

(063) Winnipeg 8702, Paul



Newsletter

Inside

February newsletter

The Winnipeg 99/4 Users Group is a non-profit group. The Winnipeg 99/4 Users Group publishes a newsletter twelve months of the year in order for our readers to keep aware of happenings locally as well as nationally involving our computers. The content of the newsletter doesn't necessarily reflect the views of the group nor of its' members. With this in mind, the group cannot be held responsible for errors, omissions, or copy infringements, as presented in the newsletter. Unless otherwise stated, all articles may be republished in other newsletters provided that source and author are identified.

Next Meeting - Date : T.B.A Contact Paul
Time : T.B.A Deagner for
Place : T.B.A more information

Executive 1987:

President: Jim Bainard 334-5987

Treasurer: Bill Quinn 837-7758

Newsletter Staff:

Editor: Paul Degner 586-6889

Research: Rick Lumsden 253-0794

Research: Mike Swiridenko 956-1793

Publisher and Distributor: Dave Wood 895-7067

Correspondence:

NEWSLETTER EDITOR
WINNIPEG 99/4 USERS GROUP
1105 CHURCH AVENUE
WINNIPEG, MANITOBA
CANADA R2X 1G1

EDITORIAL:

Our last meeting was held at the home of Sheldon Itscovich. It seemed to be an average turnout for the meeting. It was a interesting afternoon as much software was demonstrated, the usual computerese chatting and Sheldon's robot amusing the masses.

I was informed by RYTE Data, publisher of R/D COMPUTING, that my subscription was about to expire. The past year of my subscription was extremely interesting with various hardware/software reviews, Bill Gronos articles, and some hardware hacking of the 4A. The only bad press I can say is that I have received a issue with four missing pages and haven't receive V17 of R/D COMPUTING. A subscription costs \$20 cdn and you can mail it to:

RYTE DATA
210 MOUNTAIN STREET
HALIBURTON, ONTARIO
CANADA K0M 1S0

MISCELLANIA:

Miscellaneous news and reminders.

The Ottawa Users' Group released another version of DM1000 3.5 for RAMdisk users. It is for those users that have their HRD in a higher CRU address than 1000 and have been having trouble accessing their HRDs.

Those RAMdisk enthusiasts who have been enticed by RAMBOSS may like to know a few revisions have been made by Art Green and hopefully soon we'll see what they are. VER_MENU fans will be happy to know that we have version 5 that clears up most of the incompatibility in version 3.

The following appeared in the November 1986 Ottawa newsletter and was written by Ron Albright.

The first book, "The Orphan Chronicles", was ABOUT you - the Texas Instruments 99/4A enthusiast. Now, there is a book BY you. The "Orphan's Survival Handbook" is the one-stop information source for the TI user.

The "Orphan's Survival Handbook" was both easier and harder to put together than was the "Orphan Chronicles". Easier in that it was already written! It is an anthology or material gleaned from literally hundreds of user group newsletters and hundreds of hours of downloaded files from bulletin board systems. It is the "Best of" you - the TI user group members, hackers, programmers, and newsletter editors. Why, then, was it difficult? There

was so much quality material available! The hardest thing was not finding enough material, it was deciding what I could leave out!

The "Orphan's Survival Handbook" is a 200-plus page compendium of TI material. It is filled with schematics, hardware hacks, programs, tips, and tutorials from across the country. Where to call, where and what to buy, and what to read. Moreover, it contains new, "never-before-seen" material from some of the brightest minds in the TI community (too numerous to name them all). Looseleaf, and three-hole punched, the manual can be placed conveniently in a binder for easy access. And updates (which are planned for registered owners) can be easily incorporated into your "Handbook" as new insights and developments become available. While I can't guarantee the "Handbook" will have "everything you ever wanted to know", I can assure you that it has most everything I could think of.

The "Orphan's Survival Handbook" is published and available from Disk Only Software (DOS), P.O. Box 4170, Rockville, MD 20850; (301) 369-1339 or call our toll free number at 800-446-462 plus 897335 at the tone (touch tone required). Projected retail price is \$16.95.

The third release of c99 just came in the mail to me from Clint Pulley. It has double dimensioned arrays and a few other perks. Clint noted the rumour about himself developing a "full" C for the Geneve is just that. He plans to do (if he can ever get the system software from Myarc) is to expand c99 to include float, #ifdef, goto, etc. But it will still be a "small" C.

Rumour has it Mechatronics will bring out a card for IBM compatibility to be placed in our PEBs.

It appears TIMELINE is no more. Trying their DATAPAC address and reports from CIM99 confirm my suspicions that they moved onto greener pastures.

Turning off the power to a second or third external drive while it is still connected up to the computer will make attempts to access or even just catalog the first drive ~~will~~ destroy the disk.

It has come to my attention from a former member that the FORTi MUSIC SYSTEM can now be purchased for a reasonable sum. They used to sell for over \$500 when the computer was in production and now they go for under \$100. One city that you may have no trouble finding them is in Minneapolis. What follows is a product announcement for the equipment which appeared in the Feb 86 TINS newsletter.

The FORTi MUSIC SYSTEM allows a TI99/4A computer to produce synthetic music that was never before possible.

Far more flexible than MUSIC MAKER, it allows control over the attack, sustain, resonance, and decay characteristic of generated sounds. It also allows generation of very low notes not possible from MUSIC MAKER or TI BASIC. In addition, percussion effects can be generated. To complete the list of new capabilities that the FORTi MUSIC SYSTEM adds to a TI99/4A, up to 12 separate voice lines may be generated on either 2 or 4 channels for playing on a stereo system.

The system consists of a PERIPHERAL EXPANSION SYSTEM BOARD with 4 TMS9919 sound generators, a music editor function, and a music player function. The editor and player functions are disk based 9900 assembler language programs which are accessed from a menu. To expand the flexibility of the system and reduce data input required to program FORTi, the player supports several unique features. Sequences of notes are encoded as text strings specifying the note letter and duration. The sound characteristics are encoded as text strings defining the amplitude envelope to be used. A conductor function then is programmed, using simple text strings, to assign an envelope and note sequence to any of the twelve musicians (voices), keep time, and are in specific times.

To use the FORTi MUSIC SYSTEM requires some music reading skills and very limited familiarity with computers. Hardware required is a TI99/4A, PERIPHERAL EXPANSION SYSTEM, 32K MEMORY EXPANSION, DISK MEMORY SYSTEM, the FORTi BOARD, EDITOR/ASSEMBLER CARTRIDGE, AND A STEREO SYSTEM WITH TWO AUX INPUTS.

The FORTi MUSIC SYSTEM is delivered as a peripheral board, a system diskette, and a manual which includes both tutorial and reference material. In testing the FORTi MUSIC SYSTEM we have found that those who already read music and simply work through the manual from front to back quickly master the system and begin developing their own music scores for the system. SPECIFICATIONS:

Voices - 12.

Output channels - 2 or 4.

Voice pitch range - bass - 1 octave below bass clef - treble - 1-1/2 octaves above treble clef.

Percussion voices - up to 4 combined bass and percussion voices may be defined within the 12 total voices.

Envelope control - amplitude updated 10 times/second - range 0-15.

