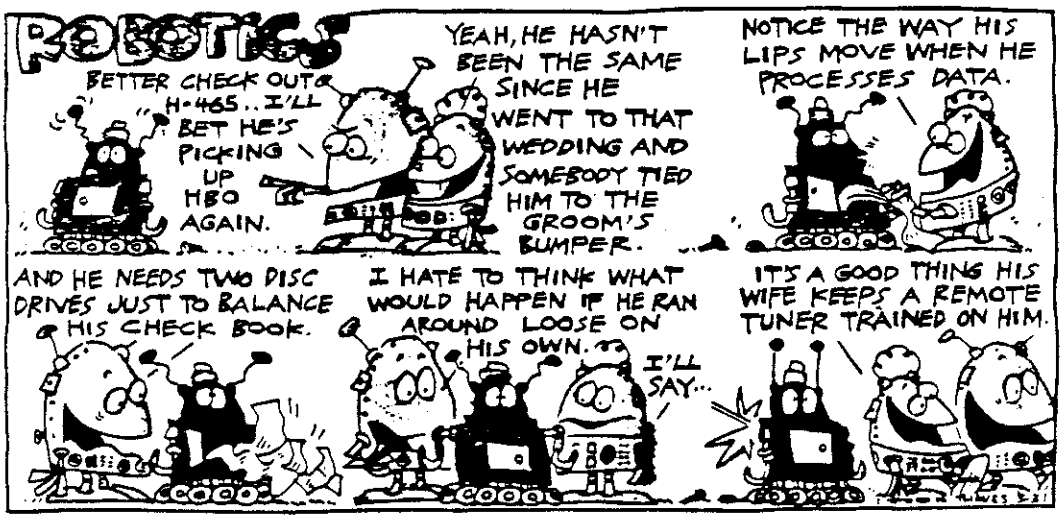
Newsletter Nine-T-Nine

May 1990 Issue

Texas Instruments
USERS GROUP
TORONTO

FOR THE TI-99/4A COMPUTER
and compatibles

Meeting Dates: May 31 * June 28



From:
9T9 Users Group
109-2356 Gerrard St.E.
Toronto,Ont.,M4E-2E2
CANADA

To:

9T9

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FOR THE TI-99/4A COMPUTER

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All memberships are household memberships. A newsletter subscription is only for those who do not wish to attend meeting,but wish to receive our newsletter and have access to our library. You are welcome to visit one of our general meetings before joining the group. If you wish more information contact either our president, in writing, at the club address on the front cover or phone him.

The meetings are usually held on the last Thursday of each month,(exceptions are December's meeting date, usually mid-month and the months of July and August, when there are no meetings. Consult this issue of Newsletter 9T9 for the date and time of the next meeting. Meetings are usually held in the lecture room main, at Canada Remote Systems, 1331 Crestlawn Dr., Unit D, Mississauga ,(Eglinton Ave./Dixie Road Area), from 7:30 - 10:30 PM.

BBS
The 9T9 Users Group supports the Toronto BBS, The TI Tower BBS #(416) 921-2731, 300/1200/2400 BPS, 24 hrs. Sysop. Gary Bowser.

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TIdbits #39

-By Steve Mickelson, President 9T9 Users Group

Compuserve 76545,1255; Delphi SMICKELSON; GEnie S.Mickelson

Club News:
Because of various conflicts and problems with work and personal schedules our last couple of meetings were more like small socials rather than meetings per se. You can expect a better organized, more eventful set of meetings in the next couple of month's. Thanks to Gary Bowser my Geneve is back on-line, I'm in the process of updating my software and re-learning use of the Geneve. Thanks, also, to Barry Boone, who completed my order for his Giffy software, (check back a couple of issues for details re: how to order). Included with the software was a converter program for the Imagewise Digitizer, (to GIF format?). I have yet to try out the software and hope to give a demo in the June meeting of Giffy V, as well as the Imagewise digitizer.

Mail call:
Recently, we were asked about the fact that the Disk Of The Month's advertisement, when published in the newsletter was always a month or so behind the D.O.M. included with that issue. The question was why not have the ad with the contents of the D.O.M. for the issue in which it was sent?

The answer is that Andy works on a deadline, much the same as what I do as far as publishing is concerned. Many times he receives an updated release or newer version of one or more of the programs included within the disk, just before the meeting date. Therefore the master disk is automatically updated. Many of the shareware programs, such as Disk Utilities and Funelwiter, have many radical changes in each release, that the description for an earlier release would be inaccurate, if applied to the current release.

And lastly, the documentation for operation of the software comes as a doc file on the disk and/or instruction screens displayed on the screen or available by way of a help or "hot key". The idea behind the ad, is to let members who missed the previous month's meeting know what they missed, as well as to inform subscribers to the newsletter only, know what can be ordered from the club's library, in the way of new releases.

And Mike's Butterfingers repair article, received some response, from GEnie mail:

Item 4757861 90/04/11 21:25
From: L.TIPPETT Larry E. Tippett
To: S.MICKELSON Steve Mickelson

Sub: THE ARTICLE

I called Mike myself the other night. I found his phone number in the text. He wasn't in at that time, but returned my call later on that night.It seems that he is requesting info on hooking up disk drives. (not to mention taking them apart.)

I told him that I had some info for him I got from the GM TRAINING CENTER I attended from time to time.
I also have the RADIO SHACK book I mentioned. I told Mike that I will mail it to him as soon as I get a chance. One of the instructors at the center, (Who I talked with just today.) is mailing me all the info he has on the matter too. (He builds computers for somebody.) anyway... Thanks for responding, but I have already talked with Mike, and I'm on top of the situation. I have his address here somewhere... I think!
Be talking to you again sometime.....
Larry Tippett
=END=

Just received a call from Tom Jakabfy, president of OSHTI, who asked for the local Tymnet node to access and sign-on to Delphi. Tom said he may drop in our June meeting. Also, related how he now has both a Rave keyboard and Zeno board projects under his belt. I have one of each yet to be constructed, and that I may be giving him a call when sourcing parts for the Zeno Board. I don't think that either could be any more difficult to construct than the Imagewise kit was. It is just a matter of finding the time. I hope to be able to put the TI mother board, the microexpansion system, small black and white t.v., and double DS/DD disk drives, which constitute my "portable" system described earlier into the empty case of a clone, I purchased from Active surplus, for $20.00. The case I bought was empty, save for a detachable keyboard. It has the space for two half-height drives as well as other components. I figure if I put the mother board, with a Zeno board and rave keyboard interface, and the microexpansion system, drives T.V. and all inside of this case. This would put all of the above within a case about 2/3 the size of the TI P-Box, including keyboard. The keyboard's "enter" key has to be repaired first. Anyway that's a summer break project.

New Expansion System:
If you read the Tales of a Power Supply article, in this issue of the newsletter, you'll find an interesting alternative to upgrading the regulators of the TI power supply. Speaking of expansion systems, Rave has introduced a new expansion system for the TI community. It comes in two versions, for the TI and Geneve. Both versions permit housing a hard drive and cards, but the exciting news is that the TI motherboard, when connected to Rave keyboard interface and IBM keyboard, can be placed inside this expansion box! I think this has the makings of a great expansion alternative.

Software updates:
TI Base users please note that Texaments has upgraded TI Base, I hope to have more details for the next newsletter.

Last month's newsletter:
Readers who tried out the examples from Assembly Made Easy, may have found it hard to run them. If you haven't already found out all examples which have a double at sign, @@, should use only a single @. The example was written for TI writer, which prints the double @ as a single.

Also, Kelly Mauricette, announced that his weekend BBS, is now running at 2400BPS.

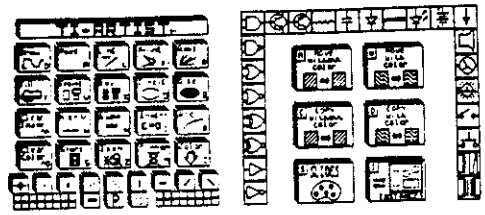
Anyway I'm out of time and space for this month's TIdbits.

The makers of TI Artist are proud to introduce the most powerful and comprehensive graphics development system available for the TI-99/4a Home Computer...

TI Artist Plus!

More than just an ordinary drawing package, TI Artist PLUS! is a complete drawing system that consists of six dynamic graphics development modules. With these modules, virtually anyone can create, edit, transform, and present the most dazzling of graphics. And with its innovative point-and-shoot menu system, TI Artist PLUS! is extremely user friendly.

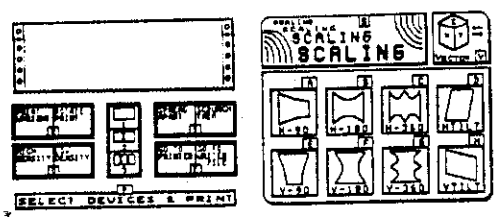
Drawing Module
With 8 different brushes, 10 fill patterns, and 16 available colors, almost any picture can be created using TI Artist's drawing tools. Freehand drawing, automatic point-to-point lines, shooting rays, boxing, circling, filling, mirroring, zooming, and spray painting are all a snap! Variable arcs and ellipses can also be drawn with ease. Any picture you design may be saved to disk and later recalled for viewing and modification.



Enhancement Module
Cutting, pasting, copying, importing and exporting graphics is easy with TI Artist PLUS!. Small images, called instances, and collections of small images, called slides, may be used to enhance your artwork. Instances and slides can be created, saved to disk, and used over and over again in all of your drawings. And if you wish, you could also purchase small collections of various (pre-drawn) graphics artwork to use.

Only $24.95
(Plus Shipping)

Print Module
With TI Artist PLUS! 1 to 3 pictures can be simultaneously printed together (or separated) across a standard 8.5" x 11" sheet of paper. Print options include: printing in portrait or landscape mode, printing in high or low density, redirecting output to a disk file, printing an outline around a picture, and printing a reverse image of a picture. TI Artist PLUS! supports most popular printers and a limited number of color printers.



Vector Module
Selected areas of a picture can be scaled using TI Artist PLUS!. With scaling, a section of your picture can made larger or smaller; the height and width of an object can be varied independently. Special effects can also be used to enhance selected areas of a picture. They allow the horizontal and vertical parts of an image to be scaled along a range. Objects can be tilted and shifted using various predefined special effects.

Font Module
The font module is used to place alphanumeric data anywhere within a picture. Detailed bit-mapped fonts (available in numerous Artist Companion products) may be used to label a drawing, create a sign, and so on. Features available in the font module include: multiline text editing, automatic outlining of fonts, automatic shadowing of fonts, and automatic left, right and center text positioning.

