# PORTLAND ATARI CLUB

(Not affiliated with Atari, Inc)

OCTOBER 1983

GENERAL MEETING: October 3rd

**BPA Auditorium**
**9th and Holladay, NE**

PAC BULLETIN BOARD SYSTEM
24 hours 7 days
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# P O R T L A N D  A T A R I  C L U B

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## O C T O B E R  1 9 8 3  N E W S L E T T E R

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| Games Column | - Robert Lindstrom |
| PAC Educators (PACE) | - Trudie Mishler |
| Forth Column | - Pann McCuaig |

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### HELP HOT LINE

The following people have generously offered to take telephone queries in the areas indicated.

| | | |
|---|---|---|
| **HARDWARE OPERATION** | Steve Deutsch | 648-2017 |
| **CASSETTE OPERATION** | Lee Gassaway | 642-2455 |
| | Gary Lippert | 233-7069 |
| **DOS OPERATIONS** | Steve Deutsch | 648-2017 |
| **MODEM OPERATIONS** | Gary Lippert | 233-7096 |
| **BASIC PROGRAMMING** | Nick Yost | 981-0838 |
| | Lee Gassaway | 642-2455 |
| **OPERATING SYSTEM** | Nick Yost | 981-0838 |
| | Leroy Baxter | 653-1633 |
| **ASSEMBLY LANGUAGE** | Leroy Baxter | 653-1633 |
| **FORTH** | Ricky Wooldridge | 224-7163 |

# Club Business and Activities

## PRESIDENT'S COLUMN

*Walter Germer*

I hope that at the last meeting we were able to let you know what the board of directors has been doing since Joe stepped down as president. Since then, I've had meetings with many of the people who are involved with the Atari computer in our area. I think we have overcome the biggest problem which faced our club, communication. Now each of the major groups (owners, dealers, distributors, and representatives) know what to expect from each other. Our working goals at this time are:

1. Help members meet other Atari users with similar interests.
2. Provide news and reviews about the latest hardware and software products from Atari and third party sources.
3. Be a community resource center for information about Atari computers.
4. Foster increased use and enjoyment of Atari computers in the areas of home applications, education, and entertainment.

In order to achieve these goals, we need your involvement. You can help your club and its members in many different ways.

You can become a leader and take a board position. As a board member you will be privy to the latest Atari news and can help chart the club's course for the future.

You can be a member of our newsletter staff. If you've always been interested in newspapers or the media, here's your chance to learn how a newsletter is put together and help ours improve and grow.

You can be a newsletter article writer. Tell other members what you are doing with your Atari computer and what has helped (or hindered) your enjoyment of it. Here's your chance to see your name in print.

You can be a leader or a member of a special interest group. A SIG is a small group of people who want to learn about a specific aspect of Atari computing. It might be a language like BASIC or FORTH, or maybe how to use that new printer you just bought, or even the pursuit of the perfect arcade game. It's up to you! We provide the forum and the audience. Make yourself known and we'll try to get you together with others who share your interests.

There are also special projects that you can get involved in. The latest is the OMSI Computer Fair where PAC will have a booth. Other activities will come up from time to time and we'll call for volunteers.

You can always be a speaker or a demonstrator at one of our monthly meetings. You could give a short explanation about a programming technique or show off your latest piece of software, or just bring your machine for use at the meeting.

There are many things we as a club would like to provide but it takes people like you to make it happen. I've seen the club begin on January 7, 1979 with 20 members and grow to 331 members today. We've been averaging about 400 people at our meetings with about 1/4 being first timers. In order to get the first timers to come back and grow as a club, we have to provide more than just talk. You became a member to learn and have fun. The best way to do that is to get involved.

Well that was exiting, but let me calm down now and tell you a little about the OMSI Computer Fair. The fair will be held Sept.30 (Friday), Oct.1 (Saturday), and Oct.2 (Sunday). The club meeting is the following Monday on Oct. 3. It will be an excellent chance for the club to get some exposure. Last year 10,000 people came to the fair to learn the latest about home computers. If all goes well we will have the 600 XL, 800 XL and the new 1020 letter quality printer at our booth. (And that means that at the October meeting we will give you a chance to inspect these new products.) This years theme for the OMSI Fair is "putting your machine to work", so we will be showing off the educational and applications side of Atari. A special thanks to Lloyd Suiter for heading the project.

ELECTION ... ELECTION ... ELECTION ...

It will be PAC election time for the next three months. The schedule is as follows:

OCTOBER : We will be asking for board nominations from the club members at the meeting. ALL Board of Directors positions are open. You may also call myself or Jim Stibik after the meeting.

Continued.....

NOVEMBER : Final nominations can be made. Then some time will be given to each of the nominees to allow the club members to learn more about them and their ideas for improving our club.

DECEMBER : A ballot will be printed in the December newsletter which you will return to the December meeting to be counted. Ballots will also be supplied at the meeting. The new Board of Directors will take their positions at the January 1984 meeting.

I hope this covers the election process we will be following. I'll bet your asking yourself what the Board of Director positions are and what they do...

PRESIDENT : Direct the activities of the Board of Directors in the conduct of club business. Appoint officers pro-temp to pursue specific club projects. Lead the business part of the monthly meeting and the board of directors meeting. Insure the adequacy of club records and financial accounting.

VICE-PRESIDENT : Assist the president in the pursuance of his responsibilities. Assume the duties of the president in the event of his absence or disability. Arrange for meeting facilities, coordinate the membership drive and act as laison between the club and local computer dealers.

SECRETARY-TREASURER : Maintain the administrative and financial records of the club. Record all motions passed by the Board of Directors and by the general membership. Collect membership dues and maintain a current list of all members.

PROGRAM LIBRARIANS (TAPE AND DISK) : Collect, edit and maintain a library of public domain software for the ATARI computer. Produce and distribute club disks and tapes at each monthly meeting and to dealers.

NEWSLETTER EDITOR : Edit, publish and distribute the monthly club newsletter. Provide the Sec-Treas. an accounting of all monies received and spent in the production of the newsletter.

PROGRAM DIRECTOR : Arrange and coordinate the monthly meeting program. Make sure that machines and other equipment are provided. Insure that the facilities are clean before leaving.

## BOARD MEETING NOTES

*Clyde Pritchard*

The PAC Board of Directors met at Pat Warnhuis' home with Walter Germer, Jim Stibik, Gail Horner, Dean Wagner, Dan Helms, Lloyd Sulter, Buddy Hammerton, Pat Warnshuis and Clyde Pritchard present.

Walter reported that he had been able to make arrangements for the club to use the cafeteria area next to the auditorium on general meeting nights. The use of the room was then discussed, and it was decided to use it to hold sessions for beginners and possibly SIG meetings.

The next item of discussion was the resignation of Marvin Woods, our new Program Director. A long awaited opportunity has come up, and he must take it. Walter assigned Jim to add the duties of Program Director to his VP activities until the new program director is elected or other arrangements have been made to continue this position.

Walter then asked each board member to let him know if they planned to run for their current or a new board position. Several members indicated that they would be stepping down and Walter requested that they assist in finding new people to fill their roles in order to keep the club going.

Dean and Dan reported that several people had stepped up to assist them with improving and organizing programs for the club software library. With this fresh help, Dean hopes to have one or more new disks ready this year.

Buddy indicated that in order to get the SIG's going he needed help from the people who are or want to be SIG leaders. He will be asking these people to get with him at the next general meeting. Pat indicated that he may be reorganizing the Assembler SIG.

Lloyd reported that he had people signed up to cover the club booth at the OMSI Computer Fair. He was still in the process of lining up hardware (especially TV's) and software. He also requested that the board approve spending money to get two AC power strips to be used with the club booth. They will also be available for club meetings.