Visual feedback - amplitude and pitch of all voices dynamically displayed current measure may also be displayed.

Editor display - 64 column (monitor recommended) by 16 rows.

OUT AND ABOUT:

Feature articles from the various newsletters we

received each month.

The following appeared in the September 1986 issue of "SIGPLAN Notices" (Volume 21, number 9):

Selecting a Programming Language Made Easy

Daniel Solomon David Rosenblueth

Department of Computer Science, University of Waterloo

Waterloo, Ontario, Canada N2L 3G1

With such a large selection of programming languages it can be difficult to choose one for a particular project. Reading the manuals to evaluate the languages is a time consuming process. On the other hand, most people already have a fairly good idea of how various automobiles compare. So in order to assist those trying to choose a language, we have prepared a chart that matches programming languages with comparable automobiles.

Assembler - A Formula 1 race car. Very fast, but difficult to drive and expensive to maintain.

FORTRAN II - A Model T Ford. Once it was king of the road.

FORTRAN IV - A Model A Ford.

FORTRAN 77 - A six-cylinder Ford Fairlane with standard transmission and no seat belts.

COBOL - A delivery van. It's bulky and ugly, but it does the work.

BASIC - A second-hand Rambler with a rebuilt engine and patched upholstery. Your dad bought it for you to learn to drive. You'll ditch the car as soon as you can afford a new one.

PL/I - A Cadillac convertible with automatic transmission, a two-tone paint job, white-wall tires, chrome exhaust pipes, and fuzzy dice hanging in the windshield. Various forms of stop lights, fog lights and backup lights are installed next to each of the many rearview mirrors. Full 4 track stereo, TV and CB radio are standard.

C - A black Firebird with flame paint job, a teenagers dream car. Comes with optional seat belts (lint) and optional fuzz buster (escape to assembler). All gauges use 1 letter displays and minimalism is the byword on this vehicle. You furnish your own steering wheel.

Pascal - A Volkswagon Beetle. It's small but sturdy. Was once popular with intellectuals. A built-in breathalyzer shuts the engine down if you don't pass its test.

Modula II - A Volkswagon Rabbit with a trailer hitch.

ALGOL 60 - An Austin Mini. Boy, that's a small car.

ALGOL 68 - An Astin Martin. An impressive car, but

not just anyone can drive it.

LISP - An electric car. It's simple but slow. Seat belts are not available, but a large supply of parenthesis are.

PROLOG/LUCID - Prototype concept-cars. Will probably get you too much attention if you do take it out on the highway.

Maple/MACSYMA - All-terrain vehicles.

FORTH - A go-cart with a backward facing driver seat.

LOGO - A kiddie's replica of a Rolls Royce. Comes with a real engine and a working horn.

APL - A double-decker bus. Its takes rows and columns of passengers to the same place all at the same time. But, it drives only in reverse gear, and is instrumented in Greek.

Ada - An army-green Mercedes-Benz staff car. Power steering, power brakes and automatic transmission are all standard. No other colors or options are available. If it's good enough for the generals, it's good enough for you. Manufacturing delays due to difficulties reading the design specification are starting to clear up.

The following four articles were taken from the January 87 Newsletter 979.

The following was captured from the Source:

ID:T13854 DATE: 15 Jan 1987 TITLE: TRITON/MG
COMPUTER SUBJECT: INFORMATION ABOUT THE SOON TO BE
RELEASED COMPUTER FROM TRITON AND MILLER GRAPHICS

TEXT:

Based on a tip from a friend in another part of the country (no one who calls here), I called TRITON today. Since I have no confidences to violate, I can freely pass along the information I obtained. I was able to confirm the following information through a discussion with a VERY reluctant salesperson. She volunteered no information at first, but responded to direct questions. TRITON is about to announce the \$499 TURBO XT computer, which is mode-switchable between the TI-99/4A and its own IBM compatible capability. It comes with 256K, expandable to 640K. It contains one DSDD drive, a parallel interface, composite and RGB ports, and 8 (?) card slots for IBM cards. It shares the keyboard, monitor, and to some extent, drives with the TI. I was unable to determine (so was the salesperson) whether it has an RS-232 interface built in, whether in TI mode it could use any of the 256K, and just how much the drives could be interused. THE PE box remains in place. The computer will be available in March. The salesperson had never heard of Craig Miller or Miller Graphics, she said. She did not know any more than she could get out of the literature in front of her.

IBM COMPATIBILITY FOR THE 99/4A:

Technical Info:

1. Two part system. A TURBO XT and a small bridge box that connects to the side I/O port on your 4A.

2. The TURBO XT is an 8 Mhz, 4.77 Mhz (switchable) mother board, power supply, XT style case, CGA color graphics card (both RGB and Composite), Floppy Disk controller, 1 half high DS/DD disk drive, Parallel port and 256K of Ram on the mother board. The mother board has sockets for up to 640K of ram. There are 8 expansion slots, two of which are used by the CGA card and the Floppy disk controller.

3. The bridge box has inputs for 4A Video in, XT Video in and outputs for XT Keyboard out and Monitor out. It also contains the software for Keyboard switching between 4A mode and XT mode and the software to convert the 4A key strokes into XT keycodes. It also has a pass through so you can keep your P-Box or other Peripherals hooked up.

4. Mode switching from 4A to XT can be done through Basic or X-Basic with CALL XT or by holding down FCTN CTRL ENTER on power up of the 4A.

5. Mode switching from XT to 4A is done by pressing FCTN CTRL ENTER.

6. The ONLY items shared by the two systems are the 4A keyboard and your current monitor or TV. Yes you can get 80 columns out of a composite monitor, but it is easiest to read with the color turned off in 80 mode. The XT allows MODE 40 which also gives you 40 column mode. Graphics programs, such as games and drawing programs work fine in 80 column and most other software that doesn't combine weird foreground and background text colors are also quite readable.

7. By not sharing the disk drives it is possible to do concurrent processing on the XT. Example: Go into XT mode, start up your COMMUNICATIONS software, log on to a BBS and start a down load. Now you can switch modes back to the 4A and do whatever you would like in 4A mode while the XT is still down loading from the BBS!!

8. We have tested this system on a number of 4A system configurations and have found it to be very compatible. Since it is an IBM clone it is also fully compatible with both IBM software and IBM HARDWARE. Yes, you can add ANY IBM cards you would like to the system.

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

General Info:

1. This system is being marketed by Triton Products Company in San Francisco, CA. They are also handling the production of the bridge boxes and they have contracted

for the Turbo XT clones to their specifications.

2. The system has a 30 DAY money back guarantee and a 1 YEAR parts and labor warranty.

3. The cost for this system (Turbo XT, Bridge box and cables) is 499.00 plus 19.90 for shipping and handling.

4. Their toll free number for additional info and/or a 6 page 4 color brochure on this system is 800-227-6900, Monday through Friday - 6AM to 6PM and Saturday 9AM to 4PM, Pacific Time.

