Newsletter

MARCH 1987

The Winnipeg 99/4 Users' Group is a non-profit organization made up of people who use the TI-99/4A Home Computer and compatables. The Winnipeg 99/4 Users' Group publishes a newsletter twelve months of the year. The content of the newsletter doesn't necessarily represent the view of the Winnipeg 99/4 Users' Group. With this in mind, the group can't 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.

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

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EDITOR'S EDICTS:

The last W99/4UG meeting was held at my house on Feb 22, 1987. The turnout for the meeting was excellent and I hope future meetings will be the same. Sheldon Itscovich demonstrated the new BASIC compiler from Ryte Data. Peter Gould brought back from his California trip the Peripheral Diagnostic Module though we ran out of time for a demonstration. A demonstration of Ver_menu 5.0 and Funnelweb 3.3e was given by myself. Popcorn follies were adopted to be held at every meeting.

The newsletter staff worries about their pride and joy continuing to be read due to the fact the cost of newsletter production is hurting the stability of the group's bank account. Since the group has no yearly dues, the group is operating the newsletter at a loss. The group is considering charging a fee per newsletter, say $1.00 to $1.50. We would like to hear your opinions on this at the next meeting.

I want to thank Dave Wood, Rick Lumsden and Peter Gould for their contributions to this month's newsletter. Newsletter submissions must be handed in to me one week prior to the last Sunday of the month, the usual date of the meeting.

The group wants to recognize the user groups we exchange newsletters with. The group encourages other user groups to contact us for newsletter exchanges.

CALGARY 99ERS
EDMONTON 99'ER COMPUTER USERS' SOCIETY
RED DEER TI USERS GROUP
RND 99ER'S
STICC
OTTAWA T.I.99/4A USERS' GROUP
KAWARTHA 99ERS
9T9 USERS' GROUP
SUDBURY 99ERS
CIM 99
MONTREAL 99ER
MAURICE 99
TINS
K*3 TI USERS GROUP
MAD HUG
TI-99ER WORKSHOP RHEINLAND

MISCELLANIA:

Miscellaneous news and reminders.

The following three articles appeared in R/D COMPUTING V17 and V19 respectively.

QUAD DENSITY TI DISK CONTROLLER

We're very happy to report that the interest in the PROM set for upgrading the TI disk controller card has been entirely sufficient. This seems to be important enough to warrant the production of the upgrade set.

You may order these for $45.00 (US) or $60.00 (CDN) funds on immediate delivery. Full instructions are included with diagrams.

The upgrade will provide TI owners with the original TI Disk Controller Card to upgrade to double-sided double- OR QUAD density storage capacity. This works out to 1440 sectors PER SIDE using 80 track drives and high density disks. You are also allowed to mix and match drive types.

Remember, it is necessary to remove the existing ICs on the card. See diagram below. This requires a de-soldering tool and strict anti-static procedures to avoid damage to the card.

If you cannot do the job — or do not have anyone experienced — we will install the PROMs for you for an additional $10 (US) $12 (CDN) shipping prepaid. All you have to do is send us your disk controller card (insured please!) via parcel post, UPS or Purolator with your payment. We will install the new chips and return your card within 48 hrs of receipt. FASTer UPS shipping will cost an additional $10.00 (US) $14.00 (CDN).

ANNOUNCING "TECHNICAL DRIVE" — A new book by Monty Schmidt. The lack of in-depth technical information has been addressed once with this new publication. Monty Schmidt finished this new book for the Chicago Faire.

It covers detailed information on the inner working of the TI DISK CONTROLLER, RS-232, DSRLNK and the CorComp 9900 Clock Peripheral. With 200 pages of disassembled and FULLY commented code, this book delves into the heart of the DSR system (Device Service Routine) used by TI to interface a wide range of peripherals to the TI-99/4A.

This information has never been covered in one reference, in such depth or in a clear format publicly available.

This book gives TI owners, enthusiasts, programmers and developers more data on interfacing peripherals to the 99/4A. In conjunction with the information TI did publish and the book "INTERN", a complete reference library is now available.

Further, the book goes onto discuss 'low level' disk controller software access and software routines contained in the DSRLNK for the MiniMemory module. In addition, programming examples are included to illustrate the techniques used for interacting with these peripherals.

