THE
BOSTON
COMPUTER
SOCIETY

# USER GROUP





## NEUSLETTER

\$1

### LISTEN

March, 1991

BY JUSTIN DOMLING

I'M EXCITED ABOUT THE COMING FAIR. FOR ONE THING: THE PIUNEEK VALLEY USERS GROUP WILL BRING THEIR REAL TIME FRAME GRABBER DIGITIZER: THE UCR CONNECTION. THEY'LL HAVE THEY'LL BE DIGITIZING R VIDEO CRMERA AND A GENEVE. PTRONE HONE STAP BY THEIR BOOTH. REGHT 94 E3 847 MONITOR RCA PLUGS ON THE MEETING SYSTEM INTO A THE MEETING SESSION TO THE MUDIENCE WATCHING THE BIG TV THRT THE UCR DRIVES. THE LIMM USERS GROUP PIONEERED THE VCR CONNECTION. THEY RECORD SESSIONS AND SEND THE TAPES AROUND TO WHICHEVER USER GROUP WANTS TO HAVE THEM. HASN'T SEEN CHARLES GOOD DEMONSTRATE HOW TO CONFIGURE THE FUNNELMEB PROGRAM? NOW YOU CAN TAKE HOME VIDEDS AND TO BE INCLUDED IN YOUR ARTWORK. DIGITIZE THEM:

SPERKING OF ARTHORK, GARY BOWSER, NEE "BOWKER" SHOULD BE AT THE FAIR. He's THE ONE WHO BRINDS US "TINY TIM", THE LITTLE CONSOLE MODIFICATION THAT GIVES YOU 80 COLUMN SCREENS AND MORE MEMORY FOR YOUR GRAPHICS. NO DOUBT, THE SIZE OF DIGITIZED PICTURES IS GREAT.

BARRY TRAVER WILL BE THERE TO GIVE A BARRY BRINGS US HIS DISKRZINE. THE NICE THING ABOUT MRGAZINE IS THAT YOU CAN RUN IT WITHOUT KEY IN THE PROGRAMS. AND BARRY BRINGS US PROGRAMS THAT ARE ON THE CUTTING EDGE OF THINGS! CATCH HIS SERIES IN Micropendium on an interpreter that converts your XBasic BRAPHICS INTO ASSEMBLY CODE. MUNCH WILL BE THERE. CORSON WYMAN, THEIR PRESIDENT, HPS YOUR FAVORITE XBASIC UTILITIES INTO EXECUTABLE CODE FOR THE IBM PC. Do you have favorite utilities at THEM TO WORK AND SHOW THE PC USERS THESE UTILITIES.

SPERKING OF PCs, BY THE TIME YOU RERD THIS TOM WARD, THE SYSOP FOR THE GROUP'S BBS (617 337 4181), WILL HAVE MOVED THE BORD OFF THE TI99/48 HE'S BEEN USING FOR OVER SIX YEARS AND ONTO HIS PC CLONE TEMPORARILY; DID YOU NOTICE? WE WOULD LIKE TO START A SECOND BOARD AGAIN, TO RUN ON THE

## NOTES ON LASER PRINTING WITH THE TI-99/4A BY LARRY FAIRBANKS (REPRINTED FROM THE SPIRIT OF 99)

ONE OF THE BEST THINGS REDUT THE TI-99 COMPUTER IS THAT IT IS COMPATIBLE WITH MOST COMMONLY USED PRINTERS, INCLUDING THE REVOLUTIONARY LASER PRINTER. MOST OF THESE PRINTERS USE THE PARALLEL PORT THAT IS ALSO USED FOR OUT MATRIX PRINTERS, AND FUNCTION IN MUCH THE SAME WAY IN TEXT MODE, USING THE SAME SIGNAL FOR PRODUCING A LETTER "A", THAT THE TI-4A IMPACT OR EPSON FX USE. GRAPHICS WILL REQUIRE THE USE OF PRINTER DRIVERS DESIGNED FOR RASTER GRAPHIC. FORTUNATELY, MOST PRINTING IS OF TEXT, SO TAKING ADVANTAGE OF THE LASER PRINTER'S 300 DOT PER INCH RESOLUTION AND TRUE LETTER CUMLLIT IS USUALLY VERY STRAIGHT FORMARD. JUST PLUG THE PARALLEL PRINTER CABLE FROM THE RE232 CARD INTO THE LASER PRINTER SEFORE YOU TURN IT ON, THEN PRINT TO DEVICE "PIO. LP". MOST LASER PRINTERS ALSO HAVE AN RE232 PORT THAT OPERATES AT 9600 BAUD.

