Saint Paul ATARI Computer Enthusiasts

SPACE

An independent computer user group

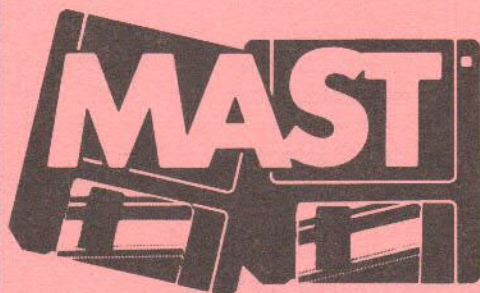**SPACE Meeting** Friday, June 10th at 7:30pm

MAST Meeting Friday, June 17th at 7:30pm

At the Falcon Heights Community Center
2077 Larpenteur Avenue West

MAST+ Programmers Meeting
Monday, June 20th at 7:30pm

At First Minnesota Bank Building - second floor
Lexington and Larpenteur, in back of building

MAST Minnesota Atari ST

DISCLAIMER

SPACE/MAST BULLETIN BOARDS

SPACE/MAST East (XE) - BBS Phone: (612)-774-0135
Sysop: Bruce Haug (Home Phone: 774-6226)

SPACE/MAST West (ST) - BBS Phone: (612)-560-9254
Sysop: Steve Pauley (Home Phone: 560-2917)

S·P·A·C·E

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NEWSLETTER ADVERTISING RATES:

S o P o A o C o E

BYTES from the SPACE PRES
by Larry Vanden Plas

Thanks to Rick from User Friendly for the 80 column demo last month.

As I feed this into my computer we are making the final plans for the '88 Amateur Fair. I hope you had a chance to come. If not, think about attending next year. We will report on it at the meeting. Let us know if you would have liked more information prior to last month's meeting. Thanks to those who helped at the booth.

A number of you have been curious, as have I, about the hard disk on the 8-bit bulletin board system (BBS). Here is the status as I know it. The mechanical part just plain wore out. By the time the problem was detected the head had been hammering the disk. The good news is the rest is just fine. That means we have the cable, case, power supply and controller card in good shape. Now we need to find a 10 Meg hard disk. It is expected that may cost $50 to 60. Bruce let me know if some of this is incorrect.

The June meeting is dedicated to Games. Specifically the Classics of the Past. They will be demonstrated by the Masters who will share some of the secrets. Come to welcome these masters and enjoy.

MAST has extended a special invitation to SPACE members for their Friday, June 17th meeting. They will be playing Midi-Maze. Last time they did this they had 10 ST's tied together. This time they hope to have more.

Our July meeting will be the annual SPACE birthday meeting. More into to come.

If anyone out there is interested in becoming newsletter editor. We will need a new one in November. Think about it and perhaps work with the current one.

Footnotes for PapaDOC
by John Novotny

Way back when (in '86), the SPACE software library became the recepiant of my program PapaDOC. The documentation accompanying it alluded to the possibility of yousers being able to expand the capabilities of said program, being that it is written in ATARI BASIC. If you have been itching to dig in but can't think of what more you can do with it, then read on. (If you have been just plain itching, scratching will do!).

First, a short review of PapaDOC. Its a print driver for an Epson RX-80 type printer. It requires text files of a generic nature, unformatted and without particular word processor imbedded commands. The word processor Speedscript fits the bill nicely, with text files created with the SAVE (as opposed to the PRINT) command. What can be imbedded in the text files are PapaDOC formatting commands, plus a subset of Epson RX-80 type print control commands. These commands allow for imbedding graphics pictures (from standard G7+ or G8 screen files, or ICON files from you know where by now), Big graphics text (from BigCHUMP character set files - check your "local" library if all of this is new to you!). Also, paragraph numbering, generating a table of contents, printing columns (up to 6 with line length of up to 132 characters), and a mish mash of more common formatting controls.

Getting into more detail, the commands PapaDOC intercepts for translating himself are the sequence <ESC>!xy, where <ESC> is CHR$(27) commonly generated by hitting the ESC key twice, ! is right next to the ESC key, and xy vary to provide the available control functions. The "x" part can be thought of as a function, and "y" the subfunction. OK, so what this is all getting to is a proposed new command for PapaDOC, giving him the ability to extract footnotes imbedded within the normal flow of text, and defer-

ring their printing for the bottom of the page, as is the commonly desired way of doing this. To accomplish this, I will use an existing function (lower case <t> will do), and adding a new subfunction (lower case <f> should be fine). So much for the easy part - existing code detects the existing function and puts us in code that will look for the new subfunction. To use this, we truck along with our document until there is a need for a footnote. At this point, we put our note ID such as (See Note 1), then our new command <ESC>!tf followed with the text for the footnote. When we've said all we want to say in the footnote, we can end it by the standard ATASCII RETURN (the familiar 155), or the rest of the world's Carriage Return code CHR$(13). We can use this because PapaDOC recognizes both as a mandatory End of Line. (By the way, this code is available with CTRL-M in Speedscript). If we want to get a little fancy, CHR$(13) can mean to imbed the footnote reference within a paragraph, and CHR$(155) can mean the footnote is at the end of a paragraph. As we will see later, the second implementation is easier than the first. Ideas of the implementation follow.

The whole process of footnoting from a word processor requires that the footnote information be deferred until the bottom of the page is reached. This offers several problems, some of which I will identify here. First off, a convenient place to hold footnote information is required. The one I am choosing is a disk file, and specifically for me, a RAMdisk file. A RAMdisk file is ideal for a couple of reasons. It will be a temporary file, OPENed for WRITE upon encountering the first footnote on a page, CLOSEd at the end of each page, then OPENed again for READ to print the footnote(s) therein. The footnoting line length must be calculated based on current line length (it may be nice to have footnotes in compressed text while the rest of the document is in pica or elite). Then text will be moved from the

document buffer using this line length, and then PRINTed to the FOOTNOTE file. A record of the number of lines in this file will be maintained, so that the printing of the document body can be stopped short of the normal end of page to allow room for the footnotes. The printing of the footnotes will then be fairly straight forward, merely a loop of INPUT #F,F$:PRINT #P;F$ for the number of lines therein.

This seems rather straight forward, and can be made to work without much effort within the existing structure of Papa-DOC. The design details show up in the situations that will require special effort. If footnote references are to be made within paragraphs, then there is the problem of how to handle the partial line up to the reference. It could be printed immediately without ending the line, the footnote buffered into the file, and then more text to finish the current line. This would work if we didn't need to justify both margins. Also, there is the problem of encountering a footnote reference towards the bottom of a page. This problem appears that it can be solved by restricting the length of footnotes, and leaving all pages shortened by the length of a maximum length footnote.