Price $17.00 (US) plus $2.00 shipping.

GROM LIBRARY BOX a new hardware project by Peter Hoddie and Barry Traver. The GLB will allow you to plug up to 15 modules into the system. From within the O/S you could then access the modules from within running

programs. The projected price is said to be about $60.00 (US).

> Ryte Data
> 210 Mountain Street
> Haliburton, Ontario
> Canada K0M 1S0

Myarc is coming out with a faster hard disk controller that can control up to 240 megabytes for $265 (US) and cables $45 (US). They also have a package deal, a hard disk controller and 20 megabyte (60 ms seek time) hard disk drive for $750 (US).

The Ottawa TI user group is having a second TI-FEST Saturday, May 16, 1987. It will be from 9 a.m. til 5 p.m. at the Merivale High School; 1755 Merivale Rd; Nepean, Ontario; Canada. They say it is going to be even bigger than last year's fest. I'm going to try to make it there for the fest.

Bob Boone, member of the Ottawa User Group, is the proprietor of Computer Download Unlimited. He has the best prices I have seen in Canada for computer peripherals such as the Myarc 9640 etc. Recently I've learned he has Avatex 1200 bps modems for unbelievable price of $150 plus $5 shipping (CDN). Several members of our group have these modems which are semi-hayes compatible and work just fine. I've purchased one from Bob and I find it to be a excellent buy. Computer Download Unlimited (CDU); 25 Ottawa Street; Arnprior, Ontario; Canada K7S-1W7; (613)623-7841

Funnelweb 3.4 has made it to Winnipeg via the grapevine. It has gone through some major revisions since 3.3e and for the better. One hinderence is that the CO (C99B) file has not been updated for use of the third release of the c99 compiler so re-entrancy does not takes place.

Some more Trojan names to look out for are STAR-ARC and DISK SCANNER. Thanks to Jim McLaren for pointing these out in the Sudbury Feb 87 Newsletter. It is a pity people spend their time constructing these things.

Rick Lumsden received a pamphlet in the mail from Quality 99 Software describing their wares. One piece of software that was rumoured to appear on shelves soon was listed. Not-Polyoptics announces new flight simulator. This new program is all machine language named "SPAD FLIGHT SIMULATOR". Staged in World War I France, this program goes beyond limited simulators to include full screen 3-D perspective line graphics, a 360 degree panorama of the area while in flight, complete acrobatic control of the plane, mathematical algorithms of the

physics of flight and a battle mode for the expert pilot.
   Some of the features include:
   6 views - front, back, two sides, up and down.
   Instrument panel including moving flight joystick.
   Eiffel Tower in France.
   Color graphics and continuous, infinite ground map.
   'SPAD' will require a disk drive, Editor/Assembler cartridge and 32K memory expansion.
   Available from Quality 99 Software. 1884 Columbia Rd. #1021 Washington DC 20009-5161. ph# 202-667-3574. Price is $27.95 US.

Our newsletter publisher, Dave Wood, has picked up a T212A RIXON modem from his place of work for an excellent price. He says using the RIXON with the TI RS-232 that pins 6 and 20 are straight pin for pin not reversed as for other modems. The HS switch pushed in gives you 1200 bps while out gives you 300 bps. He also said to add a double pole, 3-position switch with a 'TALK' side which is locking and a 'DATA' side which is non-locking to the pins on the RS-232 port of the modem. A diagram follows of the intended hookup.

```
D P   +---+ CENTER POSITION
A O 22:0 O: AUTO RECEIVE
T S 21:0 O:5
A I   :0 O:25 TALK POSITION
  T   +---+
  I
  O
  N
```

OUT AND ABOUT:

Feature articles from the various newsletters we receive each month.

The following appeared in RND 99er's Feb 87 Newsletter.

He Was So Refreshingly Truthful, I Accepted

"Hello. Is this Vern?"
"Yes, it is."
"Delbert Hawkins. Say, Vern, the club's looking for some sucker to handle the newsletter, and about twenty-three persons have turned us down so far, so we're pretty desperate. Would you, by any chance, be willing to handle it?"
"Well, gee, Delbert, I don't know. Do you think I'd be capable of handling it?"
Well, Vern, the general consensus seems to be that you'd probably make a big botch of the thing, just like all the other stuff you've tried to do, but--well, frankly, right about now we don't have much choice. It's

sort of a case of--well, any port in a storm, I guess."