Gail reported on the club's financial status and the number of new members. She also provided each

Continued.....

member of the board with an updated club membership list.

Clyde reported that production of the newsletter was behind schedule, but hoped to have it out on time.

The meeting was adjourned after a discussion of a new meeting place (Dan Heims house). Walter thanked Pat for letting the board and so many other club functions use his place over the past years.

## PAGE SIX

*Clyde Pritchard*

I finally came up with a flashy name for my editor's column. As usual for me, I thought of it in the wee hours of the morning, and even remembered it the next morning without having written it down. As I started looking for program listings to print this month I found a newsletter/magazine from England that uses "Page 6" as it's title, so it may have been the seed, but I really like the name and intend to use it here. For the new folks who may not understand the meaning of "Page Six", it is the page (256 bytes) of RAM in the Atari Computer that is reserved (under BASIC) for you to use as you see fit. This makes "page Six" a fitting name for a commentary like this.

As you read in the Board Meeting Notes (I hope), getting the newsletter out this month has been less than ideal. It is always difficult when the general and board meetings are shifted due to holidays, but this is something that we are trying to resolve by setting up the deadlines and production schedule that I wrote about last month. As Walter discussed in the President's Column, we are always happy to have new (or old) people help with the newsletter, so talk to me at the general meeting or give me a call if you have ideas, articles, etc.

The dates for production of the November newsletter are:

10/06 - Newsletter Meeting
10/10 - Article Deadline
10/13 - Rough Paste-up
10/20 - Final Paste-up
10/25 - To Printer
10/28 - To Postal Service

We need to get to the point where we can meet the schedule, but it is generally flexible enough to allow for late submission of material, as long as we know that we are going to get it and how long it is going to be. The current format of the newsletter has two columns of 48 characters per line with 54 lines per column. After you have written once or twice, it is fairly easy to estimate how much space that you will be able to fill based on what you intend to say about your subject. If you would like to write something, but don't want to commit to the size ahead of time, write it up first. Also, remember that if you need help polishing up your work, someone on the regular staff will be happy to help.

As I mentioned last month, we use the club bulletin board to submit and transfer articles. However, it is not the only option. You can bring material to club meetings on disk (or cassette), deliver it, have it picked up, or mail it.

As Walter and many others in the past have said, you can get a lot more from the club if you give some of your time and knowledge to help make it better for yourself and others. The club (and newsletter) can be better organized and improved even more if as many members as possible really join in and paticpate to their fullest.

Starting with this issue of the newsletter, we will begin to print program listings that you can key in and run. We will try to make sure that at least one listing appears each month, and that if only one listing is printed, that it will run on a 16K, cassette based system. Each listing will also be available on the PAC BBS for downloading via modem. Also, we will try to find unique, fun and informative programs that you haven't already seen, like the one this month from New South Wales, Australia. We will also be printing revised and enhanced versions of programs and toolkit routines that have appeared in the past. We feel that even though these items have been seen by some of you before, PAC has many new members who haven't seen them. Also, the enhancement and reveiw should be helpful to some of the "old timers".

If you have questions or comments about any programs, routines or articles printed in the newsletter, please submit them to us as items for "The Help Key" column or in the form of a "letter to the editor". Your input is one of the methods you can use to increase your participation in the club.

As demonstrated below, if you can't quite fill a column, we'll find something to put there. See you at the meeting.

# News and Reviews

## UP AND COMING

*Walter Germer*

After the last couple of months I thought we might get fewer new software releases, but after reviewing this month that's not the case. I did forget Christmas is only three months away. With all the new software that will be released, Christmas shopping will be easy but expensive.

For the last two months I've been talking about the new rumored dual processor computer from Atari. It's almost in the fact column now, just waiting for an official announcement from Atari which will probably come at the winter CES show in January. I have learned that it's much farther along than I first thought. The operating system design has already begun. Also the first rumor had the machine with a 8088 but now it's an 8086 which is even better. I believe this will be a great top of the line machine for Atari, one that will give the owner a lot of flexibility.

This month there has been a lot of activity in the area of education so that's where we'll start. In the coming months many game software companies will adding educational games to their catalogs.
Some are....CBS SOFTWARE (media report) who brought us Mountain King, Boulders & Bombs and many more will start their educational division with four programs. "SUCCESS WITH MATH" is the first in a four part series. The other three are "MASTERING THE SAT", "MASTERING THE COLLEGE BOARD AND ACHIEVEMENT TEST" and "ENGLISH COMPOSITION".
MILLKEN'S EDUFUN (media report) which has 10 educational programs out for Atari already, will be releasing three of them in cartridge form. "GULP/ARROW GRAPHICS", "GOLF CLASSIC/COMPBAR" and "FRENZY/FLIP FLOP".

ATARI (media report) has many new programs coming, but two new educational programs worth mentioning are "THE MYSTERIES OF WONDERLAND" and "PETER PAN'S DARING ESCAPE". These are only two of the many new educational games coming from Walt Disney Productions.

P.D.I. SOFTWARE (media report) will be releasing two new interactive children's stories, "TEDDY'S MAGIC BALLOON" and "ROBIN'S HALLOWEEN". A third program will be the first in the "ALPHABET ARCADE SERIES".

DESIGN WARE (media report) who gave us Spellcopter and Crypto Cube will be releasing a game called "CREATURE CREATOR". It's an animated pattern matching game for ages 4-8. (They also wrote Facemaker and Story machine for Spinnaker.)

KANGAROO SOFTWARE (media report) is a new educational software house with two new programs for ages 3-8. "JEEPER CREATURES" gives you 30 basic animals on which you can interchange heads, torsos, legs and tails to create new creatures. In "MY HOUSE - MY HOME" your child has fun filling the house with furniture. These are advertised to have very good graphics and are probably Apple conversions.
MAXIMUS SOFTWARE (media report) is another new educational company but their programs for now are only for Atari machines. They feature good graphics and a human voice to help the child. The voice comes from a cassette recorder. In "STORYLINE", Clover the Clown is your guide through two fairytales; The Ugly Duckling and Rumpelstiltskin. In "SAFTEYLINE", Max the Cat shows your children important safety lessons such as how to cross the street.

WADSWORTH ELECTRONIC's (media report) first program for the Atari will be offered on disk with 48K and a price tag of $49.95. I never thought algebra would be fun but it is in "ALGEBRA ARCADE". Your mission is to enter an algebraic equation and then the graph created from it zaps algebroids and the points rack up a new high score.

SIRIUS SOFTWARE (received) has an educational program in "TYPEATTACK". You might already have seen Master Type but I found this program to be a better arcade game (isn't that really the important part?). It uses Atari graphics very nicely.

That's it for the educational programs onto to games....

SPECIAL ANNOUNCEMENT (media report). Atari has just signed the rights to MARIO BROTHERS, the third in the Donkey Kong series. The computer version is expected to be out in early 1984. POLE POSITION and ROBOTRON:2084 are scheduled to be the next games released from Atari. Also, DONKEY KONG JR. is still scheduled to be released before Christmas. We can only write Santa and hope.
BRODERBUND SOFTWARE (media report) has given me some exciting news this month. First, they have signed the rights to all ULTRASOFT software.

These animated adventures were originally for Apple and include "MASK OF THE SUN" and "THE SERPENT'S STAR". The release dates are still in the air. Second, two new games will be coming out first on 48K disks to be followed by cartridge versions. In "SPARE CHANGE" you are the owner of an arcade and it's your job to keep the little creature called Zerk from driving you out of business. "LODE RUNNER" is a game which resembles Jumpman and Apple Panic. You try to find gold which has been stolen while out maneuvering your enemy through the 150 different screens. And if that's not enough, you can create your own screen.