I'd like to add a footnote at this point (but I haven't coded this yet!). The newsletter deadline has arrived, so just a note about the June meeting. Join us for Classic Games night.. come for tips on playing some oldies like Rainbow Walker, Oil's Well, Boulder Dash, Alley Cat, and Bounty Bob (+ Strikes Back). See you then.

◆ SPACE May Meeting Minutes
by Ernie Costello

1. The meeting was called to order May 13, 1988 at 7:30 PM by President Larry Vanden Plas.

2. Treasurers Report: Larry Vanden Plas. April income was $122, expenses $137, leaving a balance of $392.98.

3. Vice President's Report: John

Novotny. John reported "Compute!" magazine apparently dropped eight-bit news.

4. President's Report: Larry Vanden Plas. SPACE will have a booth at the electronic Amateur Fair, June 3 & 4 at the fair grounds. He asked for volunteers to help staff the booth in four hour blocks. We hope to pick up new members through our apperance. Volunteers will have their admission ticket subsidized by the club.

5. The Secretaries Report was accepted as printed in the newsletter.

6. Offers and Deals. Best Byte has Epson FX-80 type of ribbons for 2 for $5.95. Joe Danko told about "Super DOS", a very versatile DOS from Australia for $21. Use Friendly will consolidate orders. User Friendly is having a sale with 25% off all S/W, magazines and assessories.

7. News. ICD discontinued their MIO board until the price of DRAM chips comes down. Larry described an Antic article on Atari Writer+ tips. He tried one suggession that will reduce disk drive wear. He loaded AW+ to D8. However, he asked for ideas on how to load just the spelling checker to RAm disk. Anyone got any ideas? Atari earnings should improve with the acquisition of Federated Stores featuring the Atari line.

8. Old Business: Larry asked again for volunteers to solicit and edit ads for the newsletter.

9. BBS. The hard disk went down but Bruce has the BBS up again with his old backup drives.

10. DOM: Joe Danko demoed the DOM and a two disk application feature of the month, Daisy Dot/Dot-Magic/Font Converter, a versatile custom text printer that integrates a variety of fonts. Rick from User Friendly demoed the 80 column box on a 40 column color monitor with good results.

▼ 8-bit Magazine Reviews
by Larry Vanden Plas

This month we review the June, 1988 COMPUTER SHOPPER which has four articles on the 8-bit Atari plus "The State of the Eight: 8-bit Computers Alive and Running."

The "Applying the Atari" column discussed the release of Video Title Shop. It comes with a Graphics Companion for about $30. It also mentioned that NO Frills Software has released several new graphics disks for PrinShop users. Included are the first upper/lower case fonts, a font version of the American Sign Language Alphabet, a second Christian Scenes disk, budget graphics, and Coats of Arms. Reader input on CP/M and the Atari, VT-100 emulation, monitors was interesting and informative.

A favorable review of QuickCode-The Programmers Library introduces it as a new programing language.

"Note and Point" talks about Neil Harris' new job as East Coast and Midwest Sales Representative. Atarifests continue to give headaches to user groups. Keith Ledbetter leaves ICD. ICD promises SPARTADOS X and gives news on the MIO. ADOS is said to be a public domain release. The 8-bit Commadore Mouse will work on Atari. Daisy Dot II is said to " take control of your Epson-type printer and deliver the closest thing to laser printer definition you will ever see from dots." The program disk with manual is available for $10. A graphic demo, Jewel, is briefly described. A software package to use a second Atari computer as a RAM Disk is mentioned.

A good review of Daisy Dot II with samples will get you thinking. Note that this is upgraded from the first Daisy Dot and will run on 800's and 400's.

The state of the 8-bit Atari and other 8-bit computers provides an interesting comparison.

Thanks to John Novotny for lending me the magazine.

SPACE Software Library News

by Joe Danko

LIBRARY: Joe Danko and Greg Peasley
SPACE DISK-OF-THE-MONTH June-1988
This month's disk has two sides:
Side A:
DOMINION.BAS
DOMININ.DOC

ATARI BASIC and DOC files. A board game similar to REVERSI where two players compete to occupy the larger portion of the board. Requires one or two joysticks.

DRAW A group of files comprising a simple color drawing program written in 'ACE C', a version of the language 'C' offered by the SPACE LIBRARY. The language disk is not necessary to execute the program.

DRAW.COM: the compiled object file that will execute on an ATARI with no BASIC inserted or enabled.

DRAW.C: the 'C' source code. If you want to modify the code and recompile it you will need a 'C' compiler such as 'ACE C' and a text processor such as TEXTPRO (both available from the SPACE LIBRARY).

DRAW.LNK: the 'C' linker file with a list of 'include files' used during compilation.

DRAW.DOC: doc file.

RESCUE.BAS: ATARI BASIC action game where you release your shuttle from the mother ship and dodge the aerial mines and light on the landing pad. One of the six people will get into your ship and then you have to steer past the mines again and dock with the mother ship. Then you can try to get back down and do it all over again until you transport all of the people. Requires a joystick.

ATLANTIS.BAS: ATARI BASIC text adventure that takes place underwater.

NETATARI.DOC: An advertisement from a BBS based ATARI dealer.
You're in for a surprise if you try to exit from BASIC to the DUP.SYS utility. When DOS is entered the MENU program will reload. I copied the AUTORUN.SYS MENU loader back on side A as DUP.SYS. So when you want to exit a program and go back to the MENU from idle BASIC just keyin DOS.
Side B:

AMISBAL: A machine language pinball game loosely based on an AMIS BBS. It will load automatically on a boot even though it is not named AUTORUN.SYS because I modified DOS.SYS to look for AMISBAL.COM instead. I plan to do this on all future LIBRARY disks that would normally use AUTORUN.SYS so the names will show up on the directory index.
And that leads into the BIG NEWS.