"Would putting out the newsletter involve quite alot of time and work? I mean--"

"It's a backbreaker, Vern. It's thankless, time consuming and frustrating."

"I suppose the members of the telephone committee would be co-operative, wouldn't they?"

"Well, Vern, it might be a little hard for you to line up a committee, because--well, most of the members don't want to have anything to do with you. And I can't say I exactly blame them."

"Oh?"

"Yes. You see, most of us think you don't have sense enough to pound sand into a rathole, but--well, like I said, twenty-three persons have turned us down, so we'd sure be grateful to you if you'd be willing to handle the newsletter, at least to the best of your rather limited abilities, because..."

VERNON H. KURTZ

The following appeared in CIN99 Feb 87 Newsletter.

NEW TI WRITER by Warren Agee

Since Todd Kaplan left CompuServe many moons ago. I have been in constant contact with him. His most recent project was stuffing TI WRITER into a cartridge (superspace...do disk, no 32K needed) for DataBioTics to sell through the Triton Catalog.

Well, he did it, and more... the buffer is bigger and it has some new features, as well as enhanced old features. What's even niftier is that he also wrote a version that works on a 32K disk system without a superspace, and that is what I am using to write this message!

This thing is NEAT...it addresses many of TI WRITER's shortcomings. What Todd did is instead of just modifying the original source code, Todd only used TI WRITER as a working model and wrote his version FROM SCRATCH. The results? Some functions are faster: the overall performance seems to be quicker, and copying a block of lines is MUCH faster, among others. It has these additional features:

New file format: memory image. Not compatible with any other programs, but its good for saving a file QUICKLY and saving disk space.

Find String works like Replace String.

Find String and Replace String ignores case! So you can enter in upper or lower or any combination and it won't matter.

Find String and Replace String can use wildcards! The default symbol for this is an asterisk, but it can be redefined to anything you want (in case the string you're looking for contains an asterisk).

Show Directory: now you can list the directory to printer. You can enter a drive number (like before) >OR< a disk name or device name. So you can catalog your hard disk, myarc ramdisk by saying RD., or anything else you have hooked up.

You can scroll (by window) left, right, up, or down by using CONTROL-arrow keys.

Here's my favorite: you can turn the 80-column windowing feature off, so that as you type across an 80 column line and reach the end of the first 40 columns, instead of the screen jumping ahead a full screen, it just scrolls smoothly, character by character! This way the beginning of your line doesn't disappear all at once; the screen scrolls to the left (or right if you backspace) character by character, so you always see what you just typed.

If some of the above sounds familiar, yes, some of the improvements are the same ones to appear in J. Peter Hoddie's TI WRITER for the Geneve; that is mainly because when Todd started this project he gave Peter the source code that he had done so far. Hopefully I can convince Todd to completely rework what he has done for the Geneve. Even though it will come bundled with a word processor, TI WRITER is certainly not the word processor to end all word processors, and with 512K of RAM, he could certainly go far.

The following appeared in Gord Bradshaw's RAMblings of the Calgary 99ers Feb 87 Newsletter.

Ever wonder why so few women become addicted to computers. From a tongue-in-cheek book I found the answer:

1) Women are more SENSIBLE.

2) Women are, for some reason, less hung up on gadgets in general. They may work with computers as a means to other ends, but they won't see the point of spending a lot of time and money on computers.

3) Because men are more interested in power generally they are more likely to get off on the power fantasies of programming, so that it turns into an obsession as opposed to an occupation.

4) Men, for some reason, don't mind wasting endless hours on a meaningless task that has no tangible results. Women are more PRACTICAL.

5) Perhaps some women do want to own home computers, but their husbands have already run out and spent all the housekeeping money.

Food for thought isn't it.

The following appeared in The Orphan Survival Handbook.

Adding a Second RAM Chip

the hole I'd made in the top cover.   Voila, a manually switchable extra bank of useable memory! Now I can choose between 2 different entry menu screens simply by flipping the switch.

