# Established 2016 Number

## Historical Information taken From Bill Gaskills TIMELINE

## November 1987:

The 5th Annual Chicago TI Faire takes place on November

Mark Van Coppenole demos the GRAMulator prototype at the Chicago II Faire.

Family and Home Office Computing Magazine ceases publication of type-in programs . The magazine, which started out life as Family Computing, is switching focus to Home Office Computing in an effort to stay afloat in a very competitive market . All II-99/4A and other home computer programs are no longer found on their pages.

Hulk, Claymorgue Castle, Buckaroo Banzai and Spider-Man adventures by Scott Adams are released by TexComp.

Myarc Mouse and MyArt are offered as separate purchases from the Myarc Geneve computer by Innovative Programming (Galen Read) of Rohnert Park, CA.

Funnelweb v4.0 is updated with the November 11, 1987 release.

Graphics Expander and Font Pack I and II are released by Genial Computerware. Graphics Expander allows a TI-Artist or CSGD (Dave Rose's Character Sets and Graphic Designs) font to be stretched either horizontally or vertically.

String Master is released by Bytemaster Computer Services of Sulphur, Louisiana .

TIBM PC to 4A or Geneve file transfer utility is announced by program authors Daniele Morini and Lūigi Grilli of Italy.

is PC-Transfer Mike Dodd released by Genial Computerware.

TI99ER5

November 2017

INFORMATION

AVANTI 99 FORTH CARD for the Peripheral Expansion Box is announced by McCann Software. The beta version is shown at the Chicago Faire.

Miller Communications of Seattle, Washington develops an IBM-like box to hold the Geneve and II peripheral cards. The box is said to have a 220 watt power supply and it will have seven card slots. Millers own VideoFlex and Frame Grabber cards will fit in it as well as two RS232 cards.

SUPER CLOCK SUPPORT is released by Ryte Data of Haliburton, Ontario.

A newsletter for users of II's CC-40, and the II74 and 95 calculators debuts.

Remind Me! by John Johnson is released by Genial ComputerWare at the Chicago II Faire.

Inscebot Inc. announces that II-Artist will be produced in cartridge format. It never comes to pass.

Ali Ulgen of Seven Hills, Ohio completes a months-long, nation-wide survey of 99ers equipment and software inventories.

Bruce Ryan and Ryte Data of Haliburton, ONT Canada show off their new 99AT box at the Chicago TI Faire. The 99AT holds a large power supply, up to four (4) half-height floppy disk drives (including a hard disk drive), and still has five (5) slots for standard TI Peripheral Expansion Box type/size cards like those made by TI, Myarc, CorComp, Horizon, Foundation, Mechatronic GmbH et cetera. The 99AT is priced at 55.00 with a 135 watt power supply and a built in system interface.

Anders Persson of Lund, Sweden releases a complete mapping of the TI P-Code card.

### MANIPULATING DV/80 FILES

by Art Byers

The default input or output disk file for the 99/4A is a Display Variable 80 file. It is most often used for text files generated by word processing. The WRITER files are most easy to change and reformat when they have carriage returns at the end of each paragraph and heading.

Unfortunately, this newsletter format requires that we remove the cr's from our articles. If the editor of another 99'er club wants to reprint our articles, he/she has to go through the painful process of putting back the cr's so that the article can be reworked to fit that club's newsletter format.

For this reason, we now separate each paragraph with a blanK line. On this disK is a program that will read the articles and change each blank line into two cr's. Two are necessary so that when you use control/2 to reformat, one goes at the end of the paragraph and the other creates a blank line between paragraphs. This program is listed below, heavily annotated with remarks so that those of you who are not XB programmers can understand what is happening. The REMs were added on TI WRITER and are not in the actual program should you "list" it to screen or printer.

In the future, we will show you how to use the TAB settings of WRITER to set up the fields of a data base, then manipulate them as you wish with an XB program that reads the DV/80 file - ie: doing math calculations, global changes in the fields, sorting, etc.