THE LABER PRINTER IS ALSO FASTER AND QUIETER THAN THE DOT MATRIX. THE FIRST PAGE COMES OUT IN ABOUT 30 SECONDS, AND SUBSEQUENT PAGES ARE PRINTED AT FROM FOUR TO TEN PAGES PER MINUTE, DEPENDING ON THE MODEL. IT MAKES ABOUT AS MUCH NOISE AS A XEROX, BECAUSE IT IS BASED ON A COPIER ENGINE. SPECIAL PAPER IS NOT REQUIRED, BUT THERE ARE SOME LIMITATIONS ON THE SIZE AND MEIGHT, SO CONSULT YOUR MANUAL FOR SPECIFICS.

PAPER SIZE IS LIMITED IN ONE DIMENSION BY THE MIDTH OF THE FUSER DRUM; MAICH ACTUALLY PUTE PRINT TO PAPER. IN MLL BUT EXPENSIVE MODELS, IT IS 8 AND 1/2 INCHES MIDE. PAPER BINS ARE 8 AND 1/2 BY 11 OR 14 INCHES; BUT MOST UNITS ALSO HAVE A MANUAL FEED CAPABILITY FOR LONG OR DOD SIZED PAPER AND ENVELOPES. COLORED OR TEXTURED PAPER CAN ALSO BE USED FOR SPECIAL PROJECTS SUCH AS ANNOUNCEMENTS OR RESUMES. ONE CAN EVEN DOUBLE PRINT, SEND THE SAME PAPER THROUGH THISE; OK PRINT ON PREVIOUSLY PRINTED PAPER.

A WIDE VARIETY OF FONTS ARE AVAILABLE ON IBM COMPATIBLE DISKETTED THAT CAN BE DOWNLOADED INTO LASER PRINTERS WITH AT LEAST 512K OF MEMORY. IN ADDITION, ALL LASER PRINTERS ARE NOW SOLD WITH A VARIETY OF FONTS OF DIFFERENT CHARACTER SETS, SIZES AND OFTEN TYPE FACES BUILT RIGHT INTO THE PRINTER. ADDITIONAL FONTS ARE AVAILABLE ON CARTRIDGES WHICH OU NOT REQUIRE DOWNLOADING.

Some differences are very apparent. Bold is a different font, rather than a double strike, so it often has thicker letters in addition to being much darker. Compressed print is a different font, as in out matrix, but since many type sizes are available, CHR#(15) is not sufficient to make the change. A CHR#(12), on the other hand, will still give you a form feed.

A LARGE NUMBER OF ESCRPE SEQUENCES ARE AVAILABLE TO CONTROL FORT USAGE, LINES PER PAGE, UNDERLINING, MARGINS, AND POSITIONING. THEY CAN ALSO CONTROL ORIENTATION SO YOU CAN PRINT SIDEMAYS. THE ESCAPE SEQUENCE GETS ITS NAME FROM THE ESCAPE CHARACTER, CHR\$(27), MITH WHICH IT STARTS, AND IT ENDS MITH A CAPITAL LETTER.

PRGE 2

MANY LASER PRINTER SEQUENCES ARE LONG AND CONTAIN OPPER AND LONER CASE LETTERS; NUMBERS AND SYMBOLS. SPELLING AND SYNTAX ARE CRITICAL.

THERE ARE TWO DIFFERENT ESCAPE SEQUENCE FORMATS FOR SELECTIONS OUMNLOADED FONTS; THE FONT DESCRIPTION SEQUENCE; OR LONG FORM; AND THE FONT ID SEQUENCE OR SHORT FORM; TO USE THE SHORT FORM; YOU MUST BET THE ID WHEN DOWNLOADING;

ESCAPE SEQUENCES CAN BE SENT TO THE PRINTER IN BASICALLY TWO MAYS. IF YOU ARE USING THE FORMATTER, CREATE A TRANSLITERAL MITH A PUNCTUATION MARK LIKE AN E SIGN MAIGH IS ASCII 61. AFTER USING IT, YOU WILL MISH TO RESET IT SINCE IT MAY BE USED IN THE TEXT. REMEMBER, OO NOT USE ANY REAL CHARACTERS IN YOUR TRANSLITERAL DEFINITION, JUST ASCII DEFINITION NUMBERS. EVEN THE NUMBER 8 FOR 8 LINES PER PAGE MUST BE ENTERED AS A 55 IN THE TRANSLITERAL.

