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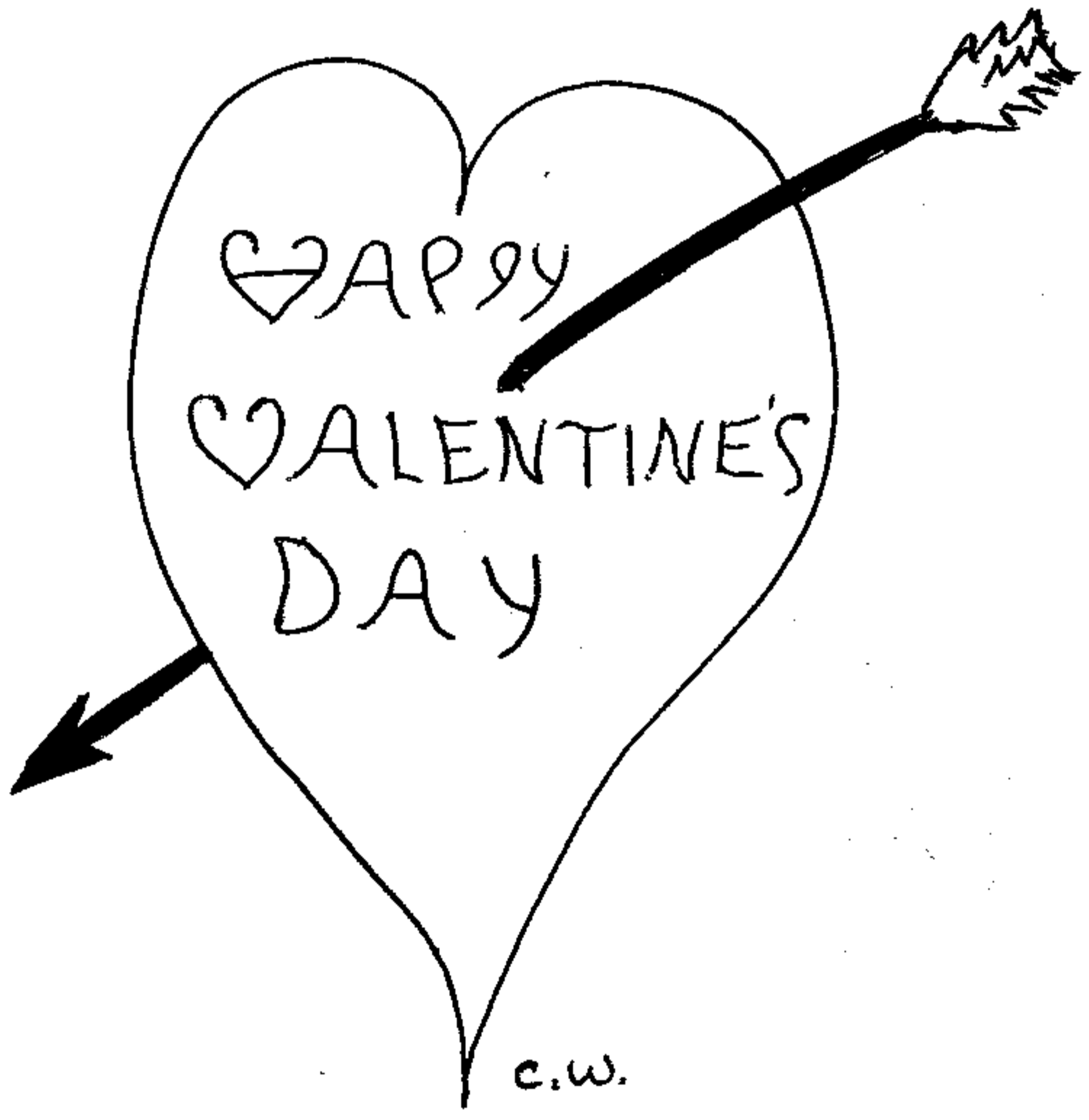
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Mass Users of the Ninety nine and Computer Hobbyists

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February 1986      Monthly Newsletter      Version 5.2



## MUNCH MINUTES JANUARY 21, 1986

To start off the first meeting of the year, we had a record number of members show up, totaling about 46 people. However, they were not all members. We had a few honored guests. We had with us for the first time, Peter Hoddie from the Boston Computer Society. He is the one person that is responsible for the well upkeep of their TI club. He has the influence and showmanship to bring to us items like the well known Gram Kracker, the MYARC X-Basic IV, and the new load interrupt switch to us for demonstrations. There are two TI message bulletin boards in the Boston calling area (1-331-4181 1-335-8475) that are one of the most useful and informative tools I have ever seen. The BCS users depend on it almost entirely. There is no charge to use it and anyone can get a user number. You will have a charge from your local phone company because it is long distance. Peter wrote and designed this system for all TI users not just for BCS.

Since the discovery of this board, we as a group have been discussing the strong possibility of having our own board for the Worcester county calling area. Peter is willing to help our group start up a new system for us and anyone else that wishes to use it. The system would link up with the BCS system to transfer info back and forth which would provide a link between users. We will announce its arrival as soon as we get the time, funds and hardware to make it all possible.