### PUTTING BACK THE CARRIAGE RETURNS

100 DIM A\$(50)! array to sto OUTFILE\$,OUTPUT re up to 50 lines of text 110 CALL CLEAR :: CALL SCREE N(4):: PRINT "PROGRAM REQUI RES TWO DISKDRIVES" 120 PRINT :"PLACE INPUT DISK IN DRIVE 1" 130 PRINT :"PLACE OUTPUT DIS K IN DRIVE 2": :"PRESS ENTER WHEN READY" :: INPUT E\$ 140 CALL CLEAR :: PRINT "ENT ER INPUT FILE NAME: ": "DO NOT ENTER DSKx." :: INPUT INFIL E\$ :: INFILE\$="DSK1."&INFILE 150 PRINT :"ENTER OUTPUT FIL E NAME":"DO NOT ENTER DSKx." :: INPUT OUTFILE\$ :: OUTFIL E\$="DSK2."&OUTFILE\$ 160 DISPLAY AT(10,1)ERASE AL L:"OPENING FILES.." :: OPEN #1:INFILE\$,INPUT :: OPEN #2:

170 COUNT=0 ! Initialize the count 180 CALL SCREEN(11):: DISPLA Y AT(10,1)ERASE ALL BEEP:"RE ADING...." 190 COUNT=COUNT+1 :: LINPUT #1:A\$(COUNT):: IF EOF(1)THEN 200 :: IF COUNT=50 THEN 200 ELSE 190 ! if end of file o r count is 50 jump to write else go back and read some m 200 CALL SCREEN(15):: DISPLA Y AT(10,1)BEEP:"WRITING...." 210 FOR LOOP=1 TO COUNT :: I F A\$(LOOP)=" " THEN A\$(LOOP) =CHR\$(13)&CHR\$(13)! if blank line is found, change to se t of two carriage returns 220 PRINT #2:A\$(LOOP):: NEXT LOOP! write to outfile, go

back and continue loop 230 IF EOF(1)THEN 240 ELSE 1 and END, otherwise go back

and read some more 240 CLOSE #1 :: CLOSE #2 :: 70 ! if EoF then CLOSE files DISPLAY AT(10,1)ERASE ALL:"T ASK COMPLETE" :: END



Most microcomputers, including the II-99/4A, use BASIC (Beginner's Allpurpose Symbolic Instruction Code) as the programming language. Although many different versions of are used among the various manufacturers of microcomputers, the fundamentals of the BASIC language are the same. The purpose of this column is to describe the elememtary characteristics of BASIC and some of the variations peculiar to the TI-99/4A.

programming are modes of available on most microcomputers including the II; the IMMEDIATE mode, and the PROGRAM mode. The IMMEDIATE mode, sometimes Known as the direct or calculator mode, causes a line of code to be executed immediately after entering.

Examples: PRINT "MAKE MY DAY!" MAKE MY DAY!

PRINT "32 + 14 + 80" 32 + 14 + 80

PRINT 32 + 14 + 80 126

If the same 3 lines were placed in the program mode, each line must be preceded with its own line number.

Examples:

10 PRINT "MAKE MY DAY!" 20 PRINT "32 + 14 + 80" 30 PRINT 32 + 14 + 80 40 PRINT 84 50 END RUN

The addition of the line numbers causes the computer to accept each line into memory where they wait until the RUN command is entered. Unlike other computers, the END

statement is not absolutely required on the II but it is considered good programming practice to signal the "END" of a BASIC program.

When the above program is RUN, this should be the print-out:

MAKE MY DAY! 32 + 14 + 80 126 84

The PRINT statement causes the contents of the set of quotation marks to be displayed. When working with numerical statements, however, the absence of quotations marks signals the computer to express the numerical statement in its simplest form. No quotes are needed if the numerical statement is already a simple whole number or decimal.

The RUN command causes the ccomputer to execute the program following the order of the line numbers from the smallest to the largest regardless of the order in which they were entered. Line numbers from 1 to 32767 can be used with the TI. However, multiples of 10 or of 100 are most often to provide greater flexibility in programming.

To make long programs earier to enter, many programmers will use the NUM (or number) command to generate line numbers automatically. NUM 10 or NUM 100 will generate line numbers by 10's or by 100's, respectively. Using NUM by itself generates the line numbers by 10's starting at 100.

In addition to the RUN command which executes a program, it may be desirable to see a complete listing of the program, line by line. Typing LIST while the above program is in the computer's memory will produce the following printout:

10 PRINT "MAKE MY DAY!" 20 PRINT "32 + 14 + 80"

30 PRINT 32 + 14 + 80

40 PRINT 84

50 END

Entering "LIST 20" will cause only line 20 to show on the monitor. Entering "LIST 20-40" will show lines 20, 30 and "LIST 30-" will display all of the 40 on the screen. lines from 30 to the end of the program.