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

As the Triton Brochure says: MAKE THE IBM CONNECTION TO YOUR T199/4A

Category: GENERAL_INFORMATION Subject: TURBO XT STUFF From: T13592 Posted: 17 JAN 1987 3:20 pm

I have ordered a Turbo XT from Triton and was able to get some additional info. The system comes with NO keyboard, the TI keyboard runs everything. The "bridge box" seems to intercept ONLY the keyboard, and passes this to the keyboard on the XT. There is apparently NO communication with XT bus traffic, hence NO data sharing at all, unless I am missing something

Most likely, the TI and XT video outs go to the bridge box, and one "monitor out" goes to the monitor. But, it of course will not run TI software on a RGB monitor, even though the XT has an RGB output as well as a composite. It may be possible to bypass this and run the XT on RGB. I ordered it primarily for the clone part, and confirmed that it is returnable in 30 days if I am dissatisfied. Score = one keyboard, one monitor, still two boxes. Close, but no cigar.

From Garth's BBS ((416)221-3578):

#115 35 15 Jan 87 12:12:43 From: Clint Pulley To: ALL REPLY TO #115 SEE ALSO #115

Subj: More on the Millers Graphics TI add-on.

I downloaded the official Triton press release from CompuServe this AM and was disappointed (but not surprised). What Triton is selling for \$500+(U.S. Funds) is a rather modest clone, but in place of the keyboard is a box which enables you to use your TI console as the keyboard. The release specifically states that the only items shared are the 4A keyboard and

monitor. Otherwise, there is no communication between the 4A and the clone.

In my opinion, this is a turkey. Anyone who has used a TI and a PC will readily realize that the small 4A keyboard will be almost impossible to use with a lot of current software (how will you key in ALT/SHIFT/F8??). I suspect that the first add-on most purchasers will get is a proper keyboard!! In short - if you want a clone, buy a clone.

A recent poll of 4A owners on a major US information network yielded the result that 70% are planning on buying the Myarc 9640, even if they have to wait a while longer. Hmmm

A DESCRIPTION OF THE GENEVE COMPUTER WITH RELEVANT COMMENTARY REGARDING WHAT IT MEANS TO US ALL

By Chris Bobbitt

At it's introduction, the Myarc Geneve computer will be among the most advanced computers available, and definitely the most advance "home computer" in history. It is more powerful than many minicomputers, and is available at a price that would have been unheard of 3 years ago. The following is a description of some of the capabilities of this remarkable device.

MICROPROCESSORS:

The TMS9995 CPU is 5 to 6 times faster than a TMS9900, the processor found in the T199/4A. This processor is only slightly slower than the 68000 CPU, yet is much simpler to use, more accurate mathematically, and contains a smaller instruction set. The advantages of this smaller instruction set is an article in itself. Suffice it to say that this technique is getting a lot of attention in programming circles.

MEMORY:

The standard Geneve Computer comes with 640K of RAM. This is expandable to 2 Megabytes using special memory expansion devices. A Myarc 512K card can be made to work with the Geneve with simple modifications. The Myarc 512K card memory may be directly accessed by programs.

GRAPHICS:

The Geneve uses the Yamaha 9938 graphics processor. The 9938 processor was designed by Texas Instruments and Microsoft Incorporated. The computer world will discover this chip and its capabilities much in the same way that they proudly announced 16 bit computing for microcomputers, years after TI had introduced the T199/4A. The graphics processor supports a variety of different modes for graphics and text.

TEXT:

The Geneve supports both 40 and 80 column modes. The 40 column mode is similar to that of the 99/4A, so none of your current word processing software is obsolete. However, text, foreground and background

colors may be any of 512 colors. 256 patterns are available for redefinition. One of the 80 column modes is the same, while another supports blinking text and multi-color text. Some limitations apply, but this permits programmers of the system to use many of the advanced human factors graphics techniques just now being developed. The use of color to impart information, much in the nature of peripheral vision can make word processing tasks as well as the initial learning process easier. Your Geneve computer will be able to keep up with this emerging technology for some time. Indeed the rich resources of the TI programming community may well result in some breakthroughs in graphics presentation. It is reasonably well known that some organizations in the community are working hard in this area. Since each of these various screens occupies very little memory of the 128K of standard Video RAM on the Geneve, up to 32 screens of text can be stored in memory at once. All of this information is directly addressable by the programmer. This bodes well to provide a rich environment for the system and applications programmer and thus the user.

GRAPHICS:

The Geneve supports every text mode of the 99/4A, as well as many new graphic modes that use much of the available memory. One of the more interesting modes supports a resolution of 256 by 212 pixels. Each pixel can be any of 256 colors. This mode also supports multi-color sprites. Each pixel row of the sprite can be any of two colors. Another interesting graphics mode supports 512 by 424 pixels with each pixel any of 16 colors. The on-screen display of a maximum of 16 different colors can be selected from a pallet of 512 colors. This mode is the same resolution as the Apple Macintosh computer, yet the system still finds the capability to support sprites, which the Macintosh does not. The 9938 chip has built in commands for line drawing, block moves and copies at hardware speeds. The benchmark for graphics systems, the Commodore Amiga, can only draw lines half as fast as the 9938 and rectangles nearly so. This bodes well for designers of presentation graphics and animation systems for everything from simple business presentations to television commercials!

INTERFACES:

The Geneve has a number of ports. For video, there is a port for an analog RGB monitor. The analog RGB monitor is more advanced than the digital ones used by the TI Professional Computer in that it allows virtually an infinite range of colors on the screen. Texas Instruments used the quality of the TI PRO monitor as a major component in its "Dare to Compare" campaign against the inferior IBM PC display system. An Amiga monitor displays the power of the Geneve quite well, and is readily available. However, an additional port permits the use of your existing TI99/4A video monitor.

Therefore, your current equipment is not obsoleted by the new machine, allowing you the luxury of leisurely getting the best price for your existing monitor and cutting the best possible deal for your upgrade. Indeed, some are already at work seeking to separate early dropouts in the Amiga world from their monitors. The Geneve also supports the Amiga mouse. Other monitors of the serial RGB type work, however, so do not pay extra simply because the name is on the front. Your 99/4A console can be used as a stand alone device with the purchase of the Geneve. The Geneve comes equipped with an IBM style keyboard. Other keyboards, costing from \$50 to \$500 will also work just fine. Since the Geneve replicates the functions of the console, you will only need the expansion system or one of the inexpensive expansion kits.

A multi-function port permits even more access to the Geneve. While labeled as being for the Amiga mouse mentioned earlier, it also can support sophisticated applications inputted from both exotic and common equipment. A video digitizer, for instance. Pictures taken from a video camera can be fed into the system. A digitizing tablet, which turns the Geneve into an elaborate data collection system or a component of a computer aided design/manufacturing/engineering (CAD/CAM/CAE) system is fully supportable, given proper software. Light pens are of course appropriate input devices as is information from a video cassette recorder or a video camera. Indeed, with external converter devices available on the market, you can pipe in television signals and enjoy crisp resolution and vibrant colors never seen before from a commercial television set, thus putting your RGB monitor on overtime.

DISK DRIVES:

The Geneve, when utilizing a Myarc Disk Controller will be capable of transferring up to 1.2Mbits/sec from disk to memory - or roughly twice as fast as any computer for less than \$10,000. When used in conjunction with the Myarc Hard Disk controller, this speed goes up to 5Mbits/sec (5 MILLION baud!), which is fast enough to do full-screen real-time animation with 10 screens displayed per second (as opposed to the average movie which displays 8 pictures per second to achieve apparent motion). Again, this capability is far beyond what comparably, and much higher priced machines are capable of doing. This is accomplished by utilizing an area of RAM in the computer (called 0 wait state Static RAM of which 8K is available in a standard Geneve) as temporary storage, along with the very modern WDS1772 disk controller microprocessor.

