The Mesa 286J Is Reborn!

The board designed to transform PCjrs into 286 machines was born a little more than a year ago, and it died a few months ago, due to many unpredictable problems. But now its inventor, Ed Strauss, says he's found the magic formula to bring it back to life.

As we reported in several past articles, the Mesa 286J performed very well on some systems, turning Juniors into speed demons that run faster than ATs. But many people who bought the units found they didn't work on their Juniors. So Ed stopped manufacturing and selling them around the first of this year.

It seems the problem was a simple one, and Ed found the solution by accident. He was checking out a unit that had been malfunctioning and noticed that all of a sudden it worked just fine. Then he noticed that the unit was resting on a part of the frame, providing an inadvertent ground. That was it! All it took was a better grounding method.

As Ed put it, "We've known all along that high frequency noise was the problem we were fighting. Formerly, grounding was only via the cable to the 8088 socket. By adding a three inch grounding pigtail now each Mesa 286J is clearly well within it's sweet spot."

"This makes a world of difference," Ed said. "You can immediately feel how predictably solid each unit is now, not just selective units (as before)."

The 286J runs at 12Mhz, as opposed to 4.77Mhz, which is the PCjr's normal speed. The Mesa 286J scores 584% or more on the PCTools performance test, which is

"And the 11th Commandment is:
Always Make Backups of Thy Floppy Disks."

considerably faster than the Nickel Express or the Jr Excellerator, the two speedup boards made for PCjrs.

Here is Ed's explanation for the speed of the Mesa 286J: "The Mesa 286J is very fast due to its 16Kb of 0-wait-state cache memory. An accelerator board without cache memory cannot improve general performance more than 30%, since the CPU still fetches every byte from the PCjr at 4.77MHz."

See if you can follow this, now: "You clearly can't double general performance just by doubling the CPU MHz. Not ever with a 10MHz V20 or V30 CPU. CPU and memory must both be improved. No matter what CPU you have, running a program requires fetching the same sequence of code and data, requiring a certain unchangeable amount of time, unless you have cache memory. The standard 8088 CPU already keeps the PCjr data bus 85% busy or more, so you're stuck with just 15% upside potential on the bus."

Here's an example of what Ed's talking about: "As the upper limit, imagine a hypothetical 100MHz Cray CPU attached to your PCjr without a cache. You'd be lucky to see a 30% general performance increase, because the million dollar CPU would still be waiting for each byte of code to be fetched from the 4.77MHz bus! We've seen it on the logic analyzer....there are very few idle bus cycles to 'soak up.' Only a fast cache memory onboard the accelerator, to retain the most recently fetched code and data, can overcome that bottleneck. When teamed up with fast onboard cache memory, a 12MHz 80286 CPU does perform hundreds of percent faster. That's what the Mesa 286J is."

At the moment, the only way to purchase a Mesa 286J is directly from Ed Strauss, at ES Quality Products, 2065 Lakeshore Dr.,Carson City, NV 89704 (702)786-4040. The price is $299.

PCjr Lives!

Many Ways to Add Power to Your PCjr
By David Wilson

EDITOR'S NOTE: The following article, written recently for the Orphan Peanut, the newsletter of the Atlanta PCjr Users Group, provides a brief description of many hardware expansion options available for PCjrs. This list is not complete, but it does provide a good idea of the many ways you can make your PCjr more fun and useful. If you see anything in this listing that appeals to you, we suggest you contact one of the advertisers in jr Newsletter for more information and current prices.

Memory Expansions:

The first and most necessary expansion of any PCjr is the addition of more memory. There isn't much in computing that is more frustrating than having one of those obnoxious error messages telling you that you don't have enough memory to do what you want to do, and one way to avoid them is to have the full 640KB of memory on board--you can even increase this to 736 KB with an additional (second) sidecar. Several expansion options are available from most vendors, but we'll make a suggestion: think about getting a Microsoft or IBM sidecar and, modifying it or having it modified to accept a full 512 KB instead of the 128 it originally had. If you're handy with a soldering iron and are the adventurous type, consider this option.

Second Floppy Drives:

There are a large number of options available, most of which fit on top of the basic PCjr and include additional memory and a parallel port, together with optional clock-calendar chips and other goodies. Several standalone external floppy drives are also offered, and most of them can accommodate a 3.5" floppy drive rather than the 5.25" standard PCjr type. This is most people's second priority, and it's one with which I agree. The difference between a 640 KB, dual-floppy computer and the basic or "plain vanilla" model is gigantic.

Modems:

The IBM PCjr Internal Modem is still available from several sources, but we don't recommend it if you didn't get it with your Junior. It's slow (only 300 baud) and uses a peculiar command set that only IBM fathoms, and it takes up one of your only two expansion slots. We feel that you can find other things to do with these slots, and you can certainly find better modems. Look for a 1200 or 2400 baud external modem. Almost all of these currently being sold are "Hayes compatible" (That's good!) and all use the standard RS-232 Serial Interface. You'll need an adaptor cable to go from the PCjr's Serial Port (marked "S" on the back of the Junior) and the RS-232 connector. If you can possibly manage it, get a 2400 baud model; several are now being marketed at around $100 or a little below. I know of no compatibility problems with any brand of external modem.

Hard Disks:

This is probably the most controversial add-on for a PCjr for several reasons. It's very expensive and many people don't want to put in the amount of money necessary for one as an enhancement to an obsolete computer. (That's legitimate, if you've thought it over and decided to put your money into a new system, but allow me to point out that even an AT-class computer is outmoded today. If you're going to save your pennies for a new system, improve your Junior and wait until the price of an 80386-based machine comes within your range.) PCjr Hard Disk systems must be added from scratch, and most require an expensive housing with controller, power supply, and the hard drive itself. If you were buying a 20-megabyte hard disk by itself, it would cost at a minimum $200, and then you'd have to get the other stuff as well. The average price for an XT-class Hard Drive card is in the neighborhood of $325, so the $75 to $200 more you may spend for a Junior Hard Disk system isn't just the result of excessive greed by the vendors -- it's a pretty reasonable price. One brand even comes with a guarantee by the vendor that he'll upgrade it to an XT-compatible system free if you change computers in the future. I've added a Hard Drive system, and it was worth it, so give it some thought.

Cartridges:

You can find cartridges to do a host of improving

Questions and Answers

Q. What is the least expensive way for me to add speed to my PCjr?

A. If you have 256K or more, the no-cost way to speed up your PCjr is to use a RAM disk. This will increase your speed dramatically. Consult your memory expansion instructions for ways to create a RAM disk (sometimes called a virtual disk or memory disk, because it exists in your computers memory). Or check our Software Store for RAM Disk Master, Disk #75, or other disks which will help you set up and use a RAM disk. In case you've missed them, check your back issues of jr Newsletter for one of the many articles we have published on the subject. Another inexpensive way to increase speed is to install a V20 chip in place of the 8088 chip which is the main processing chip at the heart of your Junior. The V20 chip costs under $20 and is placed in the socket where the 8088 chip sits.The increase in speed from a V20 chip is not dramatic, but it does boost speed by 10-15% for some operations. Since some Juniors have soldered, rather than socketed chips, if your interested in adding a V20, you should check first to see which type you have. See page 10 of the May 1990 issue for how to do this. Of course, you can dramatically increase your PCjr's speed by adding a speed-up board or a hard drive, but since the question was "least expensive," we're assuming you want just that.

Q. My PCjr internal modem is experiencing problems, even though the internal diagnostic test shows there is nothing wrong. What could the problem be?

A. The original PCjr internal modem is often referred to by those who own them as the "infernal" modem. The problems usually are related to communications software, which can most often be solved by making sure that the proper communications port is being addressed. But this question has been asked by people who have had their internal modems working just fine until all of a sudden the failures set in. Other than a failure within the modem itself, which the PCjr self-test (Error H upon boot-up or Ctrl-Alt-Ins, then select G from the menu) should have picked up, there is another common cause of internal modem failure -- interference from the power supply of a second disk drive. This can be solved by adding a shielding material, such as aluminum foil, between the modem and the power supply.

Q. I would like to be able to use my computer while I am printing documents on my printer, but I'm not sure my PCjr is capable of doing that. Can I use a print spooler or buffer on my PCjr?

A. Our PCjrs can do just about everything other computers can do, including print spooling and buffering. There is a big difference between a buffer and a spooler. Both will allow you to start your printer doing its job and then free up your computer so you can use it while the printer contin-

Questions and Answers

ues to work. A print spooler is a software program that puts information to be printed into your computers memory and feeds it to the printer. There are print spoolers on Disk #51 Print Handler and Disk #52 Jr Power Pack in the jr Newsletter Software Store. They work well and can be set for different sizes according to the amount of memory you want to allocate for the job. A print buffer is a hardware device that has its own memory which stores the information in a kind of holding pattern until the printer needs it. These devices are readily available, but are much more expensive than a software spooler.

Q.I have a Racore Drive II Plus and I can't run some software that I have heard other jr owners are running on their PCjrs. Is there something wrong with my Racore unit, or should I be using the PC switch differently. I switch it to the jr mode and it doesn't seem to make any difference.

A. Although there is always a chance that you have a mal-

functioning unit, Racore units have proven to be very reliable. It's more likely that you have not set up your boot disks correctly. This is a common mistake made mostly by people who don't take the time when they first get their units to follow the set-up instructions. Racore units (and other memory expansion units for PCjrs) require instructions in a file called config.sys as well as special software designed to enable your PCjr to recognize and properly handle additional memory. In the case of Racore units, which have a switch to allow you to change your unit from PC mode PCjr mode, you have to have the correct config.sys on your boot-up disk to match the setting of the PC/PCjr switch. And if you want to switch modes you have to reboot your computer with the right boot-up disk to match the new setting of the switch. You can't just flip the switch while running software. Racore's instructions for creating these boot-up disks are clear and easy to follow. They should not take you more than 20 minutes to read and carry out. (Yes, even beginners can do it!) And yet, when we checked with Racore recently they told us some people don't take the time to follow the instructions for making their boot-up disks and later wonder why they are having all kinds of problems. Briefly, if you want to operate in PCjr mode, which is better at handling games, your config.sys file should have the statement DEVICE=JRVIDMA2.SYS. For PC compatibility use a config.sys file with DEVICE=JRVIDMA2.SYS /C. We have also found that jrconfig.sys, which is available on the Jr Power Pack Disks (#52 and 65), as well as PCjr Autosetup (Disk #99) works fine with Racore units and allows greater flexibility and more control over other features than the software supplied by Racore.