DISKLIB2.BAS: A NEW and IMPROVED version of the SPACE INDEX disk directory database program. To RUN DISKLIB2 get the MENU running and turn the DOM over to side B, select LOAD from the main menu and select DISKLIB2.BAS. Also on this disk are two indeces: PROGINDX.M87: SPACE LIBRARY DOM files from July, 1982 through December, 1987 are in one large file. DISKLIB2 files are not compatible with INDEX so I did a conversion and mashed them all in one file. DISKLIB can do searches and sorts and is a LOT faster. PROGINDX.M88: SPACE LIBRARY DOM files from Jan, 1988 through Jun, 1988. The M88 and M87 extensions indicate that the index is made up of DOM's ending in year 1988 or 1987. The next project for DISKLIB2 will be an index of all the OTHER disks such as PRINTSHOP icons, TEXTPRO, COMMUNICATIONS disks, etc. The extensions used with special directories will be something like PS1, COM, MUS, PIC, TEX, etc.

The SPACE LIBRARY disks are readily available by mail if purchases can't be made at a SPACE meeting. Send your requests to:
SPACE LIBRARY
P.O. Box 12016
New Brighton, MN 55112

Mail orders will be a flat $6 for each double sided disk plus $1 for shipping costs. The cost for quantities of 5 or more will be $6 each and no charge for shipping inside the continental USA.

Make checks payable to: SPACE

Mail Order Woes

By A SPACE Member

July 21, 1987 I made the decision to purchase a 256K Multi I/O Board (MIO) by ICD (I CAN'T DECIDE??). The Mail Order price from 'Computer Mail Order' (CMO) was $169.00, $30.00 off of retail. At the time, it was one of the few companys that offered it. I placed the phone call to CMO, an 800 number, got the lady on the phone and placed my order. Seeing as how I have an Atari XE, I had to also order a Bus Adaptor. $17.95 more, plus $7.00 shipping for the works.

The adaptor was $2.00 off of retail so I'm still ahead. It plugs into the Cardrige slot and the expantion slot, has 2 cardrige plugs mounded on it and brings all the signals together at an edge connector to match the expansion Bus of the 800 XL.

The following week UPS brings a package, but something is wrong. It's just too small to hold the MIO! Opening it up, all I find is the Adaptor and the packaging slip. BACKORDERED!

Now I realize that companys can't ship what they don't have so I sit back and wait.

Aug 20, and still nothing, I get back on the phone and call CMO. I'm connected to the same lady that took the order and she checks her computer. Still nothing, but they think it'll be another 2 to 3 weeks. If I want to cancel, they'll credit my VISA, but then what? Go someplace else and wait another month? No, I'll wait.

And Wait, I did. Friday, Sept. 18th, UPS delivers the long awaited box! But, I've alreay made plans. I'm leaving that night and won't be back until late Saturday night. Oh, well, I waited this long, I can wait until Sunday, I think.

Sunday, chomping at the bit, I carefully sit down with the instructions and read them from cover to cover. Humm, kind of vaque for a non-hard disk and a DOS 2.5 user. The floppy disk supplied with it has SpartaDOS 3.2d and the Utillities needed for a hard disk, but nothing else. No instructions. I've never even seen SPDOS and have no idea on how to use it. Oh, well, put it aside and use DOS 2.5. That's what I had been planning to use anyway.

I better explain my system here. I have a modified 130 XE with 320K of RAM and a switch so I can disable the extra RAM and return to true 130 mode. An Indus Drive, an Atari 1030 modem, an Epson LX80 and an MPP pinter adaptor. All of this is mounded in a cabinet with a hindged cover, nicly finished. All the power supplies are mounded across the rear and plug into a power strip, also mounded in the rear. Only one hole out the back for the power cord, monitor cable, and telephone line. When the top is open, it makes a perfect shelf for the monitor, disk storage boxes and a few manuals. I could close and lock the top and keep the kids out when they were grounded.

That was before the divorce and now I had a problem. There wasn't enough room to the rear for another power supply, AND, the ones there were there were in the way! The only thing to do is to remove the power supplies and drill large holes in the back. The power supplies would sit on the bench behind the box, the cords comming through the holes to the power strip. That way I still had the main OFF/ON switch inside. Oh, well, I needed a larger hole for the printer cable anyway. I had been running for a year now with the cable out, over the side so the cover couldn't close without disconnecting it. Now I could take care of that, too.

Two hours to carefully strip out everything except the power strip, drill all the nessecary holes, and get it all back in

place on the bench. D#$%! The MIO still won't fit! The Adaptor pushes the XE out 2 inches beyond the edge. Now what?

Looking it over closely and thinking hard, I decide to raise the MIO above the adaptor, connect the flat cable comming out of the MIO to the adaptor, and push the adaptor under the MIO. Those nice boxes you get check blanks from the bank in seems to be the perfect size. Quickly I check it out and now the XE fits. Well, almost. At least the front is on solid wood again.

Now the final connection. The power plug to the MIO. Everything OFF. Plug it into the MIO, other end in the power strip. I'm READY!

The instructions say to turn the MIO on first, then the disk drive, and lastly, the computer. OK, the MIO is first.

Now when facing the computer with the MIO connected, there are two LED's on the left front corner, one green, the other is red. The power switch is on the left side, towards the rear. Also, when reading the instructions, they mentioned the red LED comming on when the MIO is accessed. If this is true, the green LED should come on when the power is turned on, right? What else could it be for?

Put the switch up and check the LED. Nothing! Humm. Recheck the cords. OK. Nothing wrong there. Well, maybe the green LED is for something else. Maybe the MIO doesn't have a Power On indicator, altho, that didn't seem quite right, but push on.

Get out the instructions for setting up the configuration. The DOS 2.5 boot disk is in the drive, but I don't need it for this. Just hold down SELECT and turn on the computer. In a second or two, the Configuration menu should come up on the screen. Simple! Two seconds, and the disk drive spins and starts to Boot! Now, What!? Plop on my stool and Think!

Now, I happen to be a technician and work on mainframes for a well know company. (No, Not Big Blue.) I also have

most of the tools needed to work this thing over good. Two hours later, I give up. The power supply is good and so is everything else, EXCEPT, the MIO!

So, what's inside of this gray box? I wanted to know what kind of RAMs where in it, anyway, so, why not? So long as there isn't any seals on the screws or on the edge of the case.

Checking it over closely, I find nothing that would give away the fact that I had opened it, so out come the 4 screws on the bottom. Removing the top, I see immediatly why ICD says the RAM can only be expanded in the factory. They are using what is called a 'ZIP' package on their 256K RAMs. Neat.· They can pack twice as much RAM in the same space as 'DIP's. (DIP: Dual Inline Pack. ZIP: Zig-zag single Inline Pack. You have to see the 2 in order to understand the difference.) I know of only two companys that make them, and this the first time I've seen any.