HARDWARE COMPARISONS:

To put this in perspective, compare the Geneve to other computers. The Geneve comes with 640K of RAM, equivalent to a fully configured IBM PC XT. This memory is expandable to 2 megabytes, twice the standard memory

of an Atari 1040 ST. The Atari ST, of course, is one of the more popular "non IBM machines" on the market. The Atari ST is the fastest microcomputer available in its price range.

The Geneve is roughly equivalent. The makers of the Geneve have gone to the extra expense of installing special purpose chips to handle, among other things, input from disks, lightpens, and other devices. In a similar vein, these special purpose chips handle output to screen, disk and elsewhere. And what about graphics? Again expensive special purpose redundancy pays off. Therefore, in graphics, input and output, the Geneve runs circles around the Atari ST. The Geneve deploys eight times as many colors as the Commodore Amiga. The Amiga is the superior machine in these respects. The Geneve, unlike the Amiga and the IBM PC AT, supports graphics with a 'true aspect' ratio. This is the superior form, and gives higher resolution through the use of square pixels, the tiny dots used to give your computer screen, even your television its color and appearance of depth.

The Geneve rates highly as a smoothly upgradeable machine. It obviously will be compatible with the newly developed Myarc disk controller card. In disk drives supported, the Geneve with the Myarc disk controller card will defeat the IBM PC AT. Four 20 megabyte hard disks can be supported with this upgraded configuration, not to mention that the same scheme will control four (or less) double sided QUAD density floppy drives of the conventional 5 1/4 inch size. The drives that use the new plastic bound three inch disks are supported as well. Knowing the market, the Geneve makers realised they needed a system that would obsolete gracefully, as has the 99/4A.

Features of the 99/4A which still challenge the marketplace are retained. An example is the 99/4A's well known device independant operating system. Virtually any peripheral can be attached, unlike almost all other computers including those costing thousands. Device independence is a feature you (the 99/4A owner) have purchased years ago and one that should not be discarded in the name of progress. Therefore, the Geneve is superior to most every microcomputer in graphics, speed, memory capacity, and in versatility.

A full-blown Geneve system would contain a Geneve computer, a NDS model hard and floppy disk controller, a TI RS232 card, plus a 3 slot expansion kit, linked to two full-blown 720 kilobyte floppy disk drives and a high resolution serial RGB monitor. If bought all at the same time, using all new components, your system would cost less than \$1,000. One of the finest features of such a system is that it can and probably should be acquired incrementally, particularly if you currently own an expanded 99/4A system. For a machine of this class, this is an incredible price. The Atari 1040 ST is well known as the first computer that cost less than One dollar for

each one thousand bytes of memory, new. The Geneve may be the first machine to drive that cost down to fifty cents per thousand.

SOFTWARE:

The Geneve will come bundled with a new version of Extended BASIC on disk which is fully 6 times faster than TI Extended BASIC. Also included will be a MS-DOS like operating system. The package is called "DOS like" because the commands used will be very close to MS-DOS. However, the internal workings of the system will not resemble nor be compatible with MS-DOS. This will be a boon for those who have had to struggle through learning MS-DOS at work or on another machine. In the package also will be an 80 column version of TI-Writer with a larger memory.

A number of other products specifically designed for the Geneve will be available at or near the release of Geneve. A number of 'C' compilers will be available by all expectations. C is a very popular language on 32 bit machines and is now beginning to appear in microcomputers in the last few years. Some business software will be readily available. UCSD Pascal, actually a language within its own operating system, will also be standard. Software developed on many machines, including the IBM PC, Apple, and others which use this system will run without modification on the Geneve.

The new Geneve software will allow users to set up directories as an aid to manage multiple files. A software RAMdisk will also be available, where the user can deal with a notional or in-software emulation of a disk. All interaction on this RAMdisk will be in memory, thus will operate at extremely high speed. Print spoolers will be available. People still pay \$200 for print spoolers, which merely are hardware systems, now software, that fool both the computer and the printer. The printer is wired to signal the computer to stop sending data while the printer repositions the print head, or rolls up the platen. Meanwhile the computer is burning up thousands of cycles waiting for printer to get ready to receive data again. A spooler is nothing but an ever ready printer to the computer and a patient computer to the printer. The job is transmitted to the spooler in a second or two and you are ready to go again while the printer chunks away.

TI BUSINESS MACHINES:

The Geneve is assembly language compatible to the TI mini computer world, and awaits a member of that community to make that software run.

There is one silver lining in the "Perils of Pauline" development path of Geneve, so fraught with delays. Time to think about the new arrival has been purchased with the sweat of the developer in a process which would normally have been extremely secret and quickly sprung on the unsuspecting community with little warning.

Handwritten note: 200-1000

NEW OFFERINGS:

One new company has been started specifically to develop Geneve software. A true multi-tasking operating system is among the goals of this firm. Multi-tasking to a user means that several programs can be run at the same time. Multi-tasking is at the heart of such programs such as Sidekick for the IBM where various panels, or windows are pulled down to allow notes and other activities to take place. Yet another goal for this new developer is a macro-assembler. Macro-assemblers are small utility programs that can be strung together to achieve a variety of goals. In the mini computer world, programmers adroit in the macros of their particular machine rarely had to write much original code to achieve powerful results. This capability will soon arrive for you with the Geneve.

Soon after shipments of the Geneve begin, BASIC and Pascal compilers will be made available by this startup firm. A compiler may not be a familiar concept to all who read this, though it is simple to pick up. When your 99/4A receives the run command, it wakes up and "interprets" the program you have told it to run; Every single time. You probably are aware that assembly language is faster. The reason for this is that it is closer to machine language and therefore requires minimal "interpretation." BASIC, however, along with a host of other languages is not that close to machine language. Easier to remember and use, but requiring some form of intervention. The interpreter is often used for BASIC. While it gives instant feedback, an interpreter is slower than a compiled program which is a machine or assembly language program. You write the program as usual, then run the program through a compiler. That program compiles a collection of assembly language or machine code commands. That 'compilation' is what you then use when you need that program. The compilation is much faster, almost indistinguishable from a program written in assembly language. The 99/4A only recently got an example of a compiled BASIC and a compiled C. If you have yet to experience the utility of compilers, you will certainly enjoy the Geneve. The increased memory will, of course, make these compilers superior in performance to anything currently on the 99/4A.

NEW SOFTWARE:

A host of Geneve-specific programs are to come. Lou Phillips of Myarc has estimated that four to five years of effort will be needed to complete the full sweep of programs needed to truly tax the Geneve system and the chips associated with it. During that period, if a new design comes along, the card, not the entire structure can be modified. Almost immediately however, terminal emulators, word processing programs that support such sophisticated typesetting concepts as proportional spacing will begin to arrive. Potential new products for the Geneve include databases, spreadsheets, and paint

programs.