Q. How can I replace the clock-calendar battery on my Tecmar jr Captain ?
A. The exact replacement Tecmar clock-calendar battery must be obtained directly from Tecmar. You can get a replacement by calling or writing the company. To replace the battery, you have to pull the old one out and disconnect the leads, which are held in spring clips. You simply push the new one in. If you are unable to get one from Tecmar, or you're in a hurry, you can buy a 3 volt lithium battery from Radio Shack, or some other supplier, and solder two solid copper wire leads to the battery, using your old battery as a guide for placement. Try to keep the soldering iron in contact with the battery for as short a time as possible. Then plug it in place.

Add power to your PCjr with JR POWER PACK I & II. These two disks, which you'll find in the jr Newsletter Software Store, contain software designed especially for you and your PCjr. They make your computer easier to use, more productive and more fun!

READER FEEDBACK

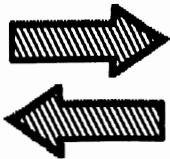## When to Panic About Missing Newsletters

Please set my mind at ease. I was one of the JrReport subscribers that was switched over to your publication with no complaint from me. I find your publication more informative and interesting than the JrReport ever was. My concern now is that toward the end of my subscription with the JrReport it began to come very late in the month whereas it used to come at the beginning. Now my jrNewsletter which used to come about the middle of the second week of the month now seems to be coming later. My hope is you're just sending them out later and are NOT fading out of business like the JrReport.

I also want to send a list of games I have been able to run. My PCjr has 640K via jr HOTSHOT; 16 Color Tandy modification done myself; Using DOS 2.1 and jrconfig.sys. Games I have been able to run include:

The Last Ninja; **Kings of the Beach**; **The Games: Summer ed.**; and **FaceOff!** (each in16 C); plus **Populous** and **Budokan** (both in 4C)

Do you know how I might get Populous and Bodokan to run in 16 colors? I have just written a letter to Electronic Arts Technical Support to see if they might be able to help.

Thanks for your help and keep the jr Newsletter going strong.

Kenny Ibarra, Riverside, CA

EDITOR'S NOTE: Although we do the best we can to get jr Newsletter in the mail by the first of the month, we sometimes fail to meet that deadline due to procrastination, overwork, laziness, unforeseen problems, or any combination of these. Since the newsletter is sent third class mail, it can take from two to three weeks for you to get it, depending upon how efficiently the U.S. Postal Service is operating that month. Third Class mail is not given the highest priority so the delivery times will differ from month to month. In spite of all these changeable factors, we suggest a general rule for you to use in deciding when to become crazed and depressed over having missed an issue of jr Newsletter: If you haven't received it by the end of the month, either we've messed up our database, or your newsletter has been chewed up by one of the USPS's mail processing machines, or your postal delivery person has become interested in one of the front page headlines and decided to read your copy of jr Newsletter him/her self. In other words, if you don't get your copy by the end of the month, let us know and we'll send you another one.

As for the second question, we haven't got any patches to run Populous or Bodokan in 16 colors, but if and when we do, we'll add them to the Jr Patches Disk.

Reader Needs to Print 3-Up Labels

I thoroughly enjoy the jr Newsletter and find that it has answered many questions for me. I do have one question, though. Do you know of a label program that will print 2 1/2 x 15/16 inch 3 up labels in various printer fonts? One of which would be compressed mode.

Clinton E. Keidel, Richey, FL

EDITOR'S NOTE: Mr. Label, Disk #97 in the Software Store, will print labels in many different sizes, including 2 1/2 x 15/16, and will print from one to nine across, in any font supported by your printer. Needless to say, we recommend it.

Reader Shares Some Game Tips

I want fellow readers to know that I have gotten Gamtek games to run. These include **Super Password**, and **Hollywood Squares**. The latter, however, needs a later version of DOS than 2.10 to run correctly.

I also just had a Tandy Modification done by Oowl Software. I did have some reboot problems, but these were ironed out by Albert Alan of Oowl Software. It seems that I had my monitor wires and a loose printer cable crossed in the back of my computer that were giving me a screen of snow whenever I rebooted my computer.

I am happy to report that the modification works just as I have been reading about in the jr Newsletter. The only game that worked before in CGA that does not work at all now is **Mean Streets** by Access Software.

Philip L.Schwartz, Parsippany, NJ

MATH FUN! A great way to get kids learning how to add, subtract, multiply and divide. Includes a program called Math Tutor which has cleverly designed exercises for kids in Grades 1-6. Also Funnels and Buckets, a nifty math game that makes learning math fun. 128K. Need Cartridge BASIC (Disk #42)

LANGUAGE TEACHER. Helpful exercises for both French and Spanish language students. Hundreds of vocabulary words and verb conjugations. 128K ok. (Disk #72)

HAPPY GAMES. Written by a mother to help her own pres-choolers learn on their PCjr, this set of colorful educational games makes learning fun. Teaches colors, shapes, logic, eye-hand skills. 256K and joystick required. (Disk #88)

GAMES FOR EARLY LEARNERS Young children like Teach Tot's alphabet and counting games. Other activities teach spelling and telling time. For Preschool through grade 3. Cartridge BASIC, 128K. (Disk #63)

EQUATOR. An excellent way to learn and review 35 basic equations used in math, finance and science. Learn to compute the volume of a cylinder, compound interest, or average velocity and much more. Manual on disk. 128K (Disk #20)

EARLY LEARNING. A collection of colorful educational games for ages 6-8. Sing-along alphabet, letter match, counting game, maze, pattern matching and more. 128K, need Cartridge Basic. (Disk #48)

CROSSWORD CREATOR V3.30. Make your own puzzles up to 36 columns by 22 rows. Many helpful sorting and placement features. Prints out on virtually any printer. 256K (Disk#71)

BRAIN BOOSTER. Includes IQ Builder, a program that both teaches and tests your ability to solve number, analogy, synonym and antonym problems like those on IQ and SAT tests. Also includes Algebra and Chemistry programs. For high school and up. 128K (Disk #43)

BIBLE QUIZ Excellent quiz game tests knowledge of both the Old and New Testaments. Provides answers and biblical references for each question. For one to three players. 128K OK. (Disk #85)

THE WORLD V.2.6 Fascinating way to see the world on your PCjr! Just use the pointer to move over full screen map of world and press Enter to zoom in on any region, country or city. Many features. Even shows you hurricane tracks by year. 256K Reviewed 2/90 (Disk #105)

Reader Provides Tips For Using 3.5:" Drives

I have been reading with interest the discussions in recent issues about how to set up Junior to use a 3.5" disk driver using DRIVER.SYS. I had tried this setup, but I found that having to address the A: physical drive as D: to format a 720k disk was just too confusing. While studying the manual for Version 3.2 of DOS I found a config.sys parameter called DRIVPARM which could be used to set up the installed drives. The advantage of this command is that you can designate any of the drives as 720k and not have to use the external driver. Junior just recognizes the larger size drive right at boot time. The confis. sys command line:
DRIVPARM = /D:0 /F:2 /C
will set up drive A: to be a 720k all the options are explained later.

When DOS 3.3 came out, I checked the documentation but could not find DRIVPARM. I tried the same command setup, but it didn't seem to work, so I stuck with DOS 3.2 until recently. I ran across a discussion on a bulletin board which provided the solution to using DOS 3.3 with 3.5" drives. DRIVPARM, while not documented, is still part of DOS. It seems the parser in DOS 3.3 has a bug in it which doesn not allow the command to be recognized. By adding one or more ^A characters in the command string, the command works just fine and can be used the same as in DOS 3.2.

The full syntax for DRIVPARM is:
DRIVPARM= ^A /D:dd [/c] [/F:ff] [/H:hh] [/n] [/S:ss] [/T:tt]

The ^A is a "control A" combination. See below for hints on how to enter.

The dd parameter for the /D: switch specifies a logical drive number between 0 and 255. This means that drive number 0=A, 1=B, 2=C, and so on.

The /c switch specifies that door lock support is required.

The ff option on the /F: switch specifies the form factor index where:
0=320/360k bytes
1=1.2M bytes
2=720k bytes
3=8" single density
4=8" double density
5-hard disk
6=tape drive
7=other

The /H:, /n, /S: and /T: can be used to set the number of heads, sectors and tracks on a disk, but are not needed to run a 3.5" disk. If you want to play with that refer to a copy of MS-DOS 3.2 documentation. Here is an example of the line I use in my CONFIG.SYS file

---

DRIVEPARM= ^A /D:1 /F:2 /C

This sets up my B: drive as a 720k drive. If you have your 3.5" in the A: position, change the /D:1 to /D:0.

On most wordprocessors you can't just press Ctrl and A to enter the ^A character. I used the COPY CON method to create a file with this special line in it and then edited it with my wordprocessor in nondocument mode to add the rest of my config.sys file commands. A note of warning, if you already have a config.sys file be sure to save a copy so you can recreate all the other commands in this new config.sys file.

Start at the DOS prompt by entering COPY CON CONFIG.SYS and press enter. Type DRIVEPARM= and a space. Now to enter the ^A character this way, you must use the ANSI number equivilent for ^A. Set NUM-LOCK on by pressing FN and N. Hold down the Alt key while entering the number 01, then release the Alt key. Now press Fn and N again to turn off NUMLOCK and continue entering the rest of the line. Press F6 and enter. DOS will tell you that one file has been copied. Now start your text editor and add the rest of your config.sys commands.