THE DIMER MAY IS TO IMBED THE ESCAPE SEQUENCE IN YOUR TEXT. THIS MORKS FOR A STRAIGHT PRINTS-DUT BUT MOT MITH THE FORMATTER. ON THE DITHER HAND; THE TRANSLITERAL MON'T MORK MITH A STRAIGHT PRINT. IT IS GODD FOR SMALL PROJECTS THAT DO NOT REQUIRE FORMATTER EXCLUSIVE FUNCTIONS SUCH AS FILL AND ADJUST. THE ADVANTAGE IS THAT YOU DO NOT NEED TO LOOK UP ASCII NUMBERS AND KEEP GOING TO THE FORMATTER TO PRINT EACH TEST COPY. TO CREATE THE ESCAPE CHARACTER AT THE START OF THE SEQUENCE, PRESS CTRL+U, PCTN+R, AND CTRL+U AGAIN TO TURN THE SPECIAL CHARACTER MODE OFF. YOU THE REST OF THE SEQUENCE MITH ACTUAL CHARACTERS, NOT ASCII NUMBERS.

USING THE PRINTER IS OFTEN MUCH ERSIER THAN YOU MIGHT THINK. I DUMPED THE "GENERAL NOTES" DOCUMENTATION FILE FROM MY FUNNELHES 4.30 DISKETTE TO THE PRINTER MITHOUT MODIFICATION AND IT COULD BE SENT TO THE PRINTER "MS IS". IT IS EVEN ERSIER WITH SOFTMARE THAT IS DESIGNED TO SUPPORT IT.

YOU DON'T HAVE TO HAVE IT PLL
BY JIM PETERSON
(REPRINTED FROM THE SPIRIT OF 99
NEMSLETTER)

DO THE CONVERSATIONS AT YOUR USER GROUP MEETING SOUND LIKE A COFFEE BREAK IN SILICON VALLEY? ARE YOU CONFUSED BY TALK OF GROWS AND GRAMS PUZZLED BY DISCUSSIONS OF MEGABYTES AND FRIGHTENED BY TALK OF BURNING EPROMS? MELL, JOIN THE OROMD, BUDDY - 50 RM I!

THERE ARE BASICALLY THREE TYPES OF PEOPLE INTERESTED IN COMPUTERS. FIRST; THERE ARE THOSE WHO USE A COMPUTER TO RUN PROGRAMS; TO ACCOMPLISH SOMETHING USEFUL OR JUST TO HAVE FUN. I BELIEVE THAT THOSE PEOPLE ARE STILL IN THE GREAT MAJORITY; ALTHOUGH HE DON'T HEAR MUCH FROM THEM.

THEN, THERE ARE THUSE MHO GET THEIR KICKS OUT OF WRITING PROGRAMS; OF CREATING SOFTMARE FOR OTHERS TO USE. THERE AREN'T TOO MANY OF THOSE LEFT IN THE TI WORLD.

AND FINALLY, THERE ARE THOSE WHO LIKE TO TINKER MITH THE

COMPUTER, SOUP IT UP, PLUG IN DOOMINKIES AND THIGHMAJIES, AND TALK IN THAT STRANGE LANGUAGE I MENTIONED MEDUE. I DON'T KNOW HOW MANY OF THOSE FOLKS THERE ARE, BUT THEY ARE CERTAINLY THE MOST KNOWLEDGEABLE, ACTIVE, AND INTERESTED, AND THEY TEND TO DOMINATE THE CONVERSATIONS AND THE PRINTED MATERIAL IN THE TI WORLD NOWADAYS.

I PRESUME THAT THOSE FELLOWS ALSO DO ACTUALLY RUN PROGRAMS ON THEIR SOUPED UP SYSTEMS. AND; SOME OF THEM MUST BE SKILLED PROGRAMMERS; BECAUSE MANY OF THEIR HYBRID HAROMARE CREATIONS WOULD BE USELESS MITHOUT SPECIALIZED SOFTMARE.

I'M VERY BLAD THAT THOSE PEOPLE ARE AROUND. UNGE IN A MHILE THEY INVENT SOMETHING THAT I ACTUALLY FIND USEFUL; AND THEY ARE A LIFESAVER WHEN MY EQUIPMENT BREAKS DOWN.