Movie Module
Animated movie sequences can be produced with TI Artist PLUS!. A small interpreted command language allows you to design an animated sequence using your own pictures and artwork. The command language consists of 8 simple instructions, including a handy indexing command that will display a directory of all your TI Artist files. Movies may be saved to and later played from disk.

Upgrade to TI Artist PLUS!
Owners of the original TI Artist may obtain TI Artist PLUS! for only $14.95 (plus shipping). To be eligable for the reduced rate, return your original TI Artist disk and the front page of your existing TI Artist manual along with the upgrade fee.

TI Artist PLUS! requires a disk system, 32K, and either an XB, E/A, or MM cartridge. TI Artist PLUS! is compatible with the Geneve 9640 (in GPL mode), and the Myarc hard disk controller. TI Artist PLUS! supports the following printers: Epson, Prowriter, IBM Graphics Printer, Seikosha GP-100/100TI/550/700, Okidata 92/93, Star NX-1000 Rainbow, and Canon PJ1080A, and Tandy CGP220..

TEXAMENTS

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The DB-9 to DB-15 Connection
-By Steve Mickelson, 9T9 U.G., Toronto

It has come to my attention that many users of 80 column cards, which use the TI 9938 Video Display Processor chip, are having difficulty determining which monitor to use, as well as how to wire a cable from the monitor to the card. Since the introduction of these cards, namely the Myarc Geneve as well Digit's and Mechatronic's, (Asgard's) 80-column display cards, the finalized VGA graphic standard set for users of IBM computers and their clones has been set to that of a relatively new connector; the DB-15 plug, a 15-pin plug, which replaces the 9-pin, DB-9 plug.

In the past articles re: making a cable for your 9938-based card, was restricted to the DB-9 plug, as early VGA and multisync monitors used this type of connector. The advent of the DB-15, makes it necessary to update such articles. Therefore, I present this article which is a composite, the first part from Delphi and the second part, namely how to connect to the new style DB-15 connector.

But first a few caveats:
When looking for a monitor, make sure that it is classified as an "analog" or "multisync VGA", not digital or TTL type. Generally speaking, the 9938 maximum screen size is 512 (w) x 212 (h), so a monitor of this pixel rating or higher, [eg. 640 (w) x 480 (h)]. While an analog VGA monitor may seem to fit the bill, as far as the video display is concerned, the Myarc 9640, for example has a horizontal scan rate in the 15 KHz range, which more in line with the IBM EGA display adapter, when the adapter is run in in CGA mode, When in EGA mode, the EGA adapter's horizontal scan rate goes up from 15.750KHz (CGA mode) to 22.000KHz (EGA) mode. An IBM VGA display adapter, uses a Horizontal scan rate of 31.500KHz, and the new PS/2 or 8514 adapter, also termed "super vga" uses a horizontal scan rate of 31.500KHz, with a screen size of 640 x 480 and 1024 x 768. While the screen size of a VGA or 8514 adapter can handle the output of the 9938, the horizontal scan rate is most likely too high for the monitor to "lock on" to the cards output. Which brings us to the analog mutisync monitor.

This monitor can be used with all variety of cards, including the EGA horizontal scan rate, with a 640 x 480 screen size, which makes the monitor compatible with early "VGA" video cards, (before the standard was released), and 9938 cards as well! A regular EGA monitor won't work, as it uses a TTL or digital signal, which our video card can't provide without some additional driver circuitry.

Since it now appears that an analog multisync monitor is what we are looking for, brings us to the third concern, namely some monitors may have more than one input connector. The Goldstar multisync has both a DB-9 and DB-15 connector, and is sold with a video cable which has a DB-9 on one end of the cable and a DB-15, on the other. If you connect the monitor to a VGA video source, you plug the DB-15 end into the video card's output and the DB-9 end into the corresponding plug of the monitor. For a EGA card, the cable is simply reversed; the DB-9 is plugged into the video card and the DB-15 end is plugged into the monitor. In this case, therefore, the monitors plugs are reversed from standard, wherby Goldstar uses DB-9, for VGA, and DB-15, for EGA!

Generally speaking, the VGA connector on a multisync with more than one connectors, uses the DB-15 plug for a VGA source. Be sure to read the spec's!

Yet, Another Geneve Cable Article!
-By Steve Mickelson, Toronto 9T9 Users Group

This article is for purposes of information only, the author and publication cannot be held liable for any damage as a result of attempting this project. If you use a composite montor with your 99/4A, and will continue to do so on the Geneve, then ignore this article and just plug the same cable used on the 99/4A, without modification.

Although the Geneve monitor has been covered elsewhere, I think that this article will enhance articles published to date. The part numbers shown should be good both in the U.S. and in Canada. Numbers,(henceforth referred to as RS#), will be the same for Geneve owners, elsewhere. This article describes making a monitor cable for connecting the Geneve to a monitor,(e.g. Magnavox or Thompson),which has a D-style, 9-pin input connector, commonly used on IBM systems,(check your for type of connector and correct pin-outs). The cable descrbed here, is specifically wired for a Magnavox Pro Monitor,(model 8CM873), and Thomson,(model 4120), hi-res. monitors, both have RGB inputs using a 9-Pin connector, with a RCA input for audio.

Parts list:

Description	RS #
1-Tandy Keyboard Extension Cable	26-1389
*1-9-Pin D-plug,female(DB-9)	276-1538
1-9-Pin D-plug hood/hardware	276-1539
1-Shielded RCA phono patch cord	42-2351

*Depending on the type of monitor, you may have to substitute a 9-Pin D-plug,male RS# 276-1537
**This item may be found cheaper elsewhere, or one package split between two-thrifty or even four-frugal Geneve owners.

Tools required:

Pliers,Wire cutters,wire strippers,low wattage soldering iron, solder, and electrical tape.

Instead of using the non-shielded 3m/10ft. Archer Joystick extension harness,(RS# 276-1978),which has no shield and may generate herringbone patterns,(v- or s-shaped lines), on the monitor's screen; I used the Tandy 1.5m/5ft. Keyboard Extension Cable for the Tandy 1000,(RS# 26-1389). Note: This item is a "special order" item at many stores and may only be available from Tandy Computer Centres.

The Tandy cable has a couple of advantages; it is shielded and is already soldered to the hard-to-find / difficult-to-solder 8-pin DIN plug used for video output on the Geneve. Also, the DIN plug has deeper recesses on the solder-side, making for easier soldering than the ARMACO DD 8280, as suggested in other articles. As only two wires have to be re-loacated on the DIN plug, most of the difficult soldering has already been done by the folks at Tandy.

Let's begin:

First, cut off and remove the female-end of the RS# 26-1389 cable. On the male-end of the cable, the plastic sleeve must be pulled back by pushing the metal tab with a small screwdriver, at the same time pulling the sleeve away from the pin side of the plug. Using a soldering iron, two wires must be desoldered and re-located as indicated:

Pin#	Wire Colour	Function	Reloacted?	Pin#	Function
* 1	White	RF Mod.	Yes,to -->	8	Comp.Sync
2	Yellow	Ground	No	N/A	-
3	Black	Audio	No	N/A	-
* 4	Green	C. Video	Yes,to -->	7	Blue,RGB
5	Red	Red,RGB	No	N/A	-
6	Blue	Green,RGB	No	N/A	-
* 7	Not Soldered	Blue,RGB	see #4	see #4	see #4
* 8	Not Soldered	Comp.Sync	see #1	see #1	see #1

*Note: All wires remain unchanged, except the White,(Pin 1), and Green,(Pin 4), which are desoldered and relocated to the unused Pin 8,(White), and Pin 7,(Green),respecyively. The plug should look as follows:

Pin#	Wire Colour	Function
1	Not Soldered	RF Mod.
2	Yellow	Ground
3	Black	Audio
* 4	Not Soldered	C. Video
5	Red	Red,RGB
6	Blue	Green,RGB
* 7	Green	Blue,RGB
* 8	White	Comp.Sunc

That takes care of the cable to the Geneve Video out plug, you should look to see if shieild wire,(which is bare, without insulation), is soldered to metal case or ring which surrounds the plug, when re-assembled. You may now pull the plastic sleeve back in place.

As for the monitor plug, cut-off about 6 cm.,(2 inches), of the wires and save for later use. Bare and strip the ends of the following wires and solder as indicated,(See ** footnotes before proceeding):

Wire color	Function	DB-9 Pin#
White	Composite Sync(C. Sync)	8
**Yellow	Ground	1
**Black	Audio RCA Centre	-
Green	Blue,RGB	5
Red	Red,RGB	3
Blue	Green,RGB	4

** PLEASEaNOTE: Most analog RGB monitors have RCA audio inputs, similar to those used on tape decks and phonographs. Using a shielded phono patch cord,(a cable with male RCA plugs on either end), remove one end and bare the wires on the other. From the 6 cm.,(2 inch), wires saved earlier, strip the ends of Yellow and Black pieces.

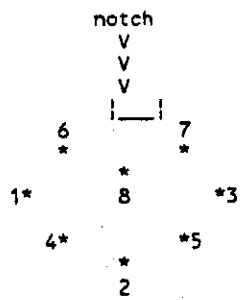
Solder one end of the short Yellow wire to Pin# 1 of the DB-9 Plug, as indicated above. The other end must be attached to Yellow wire on the video cable, plus the bared shield wire for the cable, plus the shield,(braided outer wire), of the RCA audio plug. Wrap this connection in electrical tape.

Solder the inner audio wire of the RCA cable to the bared-end of the Black wire. Tape this connection.

You may now enclose the DB-9 cable in the connector hood, with both the main video cable and the RCA audio cable exiting out the opening in the hood. If you have a multi-meter or continuity tester, you can double-check all connections for correct location and for shorts.

Pat yourself on the back for a job well-done and proceed to plug your new monitor to your Geneve. The following illustrations come from the 9640 SIG of Delphi:

View of pin-side of the 8-pin DIN plug:



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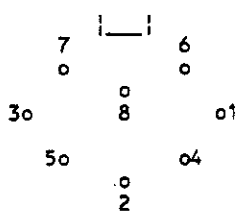
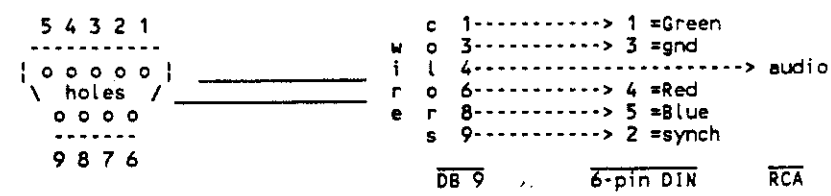
View of solder-side 8-pin DIN connector:

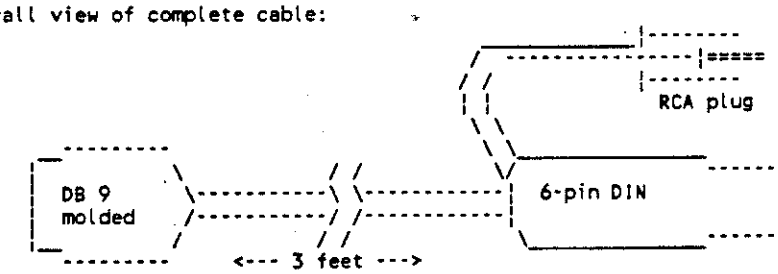


View of DB-9 Plug Pins:



"Damn' realistic computer game!"