I find this is a much easier way to set up your 3.5" drive, and I hope it will be of help to your readers.

Happy computing!

Gary K., Inglish, Jacksonville, FL

How to Fix a Common PCjr Color Display Problem

I have subscribed to the jr Newsletter since I first heard about it in June, 1986. I have gotten a lot of helpful information from it and so would like to pass on an experience that may help other readers. On page 8 of your April issue Terry Rich of Dickinson, ND writes about a monitor problem. This may be too late to help Terry, but I'd like to pass along my recent experience for any others who may have the same problem. John King, of the late San Francisco PCjr Users Group and whose articles you have reprinted, gave me the solution. (Mine was the third occurrence referred to John within the last few months! Perhaps all of our monitors are just getting to be that age.)

The problem I had was caused by the horizontal hold getting out of adjustment as the monitor got older. (It is the original IBM PCjr monitor that came with my jr in December, 1984.) The symptom I had was lines that were almost horizontal. (Since Terry says he gets vertical lines, it may be the vertical adjustment in his case. He could try adjusting the vertical hold on the back of the monitor.)

The problem I and others of our group had would occur only after the monitor was well warmed up. On

Reader Feedback

Continued from page 7

reboot (either warm or cold) the monitor went blank except for some almost horizontal lines. These were colored while the self test was going on, then became grey on a blank screen. I suspected that everything except the monitor was working, so I typed in the command line to call up a program that comes up on color. What I typed did not show on the screen; but when I hit Enter, the lines turned to color as though the program had been activated. The solution was to adjust the horizontal hold that is inside the monitor case.

Here's what I did:

1. Let the monitor cool off for over an hour, hoping that this would allow any remaining static charges to dissipate.

2. **UNPLUGGED MONITOR** from the CPU and from the power. (This is extremely important since high voltage current in monitor can be FATAL! - Ed.)

3. Removed six screws from back of monitor: two at top, two at bottom under main body of monitor, and one on each side of the power cord.

4. Slid back of the monitor off just far enough to look inside to see how it fit together. (NOTE: This is important as there is a ledge where the monitor mother board fits!)

5. Slid back rest of the way off and out of the way, leaving the cords passing through the back of case.

6. Noted warning the components have high voltage even when power is off--so was careful not to touch anything inside except the part I was to adjust.

7. Located a small cylinder with a thin piece of metal on top marked both "H Hold" and "VR502". This cylinder is about 1/4 to 3/8 inch in diameter and is close to the neck of the monior tube. The metal on top has a cross cut in it.

8. Marked the position of the cross on top so that I could tell how far I turned it, and could turn it back if necessary.

9. With a small plastic-handled screwdriver, being careful not to touch other components, turned the cross approximately 1/8 inch counterclockwise. (This is counerclockwise as it appears while looking down at the H-hold.)

10. Put the cover back on and plugged the power and cpu cords back in.

11. Turned power on to the cpu and monitor.

12. Monitor worked fine on boot up and on warm reboot.

After using my jr for over an hour I tried a warm reboot with no problem. This was on April 9, and I haven't had the problem again!

John King's explanation was that as the components of the monitor wear out over the years, the horizontal hold gets out of adjustment.

If the approximately 1/8 inch turn that I used does not work, one would need to try greater or lesser turns. One might have to leave the monitor on while making the adjustment. This is a more dangerous approach and one should be sure to have a well insulated screwdriver that will reach into the monitor without any chance of his hand touching any part.

J. E. "Ed" Jackson, Jr., El Cerrito, CA

EDITOR'S NOTE: First of all, please heed the warning and unplug your monitor from the power source and disconnect it from your PCjr. Second, the problem desribed by Ed in his letter is probably the most common monitor problem.This one, as well as other fixes for PCjr Color Display problems, are also covered in detail in a test file included on Jr Toolkit (Disk #110). Finally, here's a tip: before reaching your screwdriver in to tweak the horizontal hold , insulate the shaft of the screwdriver by wrapping it with electrician's tape.

"Outstanding" Graphics Enhanced by Tandy Mod

I have finally installed the Tandy modification on my PCjr and it works great. I have a 512K system with two 360K floppy drives, The Racore Corporation top expansion. **Might & Magic** II looks outsanding in the Tandy mode and I have not had any problems iwth it. Also **Ultima V** graphics are outrageous! I've never played an Ultima game in 16 colors before. You have to set up the PCjr with enhanced mode and force Ultima V Tandy mode by typing "Ultima T".

Melvin Raymond, Tigard, OR

EDITOR"S NOTE: In case anyone needs more info on the Tandy Modification, see the article on page one of the June 1990 issue.

If Your Motherboard Blows, DON'T Call Computerland

Back in '84 or '85, we bought our jr for Christmas from St. Louis Computerland. Contrary to our thinking and just like Big Blue, Computerland did little ever to provide us with decent service after the sale. We repeatedly found their repair service to be excessively high, and their atitudes to be uncaring. From reading the jr Newsletter in the feed back section, there seem to be others of us experiencing the same types of rejections from different sources.

The final thing that soured us on Computerland, forever, was when our jr needed to be repaired in Nov. of '89; because of a major system failure (power supply and system board fried). This store where we originally bought our jr would no longer even look at our computer, saying Computerland stores in the U.S. no longer repaired outdated machines.

Ironically, we were finally successful in finding another Computerland store in the area that still did repairs on the jr. They charged us $64.15 just for the diagnosis, and showed us an estimate for another $198.00 which we were told was the minimum amount it would cost for the repairs. We could expect to pay another $100 or more, if more repairs were necessary. This seemed too high, because at the time basic jr cpu units were selling for around $200.00.

To make a long story short, we called Paul Rau Consulting, because we purchased items previously from them, and explained our problems. They agreed to take a look-see at our jr. They replaced the mother board and the power card for $120.00, and they didn't

The Latest On Compatibility

The latest version of the PCjr Compatibility Disk, with tips on nearly 1,000 software titles, is now in the Software Store. See Disk #60.

---

3 X 5. An information management program that works just like a 3 x 5 card file. It offers speed, versatilityy and simplicity in entering, indexing and retrieving data. Has an integrated word processor, powerful search commands, multiple windows so you can edit in one and search in another, etc. Requires 256K. (Disk #19)

FILE EXPRESS. (V4.22) Very easy to use database manager. Extensive menus and prompts to guide you. Excellent choice for maintaining mailing lists, etc. Many powerful features. 256K (Disks #83 and #84)

MR. LABEL. Extremely versatile, this software enables you to make labels ranging from the very simple to the very sophisticated. It's the best of many we've tried. 128K ok. (Disk #97)

NAMEPAL. An excellent utility program for maintaining and printing name and address lists, address books or mailing labels. Keeps business and personal references and allows user to maintain free-form notes as well. Requires 128K Memory. (Disk #70)

PC-FILE III. This excellent database manager will handle up to 9,999 records, such as names and addresses, notes, product descriptions, etc. Uses generic, embedded, soundex and wildcard searches. Global updates and deletes. Sorts on any field. Too many features to mention. (Disk #3 runs on 128K, Disk #4 needs 256K)

PRINTMASTER LIBRARY. Two disk set full of graphic images for use with PrintMaster. (Disk Set #3 - 2 disks, $10)

PC-KEY DRAW. A powerful graphics program that allows you to draw, paint, produce slide shows, store and print your work. 256K, two drives. (Disk #37)

PC-KEY DRAW DEMO. Contains a slide show demonstration which allows you to see the amazing results you can get with PC-KEY DRAW. Helps to learn the many graphic capabilities of PC-KEY DRAW. (Disk #38)

ORIGAMI. Learn the art of Japanese paper folding. This program shows you how, step-by-step, to create amazing animals and other objects just by folding paper. Fun for kids and adults, too. 128K. Requires Basic Cartridge. (Disk #39)

Reader Feedback
Continued from page 9

even charge us for their labor. That's service!

I only wish now, that we would have sent them back a thank you note saying how pleased we are with our new jr, and how many times we recommend their services to our friends.

Ken W. Rice, St. Charles, MO

A Boombox for Junior

Want to improve the sound coming from Junior? Is your stereo in another room? What to do? Buy a "Mini Amplified Speaker System" (MPS-5) from Radio Shack (cat No. 32-2031A).

The sound coming from the PCjr Color Display is good, but limited due to its small speaker. It is much better with the MPS-5 attached.

The Mini Amplified Speaker System is a 1-watt amplifier with 3.5 inch speaker which uses four "C" batteries. The unit measures 5" wide, 6.5" high and 4" deep. It sells for $19.95. A cable with two standard 3.5 mm monophonic plugs is also required.

The unit has both volume and tone controls which allows for louder sound and full bass. (However, you'll still have no problem distinguishing it from a $1, 000.00 stereo system! It is, after all, only $19.95.)

When not plugged into Junior the amplifier can be connected to any Walkman-type cassette player to give improved sound or to free you from the hassles of headphones. You can also plug a microphone in and use it as a mini public address system (Or just sing along with your favorite cassette tapes.)

(This article was originally published in the Eugene PCjr Club Newsletter.)

Centering the Monitor Image

You can move the screen image left or right manually with the Ctrl-Alt-Left Arrow and Ctrl-Alt-Right Arrow keys. If you want to automate this, put the following line in your AUTOEXEC.BAT file to switch to 80 column mode and move the image two characters to the right.

MODE CO80,R

To move the image left use MODE CO80,L Of course, the DOS MODE.COM program must be on your boot disk.

Ways to Add Power to jr

things to your Junior. You can speed up the time it takes for booting to practically no time at all, install a keyboard buffer to eliminate the characteristic PCjr "BEEP" when you type too fast for it, boot directly from your hard drive, and a bunch of other things. You can even get a device that will allow you to use three or four cartridges at once.