Anyway, back to my problem. Checking the switch with an Ohm-meter, it doesn't seem quite right. In the off position, the center pole and top pole are shorted. This is OK, but in the ON position, all 3 poles show a short together, but not to ground. Fishy, but go on. Nothing has burned up yet.

Connecting power and turning it on, I check the output of the +5 Volt regulator (Not hard to spot). +5 Volts, on the head. Next, I check one of the DIPs, not a RAM. Pin 14, 16, 18, or 20 is the power pin, depending on the size of the chip. This is true on MOST 'TTL' logic chips and I knew most of these from the markings. NOTHING! No power on ANY of the chips! Regulator is still putting out, but nothing on any of the chips!

That does it. It's under warranty, so I decide to button it up and send it back. I don't think I have to say how disappointed and upset I was. Seeing as how I had bought it from CMO, I felt it was only right to return it to them for replacement. (What a mistake this would turn out to be.)

I get off of work at 3:15 PM and drive 3 miles to my apartment. I was there by 3:20 and that's 2 lights and 2 FOUR-WAY STOP signs. CMO is very sorry, and they give me a return number to mark the package with. I qickly repackage everything, new label, and then my second mistake.

I've never mailed anything UPS, so I don't have the foggiest idea where to go. Well, she had said to send it UPS or Parcel Post, and the Post Office is fairly close, so why not? Parcel Post, 4th Class and insured for $200. Only a couple bucks, and it is in the mail.

That was on Sept 21, 1987. A Monday, 4:15 PM. Oct 27th, over a month later, I call CMO. I'm directed to the same lady who took my order and she checks her computer. Yes, they have received it, but no one has had a chance to look at it yet. I keep my cool and ask her why, after more than a month, no one has checked it. Oh, no. They've only had it since the 17th of October! U.S. Postal Service, are you listening! From Mpls, Mn., to Williamsport, Pa., in ONLY a MONTH!

OK, OK. I don't shout, scream or stomp my feet. In fact, one of the reasons I had called was to order SpartaDOS Construction Set. I'd heard so much about it, and how good it worked with my expanded XE and MIO, I figured I'd give it a try. $29.95 + $7.00 shipping. Still cheaper than retail. I place my order and hang up to wait some more.

A few days later, I come across this good deal for the new model AVATEX, 1200E modem from a company in Iadho. $85.00, delivered to the door, with software. No hidden charges. I call them up and order it and am told that, being so new, they aren't avaliable yet, but, would be shipping just after Thanksgiving. OK, VISA, here we go again. I can wait that long for 1200 baud. By then I should have my MIO back and pick up a cable for the modem. Also, I needed a new printer cable and now I knew exactly what I needed.

SpartaDOS CS is here in a week and I tear into it. Now, I've never Had to use a PC and know Nothing about MS/DOS. Oh, I got DOS XL with my Indus, but DOS 2.5 worked so good, I never tried it. From what I had read in the instructions about the 'Command Processor', I didn't even want to use anything that complicated. Well, it took me the better part of a week to learn to use SpartDOS, but that's another story. Let's just say that the manual is written for Rev 2.3 and this was 3.2d. They are NOT the same.

About this time, on the local BBS, someone has a used printer cable, made for use on the MIO. He wants $9.00 for it and I send him $10.00 to help with the postage seeing as I live on the north side of the Cities and he lives on the South side.

Nov. 18th, I get back on the phone to CMO. Same lady. Where is my MIO!? Answer: They can't fix it and now I have been put on the Back Order list, again! Number 12. Now that can't be long, can it?

Waiting again, patiently, my new modem shows up the 11th of December. On the shelf it goes, because I need the interface of the MIO to use it. December 22th, calmly, I call CMO. Over a month and I've only moved up to #10 on the list. Their explanation: ICD can't make them fast enough. If I want, I could cancel, but what good will that do? I still want the MIO!

I can be very patient. At least on the outside. What good would it do to get on her case? She could really mess me over if she wanted to. Then, I'd have to get nasty and scream and howler at her boss, and then what? I'm in Mn, and they're in Pa. I wait. Feb. 18th. CMO - I'm now #4 on the list. I have a very hard time staying cool. My voice may have cracked a few times as I explained to this new lady the history of my predicament. I'm sure I said 'Goodbye' when I hung up.

The second half of Mail Order Woes and the MIO will be continued in the July Newsletter

M ○ A ○ S ○ T

News from the MAST Pres

By Jim Schulz

It's June and the start of summer has arrived. In the past, these have been the slow months for MAST, but not this summer!!! We have special events planned every month that you won't want to miss!!!

So let's see.... what is planned for this summer???? First, this month we will have our second MidiMaze tournament. We will have anywhere from six STs on up having it out to get the elusive happy face. If you haven't seen this one before, this is a must see. Please leave a message to Phil if you are interested in playing. All you need to play is an ST, monitor, disk drive and joystick. If you can't bring your system, leave Phil a note anyway and I'm sure that we can make arrangements so that you can play also. See who will be this month's champion..... Will it be Todd, Kent, Ken, Phil or even sneaky Steve?? Come and find out for yourself...

So that's June.... For July, we will have the first annual member appreciation night. At this meeting, we will be honoring one of our hard working MAST members for his contributions. We will also have specials and prizes for members as well. The only qualification.... a MAST membership card. Find that special card and hold it dear.... If you don't have a card, pick up one from Allan or me at the next MAST meeting. Also, Phil will present his first seminar on Databases and the ST. If you are knowledgeable on one of the ST databases, please see Phil at the next meeting. He will need the help of some of the members for this seminar. For August, we have a game fest planned with a Missile Command and Oids tournament as well. More on this one... next month. And for September, we have our second MAST swap meet. The first one went over so well that we just had to have

another. Like I said, a lot is planned for the months ahead.....

So what else is planned for June.... We will have lots and lots of DOMs (please believe me on this one), all sorts of news and rumors including news from this month's CES show in Chicago and possibly demos as well. Demos, this month, will include Carrier Command, the next great game for the ST and Neodesk, the desktop replacement program. Also this month, all ANALOG disks will be only $4.00 to celebrate me catching up and you waiting. Also all ST News disks (15 of them) will be available as well. Please let me know in advance if you are interested in the ST News disks. A big meeting planned again..... As always all are welcome.