Overall view of complete cable:



The following was downloaded from GEnie:

Description: This article illustrates how to build your own adaptor that lets you use you multisync monitor on vga cards, which allows you to connect your 9-pin monitor to the 15 pin vga output.

MAKE YOUR OWN MULTI MODE/SYNC MONITOR TO VGA CARD ADAPTOR
-By K.McCarraher

BELOW ARE DIAGRAMS THAT SHOW MONITOR AND CARD PINOUTS AND WILL ALLOW YOU TO BUILD A CHEAP ADAPTOR TO USE ON

THE 15 PIN PLUG OF AN VGA CARD.

(DON'T GET CONFUSED , SOME CARDS HAVE THE 15 PIN PLUG AND THE 9 PIN AS WELL ... dON'T BE FOOLED IF YOU USE THE 9 PIN JACK ,YOU STILL ONLY GET E.G.A. GO FOR THE 15 PIN)

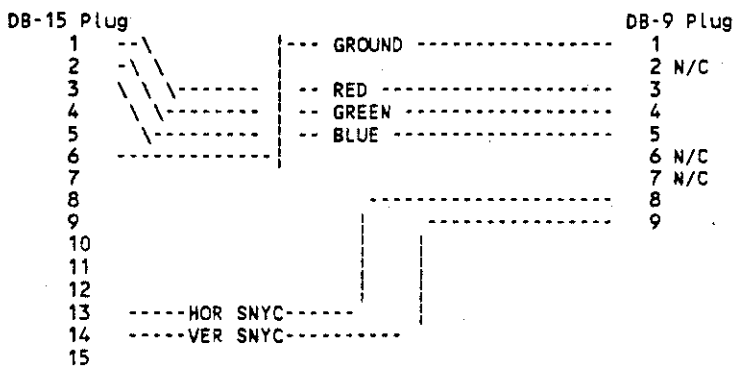
1	-----RED VIDEO	1	-----GROUND	1	---GROUND
2	-----GREEN VIDEO	2	-----r video 2nd	2	---N/C
3	-----BLUE VIDEO	3	-----R VIDEO	3	---RED VID
4	-----BIT 2	4	-----G VIDEO	4	---GREEN
5	-----N/C	5	-----B VIDEO	5	---BLUE
6	-----R RETURN \	6	-----g video 2nd	6	---N/C
7	-----G RETURN > (GROUND)	7	-----b video 2nd	7	---(SNYC)
8	-----B RETURN /	8	-----HOR. SNYC.	8	---HOR.S.
9	-----N/C	9	-----VER. SNYC.	9	---VER.S.
10	-----SYNC RETURN (GROUND)				
11	-----BIT 0		EGA MODE		VGA MODE
12	-----BIT 1				
13	-----HOR. SNYC.				
14	-----VER. SNYC.				
15	-----N/C				

TYPICAL VGA CARD PINOUT

TYPICAL MULTISYNC TYPE MONITOR PINS

Now that we have some facts, lets look at an example:

Working adapter cable.....



15 WIRES DOWN TO SIX !! OH WELL WE NEEDED A NEW TYPE DB-PLUG !

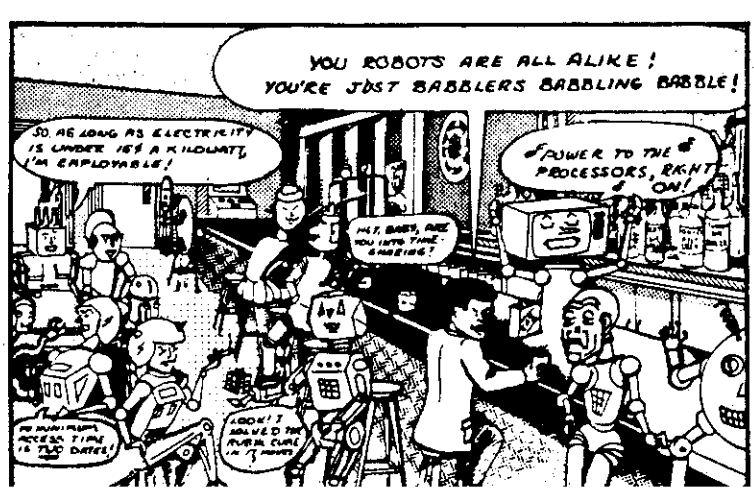
ALMOST FORGOT..... THE CONTROL BITS !
If you have a vga monitor forget the following,(even if you don't you can usually forget them):
(Their purpose is to tell the card what kind of vga monitor you have, (color or b/w)

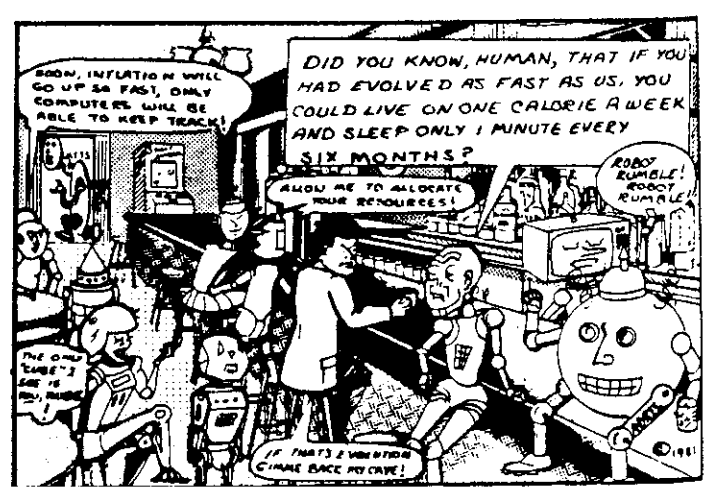
bit 0 pin 11 pin 11 grounded = color vga monitor
bit 1 pin 12 pin 12 grounded = b/w vga monitor
I found with the multimodes ... forget these pins.

I DO COMPUTER REPAIRS AND CONFIGURATIONS AS MY LIVING AND HAVE FOUND THIS SETUP TO WORK ALMOST ALWAYS !!
Note: Please..... if you are not good at wireing or soldering, please have a valid technician do this for you.
(CARDS AIN'T CHEAP..RIGHT !)

Now if your monitor is VGA multisync with a DB-15 connector, wire the corresponding DB-9 pinouts illustrated in the first part of the article to the corresponding to the corresponding DB-15 pins illustrated above.

Bit Pit Chas Andres





The following download came by-way-of Delphi:

May 8,1990
Tales of a Power Supply

Ever noticed your PEB gets really hot? Wished for a hard drive mounted in the PEB but know your PEB power supply can't handle it? Tired of your GENEVE LED winking out and your GENEVE and HFDC cards slowly turning brown around the power regulators?

I've been worried about it for quite some time... Tony Lewis advised me a while ago that the PEB power supply wasn't really designed for all of these new cards and drives which are being mounted in them. After losing a power supply (and sending $50.00 to TI to get a new one) I decided that the way to go was to replace the power supply totally with a new "switching" supply.

TI designed the power supply around the technology of the time. The power supply is a "linear" supply. That means that your PEB has inside a huge power transformer, with simple regulating circuits that provide the power to the bus in the TI computer.

A switching supply avoids the huge transformer and heat problems by switching the power on and off very quickly (this has caused some interesting problems in offices that contain a large amount of PC based equipment). Switching supplies are very cheap due to their wide applicability to PC's.

One mistake (in terms that it has caused untold grief for board designers of the PEB) is that the TI linear power supply is underpowered and generates too high a voltage for the cards on the PEB bus.

This is what the TI PEB manual says the voltages going to the PEB bus should be out of the power supply:

```
BROWN  -    +16V
YELLOW -    -16V
GREEN  -     +8V
BLACK  -   GROUND
```

Per the TI design, the cards that you plug into the PEB must drop these voltages to something they can tolerate with their circuits:

```
+16V   drops to   +12V
-16V   drops to   -12V
 +8V   drops to    +5V
```

This isn't too bad, but the actual voltages I measured coming out of the TI supply were even higher than listed (I measure +20V instead of +16V, etc.). The drop in voltage means the cards must get rid of the excess energy somehow, and that means HEAT.

Also, the power going to the floppy drive(s) is inadequete for two full height drives, or even one 5 1/4" hard drive. I wanted to mount a 5 1/4" drive along side a 1/2 height floppy drive for a complete self-contained machine.

A New Supply

Browsing at the Trenton Computer Fair (in pouring rain) I found a Highlandbrand new power supply for $50.00. Not a bargain, but I didn't want to trust this project to a used supply or one without a guarantee. The supply I picked up came mounted in a metal case ready to drop into an IBM AT compatible. Because it was mounted in a metal case, it came with a few extra goodies, like a new power connector for the back of the PEB and a low-voltage (and quieter) fan.

The supply I picked is a 200 watt supply, which I decided would have enough for my PEB with full complement of cards.

I started this project on a Sunday evening by opening up my PEB (I have a spare so I wasn't too worried about destroying this PEB) and removing the following from the left hand power section of the PEB:

a. Power Transformer (remove four nuts)
b. Terminal Strip (remove two nuts)
c. Power Connector (unscrew two screws)
d. Power Supply (remove two screws and unsolder wires to PEB bus)
e. Fan (remove four nuts)

I kept all of the wiring to the front power switch and to the fuse (new model PEB's seem to have removed the

fuse on the rear of the PEB). I carefully cut two wires from the front power switch and soldered the 120VAC power connections to the power plug which goes to the new power supply.

Working on the new power supply, I unscrewed the low voltage fan and mounted it to the back of the PEB (after cleaning everything in the PEB, amazing how dirty it gets after six years) using the four nuts which held the previous fan. I unsoldered the 110/220 VAC switch on the power supply and soldered the wires together (to force 110vac) and taped the wires to prevent a short.

Deciding how to mount the new power supply took much of my time. I finally decided to use the plastic vertical mounting unit from the old TI PEB power supply, and drill a couple of holes and mount the new power supply board to it. The new power supply then mounted vertically in the same manner as the old power supply.