I/O Devices:

Input/Output devices include Keyboards, Light pens, touch pads, and Trackball or Mouses (Meece?). The PCjr has a sidecar that is designed to accept a mouse, and this arrangement allows you to retain your precious Serial Port for an external Modem, serial printer, or some other device using a serial port input. If you're going to do much word processing or numerical work, think about getting another keyboard--the Junior's is really a nifty piece of work and will last many years, but a separate keypad for math and function keys along the top or left side is a real convenience for serious users. Two different adapters are available for keyboards, and most keyboards that are compatible with an XT or PC will also work very well on a PCjr.

Speedup, Video and other Enhancements:

Two different speedup boards are available for the PCjr, and they both work. That offered by PC Enterprises is somewhat faster, but is incompatible with the jrHotShot memory expansion. The Dual Fonts or Thin Font chip is a very nice change for those who use their Junior for word processing or test-based work. They shrink the size of the vertical segment of each letter from two pixels to one, creating a much easier-to-read typeface on your PCjr monitor. The "Tandy Mod" is a do-it-yourself modification to the motherboard that involves "piggybacking" one chip onto another to permit the PCjr to masquerade as a Tandy 1000 series computer in order to take advantage of the 16-color graphics many authors write into their programs for the Tandy. (Junior had this capability long before Tandy, but the Tandy people did a great job of marketing, and IBM didn't.)

These are just a few of the possibilities for improving, enhancing, or upgrading your PCjr. We haven't talked about prices or who sells what very much, because that's a whole 'nother ballgame. You can get all the information from the advertisers in jr Newsletter.

Do you have any tips or interesting jr experiences you'd like to share with fellow jr owners? If so, send them to **jr Newsletter**, Box 163, Southbury, CT 06488.

Using Shareware Disks
By John King

After you buy a public domain or shareware disk, first check the directory with the DIR command. Put the disk in drive A and issue the following command.

DIR A: [Enter]

Look for a files with names such as README, READ.ME, README.TXT, or any file with an extension of .DOC or .TXT. These are text files which you can read. They contain instructions for the programs on the disk. If the file is called APROGRAM.DOC, give the following command.

TYPE APROGRAM.DOC [Enter]

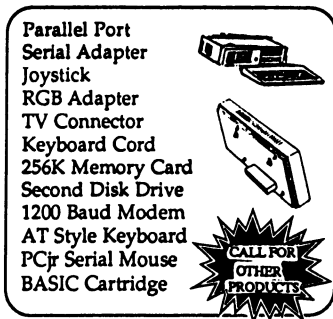You can stop the text from scrolling off the screen with Fn Pause.

The actual programs have .COM or .EXE extensions. For example, APROGRAM.COM or NEWGAME.EXE. These you run by just entering the filename.

NEWGAME [Enter]

Thexder Offers Challenge

By James Prossick

Tremendous graphics, excellent color, great sound, and addicting arcade action is what Thexder is all about. Thexder is another quality import from Japan right up there with Honda, Nissan, and Toyota. It's not new to the software market, but it is 100% PCjr compatible and a whole lot of fun.

Sierra On-Line Inc. markets this adaptation of Japan's favorite action game at a retail price of $34.95, but the street value is set at $24.00 or less. That's a good value even with the current trade deficit in Japan's favor.

Thexder is a fast-paced arcade game that calls for its own kind of strategy and a strong will to survive. The instruction booklet gives you the map for the first level of the amazing maze, but for the next 15 levels you'll need your compass, pad, and pencil to chart your course. Your goal is to pilot your Thexder Super Assault Vehicle through all 16 levels and destroy the central computer, which is constantly unleashing a variety of assault vehicles of its own.

Accomplishing this feat would make any computer gamer extremely proud and relieved. This game is "TOUGH". With a flip of the joystick or a bang into the maze wall your assault vehicle switches from robot to jet mode, just like the little tike's transformer. The enemy, and there is a wide variety of space age death toys headed your way, always outnumbers you about a hundred to one. You do have a force field to protect you, but that doesn't last long and drains valuable power and enmax

points. Just remember you can pause the game, but you can't save it. So once you're gone, it's back to square one, or in this case level one.

The idea is to find the safest and quickest route through each level, while picking up as many enmax points as you can along the way. The enmax, or energy maximum, is what keeps Thexder juiced up and ready to roll.

"You have to be a real DIE HARD to win this one!"

Destroying space varmints on the dead run or in warp flight, to the beat of a high energy sound track, is good clean fun. But it doesn't pay to duel with every death toy in the maze. Destroying some of the species of the automated techno assault team will feed your need for power, but missing the bull's-eye, failing at crowd control, or bumping into the wrong cyborg shooter can suck the juice out of you faster than a dehydrated vampire at a plasma party.

This game is unforgiving, so every shot must count. At first it's fun to waste as many metal marauders as possible, but every unnecessary shot or bump into the enemy drops the voltmeter a notch, and ohm that hurts. You have to be a real DIE HARD to pass through all sixteen levels of frantic firing and knock out the Central Processor that is causing your Thexder all this grief.

PROCOMM Bug

PROCOMM is an excellent communications program. The Host Mode feature allows you to turn your computer into a mini-BBS, so friends can upload or download files easily. However, Host Mode in PROCOMM 2.4.2 (Disk #15) has a bug which can lock up your PCjr. This has been fixed in version 2.4.3 and PROCOMM PLUS TD (Disk #108)

Exploring Your Junior With Debug (Part 2)

By John E. Wilson

This is the second of two articles about DEBUG.COM, a program that lets you look into, and manipulate, your PCjr's microprocessor and memory. In the first article we learned how to start Debug, and how to use some of Debug's commands. As we were learning about Debug, we also learned a little about the inner workings of the microprocessor that is the heart of every IBM PCjr, about bytes and hexadecimal numbers, and a even little about Assembly Language programming. In this article we will learn a couple more Debug commands, and in the process of learning them we'll also look inside Junior's memory, and tinker with it a bit (This, as you will see, is sort of a pun.).

Every PCjr has a couple of chips on the system board that contain ROM. ROM - which stands for Read-Only Memory - is a collection of permanent programs and data used to start-up and operate the computer. ROM is very similar to the programs on diskettes that we are all familiar with, but ROM cannot be changed (Except on a temporary basis.) or erased. There are several different components to the ROM in your PCjr: There are start-up routines that check- out and get Junior going, there is the Basic Input/ Output System (BIOS) which are routines that programmers can use to access almost anything within the computer, and there are data areas where Junior keeps track of things. Most of the routines, which are in machine language, are not especially interesting to look at, but there are some data areas in ROM that are. Let's use Debug to look at some of them. As in the previous article, you will get the most out of this if you load Debug into your PCjr and try out the Debug commands yourself.

You'll remember from the last article, that you start debug by simply typing in DEBUG, and pressing Enter. The only indication that you are in Debug will be a dash, or hyphen, followed by the blinking cursor. The dash is Debug's prompt, and it means that Debug is waiting for a command from you. You will probably also remember that you can enter commands in either upper or lower case letters, and that all numbers in Debug are in the hexadecimal number base.

At the Debug prompt type in: d f000:0000 and press Enter. Eight lines of data, as shown in Figure 1, should appear on your screen just below the command you entered. You entered Debug's DISPLAY command (Sometimes it is called the DUMP command.), followed by a memory address; and Debug responded by displaying 128 bytes of data beginning at that address. The display is in three parts. On the far left are two columns showing the beginning address of each line of data. These addresses are in the segmented style used by the 8088 microprocessor. The first part of the address is called the "Segment", and

the second part, to the right of the colon, is called the "Offset". In the center of the display is the actual data. There are 16 bytes of data per line, and each byte is shown as two hexadecimal digits. On the right side of the data display is the same data shown in a form that is sometimes readable. Debug interprets the data as an ASCII character code and prints the corresponding character on the right side of the screen. Sometimes this really means something, but often it doesn't. Most of the data in ROM is intended for the computer, and not for humans; but occasionally there are messages we can read.

In the display of data shown in Figure 1 is the seven digit ROM part number, beginning at memory address F000:0000; IBM's copyright notice, beginning at address F000:0008; and some error messages, beginning at address F000:0030. If Junior detects a malfunction during power-up it will print out one of these letters, A through H, in the lower-right corner of the screen. B indicates a key-

Exploring Junior With DeBug

board problem, H a diskette problem, etc. The rest of the data in these 128 bytes is intended for the computer, and appears as garbage to us. (See Figure 1)

If you want to zero in on something, there is a variation of Debug's DISPLAY command that will show only the bytes you specify. At the Debug prompt type in:

d f000:fff5 L 8

Debug responds with:

F000:FFF5 30 36 2F-30 31 2F 38 33   06/01/83

You entered the d command followed by the address, just as you did before, but you added the L parameter, followed by the number of bytes of data to display.

Of course, you can enter the L in either upper or lower case, but I made it upper case for this example to avoid confusion between a l and a 1 when the article is printed. These eight bytes of data in ROM give the release date of the ROM in the computer. As you can see in this example, my PC Junior has a ROM release date of June 1, 1983, which I understand is the original release date. Your Junior may have a later date.

Close by in memory to the ROM release date is the computer model identification number. Type in:

-d f000:fffe L 1

Debug responds with:

F000:FFFE FD   }

The machine identification code shown is FD, which is IBM's ID code for the PCjr. If you were to use the same Debug command in an IBM PC, the ID code would be FF; and on an AT it would be FC. You will notice that Debug printed a right bracket on the right side of the line because FD also happens to be the ASCII code for the } character, but the hex number FD is really what we were interested in seeing.

There is a block of information in the low-memory portion of ROM that is very interesting to snoop around in. It is only 256 bytes long, but it is packed with detailed data about the current computer settings. Current really means current, as we will soon see. This portion of ROM is unique in that it can be changed, and you can change some features of your computer by changing this data. However, these changes are temporary, and whenever the computer is rebooted the default settings are restored. You need not worry about doing any permanent damage to your Junior by exploring in this section of ROM. The worst thing that could happen is that you will need to shut your computer off and start it up again.