BUT, DON'T BE INTIMIDATED BY ALL THAT HIGH-TECH TALK, AND DON'T THINK THAT THE COMPUTER WORLD IS PASSING YOU BY. THERE ARE SO MANY THINGS TO DO WITH A COMPUTER THAT NO DAE COULD POSSIBLY FIND TIME TO DO THEM ALL. DO YOUR DWN THING AND DON'T WORKY ABOUT THE REST.

I HAVE OPERATED A TI SOFTWARE COMPANY FOR SEVEN YEARS, AND I MUSO SPEND A LOT OF TIME WRITING PROGRAMS, USING THE COMPUTER AS A WORD PROCESSOR, ETC. I PROBABLY SPEND MORE TIME ON MY TI THAN 98% OF THE USERS. SO, WHAT DOES MY EQUIPMENT CONSIST OF?

I HAVE A CONSOLE WITH THE EXTENDED BASIC MODULE PLUGGED IN; ATTACHED TO A P-BOX MHICH CONTAINS A TI DISK CONTROLLER; THO DOUBLE-SIDED DRIVES; THE 32K CARD; R5232 CARD; AND A HORIZON RAMDISK. ALSO PLUGGED INTO THE R5232 CARD IS AN OLD SEMINI 18% PRINTER SHD MM AVATEX 1208 BAUD MODEM.

I ALSO HAVE A SPEECH SYNTHESIZER, A PAIR OF TI JOYSTICKE, A TEIL MODULE AND AN COITOR ASSEMBLER MODULE, ALL OF WHICH I PLUG IN OCCASIONALLY WHEN I NEED THEM; ALSO, A CASSETTE RECORDER AND CABLE WHICH HASN'T BEEN USED IN A LONG TIME.

I USE TRITON'S SUPER EXTENDED BASIC MODULE BECAUSE IT HAS SOME EDITING FEATURES MHICH MRE USEFUL MHEN FROGRAMMING. IT ALSO HAS SOME LIMITED PLOTTING CAPABILITY MHICH I HAVE NEVER USED - AND HAVE NEVER HEARD OF ANYONE MHO HAS. IF YOU DON'T PROGRAM, IT MOULD HARDLY PAY TO SWITCH FROM THE DLD TI EXTENDED BASIC. I ALSO HAVE THE MECHATRONICS MODULE BUT NEVER GOT AROUND TO TRYING IT.

I HAD A GRAM KRACKER BUT SOON SOLD IT AND BOUGHT A RAMDISK INSTEAD. THE GRAM KRACKER HAS FANTASTIC CAPABILITIES IF YOU HAVE THE SKILL AND KNOWLEDGE TO TAKE ADVANTAGE OF THEM, BUT MOST USERS DON'T SEEM TO HAVE DONE MUCH BEYOND PERSONALIZING THE TITLE ECREEN.

I HAD A MIDGET, AND I BUESS IT IS BTILL COLLECTING DUST ARCUND HERE SCHEPLAGE. IT MAS A MUISANCE, AND SINCE I USE XBASIC 99% OF THE TIME I DION'T NEED IT. THERE ARE NOW MIDGETS OR "MODULE EXPANDERS" THAT ALLOW YOU TO ACCESS MORE THAN ONE MODULE FROM MITHIN A PROGRAM. THAT IS, IF YOU HAVE THE SKILL TO MRITE SUCH A PROGRAM. I DON'T KNOW THAT ANYONE HAS RELEASED SUCH PROGRAMS TO THE PUBLIC DOMAIN, BNO I CAN'T THINK OF ANY PRACTICAL USE EXCEPT TO ACCESS TEII SPEECH FROM XBASIC " BUT YOU CAN DO THAT MITH

THE RRM DISK IS THE DNE TOOL THAT I MOULD NOT BE MITHOUT. IN DROER TO ASSEMBLE MY TI-PD CATHLOG, I SCREENED OVER 4888 PROGRAMS, DEQUARED AND MODIFIED, MERGED IN HELP FILES, CONVERSIONS TO XBASIC AND LOADERS, AND ASSEMBLED OVER 488 DISKS OF PROGRAMS. IT TOOK ME HUNDREDS OF HOURS OF MORK " MITHOUT A RAM DISK IT MOULD HAVE TAKEN THOUSANDS OF HOURS AND I MOULD NOT EVEN HAVE ATTEMPTED IT.