The members arrived about 7:00PM. Also with us was Bob Sagnon to sell off all of his TI hardware and software. Because of job requirements he can no longer carry on. In providing this, he is performing a great service for us. A store in Westboro, called Computer Sense Center, was going out of the TI computer business. They were closing out there stock at their present location at East Main Street in Westboro. They had set up two tables and had sold quite a bit of goods that went fast. Unfortunately, they couldn't bring the entire store with them. There are still alot of the printers, monitors and computer tables. There is a tremendous amount still left. If you can't wait until the next meeting, they say they will be open Friday Saturday, and Sunday from 12:00 to 5:00. I hope they will be back with more great stuff at the February meeting.

A demo of the MICROSOFT MULTIPLAN was performed by Hector Beaudreau. There are those of us that have the MICROSOFT MULTIPLAN but don't really know how to use it to its fullest. I myself am one. Hector, on the other hand, has been living off of it. He says that if you know how it works, you can run an entire business from it. There is quite alot to it and Hector couldn't have enough time to explain all of it. Perhaps he will continue it at a later date. (He will demonstrate it more at the February and March meetings. ed.)

The business portion of the meeting got under way at 8:00PM. The raffle was held and it brought in \$26.00 to the MUNCH fund. The item raffled was PICNIC PARADIA which was donated by Colin Atherton. It was won by John Shoicare. The minutes were approved as noted. There was no library at the meeting because the librarian, Al Cecchini, was called out of town on a business trip. Anyone who has materials out will have to wait until next month to return them. In the software textware area, Jack Sughrue announced that he will be making available, to those who attend the next meeting, a disk containing easy to understand directions on how to use your TI Writer, entitled the Magic Template. It will cover the formatting processes and a few things that are described in the text. According to Jack, the guide included with the disk, makes the use of the formatting codes and the transliteration key, very powerful, lots of fun and very easy to use. The way the TI manual is written makes it very difficult to use these codes so that most of us just ignore them, instead of taking the initiative to really learn how to make great use of them. The disk will be added to the MUNCH library. Those who wish to bring an empty disk may make a copy for themselves. It shouldn't take but a moment to do this for those of you who would like it. Jack also mentioned that the literature on the TI-99/4A has been dry for a while. However, two new books have just come out and both of them are exceptionally good. The first book is called "Cracking the TI-99/4A". It is a good book for tutorials and programming techniques. The other book is put out by Compute. It is a follow up to the previous book they had called "The TI Collection". The new book is called "The TI Collection Vol. II" with all new programs that were not in the original book or in any of the back issues of compute magazine. In addition to having a wide variety of programs, it also has a lot of articles about the TI that are quite informative. The book sells for \$14.95 which is quite good for what you receive. Jack further told us at the meeting that Compute Magazine has a program which some of us are already aware of that tells you where to look for Haley's Comet in the sky. It is called "Sky Scape". It is very easy to operate and a lot of fun, however, it does have a few bugs in it and won't run fully. It seems to be very accurate at locating the comet. Jack says that he has located the comet three or four times already using this program. He will have a copy of it with him that is fully de-bugged along with the programs for the TI Writer. The documentation for it will also be available.

There is a new magazine that is on disk which is called "The Genial Traveler". This subscription disk company has just put out their first disk. The disk issues come out once every two months. If you like programming, using your Personal Record Keeping, or other cartridges like Multiplan, it can be very useful. Each disk has a full 760 sectors of items to read; use, inform, or keep you up to date with the latest. The cost of the subscription is \$36.00 per year for six disks. None of the programs written are protected so that the subscriber can make changes in them if he wishes.

# RAMBLINGS

by

Jim Cox

Please remember that membership renewals are \$15.00 and that this will be the last newsletter for those memberships which expired in December.

