a clear upgrade path to power systems or business users the same way that Apple or IBM did. It is much more logical to have expansion slots built into the basic computer system. The cost is not particularly high and the "third party" companies all 'jump in' to produce upgrade boards and powerful software.

In the case of Texas Instruments, their closed architecture policy made for costly expansion. Well built, but far beyond a reasonable level for a 'consumer market'.

DETAILS:

The new expansion unit is styled along the same lines as the IBM XT type metal case featured with the "clone" machines. A "slide in" expansion chassis with room for five full sized expansion cards (in addition to the included interface card) and up to four (yes - 4!) disk drives. A larger power supply will be able to supply any expansion cards and disk drive combinations on the market.

The cost for this unit will be **less** than current prices for original TI expansion boxes... with various options available built into each unit: having 32k on the interface card or a built in disk drive and controller or a real time clock circuit... your comments please!

A specification drawing of the unit is below. You can see that the design here is contemporary and works well with existing consoles or Myarcs new 9995 computer & keyboard.

Other projects also come into play here... one being an upgrade board for the existing 4A motherboard, the new disk controller from ATRONIC etc. multi-function expansion cards and the thousands of unexpanded consoles 'out there'.

Do you believe this approach is a logical alternative? Know any console owners who would buy a new powerful expansion system or other new devices? AGAIN: send us the market survey form from last issue!

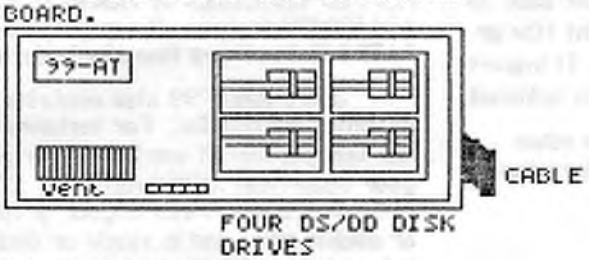
CONSORTIUM II

We've been talking with AEI regarding the consortium approach to hardware and software production. The name of the game in the TI market is ACCESS: **reaching** the 2+million owners. Even though it is entirely possible to develop new hardware devices, extend the capabilities of existing consoles and bring new software into being - the market support must be there for such VENTURES to be anything more than a VERY high risk.

Discussions to add the 80 column display to this expansion box and a modified motherboard (by AEI) have also been initated with Heiner Martin, the designer responsible for the GRAM Card, a German disk controller (by ATRONIC of West Germany), the book INTERN and a regular columnist in TI REVUE. We'll keep you posted!

SLIDE-OPEN CASE

FIVE CARD SLOTS AND INTERFACE BOARD.



FOUR DS/DD DISK DRIVES

INTERNAL POWER SUPPLY

TI MONITOR VIDEO FILTER

by Marv Shuldman, New Jersey

Shortly after plugging in my new Commodre 1701 color monitor, I noticed that although the picture was better than on my home television, certain combinations of colors and most lettering seemed to have a color bleedthrough. Bythis I mean that the edges of letters and shapes were not clear in color. Looking at the 99 title screen showed white fringing between the green and purple color bars as well as with other combinations of colors. Being by nature, and employment (most of the time) an electrical engineer, I began to deduce the following. Since the chrominance (color only part of the video), were generated internally in the 9918A (VDP) video display processor, and then combined, improper mixing of certain harmonics were being generated. Since I could not take the VDP chip apart and work on it internally I thought of two solutions: 1. Replace the 9918 VDPwith the improved 9928 VDP which puts out separate chrominance and luminance. The problem here is that the chrominance it puts out is not in the frm that can be readily used. It must be decoded with extensive circuitry to provide a Red, Green, Blue (RGB) signal similar to other computers - which may not be worth the effort. In any case, I have experimented with this chip for a much better non-color picture, which may be material for another article.

2. Filter out the color and luminance harmonic mixing with a suitable video filter. The advantage here is that it is very simple circuitry to build that, while not as good as solution #1, it still improves the picture.

PARTS REQUIRED:

1. One .005 microfarad ceramic disc type capacitor. The value is not critical allowing for some tolerance on either side. The voltage rating is unimportant, since any ceramic capacitor can withstand the video voltage here. I used a disc type, but if you have a non-disc ceramic capacitor it should be just as effective.

2. One RCA type PHONO connector, (male plug), such as is found with audio cables. The solder type is cheaper but even the solderless types can be used.