Fortunately, the new power supply came with several disk drive connectors (four to be exact). I removed one of the disk drive cables (cut it off).

The power supply also comes with connectors which are intended to plug into and IBM PC Compatible motherboard. I also cut these off and removed all of the wires except for the wires which had the voltages:

```
+12V
-12V
 +5V
 ground
```

I then soldered these wires to the bus in the same place as:

```
+12V  went to BROWN
-12V  went to YELLOW
 +5V  went to GREEN
GROUND went to BLACK
```

(Warning: If you decide to try this yourself, try and make sure that the cables going to the drive connectors are long enough to run behind the cards in the PEB. Mine were a bit short but were still usable).

Next came the hard drive. I just mounted a hard drive and a floppy drive side by side in the PEB and ran the cables out of the box before putting the whole thing back together.

Card Modifications

The nasty part of the power supply changeout, every card that you plug into the PEB will require a modification and the card with the modification cannot be plugged into a standard PEB without blowing out the card (time for a nice big caution sticker on the card).

The modification is quite simple, and is because the cards no longer need to do their own power regulation, the power on the bus (+12V, -12V, and +5V) is the right power that the cards need to run. The modification involves jumpering out all power regulators on the boards.

One way to do this is to remove all power regulators and then jumper across the contacts. I choose a simpler way which lets me remove the modification in the future if I so desire (remember also, at this point I wasn't quite sure this was all going to work!).

The power regulators have three prongs connected to a square body, and are usually located near the bottom of the card (usually one or two right next to the LED which sticks out the front):

The middle connection is ground, and should be left alone. I made up small jumpers for the outer two connections, and soldered all of them on the PC-side of the board.

Results:

I modified the GENEVE card, held my breath, and turned on the power. Relief followed as the normal GENEVE Swan Screen appeared. I then modified my HFDC card and plugged in the hard drive. The system booted normally (so far so good). I then modified my TI Disk Controller (it was a bit hard to get the case apart) and plugged it into the floppy drive. The floppy checked out fine. The last card I modified was a MYARC RS232, everything OK.

I have several more cards to modify and try, including Ron Walters fabulous MEMEX 2-megabyte memory expansion card and a speech synthesizer card (somewhat useless in the GENEVE until the next MDOS release). (I'm going to check with Ron on the memory expansion card).

Summary:
=======

Was it worth the trouble? Total project time was three evenings of about six hours total. My PEB runs cool and quiet (and my cards are no longe turning brown). I have the peace of mind of a totally integrated computer within the PEB with a hard drive!

It was worth the trouble for me, and gave me a little respite from a long haul in programming.

Of course, I wouldn't try this yourself unless you have a pretty good knowledge of computer hardware and power supplies. In any case, you are on your own.

a.l.beard
Copyright 1990 by LGMA Products

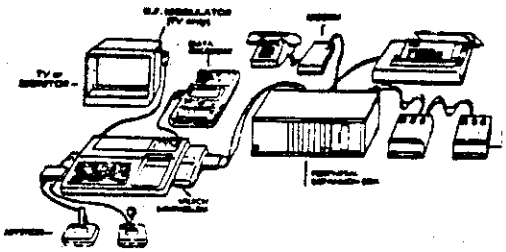
RAVE 99 CO. PRODUCT PRELIMINARY DATA

Professional Expansion Chassis MODEL PE/2

It's time to get organized!! You need to PE/2 it!!!

Does your computer area look like this?

Yes, look right to see how it could be .



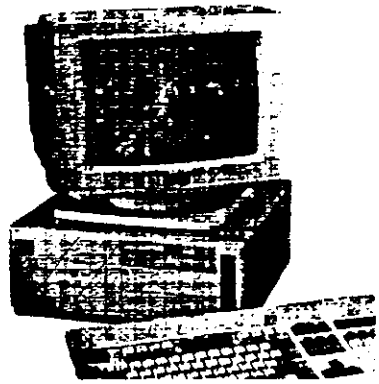
The development of the original TI-99/4A computer system was an evolutionary process with "NEED" causing new asscessories to be developed and designed into the exsiting TI-99/4A computer as best possible.

The results gave us expansion modules connected to the side of the TI-99/4A as well as the "FIRE HOSE" and the P.E. Box. This type of system, due to it's many connections, has inherent reliablity problems as well as consuming large amounts of space on desks and tables.

It is for these reasons we developed our own Model PE/2 EXPANSION CHASSIS for the TI-99/4A.

As a result of the very favorable response to our new EXPANSION CHASSIS at the TI FAIRE in New Jersey, we have made the decision to build ten systems which shall be available in six to eight weeks. Any paid orders taken at this time shall be guaranteed not to be more than the estimated prices of $275 for the GENEVE MODEL and $325 for the TI-99/4A, even if the actual units cost more. Three of the ten units were purchased at the FAIRE in NJ. Call or write if you would like to reserve one!

Now, get organized with RAVE 99's NEW PROFESSIONAL EXPANSION CHASSIS for the TI-99/4A and GENEVE computers.



Our new EXPANSION CHASSIS has modern computer styling utilizing a space-saving design. The new chassis design allows the use of existing TI-99/4A or GENEVE computers , P.E. Box cards, and disk drives into a single enclosure.

A 200 Watt Power Supply provides more than enough power for the computer, P.E. Box cards, and FIVE Disk Drives.

Access to the cartridge port is available from the right side of the chassis.

The front panel has a Power Switch, KeyLock, Reset Switch, Turbo switch, "Power" LED, "Hard Disk" LED, and "Turbo" LED.

The Expansion Chassis has 8 expansion slots for TI type P.E. Box Cards.

This Product is required for those who wish to have both functionality and and neat appearance around their computer work area.

The estimated cost of this system is $275.00 for use with the GENEVE and $325.00 for the TI-99/4A.

PLEASE REMEMBER THAT THESE COSTS ARE ESTIMATES!!

RAVE 99 Co. 112 Rambling Road, Vernon CT 06066 (203) 871-7824

With RAVE, the Future is now!

(Editor's Note: While this article addresses the specific problem of connecting two parallel devices, namely a HP Laser printer and a dot matrix type printer, to the same computer parallel port via a mechanical A/B style switch box; the same warnigs would apply to using such a switch box for video, serial port, keyboards, etc. where either two devices are connected to a single port, be it video, serial or parallel. The same holds true if you have two computer systems "sharing" a printer, monitor, modem, etc. through a mechanical switch box. -Steve Mickelson, 9T9 U.G.)

MECHANICAL A-B SWITCH BOXES AND THE HP LASERJET

by Jim Baker and Emerald Jones (UCLA PC Users Group)

Oops! Your Hewlett-Packard LaserJet breaks. If a specific set of chips has been fried (the input circuitry), you are stuck with a big repair bill. Hewlett-Packard will *not* honor awarranty if your Laser-Jet printer has been operated from an A-B mechanical switch box.

That's because the mechanical switch boxes have a habit of frying some circuits, and besides, the Hewlett-Packard documentation contains a caveat warning people to use only electronic switch boxes with these printers. Hewlett-Packard recommends you use an electronic switch box, which, because of its internal wiring, doesn't endanger Hewlett-Packard's input circuitry.

The threat to input circuitry on any peripheral exists when a mechanical box is used to switch between the peripherals. Hewlett-Packards are known to be sensitive to this condition. Comparable difficulties have been reported on Okidata printers and surely affect others.

Note that the equipment is at risk regardless of whether the connectors are serial or parallel, 25-pin or 36-pin, regardless of which type of mechanical switch box you are using.

Scenario: Two printers are attached to one computer through an A-B mechanical switch box. One is a Hewlett-Packard LaserJet, and the other is a conventional dot matrix. The operator works on the computer, using the switch box to change between one printer and the other. All equipment is turned on all the time.

When either printer is used, the signal (or logic) ground to the other is disconnected. In other words, when the dot matrix printer is being used, the signal ground between the LaserJet printer and the A-B box is interrupted. Since it has its own power source, the LaserJet's internal logic ground level settles to a slightly different level than when it is connected through the box.

When the box is switched to connect the LaserJet printer, if the power happens to go to the signal pin first, the LaserJet input chips and circuitry must absorb the energy required to equalize the levels. These chips cannot handle the transient energy and are stressed. The damage is cumulative and may eventually destroy the chips.

Whether the power goes to the signal pin first or the ground is a function of the switch box. Usually it is random. To determine if there is a power-switching hierarchy requires looking at the power switching with an oscilloscope. Not a realistic choice for many people.

Note that turning off the LaserJet printer when it's not being used, and not changing the A-B switch box position when it is plugged in will not necessarily isolate the printer from all surges. This is because EMI filters on the computer connected to the printer can bleed into the printer's input circuitry. It is possible for the computer ground to pass voltage from the computer (on) to the printer (off).

To eliminate the hazard, make both the signal ground and the shield (chassis) ground contiguous between the printer connectors to the computer connector within the switch box, regardless of which unit is operating.

1. Connect a wire in the box to make the signal ground circuitry contiguous from connector to connector within the switch box.

2. Also make sure that the shield ground (carried by the cables) is good from one printer through the box to the other printer. Tighten all screws connecting the cables and check continuity with an ohmmeter.

Another option: Use an electronic A-B switch box. For design reasons, the logic ground in these boxes remains intact regardless of which printer is on-line. The "newer cheap ones" are about $100.

The following describes the pins to be wired, depending on the connector type. It involves soldering between the pins within the box. ***Do not attempt to do this unless you have some experience soldering electronic components.***

While it's fairly simple, it should not be attempted by the novice. For one thing, should you do it

incorrectly, you jeopardize some expensive equipment. While every effort has been made to clearly describe this procedure, if you attempt it and damage your equipment, the authors of this piece cannot be responsible.

Mechanical boxes come in two different types: those with 25-pin "DB" connectors (either parallel or serial) and those with 36-pin Centronics (parallel only) connectors. In effect a "Y" structure, the box has a connector for the computer and, in our A-B example, two connectors for the printers.

Solder a minimum length of insulated wire from any one of the pins on the computer connector to the corresponding pins on the printer connectors, I.e., pin 19 to pin 19. On the serial connector, all pins to pin 7. Then check your work with an ohmmeter. This will ensure that the signal ground is contiguous, regardless of which unit is connected.

Appropriate Pins: any one of the pins noted is appropriate to use with standard cables.

25-Pin Parallel wiring: Signal ground pins = 18 through 25; use only one of the eight pins available.

25-Pin Serial wiring: The signal ground pin (ANSI standard) is pin 7; the shield ground is pin 1.

36-Pin Centronics parallel wiring: Signal ground pins = 19 through 30; use only one of the 12 pins available.