Three bytes within this block of ROM show the current status of the keyboard. First, make sure that you haven't set the caps lock key or the insert key, and then display one byte at memory address 0000:0417 by typing in:

d: 0:417 L 1 and press <Enter>

Debug will respond with:

0000:0417 00   .

Debug is reporting that there is no data set at that memory location. Another was of saying it, is that the bits are all zero. The period on the right is Debug's way of printing a normally unprinted character. Debug will only print on the right side of the screen those characters whose ASCII code is between hex 20 and hex 7E. Characters below hex 20 are considered control characters, and characters above hex 7E are part of the extended character set. As we've mentioned previously, though, the data itself is really what the computer is interested in, not the ASCII character set. In this Keyboard Status Byte each bit is important.

Now press the Caps Lock key to toggle Caps Lock ON, and then enter the same Debug command.

D 0:417 L 1   and press <Enter>

Debug will respond with:

0000:0417 40   @

Finally, press the Caps Lock key to toggle Caps Lock OFF, then enter the same Debug command, but hold the Left Shift Key down as you press Enter.

d 0:417 L 1 (Depress Left Shift) <Enter>

Debug will respond with:

0000:0417   02

You have entered the same Debug command three times, and have received three different results. What does this mean? Before we can answer that question, we

---

FIGURE 1 - Data at Memory Location F000:0000

```
-d f000:0000
F000:0000    31 35 30 34 30 33 36 20-43 4F 50 52 2E 20 49 42    1504036 COPR. IB
F000:0010    4D 20 31 39 38 31 2C 31-39 38 33 49 01 57 01 6D    M 1981,1983I.W.m
F000:0020    01 86 01 BA 01 20 4B 42-47 0A 47 0A BB 0A 84 0A    ...:. KBG.G.;...
F000:0030    45 52 52 4F 52 41 42 43-44 45 46 47 48 78 03 78    ERRORABCDEFGHx.x
F000:0040    02 EF F7 B0 00 E6 A0 FE-C8 E6 10 E4 A0 FA B8 8F    .ow0.f ~Hf.d z8.
F000:0050    10 BA C0 00 B9 04 00 0A-C4 EE 80 C4 20 E2 F8 B0    .:@.9...Dn.D bx0
F000:0060    A0 E6 F2 BA DA 03 EC B0-04 EE B0 01 EE B4 D5 9E    fr:Z.10.n0.n4U.
F000:0070    73 4C 75 4A 7B 48 79 46-9F B1 05 D2 EC 73 3F B0    sLuJ{HyF.1.Rls?0
```

---

need to look at the relationship between hex numbers and binary numbers. The hexadecimal number system is similar to the decimal number system, but it has five extra digits which are in the form of letters from A through F. Decimal 10 corresponds to hex A, decimal 11 equals hex B, etc. up through decimal 15 which equals hex F. Fortunately we won't have to learn any hex numbers larger than hex F.

The binary number system, the only number system computers understand, consists of only two digits: 1 and 0. In computers, one binary digit is called a bit (from BInary digiT), and eight bits make up one byte. Within a byte each bit is numbered from right to left. The rightmost bit is number 0 (Computers almost always start numbering with a zero.), and the leftmost bit is number 7 (Shown in Figure 2).

To covert from binary to hex, first break the byte into two halves: a right half of four bits and a left half of four bits. The position of any particular bit in each half byte determines the hex value of the bit. Figure 2 shows the hex value of each bit position. If the bit in the position is a 1, then it has the hex value shown; but if the bit is a 0, then it has no hex value. For each half byte, just add up the values of the bits. For instance: if a half byte had a bit pattern of 0110, the hex value would be 4 + 2 which is hex 6. A bit pattern of 1010 has a hex value of 8 + 2 which is hex A, and a bit pattern of 1111 has a hex value of 8 + 4 + 2 + 1 which is hex F. This conversion is actually more difficult to explain than it is to do and after just a little practice you can convert from binary to hex and from hex to binary by just looking at the numbers. Be aware that this conversion technique only works for hex/binary numbers. The relationship between binary and decimal is not at all the same.

FIGURE 2
Bit Positions and Hex Values Within a Byte

Bit numbers:	7 6 5 4 3 2 1 0
Hex values:	8 4 2 1 8 4 2 1

Now, let's get back to the Keyboard Status byte at ROM memory address 0000:0417. Figure 3 shows the coding of each bit within this byte. The first time we looked at this byte none of the keys were toggled on or depressed. Therefore, the bit pattern was 0000 0000, and the hex value was 00. The second time we looked at this byte, we had pressed the Caps Lock key ON and the bit pattern was 0100 0000, with a hex value of 40. The third time we looked at the byte we held down the left shift key as we pressed enter and this set bit number 1 and the bit pattern for the byte was 0000 0010, with a corresponding hex value of 02.

PC-CHECK MANAGER. A menu-driven program that can handle multiple checkbooks, unlimited payees and ledger account assignments. Requires 256K. (Disk #25)

HOME INVENTORY. Taking an inventory of your home might even be fun with this easy-to-use software that takes you through the process step by step. Gives a complete record for insurance purposes. Also good for listing collections. 128K. Cartridge BASIC required (Disk #58)

HOME BUDGET MANAGEMENT SYSTEM. Easy-to-use system for keeping track of income and expenses. Create separate accounts for income tax categories and get a summary at end of year. Provides chart of accounts, transaction reports, sorted ledger entries, etc. 128 K. (Disk #57) Or v. 3.13 for improved screenwriting and disk access speed. 256K. (Disk #57A)

FAMILY HISTORY. Includes complete manual on disk with how-to info on tracing and setting up your family tree with detailed genealogical information. Easy to use and modify as you gather more data. New compiled version runs faster than previous version. 128K order Disk #33 alone. 256K order #33 and #33A.

FAMILY TREE. Powerful genealogy program with easy to use menu system. Prints handy research forms, checks your accuracy, prints variety of charts and can make your family tree into a book! 256K (Reviewed 3/90) (Disk #109)

EDNA'S COOKBOOK. Will organize your recipes by subject, allowing for quick retrieval. Print out sorted collection for your own cookbook. 128K, 2 drives. (Disk #96)

CHECK PROCESSOR - Easy to use software for financial record keeping. Balance checkbook, print expenses by category, etc. 128K (Disk #59)

JR MUSIC MACHINE. If you want to write and play music on your PCjr, this program allows you to do it. Displays music as you write it using jr's 16 colors, and plays music back in three voice harmony. Features allow you to adjust key, tempo, note values, etc. Color Display required. 128K ok. (Disk #62)

PIANOMAN. A great music program! Allows you to write your own music, store it and play it on jr's terrific sound system. 128K. (Disk #36)

Exploring Junior With DeBug

FIGURE 3
Keyboard Status Byte at Address 417

```
Bit
7 6 5 4 3 2 1 0 Meaning
X . . . . . . . Insert Key toggled on
. X . . . . . . Caps Lock Key toggled on
. . X . . . . . Num Lock Key toggled on
. . . X . . . . Scroll Lock Key toggled on
. . . . X . . . Alt Key depressed
. . . . . X . . Ctrl Key depressed
. . . . . . X . Left Shift Key depressed
. . . . . . . X Right Shift Key depressed
```

At memory address 0000:0418 there is another Keyboard Status Byte, and the coding of the bits in that byte are shown in Figure 4. If you look at this byte with the Caps Lock key toggled on, you will see the byte is 00, but if you depress the Caps Lock key as you press Enter, the byte will have a value of 40.

FIGURE 4
Keyboard Status Byte at Address 418

```
Bit
7 6 5 4 3 2 1 0 Meaning
X . . . . . . . Insert Key depressed
. X . . . . . . Caps Lock Key depressed
. . X . . . . . Num Lock Key depressed
. . . X . . . . Scroll Lock Key depressed
. . . . X . . . Ctrl-Num Lock or Fn-Pause toggled on
. . . . . X . . PCjr keyboard clicker on
. . . . . . X . PDjr Alt-Ctrl-Caps Lock (clicker)
                toggled
. . . . . . . X Not used
```

For the PCjr only, there is a third Keyboard Status Byte at memory address 0000:0488. The coding for this byte is shown in Figure 5. Most of the time you look at this byte it will have a value of 00, but if you hold down the Fn key while you press <Enter> for the Debug display command it will have a value of A0. You should experiment with these three bytes by looking at them while pressing the various keys.

FIGURE 5
Keyboard Status Byte at Address 488

```
Bit
7 6 5 4 3 2 1 0 Meaning
X . . . . . . . Fn Key depressed
. X . . . . . . Fn Key released
. . X . . . . . Fn Key seen, green labeled key next
. . . X . . . . Fn Key locked on
. . . . X . . . Repeat key action
                     (0=enabled, 1=disabled)
. . . . . X . . Repeat key action at half rate
. . . . . . X . Repeat key delay is increased
. . . . . . . X Signals that repeat key is to be printed
```

One of the interesting features about these three bytes is that you can change them. Let's try it by turning on Junior's key click. Enter the following Debug command:

    e 0:418   < Enter >

Debug will respond with:

    0000:0418 00._

The cursor will be positioned after the period. Type in 04 and press Enter. From that point on you will hear a clicking sound from your Junior as you press the keys.

You used Debug's ENTER command to rewrite the byte at the address you specified. After you entered the command, Debug responded with a repeat of the address and the current value at that address. It then waits for you to type in a new value and press <Enter>. You can experiment with all of the Keyboard Status by changing various values. You'll find that you can change the repeat-key action, or even turn it off, and you can set the Caps Lock and Insert keys by writing directly to the appropriate byte in ROM.

Beginning at memory location 0000:0450 are two bytes that give the current location of the cursor. The first byte gives the column location, 0 through 79 decimal, but Debug reports it in hex 0 through 4F; and the second byte reports the row 0 though 18 hex (0 through 24 decimal). Type in:

    d 0:450 L 2   and press <Enter>

Debug responded (on my Junior) with:

    0000:0450 0B 18   =.