3. One audio Y connector, such as the Radio Shack shielded adapter # 274-303 on page 129 of their 1986 catalogue. Their adapter is all one hard piece and very compact. It has two RCA type phono jacks on top, which are connected in parallel, and one RCA type phono plug on the bottom connected internally to the two top sections. It is normally used to connect two stero cables to a mono jack on an audio amplifier. Again, you may improvise with what you have (such as shielded audio cables) but I found this to be the most elegant solution.

4. A small amount of epoxy or silicon cement. I used epoxy because it hardens into a rock-like mass. Either cement will not affect the filter due to their excellent insulating characteristics.

5. A quarter inch of wire insulating material (spaghetti shrink type prefered). This can be stripped from an old piece of wire.

6. A rubber or plastic boot to enclose the top of the filter. This gives rigidity to the filter plug. Any old piece of plastic or rubber tubing can be used - such as the top of a pen cut smooth to fit.

ASSEMBLY INSTRUCTIONS:

1. See diagram

2. Insert one end of the capacitor into the insulating spaghetti and then into the phono connector. Solder the end of this wire to the end of the connector. Snip off any excess wire.

3. Wrap the other end of the capacitor around the top part of the phone plug body. Solder about 1/2 inch around and snip off the excess.

4. File off any excess solder around plug tip to ensure ease of insertion. Clean off any filings (don't be a slob otherwise I won't invite you over for dinner).

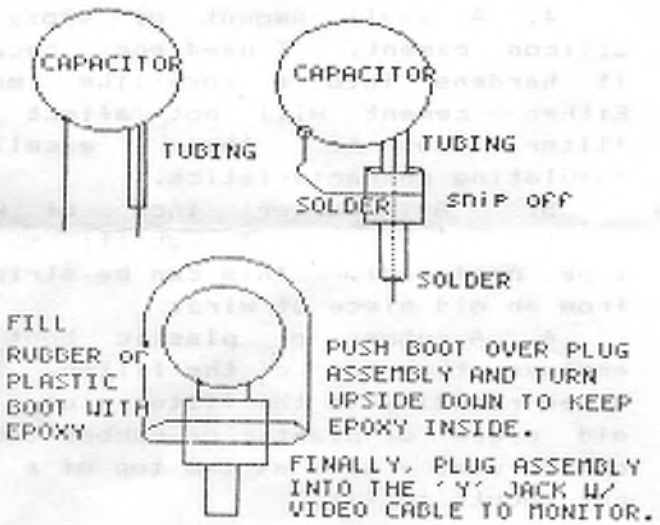
5. Place epoxy into rubber boot and place top of phono plug and capacitor into the rubber boot. Be careful not to get any on the working parts of the plug or it will not plug

in properly. Yes of course, if you do get cement on the plug, wipe it off immediately.

6. When dry, insert the capacitor plug assembly into any one of the two jacks of the Y connector. Plug your TI video cable into the other jack of the Y connector. Now insert the Y connector male plug into your video monitor jack. (Audio goes straight into the usual jack!)

7. You may unplug the capacitor/plug assembly from the Y connector to restore the original unfiltered video. This way you can compare the before and after.

8. You're welcome!



from Page 1

corporation listed on a stock exchange to provide the extensive capital required to expand. Later.

One interested backer requires a definite level of market response in order to proceed. Take a few minutes, fill out the survey form and mail it out to us today. Your return on such an investment is better support.

EXCELLENT LETTER

The publication has been most thought provoking. Your report on Myarc's endeavours to obtain rights to the 99/4A operating system lead me to wonder whether it's not time for a different approach to be problem of a new 9900/9995/99000 based computer.

I do not have a background in computers, but in surveying the field, it seems to me that the 99/4A is very much a product of its time. In 1979, memory was very expensive and disk drives were as scarce as hen's teeth. I suspect that these conditions are responsible for those features of the 99'4A that we would like to see improved.

To the 1978 theorist, the idea of programs stored in cartridges must have been very attractive. And the ingenious and intricate design that permitted storing complex routines in a proprietary ROM device outside the user-addressable memory would have been a stroke of genius. These things may command our respect, but they produced a computer that seems now t incorporate wonderful solutions t problems that no longer exist -- rather like the compressed-air cannon or the flying wing.

A rather puzzled study of the Ibs 99000 Microprocessor (Prentice Hall) and a very cursory look at an assembly language manual for the Motorola 68000 (as found in the Atari 520ST [Amiga and Macintosh]) leads me to believe that the 99000 is not at all inferior in performance to this currently glamorous chip, and the 99000 seems a good deal easier to program.