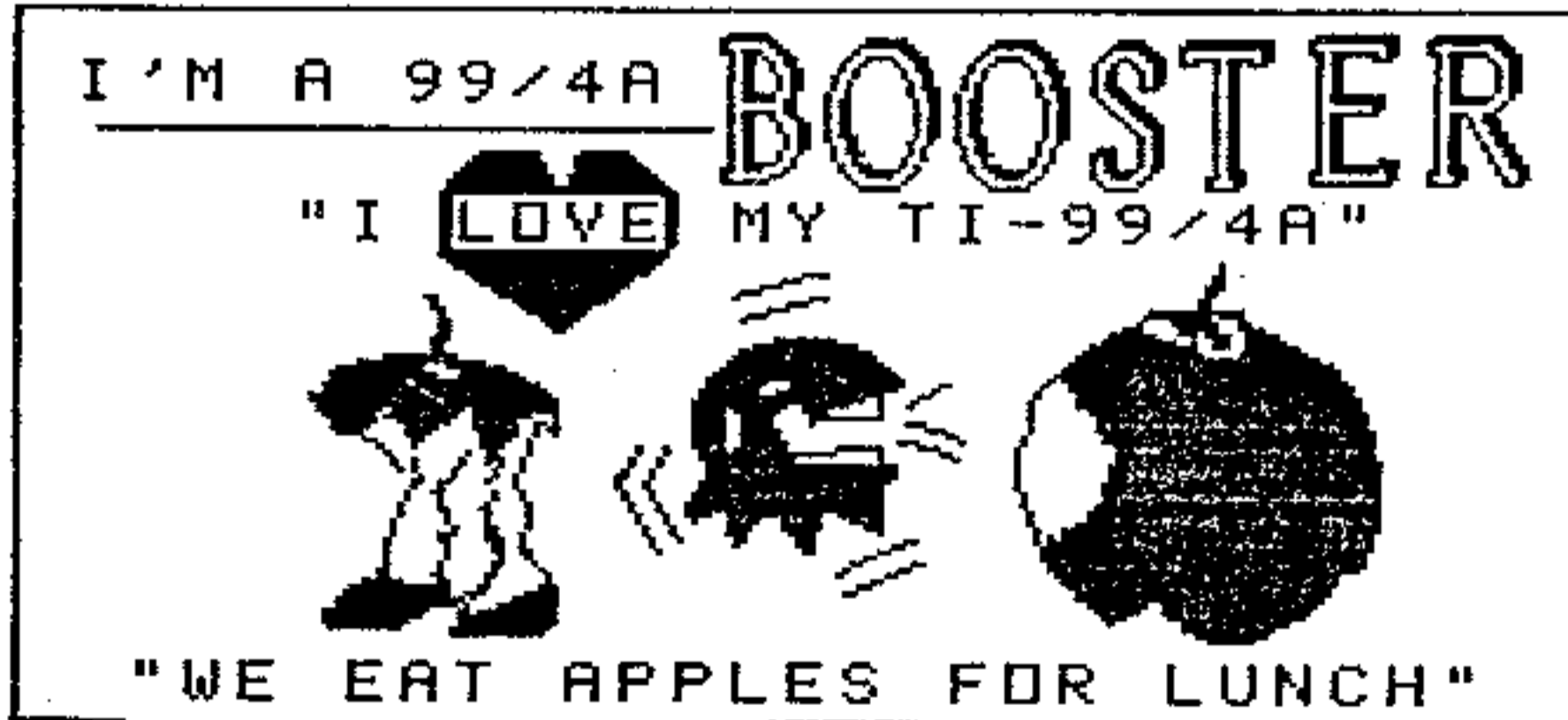
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We will have TI Booster bumper stickers for sale no later than the April meeting. They will cost \$1.50 each. See example below.

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Thanks to Hector Boudreau for the contribution of a cassette carry-case to the group. Thanks also to John Deery of the Video Connection for his contribution of books and game cartridges to the group. Thanks to the contributions of John and the folks at the Computer Sense, our monthly raffles are set for quite some time. I am also happy to be able to donate a Gorilla Banana printer to the group.

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## ADVERTISING RATES:

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Double Page	(10.5" by 8")	\$50.00	per insertion
Full Page	(5" by 8")	\$25.00	per insertion
Half Page	(5" by 4")	\$15.00	per insertion
Quarter Page	(5" by 2" or (2.5" by 4")	\$10.00	per insertion

Classified (non-commercial) Ads are FREE for MUNCH members.

Bob Gagnon has graciously donated to the MUNCH club several books and programs that will be added to the library. There are some technical manuals on the operating system of the 99 as well as the other microchips in the computer. I would like to thank him very much and wish him good luck with the other computer which he has switched to.

TREASURY REPORT:

CHECK BOOK BALANCE +\$321.47

PRINTING EXP(3 MONTHS) -\$150.00

MONITOR RENTAL EXP -\$ 25.00

DUES & RENEWALS +\$ 60.00

FREEMWARE SALES +\$ 25.00

REFERENCE CHART SALES +\$ 11.00

RAFFLE +\$ 39.25

----- \$40.00 LOSS TOTAL +\$281.47

There were some new faces at the meeting but no new members. Bruce again mentioned about the need for a membership chairperson for the group. There are still no takers for the position. If there is any person who wishes the job, please contact Bruce Willard. He mentioned at the meeting that he is willing to offer any kind of help to anyone to get started. It isn't that big a deal that someone will be getting themselves into in terms of time, effort and work. But it is an important job for the group. There are people out there that need a user group like us and don't even know that we are here.

E.C.S. is going to have a TI fair April 5th. We are not sure as to where it is going to be yet but that will be announced later. It is going to be a regional fair. It won't be a national fair like Chicago was. We will however try to get some national people there like Lou Phillips of NYARC. There are contacts being made with about eight different users groups in and around New England. We are hoping that each of these groups will participate by doing some demonstrations of there own. There won't be alot of distributors and vendors, but there will be some. There will also be at the show a presentation on how to clean the console inside and out. A step by step procedure on the proper maintainace with pictures and illustrations. It would be nice if all of us could participate as a group to have a good turnout for the show. We will, one way or another, be involved in the making of the fair but we need the support from you people. We need people to help with the demonstrations, staffing a table or whatever it takes.

Peter Hoddie took over the meeting and talked to the group about the Gram Kracker which he was hopefully going to show to us but it didn't arive until it was to late. However, it will be shown in February. The GK, a product from Miller's Graphics, plugs into the cartridge port. It has five switches on the front allowing you to dump any cartridge into it. For a full explanation of the Gram Kracker, Peter has written a full, comprehensive report on it in this newsletter.