NOTE: Once you've hardwired the grounds on the boxes that have 25 pins, you have, in effect, converted the box to either a parallel or serial box. Once it is so wired, you may not use a box converted to parallel with a serial hook-up and vice versa. Label the box clearly, so that no one can use it incorrectly.

(Jim Baker is proprietor of Computer Repair Center, Woodland Hills, CA, where he repairs computers and peripherals. Emerald Jones repairs writing from Newbury Park, CA.)

[Note: This article was downloaded from GEnie and was taken from the September and October 1988 issues of the Pasadena IBM Users Group newsletter "Prompt>," but it was apparently copied from the UCLA PC Users Group newsletter.]

RAVE 99 CO. PRODUCT PRELIMINARY DATA

Professional Expansion Chassis MODEL PE/2

TWO VERSIONS AVAILABLE

The PE/2 Chassis is available in two versions. Model PE/2-A replaces the original TI-Expansion Box, while the Model PE/2-B provides additional space/ modifications to allow the TI-99/4A motherboard to be removed from the TI-99/4A console and installed in the PE/2 Chassis.

MODEL PE/2-A

This version of the PE/2 allows use of the Geneve computer or the TI-99/4A console. When used with the GENEVE computer, only the keyboard and monitor are outside the PE/2, see figure A.

When used with the TI-99/4A console, the original TI-Flex cable is required to connect the TI-99/4A console to the PE/2 chassis, see figure B.

MODEL PE/2-B

This version of the PE/2 provides room for the TI-99/4A motherboard and RAVE 99 Keyboard interface card to be installed into the chassis leaving only the monitor and keyboard outside the chassis, see figure A.

The cartridge port is located on the right hand side towards the rear. Four drive bays are available, the fifth is used to mount the RAVE 99 Keyboard interface card. An internal "mini-Flex-cable" is supplied to connect the TI-99/4A computer to the expansion bus. Connections for the keyboard and video are located on the back of the chassis.

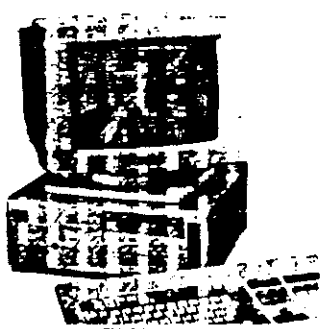


FIGURE A

FEATURES COMMON TO BOTH MODELS

- o Small size, 6.5"H X 16"L X 14.5"W, Saves table space.
- o Room for 3 accessible 5 1/4" Drives (single Height)
- o Room for 1 accessible 3 1/2" Drive (used to hold keyboard interface card in model PE/2-B)
- o Room for 1 hidden 3 1/2" hard drive
- o 200 Watt power supply with four disk drive power connectors. 110/220 Volt selectable. A/C power cord included. External power plug for monitor.
- o Eight Expansion slots
- o 3 LED Lights, Keylock, Reset Switch, and Power Switch located in front.

FEATURES UNIQUE TO MODEL PE/2-B

- o Room for the TI-99/4A motherboard
- o Access to cartridge port from righthand side.
- o Room for RAVE 99 Keyboard interface card.
- o Internal "Mini-Flex-Cable"/card.
- o Keyboard and Video connectors located on back of chassis.

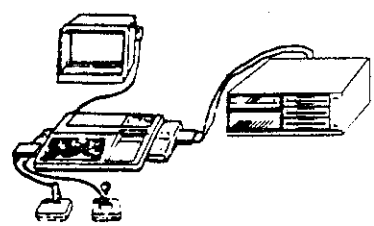


FIGURE B

RAVE 99 Co. 112 Rambling Road, Vernon CT 06066 (203) 871-7824

With RAVE, the Future is now!

The following was downloaded from our TI Tower BBS...

WHAT CAN CAUSE MODEMS TO STOP? OR HOW DID I KNOW I BLEW A FUSE?

-By Tom Jakabfy, OSHTI U.G.

It has taken me three weeks to unravel a web of events and get back to my normal operating system. It took me 3 hours tonight to get my latest problem sorted out. Here is the long and short of it.

It all began when a fellow OSHTI member,(Gary) club was having disk controller problems. This was not the clubs first time with a problem disk controller. About a year ago, my TI disk controller died in the middle of a TURBO COPY.

Anyway, my friend decided to get his controller fixed thru the TI office in RICHMOND HILL. After about 6 weeks he was sent a 'new' or 'fixed' controller card. When he went to use it of course it wouldn't work. He asked me if I would try it out for him and as usual I said OK.

The next night I tried it out. Of course the disk controller was without a protective clamshell case. Well, what happened was dreadfully scary. After I had slid it in my PEBox and turned it on, things seemed OK. When I tried to access drive 1 there was a puff of smoke and the reak of burning chips. I switched the power off as soon as I realized what was happening. There was a small bit of metal touching the side of the box since the protective clamshell was not there. Needless to say I was horrified.

The damage to the disck controller seemd centred around the power regulator that touched the side. My system on the other hand seemed to lose its memory (32K).

Fortunately I had a second 32K handy(a speech synthesizer type) and I was able to test some of the other parts of the box.

The RS232 PIO worked. The Horizon Ram Disk worked. So I went about my business as usual. Of course, it was dificult telling Gary about what had happened but he was most forgiving.

He has been able to repair some of the damage to the controller, but it still has problems.

Well about a week passed and I wanted to use my modem. I fired up TELCO and when I went to dial up a BBS nothing happened. What was the problem ?

Well I tested everything, the cable the modem my RS232. The modem did not seem to be responding to the RS232. By the way PIO did work and I could get print-outs as usual on my printer thru the RS232.

I went to a friends and tried out my modem. It worked on his RS232. I then tried out my RS232 in his machine. It worked. Aha...it was a problem in my PEBox !

After further discussions with my friends I decided to see if there was a blown fuse. Gary told me that the 32K and RS232 serial lines were on a 12 V power line and maybe a fuse was burned out.

It sounded too easy. It wasn't.

To get at the PEBox fuses requires one to remove about 12 screws from the PEBOX (the little ones). I had to remove the screews to the disk drive too. The PEBox slides forward so that you can get at the fuses...just barely. The first fuse I saw looked suspicious. I tested it. It was a gonner.

Down to RADSHACK to get some 3 Amp Slow Blow 250 V fuses. No problem. You get two for $1.99.

Of course I brought two of my kids with me and among us we got three new batteries to boot. The manager didn't even bat an eye when I paid him with the only bill I had ...a fifty(just after pay day of course).

When I got home I put the fuse in, and reassembled the PEBox...screws galore. Everything worked just fine.

I decided to go for the newly 'fixed' 32K...my last mistake.

When I put the 32K back in, something didn't want to work. My ram disk forgot what was going on. More problems.

When I fired up the machine with the 32K from the synthesizer, drive one was accessed immediately by the system. No start-up screen.

When I turned on the ram disk from basic using CALL AO the system would lock up and play a bad sound. Turning off the RAM DISK lead back to the first problem...drive 1 was access (TI XBasic was in the cartridge slot). By the way, I could get to the menu via CALL MENU and check that all files were there.

What happened was this. There is a software switch in the ram disk accessed via CALL DN. My ram disk had the value changed so that I could not access it. I had to reconfigure my system to find this out. I did not lose my files, since I could back them up using a DM.

To be safe I went through the RAM disk chip check on MENU 7.3 just to be sure my system was cleaned out. Then I reconfigured the system and dumped all files back to the ram disk.

It worked.

I hope that my experience might help someone out there who has either blown a fuse or had a ram disk behave this way. Fortunely, it hasn't cost me too much. Well, I guess the 32K will eventually get fixed too.

P.S.

Further investigation did yield some problem files. Some had garbage on the end and had to be scratched. Fortunately, most of these files had back-ups.

Tom Jakabfy
OSHTI USERS'S GROUP

The following is from Delphi...

Multi-tasking with the CLI
By Beery W. Miller

Note: The following is information regarding the use of setting background tasks running while still having the MDOS Command line interpreter available. This code patching is written for V0.96H of MDOS. This code may not, and most likely will not work with other versions, but if you search in page >06 (using Diskassembler) for a MOV or MOVB instruction of some address into >0102 and modify that address accordingly, with the same type patch procedure listed below, you should not have any problems.

The CLI will 'occasionally' miss a character since the other tasks reads the character, but with a timing patch I used, 90% of the characters are caught by the primary task.

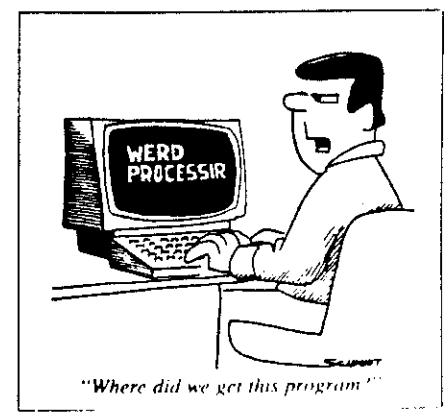
I have successfully had a 64K program running, run GPL, and return to MDOS to have my program still intact with no problems. It will even work running Adv. Basic and returning to MDOS, but be careful as when two tasks are running, attempting to type BYE in Adv. Basic to exit that task is extremely difficult. This routine can be used most likely for any background task without any loss of speed if no key presses are desired. Such as a running clock pgm, a pgm that detected a incoming call on a modem...., music, etc. It is only up to you.

Please make mention of my name and 9640 News in providing this code in any documentation that this feature is used in.

Other patches can be generated to provide an 'install' program that check what version you are running and uses the appropriate table for patching to resolve the addresses. It may even involve checking outside of page >06 if that page is reassigned in MDOS in the future.