Typing "CALL CLEAR" will clear the screen but not the Try it. To prove that the program is still in memory, type LIST. To clear both the screen and the memory, type NEW. It is always good programming practice to type NEW before entering a new program.



Natioñēr Committee FOR II STANDARDS

> FEST WEST - FEBRUARY 15,1992 VALLEY OF THE SUN TI99'ERS

Sign located in the convention room:

VENDORS FORUM - A meeting of the minds HOSTED BY: DON O'NEIL OF WHT

THIS OPEN DISCUSSION BETWEEN THE CONSUMER AND THE SUPPLIER IS AIMED AT RECONCILING DIFFERENCES OF "WANTS AND NEEDS." TO HELP RE-INFORCE THE CONTINUING SUPPORT OF THE 99/4A. WE HOPE THAT BUSINESS CAN TAKE THE SUGGESTIONS AND COMPLAINTS FROM THE PUBLIC TO HELP THE CURRENT VENDORS SERVE YOU BETTER. THIS DISCUSSION IS OPEN TO THE PUBLIC AND WE HOPE THAT YOU WILL JOIN US! TOPICS OF DISCUSSION THIS EVENING WILL BE:

><u>\$OFTWARE</u>, where is it going? >HARDWARE, when should you buy, and what? SUPPORT, what is support? who has bood support? >OPEN SYSTEMS, why should we share information, and when? >OPEN DISCUSSION, put your PRAISE and complaints on the TABLE.

TONIGHT AT 7:30 PM IN THE DEMO ROOM.

The National Committee for TI Standards (NCTIS)

Committee proposal, generated at Fest West 1992, Phoenix Arizona. To form hardware, software and configuration standards to extend the life of the 99/4a and bring order to the the community.

In these hard times, the TI community need a direction to go. In the past other committees have been formed, such as ANSI to generate standards for hardware and software developers to follow. The standards set forth by NCTIS will aid the users and developers in providing a better software/hardware solution for you. Once standards are set, it is recommended that all current and new software is labeled as standard #1... compliant. These standards should have acronyms for easy recognition.

The following quidelines were discussed at a "Vendors Forum" on February 15, 1992 in Phoenix Arizona. These are recommended standards for the community to ponder upon until May 1992 at the Lima fair, at which time the standards will be decided and publicized.

LEVEL #1: TI 99/4a Console, 32K memory expansion, cassette and EA/5 loader (EA, Supercart, TI Writer, Multiplan, etc.)

See "NCTIS", Page 3

NCTIS continues

LEVEL #2: Level #1 system PLUS: RS232 and DSSD Disk drive and controller.

LEVEL #3: Level #2 system PLUS: at least 128K of CPU RAM, banKable at the >6000 space.

LEVEL #4: Level #3 system PLUS: 9938/58 VDP with 192K VDP RAM.

PLEASE remember that these are recommendations generated by this first meeting, and are by no means locked in stone. We are presenting these ideas to you, the user, the developer, the market. Please take our recommendations and think carefully about them. Forward your ideas about the NTISC to your local user group for feedback, and then on to the Lima fair. We appreciate your support. Overall it was a very successful show.

The National Committee for II Standards released the following hardware standards after a meeting at the LIMA MULTI USER GROUP CONFERENCE IN MAY, according to Don D'Neil, facilitator for the group:

Level A: TI-99/4A console, TV or monitor, cassette decK and cable.

Level B: Level A plus 32K memory expansion, EA/5 loader (e.g. Extended Basic, Editor/Assembler, Super Cart, TI-Writer, Multiplan).

Level C: Level B plus RS232, double-sided single-density disk drive and controller.

at least 8K segments.

Level E: Level D plus 9938/58 VDP with 128K VDP RAM (any 80-column card) or a Geneve.

The group selected as its first project to write a universal DSR for memory access to all current extended memory cards (Myarc/CorComp 128/256/512K, Rambo, Geneve, Rave, etc.)

The group plans to exchange information about the current RAM cards at the Chicago TI Faire Oct. 31,0'Neil saus. Once the DSR is completed and documented, the group plans to release it in the public domain. Persons with information on accessing RAM cards are asked to contact NCTIS at the Chicago Faire or members of the group which met in Lima.