After the meeting, Peter demonstrated the new Load Interrupt Switch which is something that anyone can build. It has a capability that was built into the TI but they never released it. It's very easy to make. I myself have made one. All you need are two wires and a momentary switch that is normally open. You connect one wire from the switch to pin 13 on the connector bus on the side. The other wire is connected to either pin 21,23,25, or 27. All of these pins are connected together anyway. this is a ground. Note that the pin arrangement is quite different than the usual connector. If you are facing the console the pins run with the even numbered pins on the top and the odd numbered pins on the bottom. The lower valued numbers are towards the front and increase going towards the back. There are no lables on the circuit boards as to the locations of these pins so you will just have to count. Most people who have made their own have installed them in the Speech Synthesizer. When you use the button it tells the computer to branch to a certain location in memory and execute what ever is found there. It doesn't even matter if a disk drive is being accessed or if you are using any cartridge. There isn't a thing that can disable this switch. If you don't have a routine loaded up into memory to use it, it will crash your system. Sometimes it can crash it in some very interesting and fantastic ways. If you don't plan on building your own you can buy one from Cor-Comp for about 11.00 or 13.00 dollars as well as some software to go with it. For those of you that had missed this great demonstration, it will be shown again at the fair as well as how to install one.

At the next meeting, Peter will be returning with more demonstrations on not only the Gram Kracker but also the new MYARC X-Basic. This should be a real 'cracker' of a meeting in February. See you there.

Corson Wyman

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## MUNCH OFFICERS AND NUMBERS (all in 617 area)

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President	Bruce Willard	852-3250
Vice President	Norman Abare	297-2100
Secretary	Wm. Corson Wyman	839-5116
Treasurer	Jim Cox	869-2704
Editor	Pete Blackford	892-4946
Hardware Chair		
Programs Chair		
Adv Prog. Chair	Dan Rogers	248-5502
Club Reviewer	Jack Sughrue	476-7630
Library	Al & Lisa Cecchini	
Software Library	Don Mason	754-6630
	Hector Beaudreau	
Mail & Messages	Video Connection	852-8213

AGENDA for February 18, 1986

- 7:00 - 8:00 Open Demonstrations  
New Member Registration  
Software Exchange (members only)  
Special Interest Group meetings  
    Basic Programming -- as required  
    Assembly Language -- by Dan Rogers  
    Kids Corner -- with (to be announced)  
    Multiplan -- by Hector Beaudreau
- 8:00 - 8:20 Raffle  
Business Meeting:  
Approval of Minutes  
Treasurers Report  
Committee Reports  
Old Business  
New Business  
Announcements
- 8:20 - 9:30 CONTINUATION of:  
    Special Interest Group Meetings  
    and Open Demonstrations and Discussion

\*\*\*\*\* SPECIAL GUEST \*\*\*\*\*

Peter Hoddie from the Boston Computer  
Society, TI Group  
GRAM Kracker demo by Peter Hoddie

Plan for March meeting:

Training on Microsoft's Multiplan  
by Hector Beaudreau -- Final Lesson  
Continuation of other SIG's

LIBRARY NOTICE

Please return all borrowed materials to the MUNCH  
library at each meeting. This will give other  
members a chance to enjoy our collection of "text-  
ware" as much as you have !!!                   THANK YOU !!!

## PRESIDENT'S MESSAGE

This is the month that Cupid does his thing. It seems hearts and arrows are everywhere. All the florists are bursting out all over with roses; red ones, pink ones, white ones, yellow ones, purple ones, and actually every color of the rainbow. I guess you could say it is a pretty month with love in the air everywhere. Anyway, all you sentimentalists out there be prepared to relinquish your money and purchase flowers, candy, etc. for your lover.

Our January meeting seemed to be an intro into the love month (February). What do I mean by that? Well, our Group had donated to it a tremendous amount of books, software, and hardware. I must take time right now to thank Bob Sagnon, Colin Atherton, Nancy and John Shoikour (Computer Sense Center), and John Derry and Jim Cox (Video Connection) for their contributions. We now have many, many dollars worth of merchandise for us to use as we see fit. If that isn't love for a computer and/or our Group, then I don't know what is.

The TI Fair, administrated by Boston Computer Society (BCS), will be April 5th, at the Diamond Jr. High School in Lexington, off Rt. 128 and Rt. 95. The time will be from 10 AM to 6 PM. We (MUNCH) are committed to staffing a table, presenting demonstrations, and selling whatever we have to sell. Your officers need a little help from several people. PLEASE, PLEASE, PLEASE come to me, call me, whatever, just as long as we can get the necessary help to make a great showing at the TI Fair. We have a great Users Group. Lets show them how great we really are.

People have noted to me what a nice professional newsletter we have. That makes me feel good. Because, your input is what makes it so nice. You will note further into the newsletter that our long time Editor, for personal reasons, must step down. We will miss Peter Blackford as our Editor. I remember when Peter would whip up a twenty page newsletter all by himself in almost no time. Anyway, thanks Pete for all your help and dedication.

Okay, members, who will be our next Editor??? We need a comaittment by the February meeting, or very shortly thereafter. Again, I will be willing to train anyone who takes this job.

That's all for now. See you at the meeting.