Now enjoy, Beery Miller (9640NEWS on Delphi)

```
*I have left out a portion of the memo equates, so this will
*not compile straight out, but the 'technique' for installing should be pretty
*explanatory if you have done any assembly programming.
*
       LWPI DOSWSP
       LIMI 2
       LI   R0,1          *Begin setting up for extra memory
       LI   R1,7          *Request 7 pages
       LI   R2,1          *Local page #1
       CLR  R3            *Slow RAM is OK since it's disk access
       XOP  @MMG,0        *Ask system for the RAM...
       ABS  R0            *Check for errors
       JEQ  GOTMEM        *If none, then go to GOTMEM
       BL   @TTYOUT       *Display Error message
       DATA NOMEM,0       *Data for Error message
       BLWP @MDOS         *Warm Reboot of MDOS
GOTMEM LI   R0,4          *Get mmgt page map.
       LI   R1,PGETBL     *Put it at pgetbl
       LI   R2,10         *Pgetbl is 10 words wide
       XOP  @MMG,0        *
       MOVB @PGETBL+1,@>F111
       MOV  @PGETBL+2,@>F112
       MOV  @PGETBL+4,@>F114
       MOV  @PGETBL+6,@>F116
*PGETBL is a BSS 10     so have that somplace
```



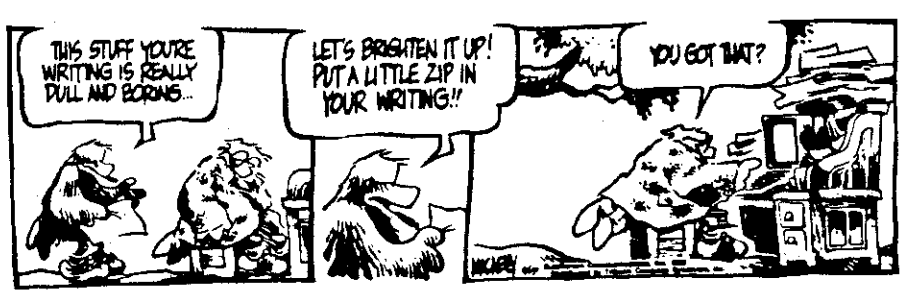
"Where did we get this program?"

```
MAIN1   .
        .     your code
        .
        B     @EXIT3        *Install background info for instant program
                            *recall (in this example, it is the ESC key)
                            *make sure you use a unique key not in the normal
                            *typing sequence or you could enter it accidentally

        B     @EXIT4        *Deinstall routine

TEST06  DATA  >060B
        DATA  >F8FE         *AT >0CEA ORIGINALLY  v0.96H
        DATA  >FF32         *AT >0CEC ORIGINALLY  v0.96H
        DATA  >F800         *AT >0CEA MODIFIED    for v0.96H
        DATA  >0032         *AT >0CEC MODIFIED    for v0.96H
TEST07  DATA  >0000
        DATA  >FF01
        DATA  >0001         *COUNTER DECREMENTER VARIABLE TO SHORTEN TASK TIME
EXIT3   LI    R0,>0000      *set 80 column mode for mdos
        LI    R1,>0001
        SYSC  @VID
        MOV   @TEST06,@>F114    *maps in page 0 and 1 of CLI>@ 8000
        MOV   @TEST07,@>8102    *places 0 into task state so it multitasks
        MOV   @TEST06+6,@>8CEA  *changes possible status of CLI to co exist
        MOV   @TEST06+8,@>8CEC  * with any other tasks running
        MOV   @PGETBL+4,@>F114  *remap our task memory back into place

KEYLP3  MOV @TEST07+4,@>0102  *patch our status time to minimize time spent
                              * in this task.
        LI  R0,0              *System scan for keypress
        SYSC @KBD
        CB    R1,@ESC         *if it was our key, let's boogie
        JNE   KEYLP3          *if not, scan keyboard again when task is active
        MOV   @TEST06,@>F114  *remaps CLI so it is not active while we use our
        MOV   @TEST06+2,@>8CEA      * task.
        MOV   @TEST06+4,@>8CEC
        MOV   @TEST07+2,@>8102
        MOV   @PGETBL+4,@>F114

        B     @MAIN1                *or wherever we want go (grin)

EXIT4   MOV   @TEST06,@>F114        *this deinstalls the CLI if we don't want
        MOV   @TEST06+2,@>8CEA      * the CLI to co-exist with any other task.
        MOV   @TEST06+4,@>8CEC      * If it is not deinstalled, and we actually
        MOV   @TEST07+2,@>8102      * exit our task, then the CLI runs with any
        MOV   @PGETBL+4,@>F114      * other task on an even time share.
        BLWP  @MDOS
```

* Notes on >0102 as the 'task' state used by the interrupt routine to determine the status of each task
- if the state is >00, the task is in run mode and can be swapped to another task by the interrupt routine.
- if the state is >FF (reserved for the CLI), the interrupt routine ignores the task if there are other tasks present.
- if the task is >FE, the task is locked and can not be multi-tasked
- if the task is >FD, the task is ignored and prgrams like the CLI in state >FF can still run (used to lock a tasks memory pages so they can't be freed, like the graphics drivers, or other code for a library)
- if the state is >01...>fc, the task is assumed to be asleep, waiting for the I/O or something and theinterrupt routine ignores the CLI

What Paul says about >0102 is it is a counter that is decremented by the interrupt routine that runs every 1/60 second. When it reaches >0000, another task is mapped in and runs until it is is decremented. The interrupt routine first determines the state of those tasks. That is why I mapped >0000 into the CLI to make it an even run time task. When I move >0001 into my task (can't go smaller), it is decremented to zero and only stays in the task about 1/16 the time it would have normally been there. Note this is only good for v0.96H (I haven't checked V1.14F to see if those bytes are in the same location. If you use DISkASSEMBLER and disassemble pages >06 and find where it moves bytes into location >0102, you can check for other versions if those bytes assembled out of position.