THE RAM DISK ENABLES ME TO SMITCH FROM ONE PROGRAM TO MINDTHER MLMOST INSTANTLY, AND MITH JOHN JOHNSON'S BOOT PROGRAM I CAN JUST AS DUICKLY CATALOG A DISK OR VIEW A FILE. MINE HAS 256K OF MEMORY. I COULD BET ONE WITH MUCH MORE MEMORY BUT I SEE NO REASON TO DO SO; I HAVE EVERY PROGRAM ON IT THAT I AM APT TO USE EVEN ONCE A MONTH, AND IT IS ONLY HALF FULL. THAT LEAVES PLENTY OF ROOM FOR TEMPORARY STORAGE AND DOMNLOADING.

HOMEVER: IF YOU DNLY USE YOUR COMPUTER TO PLRY GRMES, DO M LITTLE MORD PROCESSING AND M BIT OF RECORD KEEPING; M RAM DISK MOULD BE MN EXPENSIVE CONVENIENCE RATHER THAN A NECESSITY.

SINGE MY RAM DISK IS ONLY HALF FULL, I MOULD CONSIDER A HARD DRIVE TO BE ABOUT AS USEFUL AS THE MAMMALIAN APPENDAGES ON A SMINE OF THE MASCULINE PERSUASION. IF I MAS RUNNING A BAS. SURE - OR IF I MAS DOING A LOT OF MORK MITH THOSE MEMORY GOBBLING GRAPHICS AND NEEDED EVERYTHING OULGKLY ACCESSIBLE.

MY DLD GEMINI PRINTER HAS BEEN A FRITHFUL WORKHORSE; ALTHOUGH THE HODD DVER ONE SPROCKET WHEEL HAS LOST ITS SPRING AND IS BEING HELD DOWN BY A LODP OF ELASTIC CORD. I MILL HAVE TO GIVE IT UP SOON, BECAUSE THE GEMINI PRINTER CODES ARE BECFOMING OBSOLETE AND I NEED TO BE HOLE TO WRITE AND TEST EPSON GODES. BUT, I MATE TO GIVE UP THESE 79 DEAT TYPEWRITER RIDGIDS OND START GETTING RIPPUD OFF ON \$2.50 CARTRIDGES! AS FOR A COLOR RIBBON, THE TEMPERATURE WILL HAVE TO GO MAY DOWN, DOWN UNDER, BEFORE I PAY FOR ONE DE THOSE.

ONCE IN A WHILE, WHEN SOMEONE SENDS ME A DOUBLE-DENSITY DISKFULL OF STUFF, I WISH I HAD A CORCOMP DISK GONTROLLER. OTHERNISE, WITH DISKETTES SELLING FOR A QUARTER OR LESS, IT MOULDN'T PRY TO CHANGE.

IF I EVER GET ARDUND TO SUBSCRIBING TO GENIE OR DELPHI.
IT MILL PRY ME TO GET A 2488 BAUD MODEM.

I CAN'T THINK OF BNYTHING ELSE I NEED, AND I DON'T MANT MART I DON'T NEED. IF I REBLLY MANTED TO PLAY JOYSTICK WHMES, I MOULD CERTAINLY GET SOMETHING BETTER THAN THE TI JOYSTICK. AND IF THAT MIDI INTERFACE CABLE BECOMES A REBLITY, I WILL BE BORELY TEMPTED.

I CAH'T SEE ANY ROVANTAGE IN PUTTING THE 32K UNDER THE HOOD) OR ANYPLACE OTHER THAN WHERE IT IS NOW. IF I USED SPEECH A GREAT DEAL: IT WOULD BE NICE TO GET RID OF THE SYNTHESIZER - BUT I KNOW DNLY ONE USER MND USES SPEECH THAT MUCH. I DON'T NEED A CLOCK BUILT IN BECAUSE I HAVE A MATCH ON MY MRIST. IF I REALLY DID A LOT OF SERIOUS AN 80-COLUMN CARD MOULD BE MONDERFUL. MRITING, MOULD HAVE TO BUY M MONITOR CAPABLE OF DISPLAYING 80 I CERTAINLY DON'T WANT TO GIVE UP COLOR: MND COLUMNS. HIGH\*RESOLUTION COLOR MONITORS COST MORE. I MOULD STILL MANT TO USE MY DLU MUNITUR FOR PROGRAMMING; BECAUSE I LIKE TO HRITE PROGRAMS FOR FOLKS MHO HAVE BASIC EQUIPMENT. DON'T HAVE ROOM ON MY COMPUTER DESK FOR THO MONITORS; SO I THINK I'LL PASS.