This months surprises....

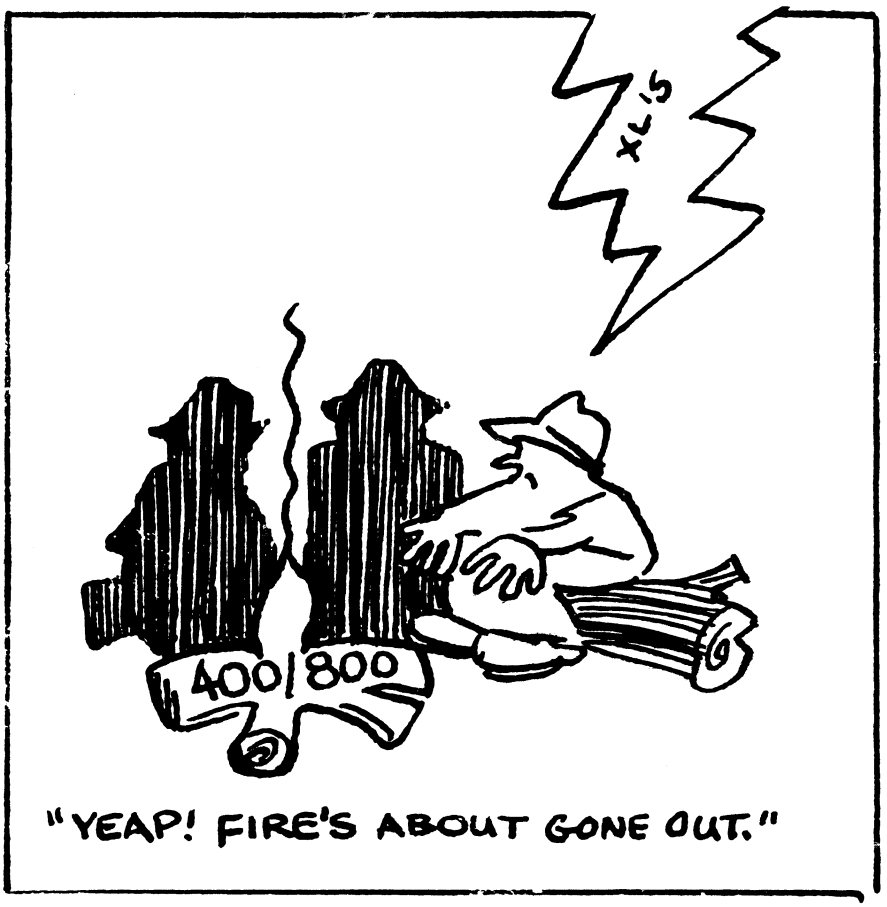
PENGUIN SOFTWARE (media report) will be releasing "GRAPHIC MAGICIAN" which has been one of Apple's most popular programse We can only hope it takes advantage of the Atari graphics as well as some of the nice things Apples can do. Unlike the graphic programs we have how, it can create animation. Also look for all their other programs to come to Atari. Some are THUNDERBOMBS, TRANSYLVANIA'S, PIE-MAN ,EXPEDITION AMAZON, and CRIME WAVE.

PHARAOH'S PYRAMID is from a new company called Master Control Software. It looks to be a good version of the arcade game Q-BERT.

RALLY SPEEDWAY is a new cartridge game from our old friends Adventure International. This game's graphics look really good for a 16K cartridge. It is similar to the road race game for the Mattel video system. One impressive feature is that you can design your own track in the "construct-a-track" mode.

ZOMBIES from BRAM looks to be a very good 3-D scrolling game. With 74 different screens your adventures are just beginning.

Last of all the Atari is getting a whole new wave of disk drive units. TRAK is one new company to add a disk drive for Atari. They have been around a long time making disk drives for other machines. Their top models have a printer port. (Percom has added this feature also). Maybe now the price of disk drives will come down so everybody can have one. Till next month..



# FORTH REPORT

*Pann McCuaig*

This month I'm going to continue reviewing Forth implementations for the Atari. First, however, a couple of announcements.

I'm still distributing the updated version of "Free Forth". (See last month's column). This version has documentation on the disk. Bring a blank floppy to the meeting and I'll trade you straight across. But call (632-7203) and reserve a copy -- I've had no extras the last two meetings.

Since many people have indicated an interest in Forth classes, I'll offer a six week class starting after the October meeting. Last chance to sign up will be at the meeting.

World Class Atari Forth(s)

There are two versions of Forth currently available for the Atari which are very well done. Both are FIG-Forths. One is PNS Forth by Pink Noise Studios, available from Mt. View Press, P.O. Box 4656, Mt. View, CA 94040. The other is valForth by Valpar International, available from several local dealers.

If you've outgrown "Free Forth", or if you want to learn on a package with really adequate documentation, then I'd recommend you purchase one of these. There are many differences between them which make valForth right for some folks, and PNS right for others. I'll try to detail those differences in this column.

Packaging

valForth comes in six modules -- you start with valForth 1.1, and then can add modules with more advanced features as you need or want them. List price is about $60 for the baseline package, and the others vary from about $30 to $60 each. Discounts are available if you hunt for them.

PNS is all in one package, available only from Mt. View Press, and costs $90, period. It has some of the features available from valForth only with extra modules, and some features which valForth doesn't offer at all. Of course, you can also get many features in the valForth advanced modules which are unavailable from PNS.

Yup. I know several people who have both!

Documentation

Both packages offer documentation far superior to any of the other Atari Forths. PNS comes with a 200 page manual of good Xerox quality. A great deal of technical information about FIG-Forth in general, and the PNS implementation in particular, is included. This information could be considered tutorial in nature only for a pretty technically competent reader.

Valpar has done an interesting thing with regard to documentation. They provide their software on unprotected disks (as does PNS), but "protect" the documentation. The manual is printed in "no copy blue" on a "blow away the copier yellow" background. Three cheers! Make the documentation of such high quality that ripping off the disk becomes silly.

Anyway, enough editorializing. The valForth documentation is well organized and better geared to the beginner than is PNS. You don't get as much Forth technical information with the Valpar documentation as with PNS, but you do get more useful Atari information. The manual runs about 110 pages for valForth 1.1, and if you buy all six modules, you end up with a manual about three inches thick!

Screen Size

PNS uses a 24 by 40 (960 byte) screen. valForth allows either a 16 by 32 (512 byte) screen, or 32 by 32 (1024 byte) screen, and recommends you use the smaller one. If you use the 1K screen, you edit it as top and bottom half, just as in "Free Forth".

The 24 by 40 screen is really nice, BUT... This makes the PNS screen incompatible with just about all other Forths (except for some Apple implementations, maybe). And transportability is one of Forth's big attractions. I have Forth running on 3 different micros, and I want to be able to move 1K screens between them.

Editors

The editor provided with valForth is very nice, and if you buy the second module (General Utilities and Video Editor) you get a REALLY slick editor. And they tease you by giving you a subset of it with the baseline package, then

include the commands you're missing on the reference card so you can drool.

The editor supplied with PNS is adequate -- similar to the Basic editor we all know and love.

Assemblers

Any Forth worth its salt includes a built-in assembler, and these are no exception. PNS provides a public domain assembler written by Bill Ragsdale, one of FIG's founding forthers. val provides a superset of this assembler which can be a little handier to use. But I doubt anyone would make a purchase decision on the basis of the assemblers.