----- Bruce Willard, Pres. -----



This article was written by Peter Hoddie of the Boston Computer Society's TI User Group.

At 10:30 AM Craig Miller of Millers Graphics presented his latest product, the Gram Kracker (GK). He's billing this little 4.25" by 6.5" by 1.125" black box as "the peripheral that TI should have built years ago" and by the end of his presentation he had everyone in the room believing!

This little device plugs into the cartridge port of the 99/4A and essentially allows the copying of a cartridge to disk or cassette. The cartridge, once saved to a device, can then be reloaded into the GK and used without the cartridge being present. The GK will back up any cartridge, that includes such biggies as Extended BASIC and literally anything else imaginable.

Besides allowing back up of a cartridge, the GK will also allow modification of a cartridge. Once the cartridge is on disk the assembly code may be changed and in early '86 Millers Graphics will release a Graphics Programming Language (GPL) assembler and disassembler so that the GROM part of the cartridge may be rewritten.

What does all this mean? It means that any cartridge can be changed. Terminal Emulator II can be run at 1200 baud, Editor/Assembler screen colors can be changed, Extended BASIC can have new commands added, default printer configurations can be changed from RS232 to PIO, and countless other possibilities.

GK comes with 56K of battery packed RAM and GRAM. This is enough to back up any cartridge. But the GK is expandable to 80K. Miller provides instructions on how to perform this upgrade for under \$20. With 80K of memory in the GK it is possible to move not only a cartridge but the entire operating system of the TI into the GK. This means that the entire operating system, starting at power up, could be re-written. Put your name on the title screen, have the computer auto-load a program on power-up, put slashes through zeros, put true descenders in the lowercase character set, remove TI Basic and put Editor/Assembler in its place. Nearly anything is possible. And since the GK is battery packed, once the system is set up as it will be used, it doesn't have to be reloaded for each session.

Miller says that about 15 cartridges can be stored on one double sided double density disk. Furthermore, it will be possible to load more than one cartridge into the GK at one time so that a menu screen might include Extended BASIC, TI-Writer, and Editor/Assembler.

Now for some technical information. The GK does not actually contain any GRAM but simulates it using ordinary CMOS RAM. As far as Miller knows, TI never even produced production line GRAM.

The good news about Miller's GRAM is that each block of GRAM is 8K long whereas TI's GRAMs filled up 8K of space but only actually used the lower 6K of each 8K block. In other words, for every GROM chip in a cartridge, there is 2K of free GRAM space to program in with a 100% guarantee that the space is not used by anything else as up until the GK it was GROM! This opens up a whole area of memory for programmers to modify TI cartridges without having to worry about any conflicts at all.

GK has two internal boards although one of these is not actually used. The reason for its existence is "for future expansion." What this means is that the GK will work with the new machine from Myarc. Miller said he was very sure it wouldn't work as is with Myarc's machine but that when the Myarc computer came out, an upgrade to GK would be available to make it compatible.

It takes about 34 seconds for the GK to save a GROM chip to disk but only about 30 seconds for it to load all of Extended BASIC. The GK saves cartridges intelligently. This means that if a cartridge only has 6K of GROM the GK doesn't try to save all 56K that might be in the cartridge. It searches the cartridge before saving it to determine which chips are present and saves only those. Modules are saved in program image format so that they take up the minimal amount of disk space possible and load quickly.

One of the more interesting uses for the GK Miller mentioned was that a Version 2.2 console (which is unable to run certain cartridges due to TI's changes) could be made into an earlier version (which can run all cartridges) by going over to a friend's house who has an earlier version, saving their operating system to disk using the GK (with 80K), and then loading it in place of the operating system on the 2.2 console. What you end up with is a 2.2 console running an earlier operating system. It is unaware that it can't run certain cartridges, so it does!

At the Faire, Millers Graphics distributed an excellent 4 page brochure describing in great detail many of the features of the GK. What I will try to do below is reproduce parts of the brochure and add my comments and additions from Craig Miller's talk as I go along:

The GK includes 8K of preprogramming that displays the following menu:

1. Load Module
2. Save Module
3. Init Module Space
4. Load/Save Console
5. Edit Memory

# VIDEOVISION<sup>T.M.</sup>

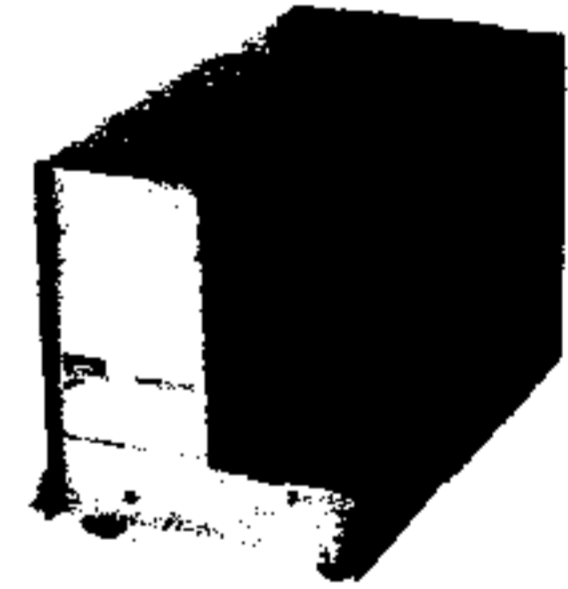
The MYARC Distributor  
THE MICROCOMPUTER ARCHITECTS GROUP