The row location, in the second byte, is easy to explain since I entered the command at the bottom of the screen. When Debug printed the results, the cursor was on the last line on the screen (18 hex, 24 decimal). The column location reported in the first byte, however, takes some thought to interpret.

The precise location of the cursor at the instant Debug started to print out the column value was in column B (Starting with zero that would be, in decimal, the 12th column from the left.), so that was the value that got printed. Of course, by the time Debug finished printing the line, the cursor was several columns past that point.

It is possible to change the values in these two bytes, and thereby move the cursor to another location, but it is best to do this with a variation of Debug's ENTER command. At the Debug prompt, type in:

    F 0:450 L 2 28 C

Debug responds by moving the cursor approximately to the middle of the screen Column 28 (40 decimal), Row C (12 decimal). If you tried this with Debug's ENTER command the cursor move would take two steps, one for the column and another for the row. Instead, we used Debug's FILL command with the L parameter followed by the number of bytes we wanted to change (2) and the value that each of the bytes should have. You'll notice that Debug is fairly relaxed about the data it receives, and you don't

---

have to type in the leading zeros of the address.

This completes our tour of Junior's ROM data areas using Debug. Remember, to quit Debug, just type a q at the Debug prompt. In this article we covered Debug's D(DUMP), E(ENTER), and F(FILL) commands, and in the previous article we covered the A(ASSEMBLE), H(HEX), R(REGISTER), T(TRACE), U(UNASSEMBLE), and Q(QUIT) commands. You are now familiar with about half of Debug's commands (These are also some of the most useful commands.), you looked at the details of Junior's built in memory, and you have learned how to control Junior at a very basic level.

How To Patch BASICA.COM

By John King

IBM BASICA.COM will not run on a PCjr without a BASIC cartridge. That is it won't run until it has been patched. The patch for DOS 2.1 BASICA has been around for a long time. If you are using a different version of IBM PC DOS, here is how to patch it. You will need DEBUG.COM and BASICA.COM. Give these commands.

DEBUG BASICA.COM [Enter]

RCX [Enter]

(a hexadecimal number is returned)

[Enter]

S 100 number C6 06 F6 01 2C [ENTER]

(a hexadecimal number is returned)

H number 3 [Enter]

(two numbers are returned, the number plus and minus 3, we'll use the number-3)

A number-3 [Enter]

NOP [Enter]

NOP [Enter]

NOP [Enter]

[Enter]

W [Enter]

(write patched BASICA.COM to disk)

Q [Enter]

Now, rename the patched BASICA.COM. I like BASICAJR.COM, but you can call it GEORGE.COM if you prefer. Just be sure the name has the .COM extension. It will run on your PCjr without the cartridge.

In IBM PC DOS 3.2, number-3 is 8A6F. If you use Debug to unassemble the code in BASICA.COM starting with number-3, you will see that the patch has eliminated a CALL by replacing it with three NOPs (No OPerations). That CALL was what prevented the program from running without the cartridge.

A bug in the DOS 3.2 BASICA turns video completely off when you return from BASICA to DOS with the SYSTEM command. To turn video back on, give the command "MODE CO80." You can use a batch file to start BASIC and give the MODE command.

Make Your PCjr Talk!

Speech, our latest addition to the jr Newsletter Software Store, allows you to make your PCjr talk to you without purchasing any additional hardware.

How would you like your PCjr to say "OK boss, I'm ready!" each time you start up? Or, would you like to write a "letter" on a disk which you could send to a friend, who could then have his or her computer read your letter out loud? Or, how about having your PCjr say, "Happy Birthday, Johnny. Here's a present for you. " The possibilities are great.

Anyone who can type can use Speech, since it's simply a matter of typing in the "phonemes", which are letter combinations for the major sounds in the English language. For example, the first thing we tried on our Junior was to have it say, "This is a test. " (Very scientific, right?) In order to do this, we typed the following line:

say tx-ih-s ih-z ah t-eh-s-t-t

And whaddaya know, our Junior said it. It sounded like a robot talking, but that's what it SHOULD sound like. After all, computers aren't human, though they're getting closer and closer.

As you can see from what we typed to get our Junior to say, "This is a test, " you need to know what phonemes to type in order to get the sounds and words you want. You could try making them up, but Vincent Poy, the author of Speech, provides a guide to help you. First he lists the 36 phonomes that Speech recognizes. Then he gives you a "dictionary" with a couple of hundred examples. Here's what he's listed as the phoneme combination for the word "telephone": t-eh-l-uh-f-oh-n. Each phoneme is separated by a hyphen and each word is separated by a space.

Vincent Poy has included on this disk two demo programs, one which brings up Max Headroom with a very important message about Coke and another which demonstrates many possibilities for using the software. There is also a little program called SAYTIME, which will read the time from your clock, if you have one installed in your Junior.

This nifty little speech program was brought to our attention by Alen Sing of the Puget Sound PCjr Users Group. Thanks, Al.

To order Speech (Disk #114) from the Software Store, please use the order form on page 23.

Print Your Own Calendars With New Calendar Software

If you have trouble keeping track of things like family birthdays, important appointments, meetings to attend, or deadlines, Calendar Keeper, our new Disk #115, may be what you need. It will print out a calendar on standard size computer paper with all your important dates noted in the proper squares.
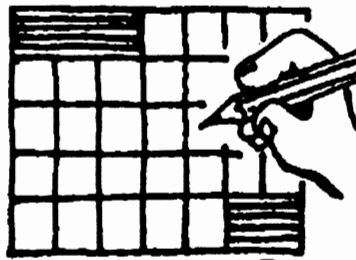
Calendar Keeper is an easy to use calendar system designed for individuals, clubs, or anyone who wants to be reminded of dates and miscellaneous appointments.

It's primary function is to draw 'wall calendars' which include the events the user wishes to remember. For instance, if you can never remember that your brother-in-law's birthday is on August 16, what better way than to print a calendar which shows "Jeff's Birthday" right in the August 16 box. Or better yet, a reminder in the August 10 box which says "Jeff's Birthday in 6 days!"

Are you looking for an elegant way to maintain, print, and distribute your club or organization's schedule of events? Calendar Keeper is perfect for this type of task. It will list all upcoming meetings, special events and dates important to your members.

Calendar Keeper permits you to maintain up to 10 separate calendar Event DataBases so you can keep track of personal events, group or club events, etc, without confusing them or getting them mixed together on the same calendars.

Calendar Keeper is menu driven, which means you select what you want to do from a list of choices, you enter the dates and what you want listed for them, and Calendar Keeper prints the calendar for you. You can print individual months at any time, or do a whole year at once.

The dates are kept in a small database, which Calendar Keeper creates. Database events can be permanent or current-year- only type events. These are differentiated by the fact that permanent events must be explicitly deleted by the user, while current-year-only events will be deleted automatically when the year changes.

A permanent event is most useful for events which re-occur on the same date every year.

Current-year-only events are useful for events which will not repeat themselves on the same date. For instance, the PTA meeting probably won't be on the same date next year. Thus if it is entered as a current-year-only event it will print this year but will be deleted from the DataBase automatically and not appear on the next year's calendar.

The Draw function enables you to print calendars which include your database events or 'plain' calendars which have no events printed in the date boxes. You can keep up to 10 different databases of events. For instance, if you are the secretary of your Audubon Society, you can print calendars with the Society's meetings and events for your members without mixing them up with your own personal calendar events, which you would keep in a separate database.

You have the option of sending the printed calendars to the screen (for preview), to a printer, or to a file for later printing, viewing or updating.

Calendar Keeper (Disk #115) requires 256K and will print on just about any printer. For ordering information, please turn to page 23.

How To Disable DMA On Racore Units

PCjr users who have Racore expansion units with DMA may want to disable the DMA feature in order to make your unit compatible with a new hard drive (some are not compatible with Racord's DMA) or for some other reason.

Disabling DMA in Racore units is not difficult and it is can be reinstalled later if you want it back. It just takes a little care, particularly when it comes to removing the DMA chip.

According to the Racore Service Department, here are the steps to follow:

1. Carefully remove the U-19 chip (a large 40 pin chip), using a chip puller, if available. (These chips cost about $25 to replace.)

2. Move the jumpers on J-10 and J-13 over one pin to the left. They are currently on the right two pins and should be moved to the left two pins.

3. Install a 150 ohm terminator in the H1 socket near the top of the board. These terminators are available in most electronic supply stores. Beckman part #899-3-R150 or Epitek part #EM 1407-151G are two types of terminators that will do the job, but there are many others that will also work.

4. Remove the floppy disk drive controller card and cable. Now you will need a $10 Racore cable, Part #5500-1013 to connect your second floppy drive. Or, you can replace the original IBM card and cable that came with your PCjr if you are going to operate with one floppy.

That's all there is to it.

The Playroom is Full of Fun and Games

By James Prossick

Educating the young can be fun for both parent and child. The Playroom by Broderbund is a collection of six learning toys that instruct young children in basic math and reading skills in an easy, digestible, and entertaining manner.

This funland learning expedition involves a trip to the child's own playroom where he can visit his make-believe playmates and choose a game to play. Once inside, the senses are aroused. Through the computer a child can hear and touch his pet bird, fish, dinosaur, or Look-A-Lot the one-eyed alien. He can rummage in the toy box, check on Pepper the Mouse, play the radio, or visit with the talking chalkboard. All the make-believe buds have a song to sing and a dance to do, but the talking board, with its five word vocabulary and animated graphics, has the most to show and tell.

In reality, the child's playroom acts as the main menu for the individual learning modules, with the high end entertainment options of the make-believe pals thrown in for good measure. Each of the six learning modules has an icon of its own located there. Clicking on any of the icons opens the door to one of the learning modules. Moving between the games requires a return trip to the playroom. This learning adventure maintains an open door policy throughout. You will see one in the lower left hand corner of each game as an exit back to the main menu. .