One other potentially useful feature I've found is this: with my previous single banked Supercart, I would more often than not scramble the memory if I removed the cartridge or inserted it with the console power on. (In retrospect, this is because the chip was hardwired to be constantly selected and was subject to transients and "spinal shock" when connected and disconnected.) Now if I "deselect" both RAMs by placing the switch in the center position, I can remove and insert the cartridge even with console power on without losing Supercart contents.   To run, however, one or the other of the RAM chips has to be selected.

I hope these comments have been useful to any other "technoklutzes" beside myself out there. If anyone has any corrections or comments to make, I'd be pleased to get them at: Jim McCulloch, 9505 Drake Avenue, Evanston IL 60203-1107 (CIS ID# 74766,500).

The following appeared in the K*3 TI USERS GROUP Feb 87 Newsletter

MUSIC PROGRAMMING USING NOISE AS LOW BASS NOTES by Bill Knecht from the PUG newsletter

An article in the October 1986 HUG Newsletter by Jeff Gatlin prompted me to write this article on Low Bass Notes. Mr. Gatlin gave a good explanation on how the low note is created by using a CALL SOUND with three voices and one noise, but there is an easier way to correct the effect of a seventh note being played. The seventh note is played for the bass note if you use a CALL   SOUND(1000,330,0,392,0,523,0,-4,0).   To correct this, he suggested using a lower note, such as 494 instead of 523. Trouble is that if you are reading the music and typing it in, you have to remember to enter the "wrong" note, like C# for C or F for E.

One way I do it is to multiply the third note by 3.75. The CALL SOUND statement would look like this: CALL SOUND(1000,330,0,392,0,523*3.75,30,-4 ,0).

I use 30 for the volume of the third note so it will be to low to be heard. Thus, you have a low C, two octaves below middle C or the one below 131.

Below is a sample program you can type into see how the low notes decrease:

```
100 CALL SOUND(1000,523,0)
110 CALL SOUND(1000,262,0)
120 CALL SOUND(1000,131,0)
130 CALL SOUND(1000,523,30,523,30,523 *3.75,30,-4,0)
140 CALL SOUND(1000,262,30,262,30,262
*3.75,303,-4,0)
```

150 END

This is the technique I used in my recent music program "Holiday Road" and the technique used in the popular Pennsylvania Polka and Beer Barrel Polka.

Another technique is to multiply the third note by 7.480916. This will drop the sound one octave. In other words:

CALL SOUND(1000,131,30,131,30,131*7.4 80916,30,-4,0)

would give you the note that is one octave below low C (131). I like this technique because you can input the third note as a "normal" low note, then by adding the noise routine, drop the note one octave. I used this procedure in my new Christmas song named "Santa". If you like programming music, I would urge you to try this and see what kind of sounds you can come up with.

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 by Rick Lumsden.

Well here's another review for all you avid orphan's out there. This column is open to all members to review whatever they please and I am sure Paul would appreciate any and all contributions. I know there is lots of equipment, software, books etc. dealing with the TI-99 so don't be afraid. Fire up those word processors and get something on disk for the members. There are lots of people upgrading and would like to read about some of the peripherals available and I know of some hardware our members have recently aquired that I for one would like to hear about. I can recall off-hand a Corcomp 9900 system, an Axiom Parallax interface and a PDM-99 module that would present interesting reading. So come on guys don't be afraid. It only takes a half hour or so and it's your input that keeps this group going. I'm sure Paul is getting a case of writer's burn-out keeping the quality of this newsletter up as he has. One last thing. Take a moment to say thanks to Paul for our little rag here. It's a real undertaking and I know I wouldn't want to try it every month.

OK On with the review. I have in latter months reviewed a lot of hardware and some software. This month something different. A couple of new books out. Well one is new the other has been around for a while. Both are by Dr. Ron Albright. Ron writes a monthly column in Computer Shopper called the TI Forum.

His first book, The Orphan Chronicles is a fact filled book on the history of the TI-99 and many of the Gurus and others we have all heard about since it's introduction back in '79. It is great reading, and

brings up alot of points about our little computer. Starting with the actual engineering and right through until that fateful fall of '83. Incredible how a company could be caught in it's own game and lose. The book actually goes beyond the time when TI dropped the computer and looks toward the future. I recommend this book for any TI'er as it is fun and informative. Makes a great addition to your library.