## TI EXPANSION CARDS

32K Exp. Card	\$105.50
128K Exp. Card	\$193.50
512K Exp. Card	\$313.50
32K to 128K Card Up-grade	\$110.00
32K to 512K Card Up-grade	\$197.00
128K to 512K Card Up-grade	\$145.00
Disk Controller Card	\$154.50
RS-232 Card	\$ 77.50

## Peripheral Expansion Sys.

PEB 50 (32K,diskcon,RS-232)	\$358.00
PEB 50-1 (one ds/dd drive)	\$459.00
PEB 50-2 (two ds/dd drives)	\$565.00
Half Hieght ds/dd drive	\$105.50



## NEW PRODUCTS FROM MYARC

X-Basic Cartridge	\$ 76.50
X-Basic & 128 Card Combo	\$236.00
X-Basic & 512 Card Combo	\$358.00
MYARC Computer*	\$420.00

\*available in april

TO ORDER CALL OR WRITE TO : \*\*\*\* VIDEOVISION \*\*\*\*  
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GRAFTON, MA 01519  
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1. Load Module: Loads any module or BASIC program saved to disk or cassette with selection 2 (Save Module). This selection will also allow you to load any memory image file that was generated with the Editor/Assembler Save utility (like UTIL1 or the RUN PROGRAM FILE loaders). The module loading and UTIL1 type file loading can automatically be chained together with a built in Gram Kracker option. This means that you can load all of the module space (56K) plus all of Memory Expansion (32K) with this loader by typing in 1 file name!

2. Save Module: Saves the contents of any module plugged into the GK module port to disk or cassette. This selection will also save the contents of the GK's Ram and GRAM or YOUR BASIC program that has been set up in GRAM with our utility. To save a module, simply plug it into the module port, select 2 and type in the filename to save it to. If you are saving it to disk, the GK will automatically check the diskette to make sure there is enough free space on it for the module.

3. Init Module Space: Clears out the GK's module RAM and GRAM.

4. Load/Save Console: Pages in the following menu:

1. Load Console
2. Save Console
3. GROM/GRAM 0
4. GROM/GRAM 1
5. GROM/GRAM 2

These allow you to load and save the optional console GRAMs, that can be switched in and out to override GROMs 0, 1, 2, which are built into the console.

5. Edit Memory: Brings up a full screen memory editor similar to the Explorer's editor. This editor also allows you to Move Blocks of memory, from anywhere to anywhere, Fill any block of memory with a designated byte or dump any block of memory to a selected output device in Hex, ASCII and ASCII with BASIC bias.

Note that the Edit Memory and Load and Save Console selections require memory expansion. You can use the GK without a 32K card or disk drive. All you really need is a cassette. However, some functions are lost with this configuration as noted. But even so, with the GK and no 32K card you can still run assembly language programs with your console.

Besides the built in software the GK also comes with a diskette that includes the following:

1. A utility that allows you to write BASIC programs that can be stored and executed in the module space. This means that ALL of VDP RAM is left free for strings and numeric variables. It also means that YOUR BASIC program will appear on the normal TI menu as a selection and it can be directly executed with the press of a key!!!

2. A utility to add some new CALLs to Extended Basic.

3. A utility to move the Editor/Assembler and TI-Writer programs to different GRAMs to allow you to load more than 1 module at a time into the GK.

4. A utility that will modify the Editor/Assembler in the GK so that it functions as a GRAM DISK for the EDIT1, ASSM1 and ASSM2 files. Then, when you select Edit or Assembler they are instantly loaded into Memory Expansion. No more waiting for them to load from Drive 1. No need to keep these files on your work disks since they are stored in the GK!!

5. A utility that will modify the TI Writer in the GK so that it functions as a GRAM DISK for the EDITA1, EDITA2, FORMA1, FORMA2 and CHARA1 (optional) files. Then when you select Editor or Formatter they are instantly loaded into Memory Expansion. No more waiting for them to load from drive 1. No need to keep these files on your work disks since they are loaded from the GK.

NOTE: With the 3 Optional Console Gram chips installed you can:

1. Override the operating system or make modifications to it, such as: Install character set with true asenders and desenders.

2. Override TI BASIC's space and put something else there. This will allow you to have a menu with Disk Manager II, TI Extended BASIC and either TI-Writer or Editor Assembler on it. Or TI-Writer, Editor/Assembler, Extended Basic and still have 8K of GRAM free for an additional module or additional enhancements to Extended BASIC (Please note: To Load and Save software to the Optional Console Gram chips you must have Memory Expansion and a Disk System.)

Around the first of the year Millers Graphics will be releasing a GPL Assembler, GPL Disassembler and a GPL Programmers Guide to allow you to program in GPL Code (which is easier than Assembly Language and allows FULL access to the entire computer and its peripherals!!). Craig Miller asked TI if he could reprint their GPL programming guide and they refused. Evidently someone at TI still wants to keep this language a secret. But TI did say that he could rewrite the manual and publish it, so that's what he's doing!