Also on the Monday following the MAST meeting, we will have the monthly MAST+ programmers meeting. This month, we will demo Bill LeDuc will demo Laser C and Chuck Purcell will demo the Mark Williams resource editor. In addition, we will have more about our STdNET network. Finally, we might get a demo of the Omniview, multires program as well. The STdNET is moving along well and will soon be branching outside the Twin Cities. Don't be left out!!! This should be another good meeting. As always, MAST+ meets at the First Minnesota building at Lexington and Larpenteur at 7:30pm on the Monday following the MAST meeting. I hope to see you all there!!!!!

Disk sales..... We sold just about 200 double-sided disks last month so there still must be a need for them. Starting this month, we will only have 125 disks a month to sell so buy early. Remember the double-sided disks now sell for $1.15 each. In addition, I just about sold out of my first box of 3.5" over-the-top labels. MAST is selling these for $2.00 per 100 so you can't beat this price. If you would like some of these, please let me know in advance so I can have your order ready. I will also bring some along to the meeting

as well. All sorts of good deals from MAST!!!!

Newsletter.... This month, we are a little thin on articles. Do you have a favorite game, program, or project??? How about writing about it for the members?? We can also use tutorials and columns as well. Help make the SPACE/MAST newsletter the best around. Finally, come November, we will again be looking for a new newsletter editor. Steve has done an excellent job the last year and has decided not to continue after November. If you are interested, please see Phil or I for more information. Please see Steve to find out how much work is involved. We are asking for help this early because it is always hard to find a newsletter editor. Please help!!!!

BBS..... Need I say more???? The BBS has been very busy lately, almost too busy. This month, check out the new ST Reports, the ANTIC updates on last month's COMDEX show, press releases for new ST products and the latest news from this month's CES show in Chicago. Also check the MAST BBS for a list of the new TOS ROM enhancements coming soon.... As always, feel free to leave your questions and I'm sure you will get an answer. A great source for ST news, rumors, and downloads and of course MAST news as well.....

HAMFEST.... We participated in this year's HAMFEST at the Minnesota State Fair grounds on the first weekend in June. I would like to thank all who helped. Since I am writing this before the show, expect a full report here next month and at the next MAST meeting. A big thank you goes out to Phil for organizing and manning the booth during the whole show!!!

Miscellaneous stuff..... First, there is no magazine update column this month, but here are some comments anyway.... The Current Notes group offer is all sent in and ready to go. I am waiting for more information and should have it by the next MAST meeting. The ST Applications group buy needs three more subscrip-

tions. If you are interested, drop me a note on the MAST BBS or see me at the next meeting. The deal is a year of ST Applications for $30.00. Finally, this month's group buy is a one year subscription to ST Informer for only $15.00. I believe that we need six members for this group buy. ST Informer is probably the best of the ST monthly newspapers. I will bring some sample issue along to the next meeting. This is a good buy on a good ST newspaper. Second, I am still taking orders for the Universal Item Selector. A new version is due out soon. Check the MAST BBS for a list of the new features. For $10.50, this is a great deal. Finally, after checking up on the NeoDesk group buy, it was no deal at all. Check your local dealer for this program.

Well, that's it for June!!!! As always, lots of stuff.... The envelope please..... This month, I have to look at a few utilities.... First, Shadow, the background downloading program which will even continue downloading after a reset. Second, Macro Mouse, a macro generator which will also you to store your keyboard, mouse and menu selections and play them back later. Third, Neodesk, a new desktop replacement program. I haven't seen this one yet, but it sounds great from the press release. Also, don't forget about Carrier Command!! I have only played with this one a little bit and it is something to be seen. Well, it's time for work so the envelope is sealed for this month. I hope to see you all at the June MAST meeting and the June MAST+ programmers meeting as well as on the MAST BBS. Happy computing!!!

Did you know you can buy blank 5 1/4" and blank 3 1/2" Disk at both SPACE & MAST Meetings?

MAST Disks of the Month

By Jim Schulz

Summer has arrived again and it's again time for more fun and surprises in the wonderful world of public domain. But before we look at this month's list of goodies, let's look at last month's selection.

#2 - MAST Newsdisk #2 (Latest disk of news and more from Dave Meile)

#78 - Uniterm V2.0c 010 (Latest version of Uniterm with bug fixes)

#235 - Sheet V1.5 (Public Domain Spreadsheet program with WKS support)

#244 - May DOM #1 (Utilities)

#245 - May DOM #2 (Applications)

#246 - May DOM #3 (Games)

#247 - May DOM #4 (More Games, and GFA programs)

#248 - May DOM #5 (Demos and OSS Pascal programs)

#249 - Demo Disk #30 (Shanghai playable demo)

#250 - 14 Balls Demo (Demo of 14 bouncing and reflecting balls)

#251 - DeskPak Plus (Shareware desk accessory with complete docs)

#252 - DeskPak Plus Source (Source code for shareware desk accessory)

#253 - ST Applications 02/88 (Disk version of February ST Applications)

Well, that's how last month looked. Not too good and not too bad. So let's first take a quick look at the DOM news and on to this month's selection.....

Disk problems.... After a lot of analysis, I finally determined that the latest version of Procopy has been causing my disk problems. The way that the files were getting corrupted was that fifteen bytes of a file were shifted to the left and the last byte was repeated two times. A little technical, but too complicated for a disk drive problem. My quick guess is that the program is getting so fast at reading disks that disk drives that are not completely up to spec speedwise might start experiencing problems. So I have gone back to the

older version of Procopy and updated my disk check program to check for these type of bad disks. I sure hope that this solves the problem. If you are still getting bad disks, please leave me a message on the board or give me a call. If you don't tell me that there is a problem, I just won't know. Thank you.

Prices.... All MAST DOMs are $6.00 each. In addition, the MAST news disk, the ST News disk and the doc disk are $2.00. Updates on old disks are $2.00 with the return of the original disk. It is again special time for disks. This month only, all ANALOG disks are $4.00 each. More on this and why coming up.

Doc disks.... Yes, I missed it again last month, but it will return this month with Todd Burkey's great new DISKSCAN program. I have said this before, oh how many times.... Well, I will have a new DOC disk for this Friday's HAMFEST so I will have doc disks for the meeting. So bring your $2.00 and get a new DOC disk. Please remember, this is not an updatable disk. Thanks.

ST News.... Yes, they also got lost last month. Yes, we heard this before also. Well, this month, I am making up new disks as we speak. All 15 ST News disks will be available at the meeting. Since we are talking about a large number of disks, please drop me a mail message on the BBS, drop me a note in the US Mail, or give me a call. I will then hold a set of disks for you. I will only be making up 3 or 4 sets of disks so plan to come early otherwise. I will also take orders at the next meeting for July MAST meeting delivery. This is just too many disks to make up and hold in inventory. Please remember that these disks are only $2.00 each as well. This is an excellent deal on a great ST disk magazine. Order your set today!!!!

