## How A PCjr Fanatic Beefed Up His System

By Bob Magnuson

When I drove home from the local mall December '84, and carried my new PCjr computer into my apartment, I knew absolutely nothing about computing. As time changes all things, in time I have become a fanatic.

I'd like to tell you just how far one can go with an IBM PCjr, and if you sense that I'm satisfied with the Junior, you're right! Since the at-work Junior (#2) is nothing to talk about. I'd like to tell you about the hardware aspects of my sit at home Junior, at this moment helping me "word process" this article. While some of the things I have done are left for experienced electronic hobbyists, most of the hardware things I have added could be done as simply as removing the top cover of the system unit.

Extra memory. While there are PCjr owners out there with the standard 128K amount of memory, Tecmar helped me get to 256K first with the JrCaptain, and then to 640K with the addition of a JrCadet. Big deal, you say. So what about extra memory, that's old hat. Read on...

In one shot, I got information from a computer magazine and a fellow Junior owner, and added 2 ex-
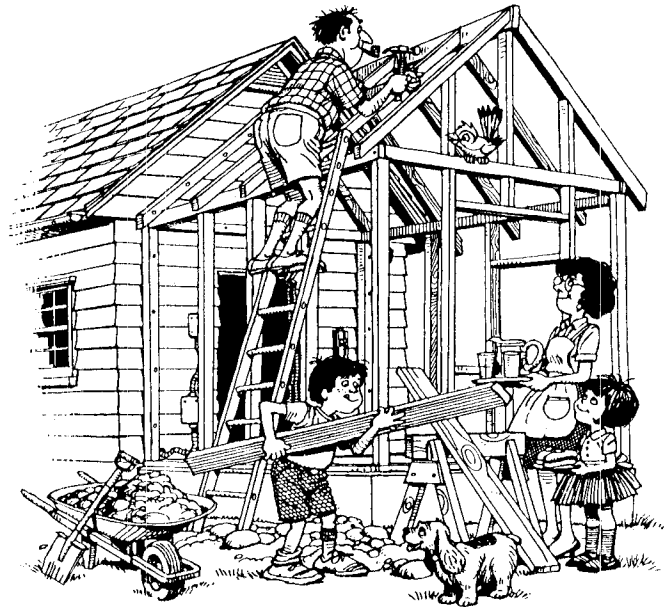
The Slotnik family adding a PCjr room.

New PCjr Turbo Board Pushes Speed Up To 8MHz

A newly developed turbo board, which will make PCjrs run up to 8MHz, is now available from Paul Rau Consulting.

Called the Nickel Express Jr, the board is installed in the place normally occupied by the PCjr clock chip. It is software switchable from 4.77 (PCjr's normal speed) to 8MHz.

According to Paul Rau, speed tests with the turbo board installed increased the PCjr's normal speed by 100%, on the PC Week Benchmark, and scored 3.2 on the Norton Utilities SI, which theoretically means it ran at more than three times the speed of a PC.

The board is being sold by Paul Rau Consulting for $79. In order to install it, the clock chip, which is soldered, must be removed and the Nickel Express Jr soldered in its place. The clock chip is re-installed in the turbo board. Rau said he does not recommend that PCjr owners perform the installation themselves unless they have soldered chips before and are confident of their ability. His company will do the installation for $30, including testing.

For more information contact Paul Rau Consulting, 260 N Lincoln Way, Galt, CA 95632 (209) 745-9284.

PCjr Program Compatibility Explained (Part 2)

By Steve Mark

Direct Memory Access

Direct Memory Access (DMA) is a standard feature on all IBM PCs except the PCjr. Simply stated, DMA allows the processor to overlap disk I/O operations with other work. Some manufacturers offer a means of adding DMA to the PCjr.

With regard to communications, DMA allows the system, when downloading a file, to continue receiving new data while the data just received is being written to diskette. Without DMA, a few incoming characters will be dropped on the floor each time the system writes out a buffer full of data. When your download completes, you will have, at best, a text file with some missing letters and, at worst, an unexecutable program. Uploading is not affected, because the system will not try to send data while it is reading from the diskette.