I'm told that the 99000 is used in current Texas Instruments multi-user minicomputers, which are said to be very good business machines indeed ("Ten years ahead of the comparable IBM minis," according to an unbiased acquaintance who sells both in a vertical market).

The problem may be that TI has swung from the one extreme of relying on its own extensive resources and reputation to produce and support a line of computers entirely different from everyone else's, to the other extreme of abandoning its own

GOTO 12

EXPLORER

YOUR WINDOW INTO THE 99/4A

Have you ever wondered how CALL SOUND, CALL SAY or the GPL Interpreter actually works? Or how Parsec sets up and scrolls its bit mapped screen? Or exactly what Extended Basic is doing when you type in LIST or RUN and it executes a program? Or how about the Interrupt Routines?

Imagine what else you could LEARN if you had an instrument that gave you total control over the microprocessor in your computer and you could stop and start it at will, at any point in a program or module and it allowed you to examine and change memory, or any of the registers or Cru Bits.

Well stop imagining because the Explorer turns our 99/4As into that powerful Instrument and Learning Tool! The heart of the Explorer is a machine language interpreter that thinks its a 9900 microprocessor. This allows you to be in TOTAL CONTROL of the application program so You can watch the Explorer's Main Screen with all of its dynamic information or flip to the ACTUAL Program Screen running in slower motion under YOUR control.

Along with ALL the other items on the Main Screen, You can also track up to 3 Dynamic Memory Windows for any area of CPU Memory, VDP Memory or GROM/GRAM Memory, in any one of 4 sizes. You can also Track, Display, Edit and Search any area of memory in Hex, ASCII and in ASCII with Basic Bias. This powerful interpreter also allows you to lock in Break Points for ROM or RAM, Any VDP Write or Read and Any GROM or GRAM Memory access. And, at any time, You can easily modify any of the items on the Explorer's Main Screen or, with the aid of the Explorer's Registers Screen, the GPL Status and VDP Registers.

The number converter on the Explorer's Options Screen uses the same mathematical logic as the 9900 microprocessor. It will Add, Subtract, Multiply, Divide, AND, OR, XOR or NOT numbers in all three, Decimal, Hexadecimal and Binary, number bases at the same time so you can easily calculate what's going to happen next, before it happens. And, Yes, it will convert negative numbers and numbers into their CALL PEEK or LOAD addresses.

To further assist you, and help explain what is going on, the actual 9900 source code for the next instruction to be executed is displayed. Also, the ENTIRE Main Screen is Dynamically updated after each and every instruction is executed, so you can examine, learn and control it step-by-step or TURN IT ON and watch it GO!!

This is an extremely easy Utility Instrument to use with its Function and Control Keys, Binary Switches, and its Full Screen Edit Control fields. It also includes a function key strip and an extensive 112 pages of documentation complete with Step-By-Step Explorations, Memory Maps, Register Information and Cru Bit and Peripheral Assignments.

- Expanded System Requirements -
Extended Basic or Editor Assembler or Mini Memory
Memory Expansion and a Single or Double Density Disk Controller System.
(currently not compatible with Myarc's MPES-50 Mini Peripheral System)

Order Number **UT02** Price **24.95**

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technology in favor of devices popularized by other manufacturers. (My acquaintance commented, wryly, that the TI 300, 600 and 800 systems "lack an important feature -- the letters 'IBM' on the front panel.")

This redirection may be a sensible business decision, but it is unfortunate for the overall development of computers -- and especially unfortunate for those of us who have spent a lot of time learning the 9900 instruction set and gaining enthusiasm for memory-to-memory architecture.

It is also possible that this new slant works against us. If you were a TI executive, would you be eager to learn that a guy in Basking Ridge, New Jersey was succeeding with a machine based on one your company had lost millions of dollars on? Irrational, to be sure, but something to consider.

The 99/4A community spends a bit too much time abusing Texas Instruments. I bought two of my three 99/4As the summer before TI discontinued manufacturing, and I spent a good deal of time on the "help line" during 1984 and early 1985. I found the TI operators invariably helpful and still enthusiastic about the computer.

TI also bent over backwards, upon its hasty exit, to make it possible for third party manufacturers to develop new accessories. It has been suggested that an earlier adoption of this policy might have saved the 99/4A, but I don't belive it.

The fundamental probem was that the "home computer" market did not exist; TI was not the only company to run afoul of this difficulty. We laugh at their marketing ineptitude, but they have a formidable track record of selling calculators that they assemble themselves against strong Japanese competition -- and how many US companies can make that claim?