The Geneve is one of the most remarkable computers ever introduced. A technical marvel, not a ripoff or anyone's clone. We are indeed fortunate that it has been designed to take advantage of the tremendous capability of the TI99/4A and its users. It should appeal to everyone, either as a first, a second, or third computer.

The following article was taken from the RAMblings section written by Gordon Bradshaw in the December 1986 Calgary Newsletter.

I ran across a interesting item in the CHICAGO TIMES about updating the TI disk controller to 12 ms from 20 ms head stepping. I am ordering the kit and will let you know how it turns out when I have it installed. Using Advanced diagnostics I tried using the 12 ms head stepping to initialize a double sided disk and it saves approximately 15 seconds so if a program does a lot of disk accessing hopefully there will be a substantial time saving. This mod will not work on PHP 1250 (Shugart drives). Anyone wanting to go ahead with this can order it from:

HANK ELLERMANN
4023 N. ODELL AVE.
NORRIDGE, IL
USA 60634

The cost is on \$8.00 and to order send a mailer and return postage.

The following article appeared in the August 1986 MAD HUG Newsletter.

External Disk Drive Power Supply

By Ken Gladyszewski

When I bought a case and power supply for an external disk drive, I was amazed at how simple and uncomplicated the power supply was. I present the circuit and parts list here for those wanting to build their own, because they already have most of the parts. These parts are expensive and total \$21 (without a recommended on-off switch and fuse). Better and less expensive complete power supplies or these same parts can be purchased from a surplus house by mail. Sheet metal enclosures can be obtained similarly. Any power with 12 volts DC @.5 amps min, and 5 volts DC @1.0 amps min. should power most any single full height drive.

See the schematic, elsewhere in this newsletter, for further details.

REVIEWS:

This column presents reviews of materials that may be of interest to the reader. The views expressed are the opinions of the reviewers, exclusively.

A Review of the Foundation 128K memory card by Rick Luusden

Well another year gone by and the old TI is still going strong. I hope everyone is still putting their TI's to good use and not gone and played follow the leader over to Big Blue country. It is still amazing to see the quality of hardware and software being produced for this orphan. On the subject of hardware, I have a short review for all of you today on a card that is no longer being produced. It is the Foundation 128K memory card. There have been many reviews in the past on the card but I don't believe any have graced our newsletter so for all you more recent TI'ers that are still upgrading, this may be of interest to you.

About a year ago a fellow TI friend was having some auto trouble and asked if I would help him out. I said sure and we proceeded to fix his car. He offered to pay for my services, but I said that it was not worth that much to bother paying me. He then said that if I liked he would trade me his 128K Foundation card for my 32K TI card. He said that he had really found little use for it other than the fact it was a memory expansion. I was quite leery about the card because I had not heard too much about it and was worried about compatibility with some programs, especially assembler. I left the deal at that for a couple months, and then found in the pages of Computer Shopper, a salvage company that was clearing out TI 32K cards for \$25. I promptly ordered one and soon after received it in the mail. This was my way out I thought. If I found some problems I always had a back-up, so I went and made the trade.

All my worries were unfounded. The card works with virtually everything I've tried. The only problem I have found is with some obscure CALL LOADS. These are of little consequence because it is very rare to find them in any programs. (Except for the CALL LOAD that acts like a "quit". This one works fine.) After reading the 'concise' manual that came with the card, I tried out the other memory banks. To say the least, they are awkward at best to use for anything other than files. If this is where your interest is on your computer the card operates very well by itself in this type of operation, but it was not what I had in mind. A little brochure that also came with the card mentioned a DSR option to allow the card to operate as a RAM DISK. Now this was what I was after. I fired a letter off to Foundation, hoping to hear back, but I knew the company had recently gone out of business. Well a couple weeks later my worst fears were realized

when I got the original letter back with some strange note about no longer in business. That is when I found out about a program from Quality 99 Software that would do exactly what I wanted. The program is called QS-Ramdisk and if you DO NOT have the DSR option, the program is all you need. But if you do have the DSR option you also need the QS-Ram Chip and program to use the card as a RAM DISK.

I ordered the program after phoning and talking to the owner and received it about one week later. Again, another piece of software that works EXACTLY as it says. The Ram Disk works perfectly and the disk even included a catalog and copy program to use with the Ram Disk. That is the only problem I have had. The Foundation card is wired as such to respond as DSKX. This effectively negates the use of most Disk Manager programs, hence the reason for the catalog and copy programs included with the Ram Disk program. I sent a letter off to QS 99 and I was told that there was no way to change the name the RD responded too because it was hard wired into the card. Oh well, it is a little awkward to use the copy and catalog programs, but it is better than nothing.

I had also heard rumours that this card might be compatible with the new Myarc XB level IV. I sent a letter to Myarc and received a letter back from Lou Phillips saying that yes the Foundation Card would work fine with the new Extended Basic but I would need a new PROM that they would supply with the XB if I ordered it. All this would cost \$74.00 and to top that he said the new PROM chip already has the RAM Disk software on board so when I was not using the XB IV (which requires a minimum of 128K) the card would act as a Ramdisk.

As you can see, I am quite happy with this card. The price was perfect and I have had no problems at all with it. The card is well built and fits the PEB like a glove. Although it is no longer being produced, it is an excellent value for those that are just beginning to expand their system. It cannot be ordered new, but I am sure you will find many for sale in the computer section of the newspaper or the most likely spot in the Classifieds in Micropendium. I don't know why someone would want to get rid of one unless he were selling out but don't be afraid to buy an expansion system if it does have one of these cards in the box.

I hope that anyone who is reading this can understand my ramblings. It is now very late on a week night and this is about as fluent as I get at this time of the morning. Hope it is of some help to someone and any further questions, just see me at the next meeting, or call me at the number on the front of the newsletter.

HELPFUL TIPS!

(FOR THE USERS, BY THE USERS!)

This column features tips appearing in the various

newsletters we receive each month. WARNING: These hints and tips are to be used at your own risk!

The following appear in CIM99 2.3 crediting A9CUG newsletter and John Willforth of WPUG.

Disk Drives:

Manufacturer: Model: Height: Sides: Power Req:

- MPI 51 FULL SINGLE FULL
- MPI 52 FULL DOUBLE FULL
- SHUGART SA-400L FULL SINGLE FULL
- SHUGART SA-405L FULL DOUBLE FULL
- SHUGART SA-455-2 HALF DOUBLE HALF
- TEAC FD-FFA HALF SINGLE HALF
- TEAC FD-55B HALF DOUBLE HALF
- TANDON TM100-1 FULL SINGLE FULL
- TANDON TM55-1 HALF SINGLE FULL
- TANDON TM100-2 FULL DOUBLE FULL
- TANDON TM55-2 HALF DOUBLE FULL
- CDC 9409 FULL DOUBLE FULL
- CDC 9428 HALF DOUBLE FULL
- BUME 142 HALF DOUBLE FULL
- PANASONIC/MATZUSHITA JA551-2N HALF DOUBLE FULL
- MITSUBISHI 4851 HALF DOUBLE FULL
- TOSHIBA ND04D HALF DOUBLE HALF

Note: Where the drive is half height and the power is also half, two drives can "generally" be used in place of one of the full height drive. There are more, than these of course, but in general those that are compatible with Apple, Commodore and Atari, will not work on the TI99/4A those that will work on the P.C.'s, are good. (Exception would be those that are 96 T.P.I., or say 80 track drives). Good hunting!!!!