I hope this helps. If you have any questions, feel free to ask.DISkASSEMBLER is an invaluable aid to learning more on this system. There is a lot more that can be learned by diskassembling the CLI than most other programs source code. Check with TOMSFREE on Delphi (Tom Freeman) for ordering info you haven't purchased it yet. That is how most of my work so far has been done. Catch you later.
-eery



```
100 ! ***********************      *         BY         *      *
   *      * ROBERT L. WESSLER  *      * 4300 FRAZIER       *
101 ! * FT. WORTH, TX 76115*      *                    *      *
03 *      **********************
102 !
112 CALL INIT
113 CALL LOAD(8196,63,248)
114 CALL LOAD(16376,67,85,82,83,79,82,48,8)
115 CALL LOAD(12288,48,48,63,255,254,124,24,12)
116 CALL LOAD(12296,2,0,3,240,2,1,48,0,2,2,0,8,4,32,32,36,4,91)
117 CALL LINK("CURSOR")
120 CALL CLEAR :: DISPLAY AT(1,9):"CROSSWORD"
130 DISPLAY AT(8,2):"1. COLOR MONITOR" :: DISPLAY AT(13,2):"2. GREEN OR AMBER MO
NITOR" :: DISPLAY AT(20,2):"PRESS 1 OR 2"
140 CALL KEY(0,K,S):: IF S=0 OR K<49 OR K>50 THEN 140
150 IF K=50 THEN 160 :: Y=13 :: T=4 :: GOTO 170
160 Y=16 :: T=2
170 CALL CLEAR :: CALL SCREEN(T):: FOR N=0 TO 14 :: CALL COLOR(N,Y,T):: NEXT N
180 DISPLAY AT(6,10)BEEP:"BE SURE" :: DISPLAY AT(8,6)BEEP:"'ALPHA LOCK' KEY"
190 DISPLAY AT(10,10)BEEP:"IS 'UP'" :: DISPLAY AT(11,13):"----"
191 FOR DELAY=1 TO 200 :: NEXT DELAY
193 DISPLAY AT(16,4):"ENTER ALL LETTERS IN"
194 DISPLAY AT(18,8):"'lower case'" :: FOR DELAY=1 TO 200 :: NEXT DELAY
195 DISPLAY AT(23,7):"PLUS SIGNS '+' " :: DISPLAY AT(24,4):"LEAVE BLANK SPACES."
200 FOR DELAY=1 TO 750 :: NEXT DELAY
210 GOSUB 770 :: FOR S=96 TO 126
220 READ S$ :: CALL CHAR(S,S$)
230 NEXT S
240 FOR S=33 TO 47
250 READ S$ :: CALL CHAR(S,S$)
260 NEXT S
270 DIM A$(13,13):: FOR A=1 TO 13 :: FOR B=1 TO 13 :: A$(A,B)="+" :: NEXT B :: N
EXT A
280 B=5 :: FOR A=1 TO 4 :: A$(A,B)="`" :: A$(A+9,B+4)="`" :: NEXT A
290 FOR A=1 TO 3 :: A$(A,10)="`" :: A$(A+10,4)="`" :: A$(5,A)="`" :: A$(5,A+10)=
"`"
300 A$(9,A)="`" :: A$(9,A+10)="`" :: A$(7,A+5)="`" :: NEXT A
310 FOR A=5 TO 9 :: A$(A,7)="`" :: NEXT A :: A$(4,9)="`" :: A$(10,5)="`"
320 CALL CLEAR :: CALL MAGNIFY(2)
330 CALL VCHAR(1,10,96,48):: CALL VCHAR(1,14,96,48)
340 CALL SPRITE(#1,96,Y,1,89)
350 RESTORE 1550
360 FOR W=2 TO 10 :: GOSUB 1460
370 READ T,U
380 FOR X=T TO T+16 :: CALL SPRITE(#W,U,Y,X,89):: GOSUB 1460 :: NEXT X :: NEXT W
390 FOR X=1 TO 160 :: CALL SPRITE(#19,96,Y,X,89):: NEXT X
400 FOR X=160 TO 176 :: CALL SPRITE(#20,123,Y,X,89):: GOSUB 1460 :: NEXT X
410 DISPLAY AT(20,19):"by`````````"
420 DISPLAY AT(21,19):"`robert```"
430 DISPLAY AT(22,19):"``wessler`"
440 DISPLAY AT(23,19):"`````````"
450 T=1000 :: CALL SOUND(T,131,4):: CALL SOUND(T,165,4):: CALL SOUND(T,196,4)::
CALL SOUND(T/2,110,30)
460 CALL SOUND(T*2,165,5,196,5,262,5,-3,10):: CALL SOUND(T*2,175,5,220,5,262,5,-
3,10)
470 CALL SOUND(T*2,165,5,196,5,262,5,-3,10):: CALL DELSPRITE(ALL):: CALL CLEAR
480 CALL CLEAR :: DISPLAY AT(2,9):"CROSSWORD" :: DISPLAY AT(5,3):"1. DRAW SCREEN
" :: DISPLAY AT(8,3):"2. SAVE OR RESTORE GAME"
490 DISPLAY AT(11,3):"3. GAME ANSWERS" :: DISPLAY AT(14,3):"4. END GAME"
500 DISPLAY AT(20,1):"PRESS NUMBER DESIRED"
510 CALL KEY(0,K1,S):: IF S=0 OR K1<49 OR K1>53 THEN 510
520 IF K1=49 THEN 860 :: IF K1=50 THEN 555 :: IF K1=51 THEN 5000
530 CALL CLEAR :: CALL CHAR(32,"FFFFFFFFFFFFFFFF"):: CALL SCREEN(16):: DISPLAY A
T(11,9):"thank you"
540 DISPLAY AT(13,3):"for playing crossword" :: DISPLAY AT(20,12):"robert wessle
r"
550 FOR DELAY=1 TO 1500 :: NEXT DELAY :: END
555 CALL CLEAR :: DISPLAY AT(4,4):"1.  SAVE GAME" :: DISPLAY AT(8,4):"2.  RESTOR
E GAME"
556 CALL KEY(0,K1,S):: IF S=0 OR K1<49 OR K1>50 THEN 556
560 GOSUB 600 :: IF K2=49 THEN GOSUB 780 ELSE GOSUB 800
570 IF K1=49 THEN GOSUB 650 ELSE GOSUB 710
580 IF K2=49 THEN GOSUB 820 ELSE GOSUB 840
590 GOTO 860
600 CALL CLEAR :: DISPLAY AT(4,4):"1. DSK1" :: DISPLAY AT(8,4):"2. CS1"
610 DISPLAY AT(20,4)BEEP:"PRESS DISK OR CASSETTE"
620 CALL KEY(0,K2,S):: IF S=0 OR K2<49 OR K2>50 THEN 620
630 IF K2=49 THEN B$="DSK1.GAMEPLAY" ELSE B$="CS1"
640 RETURN
650 OPEN #1:B$,INTERNAL,OUTPUT,FIXED
660 FOR D=1 TO 13
670 PRINT #1:A$(D,1),A$(D,2),A$(D,3),A$(D,4),A$(D,5),A$(D,6),A$(D,7)
680 PRINT #1:A$(D,8),A$(D,9),A$(D,10),A$(D,11),A$(D,12),A$(D,13)
690 NEXT D
700 CLOSE #1 :: RETURN
710 OPEN #1:B$,INTERNAL,INPUT ,FIXED
720 FOR D=1 TO 13
730 INPUT #1:A$(D,1),A$(D,2),A$(D,3),A$(D,4),A$(D,5),A$(D,6),A$(D,7)
740 INPUT #1:A$(D,8),A$(D,9),A$(D,10),A$(D,11),A$(D,12),A$(D,13)
750 NEXT D
760 CLOSE #1 :: RETURN
770 CALL CLEAR :: DISPLAY AT(12,10):"WORKING" :: RETURN
780 CALL CLEAR :: DISPLAY AT(12,4):"INSERT SAVE DISKETTE" :: INPUT " <PRESS ENTE
R TO CONTINUE>":X$
790 GOSUB 770 :: RETURN
800 CALL CLEAR :: DISPLAY AT(12,4)BEEP:"INSERT SAVE CASSETTE" :: INPUT " <PRESS
ENTER TO CONTINUE>":X$
810 GOSUB 770 :: RETURN
820 CALL CLEAR :: DISPLAY AT(12,4):"INSERT GAME DISKETTE" :: INPUT " <PRESS ENTE
R TO CONTINUE>":X$
830 GOSUB 770 :: RETURN
840 CALL CLEAR :: DISPLAY AT(12,4)BEEP:"INSERT GAME CASSETTE" :: INPUT " <PRESS
ENTER TO CONTINUE>":X$
850 GOSUB 770 :: RETURN
860 X=1 :: N=13
870 CALL CLEAR :: DISPLAY AT(1,7):"COLUMN "
880 DISPLAY AT(2,2):"``{|}~!*#$%&'()``"
890 CALL HCHAR(3,4,96,17)
900 CALL VCHAR(3,5,96,15)
910 GOSUB 1340 :: FOR A=X TO N+X-1
920 FOR B=1 TO 13
930 DISPLAY AT(A+3,B+3):A$(A,B)
940 NEXT B
950 NEXT A
960 CALL VCHAR(3,19,96,15)
970 CALL HCHAR(17,4,96,17)
980 DISPLAY AT(18,2):"``{|}~!*#$%&'()``"
990 FOR A=1 TO 4
1000 CALL VCHAR(A+3,4,122+A)
1010 CALL VCHAR(A+3,20,122+A)
1020 NEXT A
1030 FOR N=1 TO 9
1040 CALL VCHAR(N+7,4,32+N)
1050 CALL VCHAR(N+7,20,32+N)
1060 NEXT N
1070 CALL HCHAR(8,3,82)
1080 CALL HCHAR(9,3,79)
1090 CALL HCHAR(10,3,87)
1100 IF AN=1 THEN RETURN
1110 DISPLAY AT(20,5)BEEP:"ROW?  "
1120 DISPLAY AT(24,1):"ENTER -0- FOR MENU OR ERROR"
```

```
1130 ACCEPT AT(20,12)SIZE(2)VALIDATE("1234567890"):X
1140 IF X>13 THEN 1110 :: IF X=0 THEN 480
1150 DISPLAY AT(10,20):"ROW   ";X
1160 DISPLAY AT(22,5)BEEP:"COLUMN?"
1170 ACCEPT AT(22,12)SIZE(2)VALIDATE("1234567890"):Y
1180 IF Y=0 THEN 480
1190 IF Y>13 THEN 1170
1200 DISPLAY AT(12,20):"COLUMN";Y
1210 GOSUB 1340
1220 Q=0
1230 ON X GOTO 1560,1740,1780,1820,1880,1930,2030,2060,2130,2160,2280,2340,2380
1250 DISPLAY AT(8,20):"DOWN" :: DISPLAY AT(20,2):X$ :: DISPLAY AT(24,1):" " :: F
OR S=0 TO T
1260 DISPLAY AT(23,S+1)BEEP:A$(S+X,Y):: NEXT S
1270 ACCEPT AT(24,1)SIZE(1+T)VALIDATE("+abcdefghijklmnopqrstuvwxyz"):T$
1280 N=T+1
1285 IF T$="" THEN 910
1290 FOR S=1 TO N :: A$(S+X-1,Y)=SEG$(T$,S,1):: NEXT S :: GOTO 910
1300 DISPLAY AT(8,20):"ACROSS" :: DISPLAY AT(20,2):X$ :: DISPLAY AT(24,1):" " ::
 FOR S=0 TO T
1310 DISPLAY AT(23,S+1)BEEP:A$(X,S+Y):: NEXT S
1320 ACCEPT AT(24,1)SIZE(1+T)VALIDATE("+abcdefghijklmnopqrstuvwxyz"):T$
1325 N=1 :: IF T$="" THEN 910
1330 T=T+1 :: FOR S=1 TO T :: A$(X,S+Y-1)=SEG$(T$,S,1):: NEXT S :: N=1 :: GOTO 9
10
1340 DISPLAY AT(20,1):"
                                                "
1350 RETURN
1360 DISPLAY AT(20,1)BEEP:"PRESS D FOR DOWN             PRESS A FOR ACROSS"
1370 CALL KEY(0,K,S):: IF S=0 OR K<>97 AND K<>100 THEN 1370
1380 IF K=97 THEN Z=2 ELSE Z=1
1390 GOSUB 1340
1400 RETURN
1410 GOSUB 1340
1420 DISPLAY AT(20,1)BEEP:"THERE ARE NO WORDS AT THIS  LOCATION.  PLEASE TRY AGA
IN"
1430 DISPLAY AT(24,1)BEEP:"PRESS ANY KEY TO CONTINUE"
1440 CALL KEY(0,K,S):: IF S=0 THEN 1440
1450 GOSUB 1340 :: GOTO 1110
1460 CALL SOUND(60,120,8,-5,0):: CALL SOUND(60,120,8,-5,5):: RETURN
1470 DATA FFFFFFFFFFFFFFFF,FF8098A4BCA48080,FF80B8A4B8A48880,FF809CA0A0A09C80,FF
80B8949494B880,FF80BCA0BCA0BC80
1480 DATA FF80BCA0B8A0A080,FF809CA0ACA49C80,FF80A4A4BCA4A480,FF809C8888889C80
1490 DATA FF80848484A49880,FF80A4A880A8A480,FF80909090909C80,FF80A2B6AAA2A280,FF
80A2B2AAA6A280,FF80BCA4A4A4BC80
1500 DATA FF80BCA4BCA0A080,FF809CA2AAA49A80,FF80BCA4BCA8A480,FF80BCA0BC84BC80,FF
80BC8888888880,FF80A2A2A2A29C80
1510 DATA FF80A2A294948880,FF80A2A2A2AA9480,FF80A2948894A280,FF80A29488888880,FF
80BE848890BE80,00001010101010
1520 DATA 00003808382038,00003808380838,00002828380808
1530 DATA 00003820380838,00003820382838,00003808080808,00003828382838,0000382838
0838,00005C5454545C,0000484848484,00005C445C505C
1540 DATA 00005C445C445C,00003820382838,FF80808080808080,FF80808080808080,000000
7C,0000000000003030,00003820382838
1550 DATA 1,99,16,114,32,111,48,115,64,115,80,119,96,111,112,114,128,100
1560 IF Y=1 THEN GOSUB 1360 ELSE 1590
1570 IF Z=2 THEN 1580 :: X$="ART STYLE OF THE TWENTIES" :: T=3 :: GOTO 1250
1580 X$="POORLY LIT" :: T=3 :: GOTO 1300
1590 IF Y>2 THEN 1600 :: X$="ON" :: T=3 :: GOTO 1250
1600 IF Y>3 THEN 1610 :: X$="THE ETERNAL CITY" :: T=3 :: GOTO 1250
1610 IF Y>4 THEN 1620 :: X$="GERMAN SAUSAGE" :: T=9 :: GOTO 1250
1620 IF Y=5 OR Y=10 THEN 1410
1630 IF Y>6 THEN 1660 :: GOSUB 1360
1640 IF Z=2 THEN 1650 :: X$="ROTS" :: T=5 :: GOTO 1250
1650 X$="ELECTRIC CATTLE MOVER       -BACKWARDS-" :: T=3 :: GOTO 1300
1660 IF Y>7 THEN 1670 :: X$="TRACK" :: T=3 :: GOTO 1250
1670 IF Y>8 THEN 1680 :: X$="ESTEEM" :: T=5 :: GOTO 1250
1680 IF Y>9 THEN 1690 :: X$="BEFORE" :: T=2 :: GOTO 1250
1690 IF Y>11 THEN 1720 ELSE GOSUB 1360
1700 IF Z=2 THEN 1710 :: X$="RUSSIAN KNICKNAME" :: T=3 :: GOTO 1250
1710 X$="FROST" :: T=2 :: GOTO 1300
1720 IF Y>12 THEN 1730 :: X$="QUOTE" :: T=3 :: GOTO 1250
1730 X$="SWORD" :: T=3 :: GOTO 1250
1740 IF Y<>1 AND Y<>6 AND Y<>11 THEN GOTO 1410
1750 IF Y>1 THEN 1760 :: X$="BRITISH SCHOOL" :: T=3 :: GOTO 1300
1760 IF Y>6 THEN 1770 :: X$="AT ANY TIME" :: T=3 :: GOTO 1300
1770 X$="BIGWIG" :: T=2 :: GOTO 1300
1780 IF Y<>1 AND Y<>6 AND Y<>11 THEN GOTO 1410
1790 IF Y>1 THEN 1800 :: X$="SINGER PERRY" :: T=3 :: GOTO 1300
1800 IF Y>6 THEN 1810 :: X$="ZOO ENCLOSURE" :: T=3 :: GOTO 1300
1810 X$="CONSUMED" :: T=2 :: GOTO 1300
1820 IF Y<>1 AND Y<>6 AND Y<>10 THEN GOTO 1410
1830 IF Y>1 THEN 1840 :: X$="OIL ORGANIZATION" :: T=3 :: GOTO 1300
1840 IF Y>6 THEN 1850 :: X$="---CART" :: T=2 :: GOTO 1300
1850 GOSUB 1360
1860 IF Z=2 THEN 1870 :: X$="MEMENTO" :: T=9 :: GOTO 1250
1870 X$="LEG JOINT" :: T=3 :: GOTO 1300
1880 IF Y<4 OR Y>9 OR Y=7 OR Y=6 THEN 1410
1890 IF Y>4 THEN 1900 :: X$="LOCK AND ---" :: T=2 :: GOTO 1300
1900 IF Y>5 THEN 1910 :: X$="COMMERCIAL COW" :: T=4 :: GOTO 1250
1910 IF Y>8 THEN 1920 :: X$="FLED" :: T=2 :: GOTO 1300
1920 X$="FIRE CAUSE" :: T=4 :: GOTO 1250
1930 IF Y>3 AND Y<8 OR Y>8 AND Y<11 THEN 1410
1940 IF Y>1 THEN 1970 ELSE GOSUB 1360
1950 IF Z=2 THEN 1960 :: X$="AVES" :: T=2 :: GOTO 1250
1960 X$="LOOKS DISPLEASED" :: T=5 :: GOTO 1300
1970 IF Y>2 THEN 1980 :: X$="ARMY BED" :: T=2 :: GOTO 1250
1980 IF Y>3 THEN 1990 :: X$="MAN -- - MOUSE" :: T=2 :: GOTO 1250
1990 IF Y>8 THEN 2000 :: X$="SNOWY PILES" :: T=5 :: GOTO 1300
2000 IF Y>11 THEN 2010 :: X$="ENEMY" :: T=2 :: GOTO 1250
2010 IF Y>12 THEN 2020 :: X$="VAT" :: T=2 :: GOTO 1250
2020 X$="GRADS-TO-BE" :: T=2 :: GOTO 1250
2030 IF Y<>1 AND Y<>9 THEN GOTO 1410
2040 IF Y=1 THEN X$="DOUGHNUT SHAPE" :: T=4 :: GOTO 1300
2050 X$="CLEAN THE SINK" :: T=4 :: GOTO 1300
2060 IF Y<>1 AND Y<>6 AND Y<>8 THEN 1410
2070 IF Y>1 THEN 2080 :: X$="A ---- -- BORN" :: T=5 :: GOTO 1300
2080 IF Y>6 THEN 2090 :: X$="DELI MEAT" :: T=5 :: GOTO 1250
2090 GOSUB 1360
2100 IF Z=2 THEN 2120
2110 X$="DETROIT TEAM" :: T=5 :: GOTO 1250
2120 X$="SUBWAY COINS" :: T=5 :: GOTO 1300
2130 IF Y<>4 AND Y<>8 THEN 1410
2140 IF Y>4 THEN 2150 :: X$="EXPANSE" :: T=2 :: GOTO 1300
2150 X$="PEN AND ---" :: T=2 :: GOTO 1300
2160 IF Y=5 OR Y=4 OR Y=8 OR Y=9 THEN 1410
2170 IF Y>1 THEN 2200 ELSE GOSUB 1360
2180 IF Z=2 THEN 2190 :: X$="TWO OF A KIND" :: T=3 :: GOTO 1250
2190 X$="SEPARATE" :: T=3 :: GOTO 1300
2200 IF Y>2 THEN 2210 :: X$="SINGER GUTHRIE" :: T=3 :: GOTO 1250
2210 IF Y>3 THEN 2220 :: X$="DEPEND" :: T=3 :: GOTO 1250
2220 IF Y>6 THEN 2230 :: X$="RACE SECTION" :: T=2 :: GOTO 1300
2230 IF Y>7 THEN 2240 :: X$="OLD OATH" :: T=3 :: GOTO 1250
2240 IF Y>10 THEN 2250 :: X$="FAMED LOCH" :: T=3 :: GOTO 1300
2250 IF Y>11 THEN 2260 :: X$="VERVE" :: T=3 :: GOTO 1250
2260 IF Y>12 THEN 2270 :: X$="MIDDLING" :: T=3 :: GOTO 1250
2270 X$="CHAIR" :: T=3 :: GOTO 1250
2280 IF Y=1 OR Y=5 OR Y=10 THEN 2290 ELSE 1410
2290 IF Y>1 THEN 2300 :: X$="WHERE THE BOYS ---" :: T=2 :: GOTO 1300
2300 IF Y>5 THEN 2330 :: GOSUB 1360
2310 IF Z=2 THEN 2320 :: X$="THE SUN" :: T=2 :: GOTO 1250
2320 X$="WISE MAN" :: T=3 :: GOTO 1300
```