They include O'Neil; David Connery, used TI equipment; Vic Steerup, consumer; Beery Miller, 9640 News; Mike Maksimik, Crystal Software; Bud Mills, Bud Mills Services; Mark Wacholtz, Media Ware Software; Ken Gilliland, Notung Software; and Mike Sealy, MS Express Software.

# THE OTHER TI COMPUTER

By Gary Fitzgerald



Nutmeg TI-99ers and LIMA 99/4A User Group

I have secret information that a few members of your user group are in fact double TI orphans. The tapping of Chiclet-like Keys has given you away! There are those among you that possess a CC-40. Well, so do I. And in recent months I, too, have begun to take the little bugger off the shelf and use it. Allow me to tell my tale.

Some years back I purchased a CC-40 for no good reason except that it was there, and cheap. I played around for a bit, worked out programming problems on it before reprogramming for the 99/4A. And then it sat on the shelf until I got wind of a small but active user group in Lima, OH. I began a very rewarding correspondence with Charles Good and ordered up a bunch of disks from their library, which is quite extensive . In among those disks were a series of articles about the CC-40, more information than I had ever seen. In this article I want to show you what you may not already Know about your 9" x 6" x 1" "computer." Did you Know there is a disk drive for it. And an 80-column printer for 70 bucks! And a Printer/Plotter! and an RS232 with a parallel output option as well! And now - the big news. You can prepare a document using the Memo Processor Telecommunications Level D: Level C plus 128K or greater CPU RAM bankable in cartridge and port it over to Funnelweb! You need the proper cable (not II's serial printer cable) to connect the CC-40's RS232 to the TI's RS232. The cable and both Kinds of RS232s are available from L.L. Conner Enterprise. This cable has to be properly configured and I suppose if I took out my Radio Shack Multi-tester I could tell you the proper pin-ins and outs so you could build your own, but why not give Mr. Conner a little business and support the dealers that still support us. Without any further delay, I'll tell you the procedure for doing this. I borrow liberally from Charles Good and his articles. As a matter of fact, I will quote directly from his letter to

> 1.Boot the Funnelweb editor, type LF ENTER, then type RS232.CR ENTER. The 99 /4A cursor locks up and ceases to flash. This is normal.

> 2.After connecting the CC-40 to the Hexbus RS232, turn on the RS232 and then the CC-40.

> 3.Enter Memo Processor. When your document in memory is on the LCD screen, press [FN] and then the comma Key (If you have the overlay, it says (COMM over the comma Key). The

CC-40 says NOW IN COMMUNICATIONS, then READY TO COMMUNICATE.

4.Press [FN] and the [+] Key (SEND DOC). The CC-40 displays SENDING DOCUMENT TO HOST.You will observe your document's text scroll across the CC-40's screen.

5.When the document ceases to scroll across the CC-40's screen this means it has all been sent. On the 99/4A press FCTN 4 and ENTER to display the document on the monitor of your 99/4A.

It works! Now you can prepare text for the 99/4A lying in bed, on the beach, or sitting in a car (on the passenger side, let's not be ridiculous!). Anywhere your large computer can't go there is surely room for the CC-40.

Let me briefly go over what goodies are available for this pre-laptop machine. I will quote TI direct prices as of November 1991 unless otherwise noted. Among the application cartridges, the Memo Processor(SS3004 \$20) is probably the most useful to own. Also available are Finance, (SS3006 \$20), Electrical Engineering (SS3007 \$20), Statistics (SS3008 \$20), Mathematics (SS3009 \$20), and Games (SS3024 \$20).Also available are the 8K Constant Memory (SS2000 \$30) which may be used to store programs much like the Mini Memory or to add 8K RAM to the CC-40's standard 6K. There is also a 16K cartridge (SS1000 \$40) for increased RAM.

II also has 8-inch Hexbus cables (HXC08, \$9.95), an AC adapter (9201 \$18.95), and the Printer 80(HX1010 \$70) which can be used as a thermal printer or used with ribbons that are available from II and elsewhere. I Know of two working Wafertape drives in existence. These are storage devices that resemble the Adam computer's tape drives.