Unfortunately, computers can't be sold like calculators (or watches), as TI (and others) learned to their cost. It's one thing for Commodore and Atari, with bare-bones user support and a contemptible sevice policy, to "make it up on the volume"; it was quite another for quality manufacturers, like IBM and TI, to produce carefully manufactured and extensively supported computers that had to compete with toys for space on retailers' shelves.

A friend of mine recently bought ar Atari 520ST. I've had a very brief opportunity to examine it. Having done so, and scanned a Compute Magazine book on ST BASIC, Logo and the GEM system -- I'll stick with the 9/4A. The whole input/output scheme and file management provisions seem a lot more straightforward and flexible. The ST is miserably documented; Atari doesn't even provide a telephone number to call for assistance.

Maybe we didn't deserve Texas Instruments, which supported the 99/4A on a scale not since seen in the world of inexpensive computers (and even moderately costly ones; my IBM-PC owning friends greatly admire TI's lavish, literate documentation).

In any event, what do we do now? I've been wondering whether simply giving up on the whole GROM business, and building a more conventional machine based on the 99000 and the Sanyo [Yamaha -Ed] 9938 video display processor might not appeal. From the nomenclature, it seems to be a frank development of the 9918/9918A. I know TI has supplied the 9918A to Japanese MSX manufacturers; was there some kind of joint venture with Sanyo, from which TI bailed out?

TI seems to have developed a full range of programming languages for the 9900 and its successors; for example, "Power BASIC" seems like a fine implementation of BASIC. If I were TI, I'd work up a version of the "Professional" with a 99000 board and a assembler plus versions of BASIC, Pascal and 'C' on disk, and use my list of 99/4A owners to try and sell it. I'm not, and they're not going to. Still, I cannot imagine that they'd be unwilling to license their laguages to someone building a 99000 based computer.

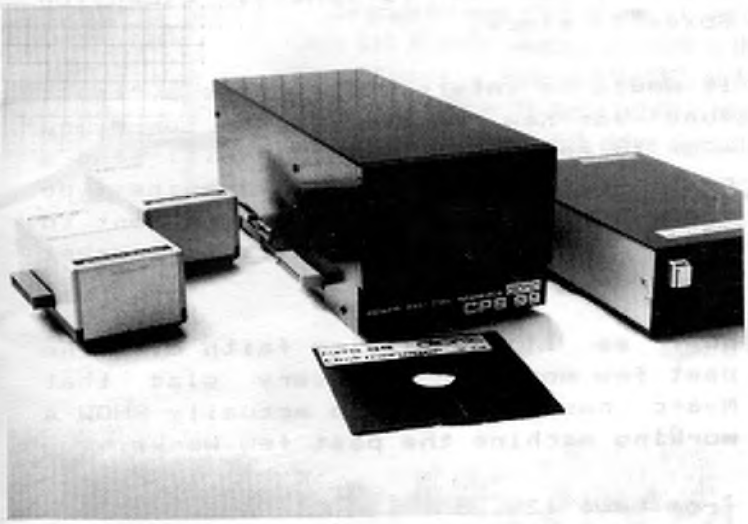
Such a machine would, perforce, leave a lot of cartridge-based firmware behind. Give it 512k (or more) of memory, and the Communications Register Unit for input/output, and you'd have something that could easily stand up to the 512ST (and, I dare say, the Sinclair QL and Commodore Amiga. I don't see the immense attraction of

GOTO 14

ATRONIC Products

ATRONIC GmbH of West Germany contacted us regarding marketing their line of products in North America. These have been selling in Europe for about two years and their ads & reviews have been spotted in TI REVUE over the past year. ALTRONIC has several very nice expansion products to offer:
CPS 99 is a very compact, sleek full expansion system with power supply, 32k memory, RS-232 (2 serial & one parallel ports) and double sided double density disk controller (up to four drives) PLUS a **small** case to house one or two drives. Photo below illustrates just how compact the unit is. It measures about 5" high, 6" wide and 13" deep. Plugs straight into the 44 pin side port to expand the TI 99/4A fully.

Great product #2 is a DS/DD controller CARD for the PE Box which also has the 32k memory expansion on board. Multi function cards have arrived! This card seems to have all the features of DS/DD controllers PLUS memory... In other words free up an extra slot in your PE Box. Price is liable to be about $245.00 (US).