(Ed. Note: 80 track 5-1/4 drives will work with the TI DC but they are best suited for the Myarc DC with the FDC80 Eprom. 3-1/2 drives will work too.)

Assembly Soothing Sounds

By Sheldon Itscovich

As we know from Extended Basic the lowest frequency is 110 Hertz and the highest is 44,733. We can also produce 8 noises. There are still 3 voices and 1 noise. The duration ranges from .001 to 4.25 seconds.

Now we have to construct a thing called a "SOUND TABLE" in order to produce any sounds in assembly. The table contains the following data.

1. The number of bytes to load into the sound register.
2. The voice number and the frequency.

3. The volume of a voice.
4. And the duration of the sound.

Now lets look at each in turn.

We will temporarily skip the number of bytes to load as this will depend on what is to be loaded so we must fill in this space last.

Lets look at how the values for the 3 voices are obtained, and the volume that we can assign to each.

DESCRIPTION	HEX VALUE
=====	
	:
TONE GENERATOR #1	: >8?,>??
	:
VOLUME #1	: >9?
	:
TONE GENERATOR #2	: >A?,>??
	:
VOLUME #2	: >B?
	:
TONE GENERATOR #3	: >C?,>??
	:
VOLUME #3	: >D?
	:
NOISE GENERATOR	: >E?,>??
	:
NOISE VOLUME	: >F?

Each frequency has a hex code that we will plug into the fundamental sound data statement to produce the desired sound. I think the best way to show this is with an example.

Say we want to produce the frequency 392 Hertz for 1/2 second at volume level 2. The data statement will look as below.

```
BYTE 3,>8D,>11,>91,30
```

Now lets pick it apart 1 byte at a time. 3 is the number of bytes to load into the sound register.

>8D is the voice and part of the frequency. Code 8 is for generator #1. Now >11D is the code for 392hz, but when we plug it into the statement we take the D off of the end and put it after the voice number. Then we put the rest(>11) after it.

Next is the >91. 9 is for the volume of voice #1 and 1 is the voice, 0=max, E=min, and F=off. Then the

duration 30/16th of a second=1/2 sec.

So to produce 3 tones at the same time, the sound table of the following Extended Basic CALL SOUND statement:

```
CALL SOUND(167,330,2,523,10,740,20)
```

Would look like this.

```
DATA BYTE 9 *NUMBER OF BYTES
*      *IN THE SOUND TABLE
BYTE >83,>15 *FREQ VOICE #1
BYTE >A6,>0D0 *FREQ VOICE #2
BYTE >C7,>09 *FREQ VOICE #3
BYTE >91 *VOL V#1
BYTE >B5 *VOL V#2
BYTE >DA *VOL V#3
BYTE 10 *DURATION 10/60 SEC
```

or all on one line.

```
DATA BYTE 9,>83,>15,>A6,>0D,>C7, >09,>91,>B5,>DA,10
```

9 bytes to load, each byte of data is separated by ",", but the duration at the end is not counted.

```
Voice #1=>A Frequency >153 = 329.63
Voice #2=>A Frequency >0D6 = 523.25
Voice #3=>C Frequency >097 = 739.99
```

```
Volume #1= >9 and 1 volume level of >1
Volume #2= >B and 2 volume level of >5
Volume #3= >D and 3 volume level of >A
```

and finally 10 for 10/60th of a second or 1/6th.

Now you may well ask how do I get that damn frequency code?

Well there is a list in the Editor/Assembler Manual for most of the generally used musical notes. But to find the code for tones that are not really notes we use a math formula to calculate it. Don't ask me how this formula is made up because I don't care!!! It works.

111860.8 / Frequency in decimal = Frequency code in decimal.

Then the decimal number is converted to Hex.

```
E6. 111860.8 / 523.25 = 213.8
```

Rounded up it is 214 which is >0D6. It is the note of middle C.

Ok now we have this data statement where do I stick it you ask? Well there is a standard format for loading your statement.

```
LI R0,>1000
* BUFFER IN VDP-MEM USED FOR SOUND.
LI R1,DATA
* YOUR TABLE WILL BE LABELED WITH A LABEL AND THIS
IS LOADED INTO R1.
LI R2,??
* TOTAL # OF BYTES IN YOUR SOUND TABLE. HERE YOU
COUNT EVERY- THING,BYTES TO LOAD, VOICES,VOLUMES,AND
DURATIONS.
BLWP @VMBW
LIMI 0
LI R10,>1000
MOV R10,@>83CC
SOCB @ONE,@>83FD
MOVB @ONE,@>83CE
LIMI 2
```

Ok lets look at my sample CALL SOUNDS/S.

```
*****
* SOUND EXAMPLE...
* PLAYS A SIREN SOUND SIX TIMES...
*****
DEF SIREN
REF VMBW
MYWS BSS 32      WORKSPACE AREA.
SOUNDT EQU >1000
T EQU 5          DURATION CONSTANT
ONE BYTE >01     BYTE VALUE= 1.
LINE1 TEXT 'FINISHED CYCLING'
EVEN            ALIGN TO WORD BOUNDARY.
*****
SIREN LWPI MYWS  LOAD WS.

LI R4,6         PLAY SIREN 6 TIMES.

MORE LI R0,SOUNDT  MOV THE SOUND DATA
LI R1,SDATA     TO THE VDP.
LI R2,320
BLWP @VMBW

LIMI 0
LI R10,SOUNDT  LOAD TABLE ADDRESS
MOV R10,@>83CC  TO THE SOUND
SOCB @ONE,@>83FD
MOVB @ONE,@>83CE
LIMI 2

LOOP2 MOVB @>83CE,@>83CE  WAIT UNTILSOUNDS
JNE LOOP2      HAVE BEEN PLAYED.
```

```

DEC R4      PLAYED SIX TIMES?
JNE MORE   NO!-GO FOR MORE.

```

* DISPLAY A MESSAGE.

```

LI R0,300
LI R1,LINE1
LI R2,16
BLWP @VMBW

```

KEEP JMP KEEP LOOP FOREVER.