Writing Programs

To compare the ease of use and speed of program development with the two packages, I wrote a sort of nifty application (see it demo'ed at the OMSI Computer Fair) using them both. I'd write and debug a few words with valForth, then edit them into PNS. Then I'd write and debug the next few in PNS, and edit them into val. And so on.

valForth comes with a bigger dictionary of "basic" words. I had to write both <= and 2DUP in PNS, while both were available in val. (Neither word is any big deal to write, but it's nice to have them there). On the other hand, both the editor and graphics words have to be loaded into val, and they are present on boot-up with PNS. Of course, both versions allow you to save a boot-able copy of any dictionary you please.

As I've said before, I prefer the valForth editor. But other than that, there was little to choose from with this application. val offers an advanced graphics package (which is very nice) but I didn't use it this time. Both implementations worked great, and were a pleasure to use.

Extras

PNS offers some really slick player missle graphics words. Also nice hooks to the vertical blank interrupt which allow you to do multi-processing. Before you get too excited, useful vb routines will have to be coded in assembler to have time to run. Of course you would use the Forth assembler. Extras in valFORTH cost extra, but are all well thought out and well documented. The "General Utilities and Video Editor" package is probably a must for anyone who hasn't given up on Forth after using it for several weeks.

"Player Missile Graphics, Character Editor, and Sound Editor" is just what it sounds like, directed toward the games programmer, as is the "Display Formatter".

The "valGraphics" package offers advanced floating point (ugh!, subject of a future column), and a nifty "Armadillor graphics" package. "Text Compression and Auto Text Formatting" is well done, but seems to me to be of limited utility.

And last but certainly not least, "valDOS". This package frees you from the Forth screen restriction, allows you to read, write, and edit standard DOS files (and gives you the whole screen to edit in), and includes standard DOS-type commands like DIR, COPY, and RENAME. (These are a little slow.)

And the transportability is maintained, as a utility is provided to allow you to convert a group of screens to a file. In fact, valDOS cleverly allows screens and files to co-exist on a single disk. Nice job.

BOTTOM LINE

PNS gives you more bang for your buck, and is very popular with advanced Forth programmers who work on the Atari.

valForth has the best available documentation of ANY low-priced microprocessor Forth I know of, and is definitely the best package for the beginner.

SO . . . you pays your money and takes your choice. I'm confident you won't be disappointed in either package.

Forth and Cassette

Next month I'll FINALLY review a version for you cassette-bound folks. In general, Forth assumes the existence of a floppy disk, but that doesn't have to be.

# GRAP AN APPLE

*Jamie Athas & Gary Francis*

This game is designed in ANTIC mode 4, a character mode which allows up to four colours to be displayed within the same character. Each character is set up in a 4 x 8 grid giving a total screen resolution of 160 across by 192 down. To use ANTIC mode 4 it is basically a matter of changing a Graphics 0 display list, then redefining the character set. You are welcome to experiment with the techniques we have used. The game was originally in Graphics 5 but ANTIC 4 increases its visual impact tenfold.

HOW TO PLAY

This is a game where you control a giant lengthening caterpillar, and have to eat the apple. The quicker you eat the apple, the more points you get, but if you take too long, it will disappear to a new location and you will lose five points. If you run over yourself or hit the wall, you lose a life. You have three lives per game. Every time you eat an apple, the caterpillar is 'cut up' and your speed increases by 1 k/mh.

PROGRAM NOTES

The concept behind this game is a familiar one, but don't let that fool you. This game is totally original.

When the program begins, a title page is scrolled up the screen. This is for visual impact only and serves no useful purpose, however anyone wishing to examine the code will find it quite interesting. Firstly let me assure you that it is NOT genuine scrolling, but display list manipulation. It works by writing your own display list (lines 1010 to 1030) consisting of a screenful of blank mode lines and a few GRAPHICS 2 lines which begin at the bottom of the screen. (This is cheating the system and I suggest that you avoid such things unless you know what you are doing.) The number of blank mode lines is gradually reduced using the simply FOR-NEXT loop in line 1060, so that the GRAPHICS 2 lines slowly creep up the screen. The techinque is crude, but it works. You'll notice a certain degree of jerkiness, as the movements are not synchronised with the vertical blank. You can experiment with the speed by changing the delay (i.e. FOR W=1 TO 15:NEXT W) in line 1060.

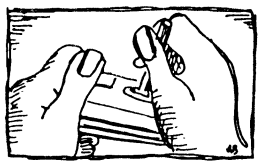
When the scrolling is finished, the character set is copied from ROM to RAM (line 1070) using the machine language routine out of Stan Ockers Doggies, then seven of the special characters are redefined (line 1100). I was going to draw up some pretty pictures to show how this is done in ANTIC mode 4 but unfortunately I ran out of time.

The screen is then cleared and another custom display list is created (line 1160), this time for a screenful of ANTIC mode 4 with 3 lines of Graphics 0 at the bottom for scoring information. If you want an entire screen of ANTIC mode 4 in your own programs, then change the loop to read FOR I=DL+6 TO DL+28. This completes the initialisation.

If you care to draw a flowchart of the main program (lines 20 to 370) you'll notice that it follows a very efficient and logical flow. Beginners should take particular note of this. It is something that you should always strive for to achieve peak efficiency without losing readability. This is something I can never stress too much. Too many programs are written with a spaghetti-like structure! As a result, they run slow and use up about twice the memory necessary. In Grab and Apple, the effort has paid off. Speed is no longer a problem despite the delays for sounds. In fact, I had to insert a lengthy delay loop (line 240) to slow the game down. The game becomes more difficult as it progresses by reducing the length of this loop every time you eat an apple. You'll also notice a certain 'beat' to the program, which starts the adrenalin flowing as the pace increases. (This was the secret to Space Invaders success.) You have to eat 50 apples in one game to reach the fastest speed. I certainly can't do it! If you want to see the game at maximum speed, change the loop to read FOR I=1 to 1:NEXT I.

Anyway, I hope you enjoy playing Grab an Apple as much as Jamie and I did writing it.