I'M M THREE-FINGER TYPIST, 50 M RRVE KEYBORRD MOULDN'T SPEED UP MY TYPING VERY MUCH. IF I REMLLY MANTED AN IBM KEYBORRD WND 80-COLUMN CAPABILITY, I MOULD THROM IN A FEW BUCKS MORE AND GET A GENEVE.

SO, WHAT ABOUT THE GENEVE? IF I HAD AN IRRESISTIBLE URGE TO RUN THE FEW GREAT PROGRAMS THAT HAVE BEEN WRITTEN FOR IT, OR IF I WANTED TO EXPLORE ITS GREAT PROGRAMMING CAPABILITIES, I WOULD GET DNE. BUT, I LIKE TO WRITE PROGRAMS FOR OTHER PEOPLE TO USE. WHEN SO FEW MAKE INTERESTED IN PROGRAMS THAT I WRITE FOR A COMPUTER THAT SOLD IN THE MILLIONS, WHY WOULD I WRITE PROGRAMS FOR A COMPUTER PURCHASED BY A COUPLE OF THOUSAND PEOPLE?

I MM SURE THAT MANY FOLKS WILL DISMGREE MITH WHAT I HAVE MRITTEN. THAT'S WHY I WROTE IT. I HOPE THEY MILL DISAGREE SO STRONGLY THAT THEY WILL IMMEDIATELY BOOT UP FUNLMEB AND COMPOSE A BLISTERING REPLY. BUT DON'T SEND IT TO ME " SEND IT TO YOUR NEWSLETTER EDITOR. THE

## CONTROL OF THE CS1 REMOTE BY ED HALL (ORIGINALLY PRINTED IN THE MANNERS NEWSLETTER)

Have you ever mondered if there might be a may to control the remote line which turns on and off the cassette motor? Well there is a way and it duesn't take too much work either. You on meed the 32K memory and for the following program the XBASIC cartridge as well. First Let's talk about why you would want to control other devices? With a little bit of circuitry and the following code a program could be written to turn on and off lights; or maybe a stered. Your TI could be used for security. The following sets up a link program that will allow user

CONTROL OF THE CASSETTE REMOTE CONTROL FOR CS1. BY DOING SO, RN XBASIC PROGRAM CAN BE USED TO CONTROL EXTERNAL ITEMS OTHER THAN THE CASSETTE RECORDER. THIS PROGRAM HAS TO BE LOADED AND RUN IN EXTENDED BASIC WITH THE 32K MEMORY EXPANSION OPERATING.

110 CALL INIT
120 CALL LOAD (16368, 79, 70, 70,
32, 32, 32, 36, 252)
130 CALL LOAD (16376, 79, 78, 32,
32, 32, 32, 36, 244)
140 CALL LOAD (8194, 37, 4, 63, 240)
150 CALL LOAD (9460, 2, 12, 0, 45,
29, 6, 4, 91, 2, 12, 0, 45, 30, 0, 4, 91, 203, 78)

ONCE THE PROGRAM IS RUN, CONTROL OF THE REMOTE IS MCCOMPLISHED BY THE COMMAND, CALL LINK("OFF") TO TURN OFF THE CONTROL AND CALL LINK("ON") TO TURN ON THE CONTROL. I HOULD EUGEET TRYING THIS FIRST WHILE WATCHING THE CASSETTE SPINDLE, WITH THE CASSETTE ON, TO SEE HOW IT OPERATES. ONCE YOU GET A FEEL FOR IT, YOU CAN WRITE A PROGRAM IN XBASIC TO PERFORM THE TIMING.



### **OPA Oasis Pensive Abacutors**

Specializing in 9900 based Software & Hardware Home of the Phoenix 2001 series of software

## MNOUNCING

## TI-IMAGE-MAKER

#### TINY-TIM'S DESCRIPTION:

The TI-IMAGE MAKER is an internal console expansion board designed for the TI home computer systems to upgrade the current video display system. The TAVY-TAN (as some have nick-named it) is based on the new V995& Video Display Processor chip, which is still softwarecompatible with the Ti's original TMS9918 chip, and is also compatible with the V9038 chip used in other thirdparty Ti video upgrades.