The second book is another By Dr. Albright called The Orphan's Survival Handbook. This one is a looseleaf style and will be regularly updated to registered owners. The best of newsletters, TI periodicals and lectures. Starting with some programming tips this one continues onto tutorials in 'C' Forth, Assembly and onward to hardware hacks, TI-Writer tutorials, User Group listings, and retail outlets for TI equipment and software. I haven't finished reading the whole book yet but from what I have seen it is well worth the money. I'm sure this would have something in it for everyone who owns a 4A computer. Explanations on how to build power supplies for disk drives, wiring for modems, installation of Load Interrupt, Reset, and Hold switches. Even how to install some GROM chips right in your console. For those who don't know what I am referring to here, a GROM chip is the self-incre.eting memory chips found in many of your cartridges. As an example, one could remove(or buy from TI) his GROM chips from say the DMII module and the E/A module and then intall them inside your console. With the simple flip of a selection switch, you could then flip back and forth between DMII, E/A and others only limited buy your needs. You could even have a blank spot on your switch so you may have the option of selecting a module in the module port. Great little hardware hack!! The entire book is filled with this kind of information that is of immense help to any TI'er regardless of his/her knowledge.

I recommend both these fine books. After reading them I think it finally convinced me which way to go as far as upgrading. I have seen the PC's in action and they are indeed impressive, but I remain loyal to the old TI. Maybe it's sentimental, or maybe it's just I am comfortable with it. Maybe a little blurb in here about the new Myarc 9640 or Gen'eve is appropriate. As Paul has probably written elsewhere, I have been trying to locate one of these units with out too much success. They are finished and are supposed to be being delivered now. I realize it's been a long wait but I do think it will be worth it in the long run. It's up to us, the loyal TI'ers to support this endeavour. We have supported the 4A with no parent and now we have a chance to support a upward compatible machine with full support back from the company. Rumour has it that at least two major Japanese electronics firms have expressed interest in the new 9640 and may pick up the line. This would be just the push we need to get us over the top.(at least in my opinion) Don't be to hard on Lou Phillips and Myarc. Sure, they have had many, many delays but remember this is a big undertaking. Any small firm can come up with a PC clone and sell it probaby quite succesfully but when have you seen a small company completely design a new computer and market it. And to top it all off in less than 18 months!!! Not since the first Apple I'll bet. This new machine out does the Amiga in some areas regarding graphics. The resolution may not be as high but the ability to display more colours at one time in the HI-Res mode is in itself something. It is FAST, running at 12Mhz compared to the 3.3Mhz we are used to in the 4A. The IBM and clones run at 4 and 8Mhz so this is a very fast machine. I should not be doing these kind of comparisms. It's like comparing grapes and raisans. They both start out as the same thing but head in different directions. The PC is a great small business computer but as far as what most people want at home I think it leaves something to be desired. On the other hand, the Atari 520ST and Amiga are great graphics machines but the Amiga is still a bit pricey. The 9640 is perfect to fill in this gap. It has the ability for great graphics and the memory and speed for spreadsheets databases and whatever else you may throw at it. Six hundred and forty hundred kilobytes of memory with the ability to expand to two megabytes. You've seen what the 4A is capable of with 48K so look out with twelve times as such. The whole computer(which requires a PEB) can be had for $720 Canadian out of Ottawa. For another $280 he'll throw in an RGB monitor to really show off the graphic capabilites. I will be ordering this machine as soon as it is available. Hold on to your 4A's for a while longer and let me demonstrate this one before you jump off the TI bandwagon. It remains up to us, the existing TI community, to support the hardware and software companies supplying us with all this new quality merchandice. Give them a chance and we can only get better.

I think it is time to stop rambling here. I'll have some specifications on the computer at the next couple meetings for all those interested. By for now and talk to you all at the next meeting.

A Review by Peter Gould.

In early February whilst escaping from part of our fine Winnipeg winter, I visited TEX*COMP at #6-19209 Parthenia St., Northridge, California. I found them tucked away (almost hidden) at the rear of a light commercial complex. TEX*COMP's mailing address is: P.O. Box 33084, Granada Hills, CA, 91334.