(Ed. Note: This article and program originally appeared in INSIDE INFO, the newsletter of Atari Computer Enthusiasts, New South Wales, Australia. We are reprinting it from PAGE 6, an Atari Users Magazine from Stafford, England.)



```
1 REM ********************************
2 REM *       GRAB AN APPLE          *
3 REM * Jamie Athas & Garry Francis *
4 REM *    First published by        *
5 REM * Atari Computer Enthusiasts  *
6 REM * New South Wales - Australia *
7 REM ********************************
9 TRAP 2000
10 GOSUB 1000
20 LIVES=3:SPEED=1:SCORE=0
30 ? CHR$(125):COLOR 35:PLOT 38,0:DRAWTO
38,20:DRAWTO 1,20:DRAWTO 1,0:DRAWTO 39,0
40 HX=4:HY=3:DX=1:DY=0:HEAD=166
50 POSITION 4,21:? "LIVES: ";LIVES:POSITION
27,21:? "COUNTDOWN"
60 POSITION 4,22:? "SPEED: ";SPEED;" k/h"
70 POSITION 4,23:? "SCORE: ";:COLOR HEAD:PLOT
HX,HY
80 POSITION 11,23:? SCORE;" ";:COUNT=50
90 COLOR 32:FOR I=1 TO 2
100 Z=INT(36*RND(1))+2:IF Z=HX THEN 100
110 PLOT Z,2:DRAWTO Z,19:NEXT I:FOR I=1 TO 2
120 Z=INT(18*RND(1))+2:IF Z=HY THEN 120
130 PLOT 2,Z:DRAWTO 37,Z:NEXT I
140 AX=INT(36*RND(1))+2:AY=INT(18*RND(1))+2
150 LOCATE AX,AY,Z:IF Z<>32 THEN 140
160 COLOR 34:PLOT AX,AY:FOR I=10 TO 0 STEP
-0.5:SOUND 0,100,10,I:NEXT I:SOUND 0,0,0,0
170 POSITION 31,22:? COUNT;"
":BX=HX:BY=HY:ST=STICK(0):IF ST=15 THEN 220
180 POKE 77,0:IF ST=14 THEN DX=0:DY=-1:HEAD=164
190 IF ST=13 THEN DX=0:DY=1:HEAD=165
200 IF ST=7 THEN DX=1:DY=0:HEAD=166
210 IF ST=11 THEN DX=-1:DY=0:HEAD=167
220 HX=HX+DX:HY=HY+DY:LOCATE HX,HY,Z:SOUND
0,100,12,4:COLOR 161:PLOT BX,BY:COLOR HEAD:PLOT
HX,HY:SOUND 0,0,0,0
230 IF Z<>32 THEN 260
240 COUNT=COUNT-1:IF COUNT THEN FOR I=1 TO
51-SPEED:NEXT I:GOTO 170
250 COLOR 32:PLOT AX,AY:SCORE=SCORE-5:GOTO 80
260 IF Z<>34 THEN 300
270 FOR I=1 TO 50:SOUND 0,I,8,8:NEXT I:SOUND
0,0,0,0
280 SCORE=SCORE+COUNT:SPEED=SPEED+1:IF SPEED>50
THEN SPEED=50
290 POSITION 11,22:? SPEED;" k/mh":GOTO 80
300 FOR I=5 TO 255 STEP 10:SOUND 0,I,10,8:NEXT
I:SOUND 0,0,0,0
310 LIVES=LIVES-1:IF LIVES THEN 30
320 POSITION 0,21:?
CHR$(156);CHR$(156);CHR$(156):IF SCORE>HI THEN
HI=SCORE
330 POSITION 11,21:? "YOUR SCORE:
";SCORE:POSITION 11,22:? "HIGH SCORE: ";HI
340 ? "    DO YOU WANT ANOTHER GAME (Y/N)?";
350 GET #1,Z:IF Z=ASC("Y") THEN 20
360 IF Z<>ASC("N") THEN 350
370 CLOSE #1:POKE 82,2:POKE 106,START+8:GRAPHICS
0:END
1000 START=PEEK(106)-8:POKE 106,START-1
1010 GRAPHICS 4:POKE 559,0:POKE 708,70:POKE
709,108:POKE 710,14:POKE
711,54:DL=PEEK(560)+256*PEEK(561)
1020 FOR I=DL+3 TO DL+26:POKE I,112:NEXT I:POKE
DL+27,71:POKE DL+28,PEEK(88):POKE DL+29,PEEK(89)
1030 FOR I=DL+30 TO DL+33:POKE I,7:NEXT I:POKE
DL+34,65:POKE DL+35,PEEK(560):POKE
DL+36,PEEK(561):POKE 87,2
1040 POSITION 4,0:? #6;"JAMIE ATHAS":POSITION
1,1:? #6;"and garry francis"
1049 REM NEXT LINE IN INVERSE
1050 POSITION 6,2:? #6;"PRESENT":POSITION 3,4:?
#6;"grab an apple":POKE 559,34
1060 FOR I=96 TO 0 STEP -16:FOR J=DL+3 TO
DL+26:POKE J,I:FOR W=1 TO 15:NEXT W:NEXT J:NEXT I
1070 DIM ML$(32):FOR I=1 TO 32:READ
A:ML$(I)=CHR$(A):NEXT
I:CHSET=256*START:X=USR(ADR(ML$),57344,CHSET)
1080 DATA
104,104,133,204,104,133,203,104,133,206,104,133,2
05,162,4
1090 DATA
160,0,177,203,145,205,136,208,249,230,204,230,206
,202,208,240,96
1100 FOR I=CHSET+8 TO CHSET+63:READ A:POKE
I,A:NEXT I
1110 DATA
60,255,252,63,255,255,255,60,10,8,20,85,85,85,85,
20,239,239,239,170,254,254,254,170
1120 DATA
60,60,190,190,255,255,255,255,255,255,255,255,190
,190,60,60
1130 DATA
248,248,255,255,255,255,248,248,47,47,255,255,255
,255,47,47
1140 GRAPHICS 0:POKE 559,0:POKE 16,64:POKE
53774,64:POKE 82,0:POKE 83,39:POKE 752,1
1150 POKE 708,54:POKE 709,188:POKE 710,246:POKE
711,90:POKE 756,START
1160 DL=PEEK(560)+256*PEEK(561):POKE DL+3,68:FOR
I=DL+6 TO DL+25:POKE I,4:NEXT I
1170 OPEN #1,4,0,"K:":HI=0:POKE 559,34:RETURN
2000 POKE 559,34:GRAPHICS 0
2020 ? "ERROR ";PPEK(195);" IN FOLLOWING
LINE":LIST PEEK(186)+256*PEEK(187)
```

ATARI

ATARI

## SIGN LANGUAGE FUN

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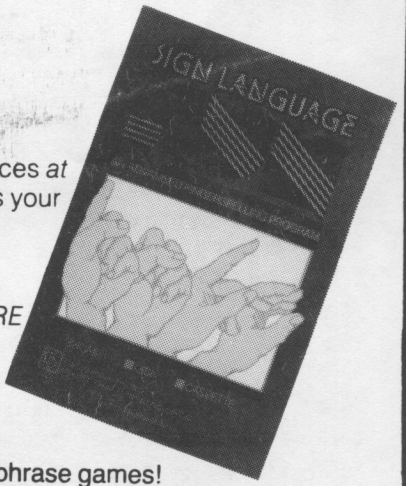


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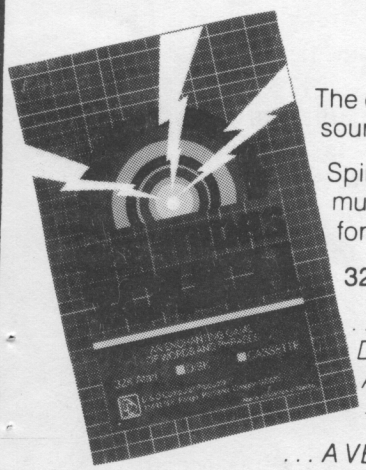
—Allan Coker, PAC Newsletter, July 1983

Enjoy one of the Atari's most exciting word and phrase games!

## THE MIDAS TOUCH



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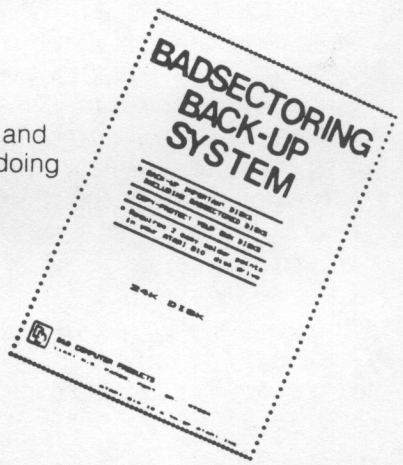
—Andee White, Atari Club Oklahoma City Newsletter, May 1983

*. . . A VERY ENTERTAINING GAME, AN EXCELLENT EDUCATIONAL TOOL, AND GREAT FOR PARTIES . . .*

—Joe Richter, PAC Newsletter, June 1983

## BADSECTORING BACK-UP SYSTEM

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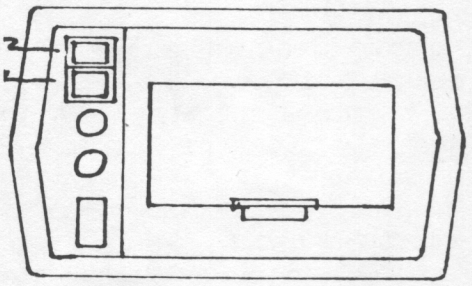


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# How To Do It . . . .