Feedback

It's all coming

First of all I want to make it clear that this is not an ad for a given piece of equipment or a particular piece of software, although what I am about to say must invariably name items to reenforce my point. I can't help that, because there just isn't enough competition to generalize what these items do.

Recently, I acquired two programs in as many days, the new GIF loader from Barry Boone and a fairware version from Germany by Achim Liese. No, let me drop back just a little further and say that six months ago I bought one of the last of the old Mechatronics cards from Asgard that remained available in this country. At the time, the purchase distressed me slightly because I had problems getting the 80-column card to work. That turned out to be a cabling problem with the Magnavox 515 monitor, and, also, I had not yet mounted the new EPROM from Barry Boone in the card. I also found that the software (TI-Writer and Multiplan) that came with the card was a mess and hardly worked at all.

To make a long story short, I finally got everything working (hardware wise), which was quite simple once I had everything I needed. During that time the Funnelweb system came through in 80-column mode giving me a magnificent and reliable 80-column word processor. This in itself opened up a whole new world to me, allowing me the privilege of *not* windowing my text all the time.

Mind you, I am a writer. I cannot get 280 pages of text into my TI, so I am forced to use a Tandy 1000A to write a whole book. This doesn't please me one little bit. I swear to all that are reading this, that is the *only* thing I use the Tandy for. I still write all my MICROpendium articles on the TI, and anything else that will fit into the memory. I love graphics, as many of you are aware. I have never found anything that beats our machine for graphics. The number of fonts (250+), the formats available, the ease of dumping it to the printer — all these are lacking in the IBM world. The writer clones we have are as versatile as anything I use, and, in most cases, more so than any word processor for the IBM. I still convert the Tandy text files to TI via PC Transfer, in order to format them easily to my printer. In short, the Tandy is a big hammer that I *have* to use, but the final product still comes out of my TI.

Back to the beginning, the GIF loaders and the 9938 video processor (alias the Mechatronics card). The two loaders I have differ in that one can accomplish various tasks that the other cannot at this stage. Oh, yes, and to add to the plot of this story, I should tell you that my wife Hollie is a base manager on the Delphi MS-DOS sig. She has an AT clone as well as the Tandy, which she uses daily and is an expert on. She is at this moment jealous as heck of my little TI because I have something (many somethings, perhaps) she doesn't have in the AT, VGA graphics. Yes, I am now loading 256-color pictures into my TI with the aforementioned hardware and software just as they were intended to look in a $2,500 MS-DOS machine.

So what am I getting at? Simply this. Anyone who leaves the TI community now to move to a clone is, at best, a fool, without the slightest idea of what is going on out here. We have *everything* available (more often than not of a higher caliber than any clone under $3,000) and, if it isn't here now, it soon will be. Be advised that I am talking about the 99/4A, *not* the disaster-prone Geneve..

Everyone complained about the speed of Multiplan, so Art Green cut the speed in half. Everyone said Artist was inferior to the clone programs — Artist Plus added vectoring to the program to outperform the $300 drawing programs for the PCs. You want 3D? McCann Software will sell you what you need for $30. You want a hard drive? The controller from Myarc will give you capability exceeding the PCs by at least four times at half the price. You want 3.5-inch drives? No problem, just plug and play with whatever controller you have. We have mice, MIDI ports, battery backed RAM and paged-in memory. Telco does almost everything the best PC telecommunications program will do. What more do you want?

Yes, we have a little ways to go yet. Foremost, we need a word processor that will allow unlimited text size. We also need some other graphic converters and there is a bit more to do on PagePro, but all you have to do is wait a little longer. It's all coming! I will guarantee you that.

Harry T. Brashear
Newfane, New York

```
2330 X$="LILY PLANT" :: T=3 :: GOTO 1300
2340 IF Y=1 OR Y=5 OR Y=10 THEN 2350 ELSE 1410
2350 IF Y>1 THEN 2360 :: X$="SICK" :: T=2 :: GOTO 1300
2360 IF Y>5 THEN 2370 :: X$="GENERAL BRADLEY" :: T=3 :: GOTO 1300
2370 X$="SPANISH HOUSE" :: T=3 :: GOTO 1300
2380 IF Y=1 OR Y=5 OR Y=10 THEN 2390 ELSE 1410
2390 IF Y>1 THEN 2400 :: X$="--- RODE TRIGGER" :: T=2 :: GOTO 1300
2400 IF Y>5 THEN 2410 :: X$="TOPS" :: T=3 :: GOTO 1300
2410 X$="TIE" :: T=3 :: GOTO 1300
5000 CALL CLEAR :: RESTORE 5010 :: FOR AN=1 TO 19 :: READ ANS$ :: DISPLAY AT(AN+
1,5):ANS$ :: NEXT AN
5002 DISPLAY AT(24,1)BEEP:"<PRESS ANY KEY TO CONTINUE>"
5004 CALL KEY(0,K,S):: IF S=0 THEN 5004 ELSE 860
5010 DATA "CROSSWORD ANSWERS","","`{|}~!/#$%&'()``",,"`````````````````````","{`dark
`dorp`ice`(""|`eton`ever`vip`!`-`opec`ale`knee`""|`````key`ran`````!","/`scowls`
5020 DATA "),`como`cage`ate`)",#-
drifts`!","#`torus`scour`#"
5030 DATA "$`staris`tokens`$","%`````sea`ink`````%","&`part`leg`ness`&","'`are`sag
e`aloe`'","(`ill`omar`casa`(",
5040 DATA ",`roy`lids`knot`)",
```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