TEX*COMP, the home of many catalogues and good mail order service in the past; has a small functional retail counter with stock readily available from the back. I had with me a long list of things to buy. I gave the

particulars of my TI-99/4A set-up, and then got one of the bigger suprises in a long time. Some of the items on the list I was advised would be a waste of money, or not effective for my system - this is not the sort of advice one hear's at a normal retail outlet - I was impressed. I didn't feel this service was just from being a Canadian and talking "funny", this is the way TEX*COMP does business. Later on I found I was being served by Gerald Price, the owner. I bought many small items at TEX*COMP and almost used up my $300.oo Canadian customs allowance much too quickly. On my "wish" list is CorComp's new Ramdisc 512K card for for the TI P-Box (I wonder if it is compatable with Myarc's new Geneve computer?).

Half a block away from TEX*COMP is a really good place to eat called "JERIMIAH'S". They have good sea food, and I had a good swordfish steak canjun style. If you are ever in the area visiting TEX*COMP (or Magic Mountain), Jerimiah's is a place to make a note about. The staff were really friendly, comfortable surroudings, good food, and most reasonable prices.

Winnipeg TI-99/4A users are welcome to borrow an item purchased. This is CorComp's PERIPHERAL DIAGNOSTIC MODULE. The module quickly check's the Disc Controller, 32K Memory Expansion, RS232, and whilst doing so quickly verify's disc-drive speed (a common problem area). To borrow phone Peter Gould 889 5505.

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 appeared in the 9T9 Feb 87 Newsletter.

News For Fixing Your Expansion Box

With the introduction of the Geneve this article on how to repair your expansion boxes' special problems will come in handy.
1. If the card and any drives lose all power and the fan is still working.
- A fuse inside the transformer is blown.
- Caused by some short temporary, unknown or otherwise.
- Double-check by looking for an open (by an ohmmeter or continuity tester) in the primary wires isolated, disconnected or open circuited.
- Fix by digging at the plastic cover and/or tape of the transformer until you find, it could be on either side towards the card connectors or the PC board, the fuse then jumper (short it) around it (the fuse in the fuse holder in the back of the box near the power input is now your only protection) instead you could put a new

fuse in parallel with the old fuse.
- If there continues to be a short because the fuse in the fuse holder in the back of the box or the fuse continues to blow then problems 2 or 3 below might be the problem.
2. The diodes on the PC board in the power section of the box are bad.
- Caused by the accidental reseating of cards while power is on or shorts by foreign metal objects fallen on the card connectors.
- If too quick an accidental reseating of cards occured or foreign object fell while the cards were operating then the diodes in the power section and the buffer chips (741s244's or 741s245's) on victim cards (any cards known to be operating at the time) should be replaced.
3. Metal objects got in under the edge card connector bus PC board or the edge card connector bus PC board broke, fractured in a small spot due to forcing the cards into hard.
- The short is caused by the fact that at manufacture pins of the card edge connectors were left at their normal long length which means that those pins come closer to the grounded expansion box chassis than anyone would expect. This makes it easier for small metal objects to cause shorts between the pins and ground or a cracked edge card connector PC board to touch the grounded chassis.

MICROpendium:

The following appeared in the February 87 issue.

Mechatronic TI-Mouse (No squeaks from this input device) by John Clulow

The Mechatronic TI-MOUSE is a beautifully designed input device for the TI99/4A. It is priced a little lower than similar devices for Apple and Tandy computers and outperforms them in some respects.

The mouse is about the size of a TI command module and has a motion sensing ball on the bottom. When it is moved on a flat surface, the computer generates a correponding motion on the screen. Two keys on the mouse are used to make menu selections, draw, etc.

Joysticks and trackballs allow motion in one of eight directions. The mouse, on the other hand, provides accurate representation of speed and the full range of possible directions making it the most natural and easy-to-use input device available. Anyone who has been frustrated while trying to use a joystick or trackball with TI-Artist will be overjoyed with the performance of the TI-MOUSE.

The TI-MOUSE cable is plugged into a small interface box which, in turn, connects to the console joystick

port. An AC adaptor supplies power to the interface. While *the* manual suggests an 8x11-inch section of table *be* available for the mouse, I found that an area of only 4x5 inches was sufficent. A mouse displacement of one inch translates into about 96 pixels on the screen; the minimum movement for full screen motion is about 2.5 inches horizontally and 2 inches vertically.