The user interface employed by The Playroom brings modern software technology into the fun realm, and helps orient children to the popular icon based software of today. As we all know, the mobility and ease of moving through software by windowing, initiating action by icons, and moving objects on the screen with the cursor, makes using the computer easier and more enjoyable. Any child picks up on this reality quickly, especially when the interface is this entertaining.

Exploring The Playroom's characters and objects will not only introduce your child to a bunch of new computer friends, but will also transport him into some entertaining and educating games. The Mousehole leads to a board game with three difficulty levels, that teaches basic counting skills through the roll of the dice and the movement of the players. Level one uses dice rolls up to four. Level two goes to six and level three extends the counting to nine. The game itself is a start to finish board game that can be played by two people or solo against the computer. Three dice roll out of the cup and then the player selects the best move. The game is simple. But some strategy is involved, since certain squares contain jumpers that send you backward or forward a few notches. Children can select their own play character, unless operating against the computer which will always take the robot by default. A thoughtful design feature in this sequence is the use of a color change for the play character whose turn is next. This keeps the game moving in an orderly fashion, and visually tells the child whose turn it is.

Counting skills are also the learning lesson hidden behind the veil of fun in the Spinner Toy module. This game consists of a presentation board, and an object and number wheel, each with a maximum of twelve stops. The child can experiment by choosing an egg on one wheel and the number six on the other. Up on the presentation board appears six eggs. Now to make the game more fun and educational, you need to roust Pepper the Mouse and select a number range. If you operate with numbers one through six, then the corresponding objects from the second wheel will appear randomly in groups up to six on the presentation board. The player's job is to make the right selection on the number wheel. A song and a brief spurt of animation rewards each correct choice.

No early learning package would be complete without

The Playroom

Continued from page 19

an alphabet recognition module. Broderbund, with a nice creative twist, has breathed new life into this tried, true and somewhat tired concept with the ABC Book. Yes, all 26 of the friendly letters are at the top of the screen. Yes, pop goes the pretty picture on screen for the letter you choose. Then what's the creative twist? Your child gets to use the picture as a building block in the creation of an individual story line. The background picture for this create-your-own- story is already in place, with your choice of either a fantasy layout, castle equipped, or a neighborhood block. Of course, the letter picture association fits the locale you're in. There are road signs, mail carriers, air-
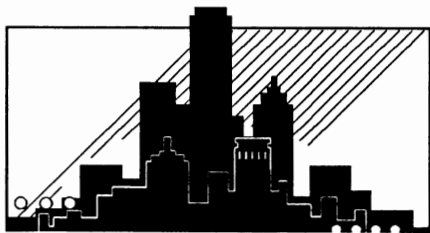
"The Playroom succeeds because it teaches children without them ever knowing it."
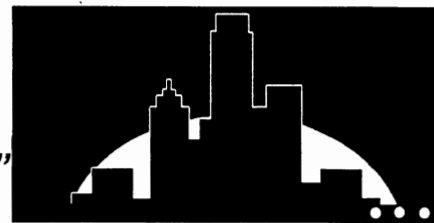
planes, and ice cream trucks for the neighborhood, and trolls, unicorns, fairies, and Kings and Queens for the fantasy land.

This whole sequence reminds one of the activity books and stickers that children love, but with the added benefit of your child using the alphabet to develop word associations with the letters. There is a giant step here that can be taken from mechanical learning to creative play. Asking your child why, or participating in, the placement of the characters and objects increases the depth and enjoyment of developing the story for both of you. Once completed, the final picture can be printed and then your little one can tell you the story from beginning to end. Best of all the completed picture can be saved as a reward of the child's accomplishment or can be used to share the story with other friends and family members.

For children growing in height and mind there is The Computer, a beginning spelling and word recognition game. This module emulates a standard computer keyboard and screen. The child can roam the keyboard familiarizing himself with upper and lowercase letters by watching what appears on the screen. Step two is to wake up our buddy Pepper Mouse again. He will display an array of gifts to chose from, and guide the child in the spelling of the name of each gift. By limiting the child's choice of letters,
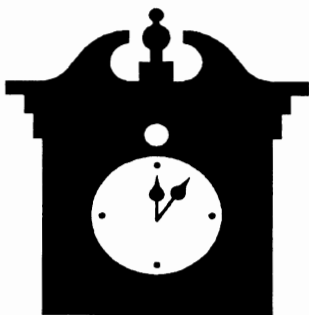
through displaying only the keyboard row where the right letter resides, the selection process is simplified. If an error is made, Pepper displays the correct letter. As elsewhere in The Playroom, a correct answer rewards the child with a sound and graphics burst. In this case, the animation sequence is an opening present and a song. There are two sets of gifts, eleven packages each, adding up to a 22 word vocabulary from which to select. Interestingly enough, the player never has to touch a real keyboard to make the letter selection. It can be done by point and shoot, so using this segment as a keyboard recognition tutor is optional. This also makes the game much more accessible and easy to use for younger children.

Telling and understanding time is a mechanical and spatial learning process a child begins early on. The Playroom handles it quite nicely on several levels with The Clock module. This learning game teaches movements of hands of the clock, numerical recognition of digital time, the 24 hour cycle on which we base our life, what real life activities correspond to the hour of the day, and as an after thought, some basic counting skills. By positioning the clock hands the child initiates a multiple response. Pepper is shown in one window in the activity of the hour. He may be riding a bike, brushing his teeth, or maybe sleeping. A smaller window above Pepper shows a cityscape that further orients the child to night and day by the position of the moon and sun and the amount of light and dark displayed. Below Pepper, a digital display of the correct time is shown, with the time written out in script below that. The cuckoo clock starts the action by pushing out tweety, who chirps out and displays the appropriate number of notes for the time of day. The child can count the notes to determine the right time. The game does not go into the nuances of time and how we describe them. No eight-fifteen's, quarter-to's or half- past the hour are used. But the game does provide the basics of telling time and how it relates to the child's everyday activities.

The final learning module, Mixed-Up Toy, is strictly for fun. It allows the child to mix and match the body parts of a variety of characters and creatures, and is sure to get some smiles and laughs from the peanut gallery. Clicking on the window in the upper right hand corner will cycle through a variety of creations for a good overview of the possibilities. To design one's own creation, the child must position the cursor arrow on the head, midsection, or feet, and run through the different body parts to the desired

choice. The ability to get a good quality print-out of each creation, without unwanted window dressing or background icons, greatly expands the use and enjoyment of this little graphic adventure. It lets the child show and keep his creation.

This fun and learning package is designed to be used together by parent and child. The manual is well written, covers all the program's mechanical operations, and has a load of good ideas for expanding The Playroom's usefulness through parent interaction. There are 15 spin-off activities designed to be used with the program, ranging from coloring pictures of the Playroom Pals included in the manual to sharpening the child's listening skills by matching the computer generated sound with a picture of the right character. By being able to control the range of numbers used in the counting games, the choice of words in The Computer Game, and selection of lower or upper case letters in the ABC Book, the parent is allowed a great deal of flexibility in designing the appropriate learning level for the child.

A wish list of improvements for The Playroom would include the option of importing a larger variety of environments or allowing some construction of a new background in the ABC Book, being able to add more words for The Computer game, extending the graphics and vocabulary of the talking chalk board, and adding new body parts for the Mixed-Up Toy.

You will need 512K and two 5 1/4 or one 3 1/2 inch drive to run The Playroom on Junior. With the Tandy modification you're blessed with 16 colors, otherwise your restricted to the four shades of CGA. The graphics are clean and crisp, and utilize the 16 color palette effectively with good color combinations. Unfortunately Junior's sound chip is not supported, but the standard PC sound generation is still above average. Be forewarned, loading time and trips between The Playroom's main menu and the various modules takes some time unless you have a speedup board in your PCjr. It is advisable to keep anxious fingers away from the keys during the transition, since jamming on the keyboard can lock-up the program. The Playroom's interface works well with either keyboard, joystick, or mouse, and there should be no problem producing hard copy with the variety of printers that are supported.

The Playroom retails for $44.95, but can be purchased for a mail order price of $29.00. This program sets up a triangle of interaction between the child, parent, and computer that promotes a fun learning experience. The Playroom succeeds because it teaches children without them ever knowing it. Its appealing sound and graphics and educational flexibility make The Playroom a good value, and a program that's sure to spend more time in the disk drive than the storage box.

File Transfers by Modem

When you consider sending or receiving files electronically by modem, it's useful to know approximately how long the transfer will take. At 1200 baud, files are transferred at about 5,000 bytes/min. The rate will be a bit over one-fourth as great at 300 baud and almost twice as fast at 2400 baud. A disk full of shareware programs that you can buy for three to five dollars will take over an hour to download at 1200 baud. If it's a long distance call, perhaps you should consider mail order.
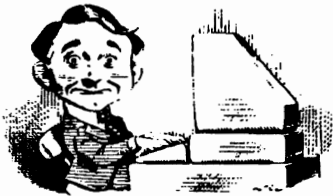
Need Help?

The following disks from the jr Newsletter Software Store can help you to get the most out of your junior. To order, see the coupon on page 23.