* SOUND DATA TABLE...

```

SDATA BYTE 3,>80,>0E,>91,T

```

* COMMENTS ARE IGNORED BY THE ASSEMBLER.

```

BYTE 3,>8B,>0D,>91,T
BYTE 3,>87,>0D,>91,T
BYTE 3,>82,>0D,>91,T

```

* BUT THEY HELP TO BREAK UP THE MONOTONY

```

BYTE 3,>8F,>0C,>91,T
BYTE 3,>8B,>0C,>91,T
BYTE 3,>8B,>0C,>91,T
BYTE 3,>84,>0C,>91,T
BYTE 3,>81,>0C,>91,T

```

* OF A LONG SEQUENCE OF DATA VALUES.

```

BYTE 3,>8E,>0B,>91,T
BYTE 3,>8A,>0B,>91,T
BYTE 3,>87,>0B,>91,T
BYTE 3,>84,>0B,>91,T
BYTE 3,>82,>0B,>91,T

```

*

```

BYTE 3,>8F,>0A,>91,T
BYTE 3,>8C,>0A,>91,T
BYTE 3,>8A,>0A,>91,T
BYTE 3,>87,>0A,>91,T
BYTE 3,>85,>0A,>91,T
BYTE 3,>82,>0A,>91,T
BYTE 3,>80,>0A,>91,T

```

* COMMENTS ALSO SERVE AS A MEMORY AID

```

BYTE 3,>8E,>09,>91,T
BYTE 3,>8B,>09,>91,T
BYTE 3,>89,>09,>91,T
BYTE 3,>87,>09,>91,T
BYTE 3,>85,>09,>91,T
BYTE 3,>83,>09,>91,T
BYTE 3,>81,>09,>91,T

```

* IN THAT THEY HELP YOU TO RECALL WHAT

```

BYTE 3,>8F,>08,>91,T
BYTE 3,>8E,>08,>91,T
BYTE 3,>8C,>08,>91,T
BYTE 3,>8C,>08,>91,T
BYTE 3,>8E,>08,>91,T
BYTE 3,>8F,>08,>91,T

```

* THE PROGRAM IS ABOUT, WITHOUT HAVING

```

BYTE 3,>81,>09,>91,T
BYTE 3,>83,>09,>91,T
BYTE 3,>85,>09,>91,T
BYTE 3,>87,>09,>91,T
BYTE 3,>89,>09,>91,T
BYTE 3,>8B,>09,>91,T
BYTE 3,>8E,>09,>91,T

```

* MENTALLY TRANSLATE THE SOURCE CODE

```

BYTE 3,>80,>0A,>91,T
BYTE 3,>82,>0A,>91,T
BYTE 3,>85,>0A,>91,T
BYTE 3,>87,>0A,>91,T
BYTE 3,>8A,>0A,>91,T
BYTE 3,>8C,>0A,>91,T
BYTE 3,>8F,>0A,>91,T

```

* INTO THE IDEA THAT IS A PROGRAM.

```

BYTE 3,>82,>0B,>91,T
BYTE 3,>84,>0B,>91,T
BYTE 3,>87,>0B,>91,T
BYTE 3,>8A,>0B,>91,T
BYTE 3,>8E,>0B,>91,T

```

* HAPPY PROGRAMMING!

```

BYTE 3,>81,>0C,>91,T
BYTE 3,>84,>0C,>91,T
BYTE 3,>8B,>0C,>91,T
BYTE 3,>8B,>0C,>91,T
BYTE 3,>8F,>0C,>91,T

```

* PROGRAM BY: SHELDON ITSCOVITCH

```

BYTE 3,>82,>0D,>91,T
BYTE 3,>87,>0D,>91,T
BYTE 3,>8B,>0D,>91,T

```

* COMMENTS BY: MIKE SWIRIDENKO

```

BYTE 3,>80,>0E,>91,T
BYTE 1,>9F,0

```

TURN SOUND OFF.

END SIREN

MICROpendium:

The following appeared in the January issue of MICROpendium.

European users use ingenuity to cope with shortages, high equipment costs

By Chuck Kurzhal

When I first heard word of the Consumer Electronics Show in Cologne, West Germany, I thought it would cover numerous brands of computers. For this reason, I took along a couple of friends, one a C-128 owner and the other an Atari 1040ST owner. The three of us were surprised when the show turned out to be for the TI-99/4A

only, but I was elated in that I would get a chance to expose them to the TI and its great capabilities. By the end of the show, neither of them was bored.

Upon arrival at the Chorweiler Gynasium in the northern part of the city and entering the building, I had a slight sinking feeling. Only a few people were waiting in line to get into the room in which the show was being held.

My first assumption was that the TI-99/4A was becoming less popular than I had heard. Upon further investigation, I found that the showroom was actually packed to the maximum with people. We had arrived an hour early and the morning had been reserved for system set-up and for the students at the school to get some time on the machines.

I asked to see Mack McCormick and was happily steered to his location. I had never met Mack but we talked on the phone and written back and forth, so it was quite a pleasure finally to meet him. Mack, in turn, introduced me to Lou Phillips, Paul Charlton, Heiner Martin (editor of the German publication TI Revue and also the head programmer for Mechatronics) and Karl Trissl, the right-hand man to Lou Phillips. I had just met some of the great names in the TI community and was fully impressed by each one of them!

After I asked Lou about the new 9640 computer, he, with a beaming smile, handed me a card and pointed out the chip he had waited for and finally received from Japan. As I watched, the card was inserted into an expansion box and Trissl ran it through its paces, using a short graphics routine. Through use of a mouse, he selected a color, plus a point on the screen, and drew squares and circles with amazing precision. Following this he loaded another program which randomly displayed a multitude of colored shapes on the screen, creating a kaleidoscope pattern running at blinding speed. Impressive? Yes!

Though the new computer was the main star of the show, a great deal of credit for the success of the TI-99/4A must go to the TI users in Germany, Holland and Belgium. Europe is greatly lacking in available hardware and software, and that which is available is extremely expensive in comparison to U.S. prices. Much of what the European users need could be obtained through mail order from the U.S., but the costs of shipping, tax and customs makes this route expensive also. A good example is the price of used cartridge software I saw being sold at one of the booths. Cost per cartridge averaged 40 DM (German Marks) to 95 DM; even at a rate of 2 DM per U.S. dollar, this means that they cost \$20 to \$45 each! The costs are equivalent for Holland and Belgium, too, so it does no good to try another country in Europe.

The Europeans have found an alternative route, in that they have literally taken TI-99/4A consoles and peripherals apart, studied the workings of the system and built what they needed at a fraction of their retail

cost. Observing some of the setups, I saw "home made" plotters, PEBS, disk drive cases with 3-1/2 inch disks, hard disks, GRAM cartridges, RAMdisk expansion cards and IBM peripheral expansion cases converted to TI PEBS. Mind you, these were not "off-the-shelf" pieces of equipment (other than the empty IBM cases) but were built through the ingenuity and expertise of the German, Belgian, and Dutch users. I spent the remainder of the afternoon trying to avoid stepping on my lower jaw each time I went from one display to another.

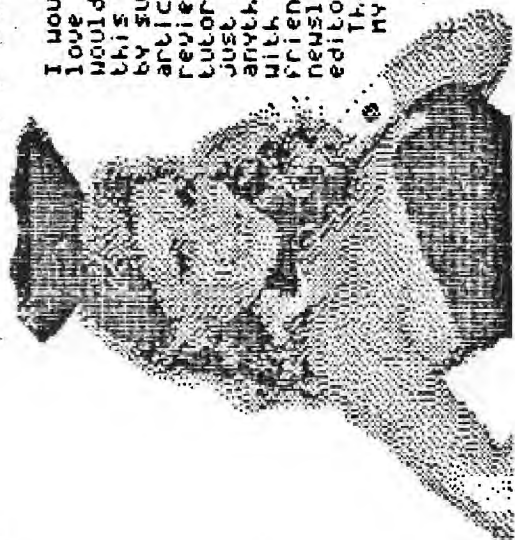
The two persons who accompanied me, and who own the "other" brands of home computers, were equally amazed that there was still such a following for the TI-99/4A. Even though I apologized for dragging them along under what they considered false pretenses, I was glad they came along and saw what is in the near future for our "little orphan."