There are Printer/Plotters available from L.L. Conner and Jim Lesher, but for my money the disk drive from TAPE of California and the Printer 80 are the most needed peripherals. Any computer is almost worthless unless you can store your programs and call them up on demand. Do you want to type in a program every time you need it? There is a Pascal cartridge unavailable from TI that seems to be way over-priced at \$50 from Jim Lesher (Yes, I paid for it...through the nose!!). You may also upgrade the 6Kto 18K internal RAM following the directions contained on the disk. If you are not good with small parts or soldering, L.L. Conner will sell you one all done up with the extra memory. Jim Lesher has recently advertised good prices on CC-40s and Hexbus peripherals (M ICROpendium, 1992 March). There are somegood deals out there, particularly compared to the cost of a "modern" laptop computer.







Despite the fact that Jim Peterson has discontinued the famous Tips series (after over 40 months), he is still selling his incredibly cheap, ingenious and innovative Basic and Extended Basic software (some 130, all for \$3).

One of the Tigercub's biggest successes (besides his Tips from the Tigercub on disK, Volumes 1-4) has been his Nuts and Bolts series.

This collection (Nos. 1 and 2, \$19.95 each, \$37 for both) has served Extended Basic programmers well – increasing productivity and ease of programming. These disks contain 100 subroutines each, all in D/V 163 file format – ready to merge right into your existing program to enhance it in any of, well, a hundred ways.

Containing everything from screen wipes (clever ways to clear the screen), to character fonts to enhance your displays, to math routines, sorting routines and sound effects. If you program in Extended Basic, you need this toolbox of routines.

By merging these into your code and using the CALL SUB routine commands, you can double or triple the time it takes you to construct a polished program. I love this software not just because it is well done and extensively documented. I love it for what it represents – a return to programming.

There are no high scores, windows, screaming meanies, or aliens near this disk. This disk is for programmers. Beginners and experienced hackers, alike. Whether you are writing your first or your first hundred programs, these subroutines are fundamental. They are the building blocks for your ideas. They are not ideas themselves— they are but bricks in the wall. You supply the cement and Voila! A program — your program. Yours and Jim's — but Jim will let you take the credit. Check out Tigercub Software soon.

Editors Note: Jim Peterson released 3 Nuts & Bolts disk packages. All of them full of useful subroutines to be merged into your programs. I am not a programmer but I have used them on many Extended Basic programs I wanted to "spiff" up a bit. If you've not looked into these packages, you need to.

Hesterdays News

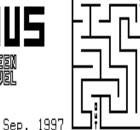
## SCREW THIS

SHAMUS

NOP BREEL

By

Roon Bits, Bytes & Pixels Sep. 1997



Q: How many Zen masters does it take to screw in a light bulb?

A: Two: One to change the bulb and one not to change it.

Note: 1 to change and 1 not to change is fake Zen.

The true Zen answer is four. One to change the bulb.

Q: How many Carl Sagans does it take to screw in a light bulb?

- A: Billions and billions.
- Q: How many folk singers does it take to screw in a light bulb?
- A: Two: One to change the bulb, and one to write a song about how good the old light bulb was.
- Q: How many surrealists does it take to change a light bulb?
- A: Two: One to hold the giraffe, and the other to fill the bathtub with brightly colored machine tools.
- Q: How many gorillas does it take to screw in a light bulb?
- A: Only one, but it sure takes a truckload of light bulbs!
- Q: How many doctors does it take to screw in a light bulb?
- A: Three: One to find a bulb specialist, one to find a bulb installation specialist, and one to bill it all to Medicare.
- Q: How many psychologists does it take to change a light bulb?
- A: None, the bulb will change itself when it is ready.
- Q: What is the difference between a pregnant woman and a light bulb?
- A: You can unscrew a light bulb.
- Q: How many managers does it take to change a light bulb?
- A: Three: One to get the bulb and two to get the phone number to dial one of their subordinates to actually change it.