So that's the news for June and now on to the public domain software...

ANALOG - Last month, we again had no ANALOG disks. Well, I finally got tired of 2 megs of ANALOG stuff on my hard drive so I went at it on ANALOG disks. In

the past two weeks, I have redone all five previously released ANALOG disks and have completed another four to date. These new ones include a color and a monochrome version of Floyd the Droid which I have finally run. Not bad.... Even digitized sound.... I should have all the ANALOG/STLOG disks up to date by the meeting. This is the reason for this month's special. To thank you for waiting, they are on sale. The redone current disks mostly include new picture files of ANALOG and STLOG covers and no new programs. All redone ANALOG disks are available for a free swap with your original disk. Also the new ANALOG disks will include stuff from the last two issues of STLOG as well. You have asked for it on the MAST BBS so now you can have it!!!

Uniterm - No Uniterm update this month..... But I will release the Uniterm support disk with sample macros, utilities and more to be used with Uniterm. Once you buy the update disk, both disks can be updated for $2.00 with replacement disks.

DBMan V4.0 - So you want to see what DBMan is about without the $250.00 price tag. How about a fully running copy with only a 30 record limit?? Yes, you can get the power of DBMan for a public domain price. This is a full running demo with only a 30 record limit on the files. Nothing is left out. This is an excellent deal to try out or even get a data base for some small programs. Check this one out!!! I use it every month for the disk labels.

JIL Cad - Have you ever wanted a full CAD package for a cheap price??? Well, this is it. This program, originally to be released through Migraph, is a full-featured CAD program. This is shareware and a smaller version of a larger package. This program requires a monochrome monitor and a double-sided drive, but is well worth it. This is still a good program even though it is a couple of months late. In my new, get- it-done-early plan, I will have this at the next meeting.

Mark Johnson C - Yes, another update for this month.... This is the new and improved version of the public domain C compiler from Mark Johnson. Initial reaction has been quite good to this program. He has added more so it might be two single disks instead of one. I have been told that I can squeeze it on one disk, but I will see. Yes, this will be available for $2.00 and your original disk or $5.00 and your original disk for two disks if needed. What a deal on the best public domain C compiler around.....

File/Folder Restore - So you have Turtle and you can't restore your backups without a lot of problems???? Well, there is now a program to solve this problem. This is a brand new program with OSS Pascal source as well. So your restore problems are over.... Now where are more disks ???? Maybe...

Goodie - What??? That's what is is called??? Yes, this new program is a multifunction desk accessory with a ram-disk, a directory printer, a clock/calendar, disk backup, file copy and undelete. Quite a bit and worth a look as well!!!!

VDOS - Would you like a new interface to work from??? Are you tired of GEM??? Then check out VDOS, the new virtual DOS. Get the complete package and the complete low-down at the next MAST meeting. An excellent bargain for a public-domain price!!!

UNIX Shell - This is the most interesting program/programs which I have seen in years. Two programmers in England set out to write a UNIX interface for the ST with UNIX utilities. They tried to sell it commercially, but everyone wanted them to change it and they said no!!! So it is now available as shareware. This UNIX shell comes with a large number of UNIX utilities and manual pages as well. This package is available on two SS disks for $6.00 at the next meeting. See what the commercial software vendors wanted to change!!!!

Well, that's a sample of what we have for this month with more coming every

day. I have so much good stuff this month that I had better stop before I fill up the whole newsletter. Check out the MAST BBS the week of the meeting of the latest update on this month's DOMs. As always, I do my best to put out as much good stuff as possible given the time that I have available. I am starting early this month putting disks together so expect a lot of disks and a good selection. Maybe even some picture disks as well...... As always, expect the best from the MAST DOM.

If you can't make the meeting and would still like to get ahold of the DOM or would like to get ahold of the DOC disk, my address is
3264 Welcome Avenue North
    Crystal, MN 55422
That's it for June. It's time for more disk making!!! Check out the new ANA-LOG and ST News disks this month and take advantage of this month's special as well. All sorts of good new stuff is coming very soon..... I hope to see you all at this month's MAST meetings and on the MAST BBS.

Children Will Play
By Phil Seifert

Well, last month I mentioned I would write about a big game all the big boys were playing for this month's article. Perhaps some of you thought it would be about Dungeon Master or possibly even Midi Maze (more on that, later). Nope, it isn't either one, but, it is very important to all of us. What I would like to talk about this month is the Apple vs. Microsoft, HP lawsuit. What it is about and how it may affect us in the future.

Long time ago, there was a division of Xerox Corp. called Palo Alto Research Center, or PARC for short. This division was assigned some of the top men and women in the computer industry that worked for Xerox. Their goal was to create a more perfect computer, both software and hardware. In their endeavors, they created many advances, not the least of

which was Smalltalk. I am not going to go into all the details of this, but, will say that Smalltalk helped formed the basis for the icon driven shells that we currently use in the Macintosh, Atari ST, PS/2 Presentation Manager, Amiga, and so on.

What is important about icon driven shells is that Apple, Inc. has now claimed proprietary rights to the visual interface used by the Macintosh. No one else is to be allowed to duplicate in part or whole their interface. Now, most people would consider this a most reasonable request. After all, Apple did all their own development of their visual environment. The problem lies in what did Apple really create in their own innovations, what did they license from Xerox, and what type of agreement did they make with Microsoft. It seems that Apple signed a license agreement with Microsoft that allowed the latter to use certain parts of Apple's graphic enviroment a few years back. Now Apple is claiming they have gone too far in creating Windows (and HP in their system) and are now infringing upon Apple's intellectual rights.

Microsoft and HP are taking the position that Apple does not own all rights to Icon and windowing systems, which PARC was the basis. Further Microsoft countersued to state they have not gone beyond their original agreements with Apple. You might be wondering how this would effect us, right? Well, imagine if Apple was considered correct by the courts. Anyone who puts out an icon and window shell could be sued for infringements. This would include GEM and WorkBench (Amiga's O.S.). That would be a good way to quash all the upstarts, wouldn't it? And don't imagine that Apple wouldn't try it. They already have done it before. When GEM first came out on the ST and the IBM PC, Apple sued. The net result was Digital Research, Inc. changed GEM. Atari at that time had complete rights to the version they were already using so they said no to any changes of their system.