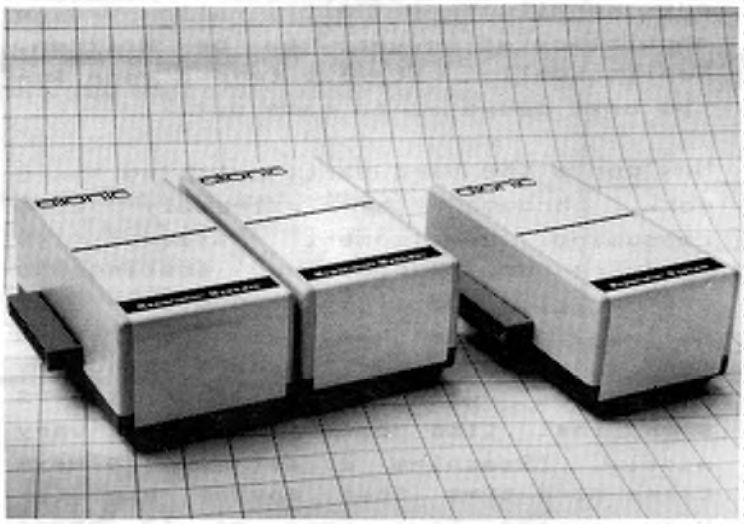


Great product #3 is their RS-232 card with 32k memory as well! (No, you can't use both the disk controller w/ 32k and this card at the same time!) This is totally TI compatible: 2 serial ports and one parallel port. The only difference is that the parallel port is NOT bi-directional like TI's. Price is estimated at about $175.00 (US)

They also have a "MEGARAM" card in 256k and 512k versions. Fewer details on this product at press time, but there seems to be a full MEGABYTE RAM model as well with RAM disk functions and a "SUPERVISOR" program to access the memory through XBasic and E/A programs!

Another ad found in TI REVUE mentioned an interface card with 32k on board. Best of all, the cards save you money over the discount mail order prices on RS-232 or disk controller and 32k memory cards. Purchased separately you pay more for two separate cards than one of the ATRONIC cards! not to mention saving an extra expansion slot for another card.

The arrangements negotiated thus far include stocking products here in North America, providing support and translation services, repair and exchange capacity in house as well as handling marketing functions. We



would, of course, like to hear from owners who are interested in another line of innovative products for their TI 99/4A.

from Page 1
of additional cards in the Peripheral Expansion Box. Watching the demos of operational software really underlined the power and speed of Myarc's new computer. This system should be able to hold its own with any other mainstream computer on the market. All the rumours can now be laid to rest! It

truly is an awe inspiring computer. Remember the information from earlier issues? Lou Philips and his team have really done an excellent job. What is needed is a finishing touch on the operating system. Functional software from various programmers and companies will make this the **only** machine of choice for any TI 99/4A owner.

Plans seem to call for Myarcs Extended **Basic** Level II (version 2) to be included in the computer. A version of "C" will also be included. Some rumours exist regarding an optional IBM (8088) co-processor to allow IBM PC programs to be used with the computer. All of the above features are THE ONLY WAY TO GO. In todays market it is essential to have IBM compatibility - no matter who you are... in **ANY** section of the micro world.

Word has it that several units have been sent to third party programmers to develop software for the machine. Transparent memory specifications and **open architecture** will allow very sophisticated software to be written. Realistically, it will take a year for the best packages to come out.

Now comes the hard part; watching Myarc work through the extremely time consuming development stage, to hardware prototyping and testing, to the critical operating system (O/S) software coding has been frustrating for many owners. Standard industry procedures with other manufacturers show that time estimates can vary widely. Reaching a set goal always takes more time than anyone expects. Many owners have gone on to other machines (notably the Atari ST 520 or 1040) or have given up on ever seeing a new compatible. It will be very difficult to reach substantial numbers of TI owners. I believe Myarc is well aware of the hard task ahead in marketing a new computer.

With the current status of the microcomputer industry, sources of 'venture' capital are limited. Only recently has the investment community shown any renewed faith - notably with industry giants such as Microsoft and Ashton Tate. For a new computer, even with a loyal base of users, marketing will be the key issue.

The other aspect which has an effect is that Myarcs 9995 computer has been designed for the Peripheral Expansion Box. Out of the millions of TI 99/4A computers sold, only about 12% were ever expanded. It has been estimated that 200,000 PE Boxes were made by TI. The "serious" users bought these rather overbuilt and expensive expansion units. As Eric noted upon first seeing the thing, "This box is like a piece of mainframe lab equipment. Certainly not a standard consumer product."
This approach limits Myarcs potential sales base. Add that to the fact that Texas Instruments didn't really intend for the design to hold more than 512k with the addressing lines through the box and you have an unusual situation. What is **needed** is a fully compatible expansion box. Paul Meadows remarked at the Ottawa show that "the price of PE Boxes had just gone up." Several people asked about getting an original TI expansion unit. They're not easy to find!