## TYPING LISTINGS
*Pat Warnshuis*

I've lost track of where this idea originated but it's too good not pass on. Sorry I can't credit it.

This idea is an aid in entering program listings or data. Looking back and forth from the source to the keyboard to the screen invariably leads to many typing errors. One solution is to ask someone to dictate the listing to you while you type. This method is also helpful in proofreading what you have entered into your ATARI. Trouble is, it's hard on the innocent assistant.

Enter the obvious (after somone else has thought of it!). Record the listing on a cassette recorder yourself. Then playback the recording as you type it in or proofread it. Thanks for a great idea, whoever you are!

## KEYBOARD LOCKUP
*Pat Warnshuis*

This one is worth the price of an entire issue (at least). It's from the March/April ('81) issue of ANALOG. Every so often you'll seem to lose the keyboard while entering a program under the BASIC editor. No matter what you do, you can't set the ATARI to accept a keyboard input. Someone suggested that if you just run or list the program frequently while you're working on it, lock up won't happen. I don't think so. Seems to me that I've lost the keyboard even when making frequent listings. What's maddening about this is that the only recovery has been to power-off, power-on, thereby losing everything you were working on. Someone else suggests that lock up is caused by making a keyboard input while the editor is trying to shift its text about in RAM. Again, I don't think so. Anyway, one proposed solution has been to key in "BYE", "RESET", "LIST". My first reaction was how do you key in "BYE" if the keyboard is locked up. Or is it only the screen that is locked out?

Well, it happened to me several times since I read about it and so far this sequence has salvaged the effort: "RESET", "BYE", "RESET", "LIST". Typing "BYE" sends you to the Memo Pad Mode but your BASIC program is still intact. The next "RESET" puts you back in BASIC with the READY prompt. "LIST" your program for reassurance.

## BEGINNING BASIC
*Pat Warnshuis*

FLASH ! ! BEGINNER'S CORNER

No! No! This is not a news bulletin. It's just a little fun dinking around. The listing will cause a selected phrase to blink on and off on the screen. But it does so aesthetically. I've seen some methods which were downright aggravating. This one draws attention to your phrase without giving you the eyeball jitters.

First, take a look at the listing. In line 130 insert the phrase you want to blink in reverse (inverse video, use your ATARI logo key) characters.

In line 100, the POKE 752,1 turns off the cursor. It's confusing with your phrase blinking at the same time. Use POKE 752,0 to turn it back on.

In line 110 the PRINT CHR$(125) clears the screen. You can also clear the screen by printing the up-and-left arrow inside quotes. You do that by hitting the ESC key, then hold the CONTROL key down while hitting CLEAR. Most printers will not print it properly, however, and that's one reason why I prefer the CHR$(125) method.

Note the POSITION command. This works in text mode as well as in graphics and is more powerful than the tab key. In POSITION X,Y the x positions the cursor over x columns and the y positions the cursor down y rows. Don't forget to count from zero, not from one. We're going to use POSITION to place the invisible cursor at the start of the word we want to blink.

FOR W=1 TO 100:NEXT W is a delay loop. It does nothing but take time. Without it the blinking is too fast so we slow it down this way. Change 100 to get a rate you like. Making it 400 will give you just about one second intervals.

In line 170 the PEEK(764)=255 let's the operator control when the action stops. PEEK(764) tells BASIC to take a peek at location 764. That's where your keyboard entry is picked up by BASIC. Immediately after doing an INPUT or GET, BASIC sets that location to 255. It stays at 255 until you make another keyboard entry. Then it holds the value of the last key you entered until BASIC reads it again with either an INPUT or GET. So line 170 says: "Take a look at what's in 764. If it's still 255, then go back to line 130 and do the blinking business again." Of course, as soon as we hit ANY key (except

Continued

break, control, shift and I think caps/lower) the peek at 764 is not equal to 255 so the IF test fails. When an IF test fails, the rest of the line is ignored and the program goes to the next numbered line. The overall result is that the program stays in the blinking loop until the operator hits a key.

This PEEK(764) is a good way to have a BASIC take a glance at the keyboard on the fly in a program. You can branch in either of two directions, depending on whether or not the operator has hit a key since you last peeked. You can't do this with an INPUT statement because INPUT and GET both make BASIC sit there staring at the keyboard until you enter something. It can't do anything else until you wake up.

FLASH ROUTINE

```
100 POKE 752,1
110 PRINT CHR$(125)
120 POSITION 5,10:PRINT "HIT THE SPACE BAR TO
STOP THIS"
130 POSITION 13,10:PRINT "":REM Enter the phrase
SPACE BAR between the quotes in reverse letters
140 FOR W=1 TO 100:NEXT W
150 POSITION 13,10:PRINT "SPACE BAR"
160 FOR W=1 TO 100:NEXT W
170 IF PEEK(764)=255 THEN 130
180 POKE 752,0:LIST :END
400:GOTO 270
```

## SCREEN EDITOR

*Pat Warnshuis*

Here's a complete screen editor in less than 900 bytes. I've included both a disk version and a cassette version (and you thought I didn't care!) The versions differ a bit but the following comments apply to both listings.

You can create, save and read text files with this editor. You can even add to previously created text files. The editor permits you to use all the functions of Atari's screen editor when preparing your text. The screen editor is the thing you use when you type in a BASIC program. In this editor you have all the cursor controls, backspace, insert, delete, clear etc. operations that you already are familiar with. One of the nice things about this program is that you can exchange text with others and not have to worry about what word processor they may or may not have. Simply send this little program along with your text! You can, of course, use it to make notes to yourself. I've taken to using it to document my programs as I write them. I create a file wih the same name as the program I'm writing and add the extension ".DOC" for "documentation".

To use the editor, simply RUN it. It is supposedly self-prompting. If you find the listing a bit cryptic, that's because the whole thing started as a challenge entry for Softside Magazine's 1KBYTE feature.

If you are creating a file, be sure to exit the program with the Control E key as prompted. In all disk and cassette write operations, the last record is not written to the device until the file is CLOSE'd or an END statement is executed!

In the listings, enter the first character of each prompt word in reverse video for emphasis. Enter ©C just as it appears. In the prompt, ©C means "Control C". That is, it tells the reader to enter the letter C while holding the CTRL key down. (Ed. Note: When reading this article and typing in the programs, replace the "©" with a "caret" symbol (upper case "*"). Sorry about that.) In that string, "hhh*LVd", the '*' and the small 'd' MUST be entered in reverse video.

The cassette listing has several important items for general cassette use. In LN 3 that 'TRAP 5:LPRINT' is a trick you should use before the first write to a cassette tape if you have the 850 interface unit. (Ask Jim Stibik!) Sometimes the interface unit does not get initialized properly. The dummy LPRINT corrects the problem. You aren't actually writing to the printer, you're just forcing the interface to go through some gymnastics. That's what the TRAP is for. We know we'e going to get an error in the LPRINT, either because the printer isn't there, not on, or has not been OPEN'ed. The TRAP skips around the resultant ERROR that BASIC is going to try to warn us about.

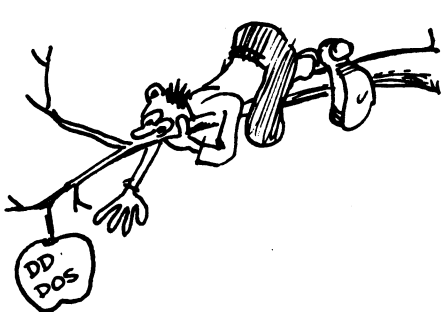
Notice that in the write mode, the cassette file is not opened until we are actually ready to write. Mustn't open a cassette for write more than 20 seconds before you do the first write. Else you get garbage out there. That POKE 54018,60 stops the cassette between screens. POKE 53775 turns off the sound generators which POKEY used. Sometimes a cassette read/write will leave these rascals intermittently active. Cheap insurance. END writes the last record out to the cassette, puts an end-of-file marker on the tape, and closes the channel. Very important to exit the program this way!