The TI-Faire at Cologne (in German, Koln) was organized by Mike Heuser of the TI99ers Workshop, Rheinland, and I feel that he deserves a huge round of applause for the great success of the show. For those of us stationed in Europe, this type of function proves that we are not out of touch with what is happening with the TI-99/4A but are, in fact, a part of the whole process.

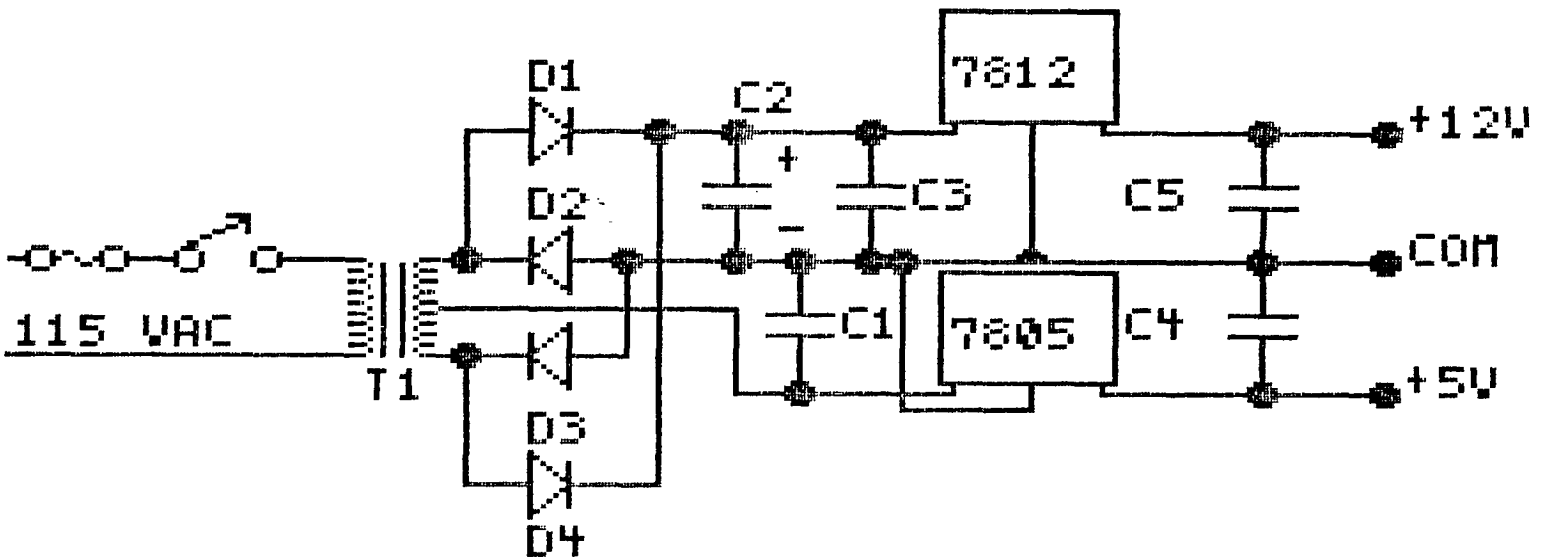
(I did not get to see the demonstration of the Geneve computer during the high point of the show--there just wasn't room enough to get close!)

MICROpendium is a monthly magazine devoted to the TI-99/4A. Subscription from Canada costs \$20.50 US. Mail to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

I would just
love it if you
would support
this newsletter
by submitting
articles, and
reviews, and
tutorials on
just about
anything
with TI to my
friend, the
newsletter
editor.
Thank you,
my darlings!
Julie



EXTERNAL DISK DRIVE POWER SUPPLY



NOTE: REGULATORS 7805 & 7812
MUST BE MOUNTED ON
SUITABLE HEAT SINK!

	QTY	DESCRIP.	PART NO.	COST	
T1	1	TRANSFRMR	2731515	\$6.99	
C1, C2, C3	3	CPCTR 16VCE02A	2721020	\$2.49	EACH
C4, C5	2	CPCTR 100UF035V	2721016	\$0.79	EACH
D1-4	4	3 AMP BARREL DIODE 1N5402	2761143	\$0.89	FOR TWO
7812	1	FIXED REG 12V	2761170	\$1.59	
7805	1	FIXED REG 5V	2761171	\$1.59	

Artwork By

Paul Desner

Where's the Data?

FIND OUT FAST WITH FIRST BASE

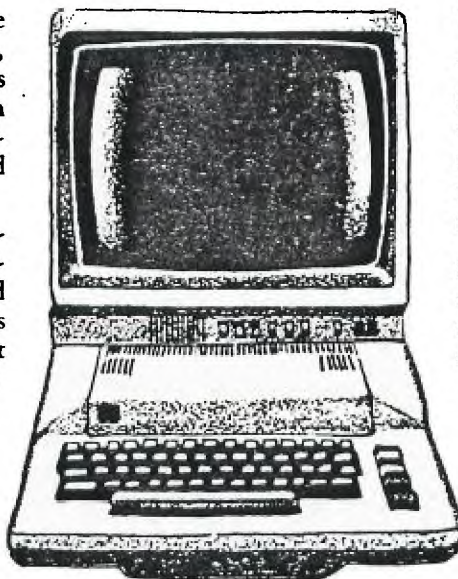
You can now browse from one Manitoba data base to another, quickly and easily. All you need is your computer terminal, a modem that lets your computer communicate over your phone line...and First Base.

First Base is a new access-to-information service from MTS. You simply enter an identification code and a password, and a list of data bases appears on your screen. You select the one you want to access, with only the touch of a key. There's no complex log-on procedure.

REASONABLE RATES

First Base is a pay-as-you-use service. Rates in Winnipeg are 2.5 cents per minute between 8:00 a.m. and 6:00 p.m., Monday to Saturday. After 6:00 and all day Sunday, the charge is just 1.5 cents per minute. Outside of Winnipeg, the daytime charge is 6.5 cents per minute, and 4 cents after 6:00 p.m. and all day Sunday (regular long distance rates do not apply).

There is a one-time-only service fee of \$19.55, to enter your security codes into the system.



TELL US WHAT YOU WANT TO KNOW

There are several Manitoba data bases now available on First Base that offer a variety of information, such as: postal codes, road and weather conditions, stocks and bonds prices and much more.

Some of the data bases are available on a subscription basis only; you must have a subscription before you can access them from First Base.

First Base is a new and growing service, so tell us what data bases you would like to access. Your suggestions for additions to First Base are welcome.

CALL 941-5735

For more information on First Base, the data bases and their subscription rates, please call Bob Thomas at 941-5735. If you're calling from outside Winnipeg, please call collect.

You may even have a data base of your own that you wish to offer through First Base.

FIRST BASE

A NEW ACCESS-TO-INFORMATION
SERVICE FROM MTS



MANITOBA
TELEPHONE
SYSTEM

A member of Telecom Canada

MONROE

NEWSLETTER EDITOR

1185 CHURCH AVENUE
WINNIPEG, MANITOBA
CANADA R2X 1G1

EDMONTON TIERS
PO BOX 11983
EDMONTON ALBERTA
T5J 3L1