Note: Dheins Hardware, 7 W. Airline Highway, Waterloo, IA 50703 (319) 236-3861 has TI Peripheral Expansion Boxes in stock.

It would be interesting to see a "trust fund" for new computer orders for Myarc - or to see how many people will send a cash deposit - or even a grapevine type flood of **firm** advance orders sent to Myarc. THAT would indicate market response.

Just as I was losing faith over the past few months. I'm very glad that Myarc has been able to actually SHOW a **working** machine the past few weeks.

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"windows" and "icons", but with 64k of VDP RAM, they'd sure be easy to do).

Failing such a radical departure, we must hope that Myarc (or someone) will bring a 99/8 lookalike to market **fast**, while the 68000 machines are still feeling their way.

Of course, if I understand some of the rather terse predictions in your newsletter, it may be possible to

overcome GPL's present restriction on speed of execution. If so, and if any of the rumoured attempts to provide a 9938 card come to fruition, it will be fun to show the ST, QL and Amiga owners what a six year old computer can do!

But, on the larger view, it's important to have a computer in current production. I keep running into people (including computer industry professionals) who have a 99/4A in the closet. They are amazed to learn (A) that it can be expanded and (B) that anyone is still supporting it. I run into other people who admire my 99/4A, but won't buy a new one from Tex-Comp or Tenex or Unisource or the International 99/4A Assistance Group because it's "out of production", hence "obsolete". We need something to keep the flag flying.

On several occasions last year, I saw ads in Computer Shopper for a 9900 board for S-100 bus computers. Given the S-100 8-bit orientation, I wonder how this is possible (limit the instruction set to byte operations?). I know very little about it, but if the ...ing has been done, it might be an alternative (an expensive one) if Myarc doesn't come up with something marketable.

Yours truly, Timothy Sanford, NY

THAT is one of the more astounding letters I have ever seen! Points well taken all around. To answer some of these:

1. GROMs and GPL effectively kept the third party out of the machine for years. Apple and IBM on the other hand have open architecture - all information is freely available. Witness the immense number of products that have been created for the two top dogs!

2. TI has not really made it easy for third party manufacturers to develop new products for the 99/4A. Today, all internal information is still considered a secret by Texas Instruments, "proprietary" to all concerned. They License a few items, perhaps, but nothing of real importance ie: source & operating system code, GROM technology, hardware & software specs etc.

3. The "home computer" (a term invented by TI) needs to DO something around the house that will save the average homeowner MONEY: ie. control the hot water tank and furnace. We are now seeing a resurgence mentality. Apple did not participate in the 1983 price wars... they sold educational institutions and small business' **applications.** Plus their upgrade path was built into every case sold.

4. The 9938 was developed in a joint license venture with Texas Instruments and Japanese companies. TI apparently bailed out and now Yamaha has gone into production. The chip is available for experimenters and in quantity to manufacturers.

5. The 99000 chip is a very sophisticated, fast and powerful microprocessor which has never come into popular focus. Speculation about TI's approach to marketing ineptitude has been leveled regarding their chips as well!

6. Programmers are working on writing a GPL **COMPILER** to increase the speed of the GPL interpreter. Work is also proceeding on a technical & disk drive access book - with routines, documentation, source code etc.]

7. Now that Myarc is showing their 9995 CPU and AEI is working up a power upgrade board, we'll see a machine in production! Not a "home" computer either, but a powerful micro that can run in any PC or network market going.

8. It is not generally recognized that TI's Peripheral Expansion Box is based on an 8 bit data path... another limitation performed through hardware decoding. Information is sent out 8 bits at a time. An S-100 bus orientation would work the same way [a MultiBus or QBus system would be better]. TI even has a special chip that interfaces multi-processors quite easily. 8 to 16 - 16 to 8 etc.

TIME AND EFFORT:

Where does the time go? This issue is weeks late again. We're trying to play catch-up with the publishing deadline. Please note that you did not miss an issue... We have decided to place the cover date to correspond with the month in which you receive the newsletter. Rather than May at the END of May, delivered in June, it says June. Avoids some confusion.

End of line.

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