D:SCRNEDIT Screen editor for disk system

```
1 DIM F$(15):OPEN #3,4,0,"K:":OPEN
#2,12,0,"E:":POKE 709,8:POKE 710,194
2 ? "Read or Write ":GET #3,C:IF C=82 THEN
A=4:W=0:GOTO 4                (Enter the R and W
in reverse video)
3 ? "NEW or Add ":GET #3,C:A=8+(C=65):W=1
4 ? "FILE ";:INPUT F$:OPEN #1,A,0,F$:IF A=4 THEN
8
5 ? CHR$(125);"©C Creates next screen":? "©E
Exits now":GET #3,C:? CHR$(125);"©S Saves
screen";:IF C=5 THEN 12
6 GET #3,C:IF C<>19 THEN PUT #2,C:GOTO 6
8 C=PEEK(560)+256*PEEK(561)+4
9 POKE 850,A+3-(A=9):POKE 852,PEEK(C):POKE
853,PEEK(C+1):POKE 856,192:POKE 857,3
10 C=USR(ADR("hhh*LVd"),16):IF W THEN 5
(enter the * and d in reverse video!)
11 GET #3,C:IF PEEK(851)=1 THEN 8
12 ? CHR$(125):END
```

CASSETTE BASED SCREEN EDITOR!

```
1 OPEN #3,4,0,"K:":O=0:W=0:A=4
2 ? "†Read or Write ":GET #3,C:POKE 752,1:IF C=82
THEN 8
3 A=8:W=1:OPEN #2,12,0,"E:":POKE 709,8:POKE
710,194:TRAP 5:LPRINT
4 ? CHR$(125);"©C Creates next screen":? "©E
Exits now":POKE 752,1:GET #3,C:IF C=5 THEN 14
5 ? CHR$(125);"Enter new screen. ©S will Save
screen";
6 GET #3,C:IF C<>19 THEN PUT #2,C:GOTO 6
7 POKE 752,1:PUT #2,32
8 IF  NOT O THEN OPEN #1,A,0,"C:":O=1
9 C=PEEK(560)+256*PEEK(561)+4
10 POKE 850,A+3:POKE 852,PEEK(C):POKE
853,PEEK(C+1):POKE 856,192:POKE 857,3
11 C=USR(ADR("hhh*LVd"),16):IF PEEK(851)=136 THEN
14
12 POKE 54018,60:IF W THEN 4
13 GET #3,C:IF PEEK(851)=1 THEN 10
14 ? CHR$(125):POKE 53775,3:END
```




## LPRINT VS PRINT #N

**Pat Warnshuis**

I really got kicked in the teeth by the LPRINT command when I was checking out Epson my printer.

LPRINT is a lazy PRINT #n instruction. You don't have to open and close a file to use it. Just 'LPRINT' and, bang!, you output to the printer. The problem lies in the convenience of the command. Each time you invoke LPRINT, it opens a print file for you, prints your string, and closes the file. Trouble is, when it closes the file, the print buffer gets flushed so the printer prints the rest of the buffer plus a carriage return. Get it? Plus a carriage return.! So with the LPRINT instruction, you cannot concatenate strings in your printout.

This means that you cannot:

```
FOR CH=160 TO 200:LPRINT CHR$(CH);" ":NEXT CH
```

and expect to see the characters printed on a single line. Nope, you'll have a nice column of 40 characters. Must use PRINT #n; on a print file which you previously opened. Watch for it. It'll get you sooner or later.

## FOR SALE

*PAC Members*

Atari 820 40-column printer. Includes manual, I/O cord, and two rolls of paper. Asking $175 or best offer. Call Tim Toenjes, 665-7297.

(Ed. Note: If you want your ad to be rerun, you must call me or resubmit your ad copy.)

## PEEKS AND POKES
*Pat Warnshuis*

POKE 202,1 in your program will cause the entire memory to blow its mind if the user hits either BREAK or SYSTEM RESET.

POKE 703,4 will put a text window in Graphics Mode 0. Nice. You can scroll and display text in the lower window without disturbing the first 20 lines of text. Like Modes 1 and 2. PRINT #6;"text" to display in the upper screen area. PRINT "text" to print in the text window. Also, PRINT CHR$(125) will clear only the text window. PRINT #6;CHR$(125) will clear only the upper screen area.

POKE 1913,87 will eliminate the read-after-write verify on disk IO. Double the write to disk rate. All other error checks are still made. I have NEVER seen an ERROR 145 which this would return on failure. After POKE 1913,87 go to DOS and WRITE DOS FILES to make the modificatio permanent on that disk. POKE 1913,80 to restore the read-after-write verify.

POKE 16,64:POKE 53774,64 in your program disables the break key so that it can't crash your program while it is running. What the big boys don't tell you is that declaring any graphics mode will reset these two locations to their power-on values. So you must reset them after each graphics statement in your program.

POKE 580,1 directs SYSTEM RESET to do a cold start (just like the power was just turned on.) Will run any AUTORUN.SYS file you have on the disk, like the MENU. This RESET combined with NO BREAK, is useful if you want to protect your program while it is running. This is very useful in demo situations where people will try to do their best to crash it. With these three poke, they will punch away in vain.

An issue of ACE cited the memory location from the device handler table which permits toggoling all output to the printer. This is extremely handy as you do not have to go in and reroute printout from screen to printer. This is very handy in program testing and for use with "professional" packages that output only to the screen editor. POKE 838,166:POKE 839,238 will route all normal screen display to the printer. POKE 838,163:POKE 839,246 restores output to the screen. Nice!!

## PAC SOFTWARE LIBRARY
*Clyde Pritchard*

As announced at the last general meeting, GAMES IV is now available on cassette. Dan has a boxful of these jewels available for sale.

Other recent arrivals are the "MODEM" and "DEMO II" disks. "MODEM" has several public domain terminal programs and utilities, and also documentation files for the programs and two of the local BBS's. "DEMO II" was shown a couple of meetings ago, and is full of great sound and graphics programs.

Also available from the club library are:

- GAMES I, II, and III
- EDUCATION I
- UTILITY I
- DEMO I
- BBS System

When you buy these programs from the club library, you are getting good programs at low cost, supporting the club and further development of its library.

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*Clyde Pritchard*

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MONTHLY ATARI CLUB MEETINGS
First Monday of each month, at 7:00pm
Bonneville Power Administration Auditorium
9th and Holladay Streets, N.E.

* Get the latest Atari news.
* Share with others who are working on similar programming efforts or problems!
* See the latest games in action!
* See a featured application program reviewed and demonstrated.
* Learn the ins and outs of your Atari in the Beginners' Corner!
* Send up a "HELP!" flare to fellow members on problems which have been bugging you.

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MONTHLY ATARI CLUB NEWSLETTER

Follow the regular columns in the local newsletter:

* Programming techniques, tricks and cutsies for the more advanced programmer.
* Reviews of the latest games and applications programs.
* Buy and sell opportunities of used Atari hardware, software, and games.
* Other articles of exciting happenings, games, programs or tutorials.

The Portland Atari Club Newsletter is recognized as one of the finest in the country. The newsletter alone justifies your membership.

FOR FURTHER INFORMATION, CALL:

Walter Germer, President, 282-2139 (home) 297-3789 (work)
Jim Stibik, Vice-President, 646-3467 (home)

OR

Mail Application with $20.00 dues to:

Gail Horner, (Secretary/Treasurer)
25410 S.W. Petes Mtn. Road
West Linn, OR 97068

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Join your Portland Atari Club ! ! !