PCJR AUTOSETUP. A beginner's dream: Just select from a menu to make separate boot disks especially for each type of software you use. Automatically creates the right config.sys and autoexec.bat files for RAM disks, games, word processing, telecommunications and other software to run at maximum power and efficiency on your PCjr. Designed especially those who haven't mastered the art of customizing their computers. This one does it for you! 256K (Disk #99)

JR TOOLKIT V2.0. A collection of 30 upgrades, modifications and repairs. Some easy, some require experience. Includes adding second 5.25" drive (easy) or 3.5" drive (easy), PCjr to Tandy 1000 Mod (harder), power supply upgrade (harder), reset button (harder), V20 speedup chip (easy), how to quiet drives (easy), adjust monitors (easy), plus many others. (Reviewed 3/90 & 6/90) (Disk #110)

JR POWER PACK. A collection of particularly useful programs for PCjr owners. Set up RAM disks, address memory to 736K, turn a joystick into a mouse, set screen colors, keyboard click, scan and search text files, screenblanker, print spooler, and more. 128K. (Disk # 52)

JR POWER PACK II. Disk full of programs to make your PCjr more useful and powerful. Fix compatibility problems, set up ram disks, tiny word processor, set up 3.5" drives, use DOS easily, and more. Need 256K for some, 128K ok for most. (Disk #65)

PCJR COMPATIBILITY DISK V3.5. Lists hundreds of software titles, along with info on how they run (or don't run) on PCjrs. Includes many tips on how to make software PCjr compatible. Powerful search feature finds titles quickly and easily. 128k ok. Updated April, 1990. (Disk #60)

PCjr PATCHES V.5.0 Patches to fix software that ordinarily won't run on PCjrs. V.5.0 adds patches for Prodigy, Telix V.3x, Bard's Tale II, Maniac Mansion, Designasaurus, California Games, and F-19. Also patches for Flight Simulator V.3.0, Arctic Fox, Managing Your Money V.3, Autocad, King's Quest IV (early 512K version), KQ II (PC ver), Turbo C, Quick BASIC V3-4, Advanced Flight Trainer, Double DOS, Bard's Tale I, Turbo BASIC, and BASICA. (Disk #56)

jr Newsletter Software Store

The software in the jrNewsletter Software Store is the best public domain and user-supported software for the PCjr we've been able to find. All software has been tested on our PCjrs and is highly recommended. Some of the programs are equal to or better than commercial programs costing hundred of dollars. These are offered for you to try at $5.95 per disk. Some shareware requires additional payment if you continue to use it.

Educational Software, page 6.
Games, page 9.
Art & Drawing, page 10.
Databases, page 10.
Especially for Jr, page 12.
Family & Home Management, page 15.
**Music, page 15.**
Spreadsheets, page 19.

Software Store Recent Additions
Please Use Order Form on pg. 23.

* NEW * SPEECH. Make your Junior talk! With this software you can make your PCjr's internal speaker say anything you want. Very easy to use. No additional hardware required. (Reviewed 7/90) 128K ok. (Disk #114)

* NEW * CALENDAR KEEPER V2.1. Keep track of important dates, birthdays, club meetings, etc. and print monthly calendars with these dates clearly noted in the proper squares. Prints wall calendars on standard size computer paper. Easy to use, menu driven, can keep up to 10 databases of events and reminders. Many features. Need 256K. (Reviewed 7/90) (Disk #115)

* NEW VERSION * JR TOOLKIT V2.0. A collection of 30 upgrades, modifications and repairs. Some easy, some require experience. Includes adding second 5.25" drive (easy) or 3.5" drive (easy), PCjr to Tandy 1000 Mod (harder), power supply upgrade (harder), reset button (harder), V20 speedup chip (easy), how to quiet drives (easy), adjust monitors (easy), plus many others. (Reviewed 3/90 & 6/90) (Disk #110)
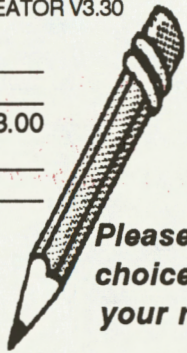
SCRABBLE. At last, an excellent Scrabble game that runs in 16 colors on PCjrs! Plays just like the board game. Expandable dictionary checks words. Keeps track of all premium score squares and scores for up to four players. Also contains WORDWHIZ, a nice vocabulary building game. 256K (Reviewed 5/90) (Disk #113)
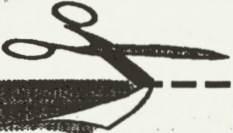
jr Software EASY ORDER! Form

SET DISK SETS
1 PC WRITE V3.02 (3 disks-$12)
2 PC CALC PLUS. 512K (2 disks-$10)
3 PRINTMASTER LIBRARY. (2 disks-$10)

TITLE
1 PC-WRITE V2.5 (128K)
2a PC-WRITE V2.7 (256K), Disk 1
2b PC-WRITE V2.7 (256K), Disk 2
3 PC-FILE III. 128K
4 PC-FILE III. 256K
5 PC-CALC. 128K
6 PC-CALC. 320K
8 GAMES I
9 DUNGEONS & WARS
10 PINBALL RALLY
12 REFLEX POINT
14 ADVENTUREWARE
15 PROCOMM
16 BUSHIDO
17 PC-OUTLINE
18 TYPING INSTRUCTOR
19 3 X 5
20 EQUATOR
21 TIME TRAVEL IN HISTORY
22 PC-DESKTEAM
23 PC-PROMPT
24 PC DOS HELP
25 PC-CHECK MANAGER
27 MINICALC
28 SUPER UTILITIES
29 MORE SUPER UTILITIES
30 ARCADE GAMES
31 BOARD GAMES
32 PLAY AND LEARN
33 FAMILY HISTORY (128K), single
33A FAMILY HISTORY (256K), need both
34 GAMES II

35 NEW KEY
36 PIANOMAN
37 PC-KEY DRAW
38 PC-KEY DRAW DEMO
39 ORIGAMI
40 DOS 2.1 FIX
41 WORD PROCESSING FOR KIDS
42 MATH FUN!
43 BRAIN BOOSTER
44 PC-CHESS
45 ZAXXON/GALAXY TREK
46 PHRASE CRAZE
47 GOLF/SAILING
48 EARLY LEARNING
49 DOSAMATIC
50 IMAGEPRINT V3
51 PRINT HANDLER
52 JR POWER PACK
53 CASTAWAY/S. AMERICA TREK
54 THE BEST OF JR NEWSLETTER I
55 SUPER BOARD GAMES
56 PCjr PATCHES V.5.0
57 HOME BUDGET MANAGEMENT, 128K
57A HOME BUDGET MANAGEMENT, 256K
58 HOME INVENTORY
59 CHECK PROCESSOR
60 PC-JR COMPATIBILITY DISK, V3.5
61 BOYAN
62 JR MUSIC MACHINE
63 GAMES FOR EARLY LEARNERS
64 COMPUTER JOKER
65 JR POWER PACK II
66 THE BEST OF JR NEWSLETTER II
67 AS-EASY-AS, V.2.05 (256K)
68 DOUBLE TROUBLE
69 GALAXY
70 NAMEPAL
71 CROSSWORD CREATOR V3.30

72 LANGUAGE TEACHER
73 BAKER'S DOZEN
74 MIND READER
75 RAMDISK MASTER
76 PC-STYLE
77 COMPUTER TEACHER
78 PLAYER'S CHOICE
79 MEAN 18 GOLF COURSES-1
80 MEAN 18 GOLF COURSES-2
81 SCOUT
82 SPELLING BEE
83 FILE EXPRESS, DISK 1
84 FILE EXPRESS, DISK 2
85 BIBLE QUIZ
86 JRTELE V2.1
88 HAPPY GAMES
89 STAY ALIVE !!!
90 SPEED READ
91 THE BEST OF JR NEWSLETTER III
92 STUDY AIDS
93 TYPEWRITER
94 SHARESPELL
95 WIZQUIZ
96 EDNA'S COOKBOOK
97 MR LABEL
98 TOMMY'S TRIVIA
99 PCJR AUTOSETUP
100 WAR ON THE SEA
101 GAMES III
102 4DOS V2.21
103 TEXT UTILITIES
104 PKZIP V.1.02
105 THE WORLD V.2.6
106 GAMES IV
107 AS-EASY-AS V.4.00 (384K)
108 PROCOMM PLUS TEST DRIVE 256K
109 FAMILY TREE
110 JR TOOLKIT
111 PRINT IT!
112 LZEXE
113 SCRABBLE
114 SPEECH
115 CALENDAR

_____ disks @5.95 each = $ _____
_____ disk sets = $ _____
Shipping & Handling = $ 3.00
Add 8% sales tax in CT $ _____
TOTAL $ _____

Name _____

Address _____

City _____ State _____ Zip _____

Prices are U.S. funds.

Make check Payable to jr Newsletter.
Send to:
**jr Newsletter
Box 163
Southbury, CT 06488**
All Orders Sent First Class Mail

Please circle the diskette #'s of your choice above, and remember to give your name, address, and total order on the form lines.

A full listing of software titles is found in our catalog. If you didn't receive PCjr Survival Kit, write
Jr Newsletter, PO Box 163, Southbury, CT 06488
for your free copy..

SUBSCRIBE NOW
to jr Newsletter
1 yr. (12 issues) only $20
2 yrs. (24 issues) only $36

Name _____

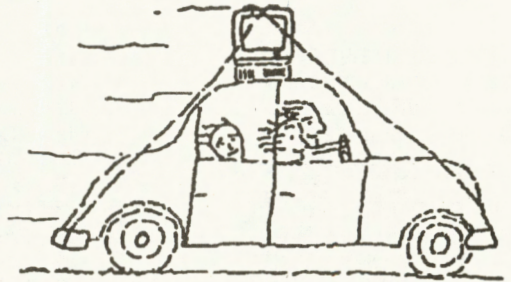Address _____

City _____

State _____ Zip _____

Satisfaction guaranteed or your money back for all un-mailed issues. All prices U.S. funds. Add $8/yr. for delivery to Canada.

(Connecticut residents add 8% sales tax)

Send order with payment to:

jr Newsletter
Box 163
Southbury, CT 06488

Moving?

Please send your new address to us at least one month before you move. The Post Office will not forward your newsletters. Send notice to:

jr Newsletter
P.O. Box 163

Southbury, CT 06488.

jr Newsletter
P.O. Box 163
Southbury, CT 06488

Your subscription expires with this issue. If you want to continue, please send envelope provided inside. If you have already renewed, ignore this notice.

9007-R

L E TEAGUE
17707 LACEY DR
EAGLE RIVER, AK 99577

jr Newsletter