The problem really comes down to this, if Apple wins in court, they will have legal precedents to challenge ANYONE who creates a icon and window environment. This would include IBM PS/2 and Presentation Manager. This, I feel, is the real target of the lawsuit. What Apple is trying to accomplish by litigation is what they do not seem to be able to stop by marketing, is IBM's dominance of the computer market here in the United States. Apple has been starting to make some inroads into the business world, mostly in desktop publishing. But, IBM with the PS/2 et. al., will be able to challenge that by offering complete integration with their line of computers. After all, what would you do, buy a completely new line of computers that are not compatible with what you currently use? (Macintosh) or buy a new line that is mostly compatible with you currently use (IBM)? It will be interesting to find how the courts rule on this issue. So far the courts have ruled in favor of Broderbund over Unison World (Printshop vs. Print Master) and are currently deciding about Lotus vs. Paperback and Mosaic (what is kind of amusing about this last one is that Lotus is now being sued by Software Arts, Inc. the remnants of the original company that developed the electronic spreadsheet, Visicalc, on micro computers for the same reasons).

Hopefully, the courts will decide in favor of Microsoft & Hewlett Packard. It does not do the computer industry any real good to stifle developements. Some day it would be nice if all computers worked the same way and used the same formats and so on. But, if Apple has its way, the only way that would happen is if we owned only Apple products. Others will say this is good, that this promotes innovation by protecting anything you may develop without fear you will be ripped off by others not willing to put the time and money into the research. I feel this is correct, up to a point. Ideas should not be copyrighted or patented. Only the

methods to achieve them. Otherwise, I will write a new science fiction novel based on time travel and proceed to sue anyone who writes one after me.Ok, enough of the serious talk.

On to more important things (depending on your viewpoint). We do have a Midi Maze tournament at the June MAST Meeting. I expect everyone to practice up, don your shooting gloves (Bill, if you wear gloves, you won't get blisters) and proceed to have fun blasting all your friends out of the corridors. Anyone who is a SPACE/MAST member is eligible to play. I will have a good supply of midi cables there so all you will need is your body, an ST, joystick, and midi cable if you do have one. (If you do not have an ST, you can still play, but you might have to pry someone's joystick from their cold, dead fingers.) Actually, you don't need a machine but it would be nice if one could be brought. The more the merrier.
Last month, we had demonstrated one of my favorite all time arcade games. Missile Command! I love this game and the ST version is one of the best adaptations I have run across. Definitely should be on anyone's shopping list.Word Up! and Turbo ST also looked very good. I am very impressed with Fontz from the same people who did Word Up! This program allows you to create GDOS fonts from Macs and other sources. Just what the ST needed, more access to more fonts to use with GDOS. Good utility software is coming right along for the ST.
Another piece of software I am excited about is NeoDesk from Neocept. I have not gotten mine yet, but, this replacement for the desktop shell looks interesting. Some of the features are more windows, batch processing, and installing programs as icons in the desktop. Kinda reminds me of the Macintosh. Shhhhh, don't tell Apple, they might sue!!! We will demonstrate this one at a future meeting.
I could tell you about the new operating system Atari currently has in beta

testing for the ST and Mega, but, then Jim might not have too much to say. Could that ever happen? I don't want to find out! That also looks interesting and hopefully should relieve some of the carping Atari gets about not releasing the Mega roms for the 520 and 1040. They will be replaced by this also. I will let Jim tell you about it.See you all at the meeting (and probably in the corridors of Midi Maze, zap...zap...zap).

STdNet
an Atari ST
developers' Network
What is STdNet?

STdNet is an alliance for those who develop software for the Atari ST computer. Members maintain contact via mail, both paper and electronic. The principal means of electronic communication is USENET. A program called UUMAIL enables members to send and receive mail, including mailing lists, via USENET. What are the goals of STdNet?
Primary goals:

1) Act as a clearinghouse for information relating to the Atari ST - both hardware and software.

2) Disseminate information regarding "standard" ways of performing some software operations — including standard library routines, ways for getting around bugs in the Atari ST operating system, and common programming problems.
Secondary goals:

1) Provide electronic mail communications between Atari ST developers.

2) Provide a software library containing source code examples in a variety of languages.

3) Provide a cohesive voice to express our desires (and help) to Atari.
Other goals:

1) Maintain and disseminate a "catalog" listing of software developed by members.

2) Maintain and disseminate a "catalog/review" of PD software.

3) Provide a "help line" to answer questions from Atari ST developers.
How can you join?

Send an electronic mail message to:
ftg!dwm@stag.UUCP or [GEnie: D.MEILE1]
or Send a letter to:
David Meile
STdNet
P.O. Box 13038
Minneapolis, MN 55414

STdNet came out of some discussions we've been having at the MAST Programmers meeting (MAST is the Minnesota Atari ST users group). We hope to encourage anyone who is interested in programming on the ST (including non-Atari- registered people who write software).
— Dave Meile (acting as corresponding secretary for STdNet)

AN ST VIRUS!
By Dave Meile
From the May MAST Newsdisk

Scary title, eh? The term "virus" has shown up quite a lot in computer oriented magazines over the last 6 months or so. You've heard rumors of disks being erased, computers going haywire, etc. I will try to explain the basic concept of a "virus" in this article.

In the medical world, a virus is a bit of RNA wrapped in a protein shell which can insert itself into a living cell and cause the cell to replicate the virus. In some cases, this replication is relatively harmless. However in most cases, some damage to the organism results. The common cold is caused by any number of viruses, for example.

In the computer world, a virus is a bit of program code "hidden" within another program or on a disk which can insert itself into an operating system and cause a computer to replicate the virus. In some cases, this replication is relatively harmless. However, in many cases, some

damage to the computer (disk/system/...) results.

Sometimes you will hear related terms such as "Trojan Horse" (a program which purports to do one thing, while doing something else entirely — such as erasing your hard disk) or "worm" (program code which destroys information in memory or on your disk, usually silently, but which does not try to replicate itself on other disks).