The following is an explanation of the five switches that are on the GK. They are located on the front of the unit and are arranged horizontally.

Switch 1:

RESET: Executes the power up routine to reset the computer back to the main title screen.

NORMAL: The normal operating position for the GK. With the switch in this position the GK's module space will automatically be turned off when a module is plugged into the GK's module port (no need to remove the GK to use other modules).

GK OFF: Allows you to manually turn off the GK's module space. This permits the GK selection to be displayed on the menu when an auto start module has previously been loaded into the GK.

Switch 2:

GRAM 0: Turns on an alternate operating system or title screen when an optional RAM (GRAM 0) chip has been installed and an alternate or modified operating system has been loaded into GRAM 0.

OP SYS: Enables the normal TI operating system and title screen in GRAM 0.

Switch 3:

GROM 1-2: Disables TI BASIC and enables GRAM in its space when the optional RAM (GRAM 1 and 2) chips have been installed. This allows you to have other modules of programs in this space or to modify TI BASIC.

TI BASIC: Enables the normal TI BASIC language in GROMs 1 and 2.

Switch 4:

BANK 1: Turns off write protection and enables bank 1 of the module RAM space.

W/P: Turns on write protection for the entire module space and for GRAM 0 (alternate operating system).

BANK 2: Turns off write protection and enables bank 2 of the module RAM space.

Switch 5:

LOADER ON: Places the GK selection on the menu which enables the internal software for loading, saving and editing modules as well as other areas of memory.

LOADER OFF: Disables the GK internal software.

If all those switches sound complicated, don't worry too much. The GK prompts you when loading a program to flip various switches to enable various banks of memory, so for the most part you don't have to worry about how the switches should be set.

## EDITOR'S NOTES > > >

As editor of this Newsletter for the past three (!) years and several months, I have seen many changes in the TI computer as well as in the character of our Users' Group.

When we first started as a formal organization, the 99/4A had just been introduced as a replacement for the original 99/4. As we watched it become a very popular machine, with an increasing amount of third party software available, we smiled smugly - after all, we were there first!

A comparatively short time thereafter, we watched in horror as our beautiful machine became an orphan of the poor economic times in the home computer industry. Fortunately, TI has done a very credible job of maintaining some degree of support for the machine in the intervening years, and there is still no shortage of quality software and hardware available from many vendors.

Fortunately, too, our Group has continued to meet the needs of our members by providing a forum for discussion, problem solving, and mental recreation.

It is with no small amount of regret that I must, at this time, formally yield the Editor's chair to someone who will have more time than I can currently devote to this publication. It is, I am sure you will agree, unfair to hold the position of Editor when I am unable to devote the amount of time necessary to produce a quality product. If you are saying "but the recent issues have been great, haven't they?", that's only because Bruce Willard (and friends) worked overtime to put them together. My work schedule, as well as involvement in the Worcester Engineering Society, together with responsibilities to other publications, prevent me from continuing as Editor of the MUNCH Newsletter.

Sincerely, Peter M. Blackford

There are a few limitations when using GK. These are limitations imposed by the way TI set up the main selection screen and they are: You can have only up to nine programs listed on the selection screen and they can have names no longer than 19 characters. Actually, that's not such a terrible limitation.

Furthermore, you may have noticed at some point in your work with the TI, an extra menu selection that said "REVIEW MODULE LIBRARY." What this was for was to allow you to see what was in the on-line GROM library box. Never heard of it? TI never released it. Craig Miller built one. What will it do for you? It will let you have up to 16 modules on line at once in the box. When can I get one? Not until sometime next year at the earliest. Miller isn't sure if (never mind when) he'll release it, but it looks like he will.

One of Miller's great hopes is that software for the GK will be written and put into the public domain, at least at first, and distributed through user groups. He believes this will happen and provide for a huge base of modifications and improvements for your TI using the GK. Chances are this will happen too. Everyone is excited about the GK and when people start developing routines that use it, they'll be giving them away right and left just to show off all the neat tricks they've taught their TI to do!

The GK uses little power because all the RAM and GRAM is CMOS and thus should not overheat and so should be good for extended operation. In fact, Miller said the largest amount of heat the GK has to deal with is from the console beneath it, not from the components inside of the GK itself.

The system unit weighs two pounds and comes with the following CMOS memory:

- 16K cartridge RAM
  - 2 banks >6000 - >7FFF
- 40K cartridge GRAM
  - contiguous >6000 - >FFFF
- 8K system ROM/GROM
  - internal software

All memory is backed up with a lithium battery.

The following contacts are gold plated for high reliability and long life:

- module interface
- computer connection
- control switches
- logic to memory board
- option GRAM sockets

The unit will sell for \$174.95 plus \$4 for shipping, handling, and insurance and can be ordered from Millers Graphics, 1475 W. Cypress Ave., San Dimas, CA 91773. There will be a 120 day warranty. Expected availability is the end of November.



The GK will come with a disk full of utilities which will allow customizing of modules and menu selections. It will also have a complete manual explaining how to go about making changes and moving programs around.

At the show, Craig Miller was asked if TI was aware of the GK and if he expected any lawsuits due to copyright restrictions. Miller said that TI has been aware of the GK since he began work on it some months ago and that TI has essentially said that it is OK, although they won't admit it straight out.