OPA has used state-of-art CAD/CAE designing and top design engineers to bring you the best video upgrade for the Ti in the smallest and most software-compatible package possible. The PCBoard containing the V9868, 192K of video ram, and a special ASIC device, plus a 25-pin monitor/expansion port with RGB video driver circulty, has all been installed on a 4\*\*2\* jayout. This board is designed to be installed inside the Ti console in place of the current TMS9918 chip. Nothing more than a few tools are needed to install TINY-TIM as the old video chip is sockstad, and only two jumper wires to connect.

After reading over the following features, specifications, and software included, we are sure you will find that TIMY-TIM is the best little thing for your TI since you first bought your TI console. For your convenience, an order form is attached to this AD, to help both us and you, in processing your order.

#### MANUALS/SOFTWARE:

- Step-By-Step User installation Guide.
- Recommended RGB monitor guide, with detail specs, and pin-outs for different monitors, to ease in interfacing TIM to your RGB monitor.
- Complete V9958 programming guide, with Assembly and BASIC suffwars examples.
- Graphic Demos displaying the power of TIM.
- Our own GIF viewer supporting the V9958.
- Three disks packed with fairware software which support the V9928/58 chips.

\$179

To order yours, fall out the attached order form today. Remembering to edd PST if in Ontario. And \$7.50 for shipping and handling.

Price is same in ILS. or CAN funds. Money Price is same in U.S. or CAN funds. Honey order or checks accepted Prices subject to change. For more into see order form ........

### T.I.M. / V9958 Specifications:

- Full 192K of video ram already installed.
- Full Analog RGB Video Monitor port.
- External Analog/Digital Expansion port for future OPA like digitizers, GENfock, etc.
- 80 columns with 24 or 26.5 lines of text.
- 256 by 192/212/384/424 graphics modes with each pixel being any one of 256 polors.
- 512 by 192/212/384/424 graphics modes with each pixel being any one of 16 polors out of the built-in 512 color palette.
- Capable of simultaneous display of 19,268 colors by using the YJK system display.
- Addresses can be specified by soordinates.
- Area move, line, search, and other commands.
- Vertical and Horizontal scroll functions.
- 32 sprites with up to 8 per horizontal line.
- Unique planar representation for 3D simulation.
- Plus all features of the original TMS9818 chip.

#### SPECIAL OPA ADDITIONS:

- Special ASIC chip designed by OPA to remove any software-compatible problems with old software written for old video chips. This allows TIM to be 180% hardware and the first yideo upgrade with no on-board software.
- NEW, a wall function to the CPU to allow future software to remove any un-needed delay loops.

| OPA at the following EST at (418)860-082 ing computer is important to the computer of the comp | g address, or phone w<br>5; (For more info see th<br>portant for this device, | equesting more informa-<br>g form, and then wall it to<br>s anytime from Bam-Ilpm<br>le box to the left, if order-<br>if unsure give us a call.)<br>Ontario Canada M4Y-2NS |
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| Name:<br>Address:  | <u> </u>  |  |
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| Chy:   |   | ZJp:   |
| Computer:T   | <sup>198/4</sup> _T198/4A _   | T199/4QIT199/8   |
| What_Order_  | _More Info _ Latest   | catalog (sine lotter)  |

| ARTICLE             |                  | PAGE |
|---------------------|------------------|------|
| METICLE<br>MELISTEN |                  | 1    |
| NOTES ON LASE       | R PRINTING       | 2    |
| POU DON'T HAV       | E TO HAVE IT ALL | 3    |
| CONTROL OF TH       | e CS1 Remote     | 6    |
| <b>30</b> 0         |                  |      |

#### (CONT. FROM PAGE ONE)

TI 99/4A. BUT TOM DDESN'T MANT TO KEEP RUNNING IT. HE MANTS TO USE A PC. THIS WILL ALLOW US TO NETWORK WITH DTHER TIERS AROUND THE GOUNTRY. DO YOU MANT TO START A SUBSCRIPTION TO THE 4A DISKAZINE BEERY MILLER (PUBLISHER OF 9640 NEWS) MANTS TO START? AND DO YOU HAVE SOME COMMENTS FOR THE PUBLISHER; OR ARE YOU LOOKING TO BEERY MILLER FOR SOME SUPPORT? HOW MOULD YOU LIKE TO PHONE YOUR PREPARED MESSAGE FILE TO THE LOCAL BBS NUMBER AND HAVE IT ECHOED BUTSIDE NEW ENGLAND?