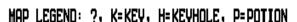


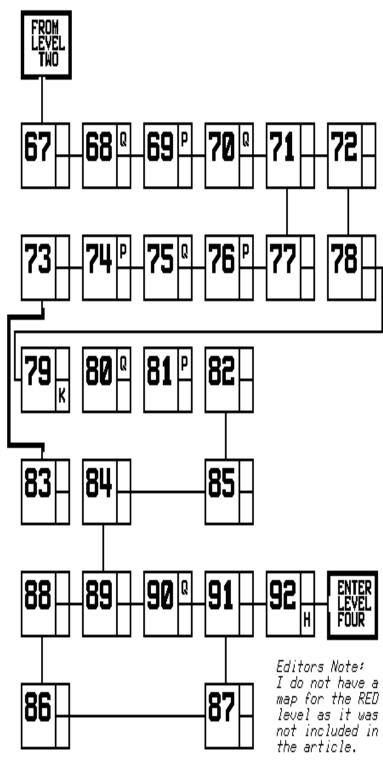












IBM COMPATIBILITY FOR THE 99/4A

Technical Info:

- Two part system.A TURBO XT and a small bridge box that connects to the side I/O port on your 4A.
- 2. The TURBO XT is an 8(Mhz), 4.77(Mhz)(switchable) mother board, power supply, XT style case, CGA color graphics card (both RGB and Composite), Floppy Disk controller 1 half high DS/DD disk drive, Parallel port and 256K of Ram on the mother board. The mother board has sockets for up to 640K of ram. There are 8 expansion slots, two of which are used by the CGA card and the Floppy disk controller.
- The bridge box has inputs for 4A Video in, XT Video in and outputs for XT Keyboard out and Monitor out. It also contains the software for Keyboard switching between 4A mode and XT mode and the software to convert the 4A Key strokes into XT Keycodes. It also has a pass through so you can Keep your P-Box or other Periphs hooked up.
- 4. Mode switching from 4A to XT can be done through Basic or X—Basic with CALL XT or by holding down FCTN CTRL ENTER on power up of the 4A.
- Mode switching from XT to 4A is done by pressing FCTN CTRL ENTER.
- 6. The ONLY items shared by the two systems are the 4A Keyboard and your current monitor or TV. Yes you can get 80 columns out of a composite monitor, but it is easiest to read with the color turned off in 80 mode. The XT allows MODE 40 which also gives you 40 column mode. Graphics programs, such as games and drawing programs work fine in 80 column and most other software that doesn't combine weird foreground and background text colors are also quite readable.
- By not sharing the disk drives it is possible to do concurrent processing on the XT. Example: Go into XT mode, start up your COMMUNICATIONS software, log on to a BBS and start a down load. Now you can switch modes back to the 4A and do whatever you would like in 4A mode while the XT is still down loading from the BBS!!
- 8. We have tested this system on a number of 4A system configurations and have found it to be very compatible. Since it is an IBM clone it is also fully compatible with both IBM software and IBM HARDWARE. Yes, you can add ANY IBM cards you would like to the system.

9. The minimum 4A system requirements: A TI 99/4A console and a monitor or a TV set with RF modulator.

General Info:

- This system is being marketed by Triton Products Company in San Francisco, CA. They are also handling the production of the bridge boxes and they have contracted for the Turbo XT clones to their specifications.
- 2. The system has a 30 DAY money back guarantee and a 1 YEAR parts and labor warranty.
- The cost for this system (Turbo XT, Bridge box and cables) is 499.00 plus 19.90 for shipping and handling.
- 4. Their toll free number for additional info and/or a 6 page 4 color brochure on this system is 800-000-0000, Monday through Friday – 6AM to 6PM and Saturday 9AM to 4PM, Pacific Time.

PLEASE DON'T CALL THEM UNTIL MONDAY, JANUARY 19, 1987 FOR TECHNICAL INFO OR QUESTIONS. You can call before then to get a brochure. The people that answer the phones are going through a training course this week so they won't be able to properly answer your questions until then.

Delivery is scheduled to start on March 1st of this year. .We have been using this system for awhile now and we are very pleased with its performance. This isn't vaporware, ALL R&D, testing and software is complete and the units are ready for production, so the March time frame is a reality. .At last, a MAJOR expansion for the 4A. We hope you are as pleased with this product as you have been with our other products in the past.

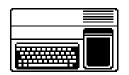
As the Triton Brochure says: MAKE THE IBM CONNECTION TO YOUR TI99/4A

----- **M**G -----

Yesterdays News



## Vesterdays 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 720K 3.50 floppý drive

Samsung Syncmaster 710mp

80K Gram Kracker

**TI-99/4A SOFTWARE** PagePro 99

PagePro Composer PagePro FX PagePro Headline Maker PagePro Gofer TI<sup>–</sup>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.