Three demo programs are provided. An Extended BASIC program displays a pocket calculator on the screen. The mouse moves a hand-shaped sprite to operate the calculator. An assembly language Breakout program shows how the mouse works in an arcade type game. Full source code is provided. The third program is a demo version of Mechatronic's TI-DOS; a disk manager program. The mouse moves an arrow-shaped cursor for icon selection of various disk functions.

These examples illustrate how to include mouse routines in user-written programs. This is easy to do with the software provided. Loaded with a CALL LOAD statement, a program called MOUSE allows access to the device in Extended BASIC programs, Sprite number 1, used by the MOUSE program, can be assigned any desired color and pattern as usual. Three CALL LINK routined are available: MAUS0 halts the main program until the sprite cursor is positioned as desired and the mouse key is pressed; MAUS1 is an interrupt routine which allows the Extended BASIC program to continue running while keeping track of the position of the mouse; and MCLR cancels the MAUS1 interrupt routine. MAUSE0 is analogous to an INPUT statement in BASIC; all processing stops until an entry is made. The interrupt routine, on the other hand, "automatically" keeps track of the mouse as the program continues execution. Interrupt routines, executed many times each second, tend to slow down operation of an Extended BASIC program so the MCLR routine be executed whenever mouse input is not to be obtained. (An in-depth explanation of this principle can be found in J. Peter Hoddie's article "Attach a Sprite to a Joystick" in MICROpendium's OCT '86 issue.)

CALL LOAD or CALL PEEK statements are used to read or assign mouse parameters, allowing a high degree of control in Extended BASIC programs. A continuous set of nine bytes contain the data, allowing several parameters to be read or written with a single PEEK or LOAD. The parameters include the vertical and horizontal position of the sprite cursor, status of the mouse key, vertical and horizontal location of the "home" position and specification of the upper, lower, left and right boundaries. The sprite boundaries establish a "window" within which the sprite can be moved.

Perhaps the most obvious use of the mouse would be with a program like TI-Artist. One of the many ways in which this program is unique is that it allows the user to specify a "DSR" (Device Service Routine) for new input devices. So I sent the mouse to Chris Faherty, author of

TI-Artist, and he quickly modified the assembly program provided into a DSR. The only thing lost was the "rubber-band" effect.

In the process, Chris provided some feedback about the performance of TI-MOUSE relative to others he had worked with (the Mac mouse, Tandy, etc.). He said that the TI-MOUSE was much faster and much more responsive than others he had tried. He was also very happy with how easily the TI-MOUSE moved. He said others were like sandpaper by comparison. Chris also told me that similar devices for other computers sold for 20 percent to 30 percent more than the TI-MOUSE. TI-Artist users can obtain a copy of the DSR from T.A.P.E. or Inscebot.

Bill Sager, President of New Horizons Computer Club and TI-Artist user, offered to evaluate the mouse with TI-Artist. Bill said his kids (ages 6, 8 and 10) loved it and took to it right away. It greatly simplified use of TI-Artist for them.

He said that using the mouse speeded up TI-Artist somewhat and made it much easier to draw curved lines, ovals, ellipses, etc. Drawing a straight line freehand was rather difficult, but the LINES, K-LINES and H/V LINES of TI-Artist could easily be used. In general, he said, he had much better control of the cursor.

Although it is possible to move the mouse too fast when drawing, causing it to skip pixels, Bill said that, as with many new tools, this just took a little practice to develop the right technique. The most prominent drawback was loss of the rubber-band effect, but Bill was able to compensate the more he used the mouse. Also, because of the much greater responsiveness of the mouse, working in ZOOM mode was more difficult, but not impossible.

Over all, Bill felt that the mouse is a great addition to use of TI-Artist in that it eliminates the stiff action of the joystick and provides a more delicate touch when using the program.

The Mechatronic TI-MOUSE is a well-engineered product that is easy to use. I would highly recommend it to anyone in the market for a mouse.

Cost: $99.95
Manufacturer: Mechatronics GmbH, West Germany; distributed by T.A.P.E. Ltd., P.O. Box 4042, Ontario, CA 91761.
Requirements: console, memory expansion, disk system.

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.
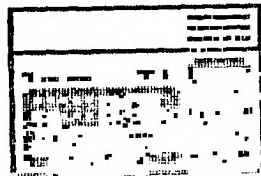
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