The unique thing about a virus is that it can spread itself from one disk to another — indeed, it has been PROGRAMMED to spread from disk to disk. The virus with which I am most familiar on the ST spreads itself by inserting a bit of program code between the operating system (TOS) and the program code which operates your disk drives. When you boot your ST using an infected disk, the virus activates. When you put a new disk into your disk drive, the virus copies itself onto the new disk, and the cycle continues.
************ IMPORTANT NOTE ***********

When things go wrong on your ST, you should NOT immediately suspect a virus. There are many natural glitches as well — poor or defective disk media being the biggest problem. Bad disks are one reason that you should make copies of all your important files onto "backup disks" which you can safely store someplace away from your computer.
****

Thankfully, there are people with the expertise to write programs to detect this virus on the ST. In the PROGRAMS folder of this disk is an ARChive file, VDU.ARC, which contains a version of the Virus Detection Utility. The program came from Europe on a disk full of information called ST NEWS, edited by Richard Karsmakers. (See the ADS for more information on getting the ST NEWS disks...)

This virus places itself into a special part of your disk called the "boot sector". You may have noticed that some games will run automatically when you start your

ST with the disk in your first drive. That is because the "boot sector" contains information telling your ST where to load the program, and similar things. On a regular disk this information is generally not there (TOS and GEM don't require much information from the "boot sector"). However, the virus has some instructions for your computer to load it into memory and insert itself between TOS and the disk drive code. The result is similar to an auto-starting game — the information gets loaded first, then the operating system takes over.

Here are the steps that are taking place:
0. The computer starts with an 'infected' disk in drive, and the
1. boot sector instructions are executed which
2. load the virus and insert it between TOS and the disk drive code
3. then turn over control to TOS/GEM as if nothing happened.
4. Inserting a new disk and doing any disk operation
5. activates the virus, which copies itself
6. onto the previously uninfected disk, continuing the cycle.

Here is what the Virus Detection Utility does:
0. The VDU reads the information from the boot sector
1. into memory and looks for boot sector instructions.
2. When it finds such instructions, it
3. Notifies the computer user and provides options to
4. destroy the virus information and
5. 'immunize' the disk against further 'infections'
************ IMPORTANT NOTE ***********

One problem still remains. The VDU cannot distinguish between a virus and legal boot sector instructions (usually found on game software). So — you should NOT use the Virus Detection Utility on games which you know to be auto-starting. To keep such disks from becoming 'infected' with the virus, you should

always turn your computer off, insert the game disk, wait about 15 seconds and then turn your computer back on again.

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Why do people write virus programs? There may be a variety of reasons — it can be a neat 'hack', there may be malicious intent, or (as in the case of a recent Macintosh virus which has gotten much press) it can be to spread a "happy birthday" message around the world. Whatever the reason, virus programs are NOT appreciated. They take control of your computer and your programs away from you.

RIBBON RE-INKING
Jim Scheib - 721-4185

The club can re-ink most printer ribbons (black) for a small fee. There is no longer a reason to use a faded ribbon! Ribbons that can be re-inked are: $1.00/ribbon - Spool to spool (all types) - Epson MX-80 and compatibles - Epson LX-80 and compatibles - C. Itoh Prowriter and compatibles (NEC 8023A/C) - Citizen 120 D - Panasonic - small ones that turn counterclockwise: $2.00/ribbon - Epson MX-100 and compatibles. Other ribbons can be attempted, too. But if you prefer, you can buy an adapter ($8.50 + $3.50 shipping and handling) for the club and receive half that amount in credit towards re-inkings. See Jim Scheib at the SPACE meeting, or Jim Schulz at the MAST meeting. Please pay in advance and be sure to have your ribbon(s) in a plastic bag.

Notes from the Editor
by Steve Pauley

Thanks to everyone for writing stuff for the newsletter. I know It's summer and there are a million other things to do this time of the year, but I hope some of you will take time to write something for the newsletter so we can keep up the volume during the lean months.

July Newsletter Deadline
Articles:
If you would like to write something for the July newsletter, you must upload it to the SPACE or MAST bbs by June 26th. If you don't have a modem maybe someone else can upload it for you. You can also mail your articles to me on a disk. I can read Atari ST, IBM and Mac disks, but not Atari 8 bit. Give me a call at 560-2917 evenings if you need more info.

Ads:
All ads must be received by June 26th to appear in the July issue. The Ads should be accompanied with your check for payment. Check inside front cover of this newsletter for rates and sizes.

ST. PAUL ATARI COMPUTER ENTHUSIASTS
& MINNESOTA ATARI ST

SPACE and MAST are independent user groups of owners of ATARI Home Computers. It has been organized by local owners of ATARI computers for the purpose of mutual self assistance and sharing of information. It is open to all interested computer enthusiasts.

Benefits of memberships in the groups include monthly newsletter mailed to your home, BBS access, software demonstrations, group purchases, public domain disk(s) of the month software at low prices, reference book library, educational software library (8-bit only) with over 20 titles, personal contacts/learning, greater information and awareness on the world of ATARI, software at discounted prices from dealers, question and answer session, etc. Come to a meeting to find out more.

SPACE - 8 Bit Group The SPACE meetings are devoted primarily to the 8-bit ATARI computers such as the 400, 800, 600XL, 800XL, 65XE and 130XE. There is other ATARI related news and some 16-bit news at the SPACE meetings, as well. The SPACE group meets on the second Friday of each month at the Falcon Heights Community Center, 2077 West Larpenteur Avenue, at 7:30pm. Doors open at about 7:10pm.

MAST - ST Group The MAST meetings are devoted primarily towards the ATARI 520ST, 1040ST & MEGA computers. There will be ATARI related news items covered, but not 8-bit news. The MAST group meets on the third Friday of each month at the Falcon Heights Community Center, 2077 West Larpenteur Avenue, at 7:30pm. Doors open at about 7:10pm.

MAST+ - Programming Language User Sig MAST also has a programmer's group meeting. This group has a more technical discussion regarding programming the ST computers in a variety of languages. The group meets on the Monday following the MAST meeting at the First Minnesota bank on Lexington Avenue near Larpenteur Avenue. Meeting time is 7:30, with doors opening at about 7:20pm. The entrance is in the back of the building and leads to a stairway to the second floor.

For more information, or to confirm a meeting time and location, call Larry Vanden Plas (SPACE) 636-2415 or Jim Schulz (MAST) 537-5442.

- -

SPACE/MAST Membership Application

Name_____ Date_____

Address_____

City_____ State_____ _Zip_____

Phone_____Equipment/System Used_____

Areas of Interest_____

Check one or both: SPACE____ MAST____

Renewal?____ Address Change?____ Membership Card Given?____

Dues: $15.00 per year - Please enclose with Application.
Mail to: SPACE/MAST, P.O. BOX 12016, New Brighton, MN 55112

SPACE/MAST NEWSLETTER