The GK is probably the most important peripheral to ever be developed for the TI. What it really does is allow anyone to completely rewrite the operating system of the TI 99/4A. It turns the TI into a 100% RAM based machine. It gives you a completely blank space to work in. With the GK its like having all of the incredible hardware that TI put together without any of the problems inherent in TI's operating system. Literally anything is possible. Craig Miller has done a tremendous job in bringing this product to market. The GK should start a completely new wave of programs and utilities for TI users. Never before has the hardware of the TI been so easy to access. Using the GK the full power of the TI will finally be truly released and we'll all see what these little \$50 machines can really do!

Although the Gram Kracker was the only truly new release from Millers Graphics at the TI Faire, there are two other products from Millers Graphics that have been recently released that were shown that are worthy of note.

The first is Advanced Diagnostics. This program is a completely programmable system that will copy disks, check motor speed, edit sectors, and more. All commands are entered on a command line or can be typed into a standard DIS/VAR 80 file which will then be executed automatically. In this way you can create a file that will only copy certain sectors from a disk, perform a read/write test on your disks, or anything else that can be done directly with Advanced Diagnostics. The program comes with sample command files and features on-line help screens. The following is a list of the commands available with Advanced Diagnostics:

BEEP	CHANGE COLORS
CHECK DISK	COMMAND FILE
CHECK MEMORY	CONVERT NUMBER
COPY READ	COPY WRITE
DISK DIRECTORY	EDIT SECTOR
FORMAT DISK	FIND FILE

HEAD STEP	MOTOR SPEED
OUTPUT DEVICE	OUTPUT WIDTH
PAUSE	READ TRACK
SEEK TRACK	SELECT DRIVE
TIME DELAY	USE DSR
WRITE SECTOR	WRITE TRACK

The program also comes with a 40 page manual that includes an introduction to the operation of disk controllers and Miller's fantastically complete memory maps of the important sectors on a disk. The program is not compatible with Myarc controllers. It sells for \$19.95.

The other incredible new program from Millers Graphics is called Explorer. Don't confuse this program with a disk editor program with a similar name. This Explorer is difficult to describe but a must for anyone interested in how the TI really works. Essentially what it does is let you step through any assembly code a single instruction at a time. The Explorer provides two full screens of information including data on CPU, GROM, and VDP memory access, listings of all CPU and VDP registers, disassembly of instruction being executed, window on memory currently being accessed, and more. You can change values and see how it effects the running program. With Explorer you can watch the system power up routine running and see exactly what the TI does starting from the moment you turn on the power. You can watch how Extended BASIC interprets your program. You can debug your own assembly code by walking through it with Explorer. Explorer comes with 112 pages of incredible documentation which includes over 25 pages of complete memory maps of VDP, CPU, CRU bit, peripheral assignments, and GROM, and also several complete sample explorations.

This program is the ultimate way to find out how your TI works and a whole lot of fun to play with. I got mine an hour before I left for the TI Faire and almost forgot to pack as I was so involved with watching the power up routine. Miller even explains how to add your name to the title screen! This program sells for \$24.95 and is worth every cent.

As you can probably tell, I am very impressed with the work done by Millers Graphics. They are definately one the the most important companies left for the TI-99/4A. I had the pleasure of talking to Craig Miller and members of his staff and found them to be both friendly and knowledgable. Over all, by the time 11:30 AM rolled around and Craig Miller had finished his talk, I was already convinced that my expenses to travel to Chicago were well worth it. Craig Miller and his incredible staff, alone made this great show worth attending.

" . . . RAFFLE . . . RAFFLE . . . "

In January John Shoikour (little John, as I call him) won the raffle, PICNIC PARANZIA. Congratulations, John!!!

The February raffle prize will be a ten-pack of OMNI Resources diskettes, donated by OMNI Resources of Millbury, MA., or a twelve-pack of cassettes, donated by Hector Beaudreau of Bailey's Audio Visual in Worcester. OR the winner could choose ??????? (to be announced at the meeting). Come and see what ??????? is!!!

I would like to take this time to thank all of the people who donated merchandise to MUNCH to help us keep operating at a peak level. Again, thank you.

The raffle is open to all who attend. The drawing will be held just prior to the business meeting. Remember:

\*\*\*\* YOU MUST BE PRESENT TO WIN \*\*\*\*

Bruce Willard, Pres.

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" COMPUTER QUERIES "

Question:

Answer:

If any of you have any problems or questions about our computer, this is where to find the answers to them. Send your question to one of the editorial staff or drop it at the Video Connection on Lincoln St. and it will be printed in the newsletter with an answer. If, in the unlikely event, we cannot find the answer in a reasonable amount of time, we will print it here looking for the answer out there in TI land. I know that I don't have all the answers. How about you???

M.U.N.C.H.

560 LINCOLN STREET

WORCESTER, MA. 01605

First Class

\*\*\*\*\*  
IMPORTANT NOTICE  
\*\*\*\*\*

February meeting will be on February 18, 1986  
at University of Massachusetts Medical Center  
(Come to the VISITORS entrance and follow the signs for MUNCH...)