Share experiences with other Atari owners.
Get the latest on ATARI news and products.
Exchange problem, programming techniques and programs.
Participate in workshops and tutorials.
Receive the monthly newsletter.

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FULL FAMILY
MEMBERSHIP APPLICATION

Please fill out the following information
Then forward Dues: $20.00 per year.

Gail Horner
Treasurer, Portland ATARI Club
25410 S.W. Petes Mtn. Road
West Linn, OR 97068

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NAME:_____

ADDRESS:_____

CITY:_____ STATE:_____ ZIP:_____

PHONE:_____ AREA CODE:_____

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In the hardware, software, or applications columns below, please check the items that are of interest to you.

| HARDWARE | SOFTWARE | APPLICATIONS |
|---|---|---|
| 400(How Much Ram) K | Assembly | Business |
| 800(How Much Ram) K | Atari Basic | Word Processing |
| Disk Drive (How Many) | Microsoft Basic | Phone Network(Modem) |
| Cassette | Forth | Hobby |
| Printer What Type | Pilot | Games |
| Modem What Type | Other | Color Graphics |
| Other_____ | Home Application Systems | Music or Sound Generator |
| | | Other |

# ATARI DEALER LISTING

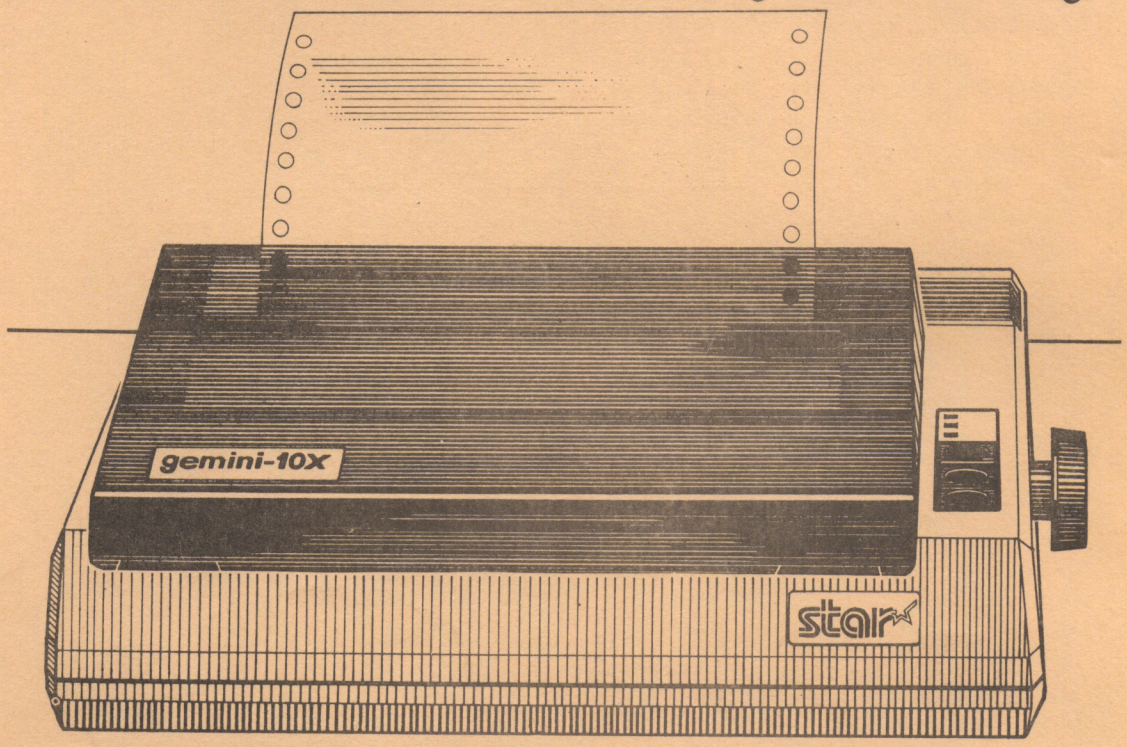
*Clyde Pritchard*

The following list was supplied by THE MOORE COMPANY. It shows the authorized ATARI dealers in our area. ATARI rebates are valid only on items purchased at an authorized dealer.

| | | |
|---|---|---|
| BROOKFIELDS | 2900 SE Morrison | Portland, OR |
| BYTE SHOP | 3482 SW Cedar Hills Blvd | Beaverton, OR |
| COMPUSOFT EXCHANGE | 2807 NE 154th | Vancouver, WA |
| COMPUTERLAND | 621 SW 5th | Portland, OR |
| COMPUTERS, ETC. | 1513 NE 122nd | Portland, OR |
| DESK TOP SYSTEMS | 4179 SE Division | Portland, OR |
| FIRST RUN VIDEO | 3278 B Lancaster Dr. NE | Salem, OR |
| FUTECH | 444 Ferry St. | Salem, OR |
| GRESHAM VIDEO SYSTEMS | 839 SE Powell | Gresham, OR |
| HOME ENTERTAINMENT | 703 Vandercook Way | Longview, WA |
| I.B. COMPUTERS | 1515 SW Marlowe | Portland, OR |
| LAKES VIDEO | 4408 SE Woodstock | Portland, OR |
| LARRY KELLY'S | 2236 SE 182nd | Portland, OR |
| LEEKS TV | 19960 Hwy 212 | Clackamas, OR |
| MAUDES | 2532 SE 122nd | Portland, OR |
| MICRO SYSTEMS SUPPORT | 16325 SW Boones Ferry Rd | Lake Oswego, OR |
| MOVIE MART | 10801 NE Sandy | Portland, OR |
| NATIONAL MICRO DISTR. | 7933 SW Nimbus | Beaverton, OR |
| NORTHWEST EFFECT | 6204 E. Hwy 99 | Vancouver, WA |
| PALMERS TV | 7215 NE Sandy | Portland, OR |
| PERSONAL INTERFACE | 13870 SW 114th | Tigard, OR |
| OSU BOOKSTORE | P.O. Box 489 | Corvallis, OR |
| R VIDEO | 20440 SE Hwy 212 | Clackamas, OR |
| RAINBOW CONCEPTS | 2111 SW 21st | Portland, OR |
| RICK'S RECORD RACK | 100 N Ivy | Canby, OR |
| ROYAL SOFTWARE | 2160 W. 11th | Eugene, OR |
| SLEEPERS DREAM | 17420 SE Division | Portland, OR |
| SOFTWARE PLUS | 358 Warner Milne Rd. | Oregon City, OR |
| ST HELENS ELECTRONICS | 1538 Columbia Blvd. | St Helens, OR |
| TOM PETERSON'S | 8303 SE Insley | Portland, OR |
| U of O BOOKSTORE | P.O. Box 3176 | Eugene, OR |
| UNIMART | 12314 SE Division | Portland, OR |
| VIDEO GAME BOUTIQUE | 1210 Jantzen Bch. Ctr. | Portland, OR |
| VIDEO MAGIC | 3700 River Rd. N. | Salem, OR |
| VIDEO SHOWPLACE | 2029 NE Burnside | Gresham, OR |
| WALLACE VIDEO | 105 S. Molalla Ave. | Molalla, OR |
| WASSONS | 631 NE Grand Ave. | Portland, OR |
| WESTERN TECH. ENT | 13775 SW Pacific Hwy | Portland, OR |

Atari dealers in eastern, southern, and costal areas of Oregon were deleted from this list due to space limitations. If you have a question about these or any other dealers, contact one of your club officers.

# When it comes to superior printer performance, we study our lines very carefully.

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