If you have very little extra memory beyond that required to run your communication program, then the lack of DMA is indeed a problem. But if you have extra headroom, the solution is very simple: do your downloading to a RAM disk.

The documentation for QMODEM 2.2 says, "A PCjr must contain a DMA chip to successfully use the transfer protocols." I say this is not true. I normally run QMODEM with a 200K RAM disk. If I plan to download more than 200K of files, I simply install a larger RAM disk. I have successfully up/downloaded files to bulletin board systems, CompuServe, and point-to-point. After the transmission is completed, copy your new files to a real diskette immediately to prevent losing them in a power outage.

I know that several PCjr users have experienced system hangs that require a reboot to clear. This would make one quite nervous about trusting a RAM disk to receive a lengthy file. Let me try to set you at ease. There is a diskette containing patches to DOS 2.10. These patches fix a bug in the way DOS handles (or fails to handle) certain keyboard interrupts that are unique to the PCjr. I installed the patches (a very simple process) over six months ago and have not experienced any lock-ups since that time. You should be able to get the patch diskette from your dealer or another PCjr user. Ask around, it's worth the search.
(EDITOR'S NOTE: The DOS patch is on Disk #40 in the jr. Software Store.)

DMA in General

The lack of DMA affects the performance of programs that use diskette drive(s). However, except for the communications concerns covered above, this shortcoming rarely affects whether a program will indeed run on a PCjr.

Some programs will simply not run correctly, or at all, without DMA. I also understand that some copy protection schemes use the DMA processor. If true, these programs obviously will not run on a standard PCjr. (I do not have a DMA chip in my PCjr and so have had no first-hand experience with these programs.)

If the software you want to run requires DMA, all it takes to run it on your PCjr is money. At least one manufacturer offers a DMA chip for the PCjr. The hitch is that the chips usually come bundled in expansion units which also include second drives, parallel ports, and other goodies. That's fine if you are just starting to expand your PCjr, but if you don't want (or already have) a second drive, it's an expensive DMA chip. (EDITOR'S NOTE: The keyboard Buffer Cartridge available from PC Enterprises for $29.95 solves some of the compatibility problems caused by the PCjr's lack of DMA.)

Video Buffer

Here again, I am at (and sometimes beyond) the limits of my personal knowledge, but I'll give it a try anyway.
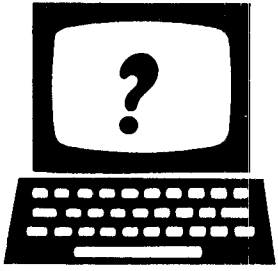
The video buffer is where the hardware gets the information it needs to put characters and pictures on the screen. Your program has some options as to how (or if) it will put information into the buffer. If the program uses DOS or normal BIOS to write to the buffer, then there should be no problem. Fortunately, most programs are well-behaved in this regard. If your program tries to address the buffer directly, or (worse) tries to write directly to the display, bypassing the buffer, then you've got a problem.

There are two differences between the way the video buffer is handled on the PC and on the PCjr. First, as I mentioned earlier, the video buffer is in main memory on the PCjr, rather than on the display adapter as is the

Questions and Answers

Q. What mouse system, if any, can I use on my Junior?

A. With the growing sophistication of graphics programs and word processing software that is compatible with mice, the little creatures are increasingly popular. Basically, they provide an alternative to keyboard input, and a much faster way to move things around on your screen or to do things like cut and paste. Since your PCjr has a serial port, you can use any serial mouse on the market. We use a three button mouse called PC Mouse, by Mouse Systems, which retails for about $159. As with most serial mice, you will need an RS232 adapter for use with your PCjr. PC Enterprises has Mouse Systems PCjr Mouse (two buttons) for $89, which does not require an adapter and can plug into either your serial port or your joystick port. There are many things to consider before buying a mouse. If you want to do some research, a very good rundown of those considerations, as well as reviews of many mice now on the market, was printed in the August issue of PC Magazine.

Q. How can I tell before buying software whether or not it is going to be compatible with my PCjr?

A. Even though your PCjr, if it has sufficient memory, can run almost any software written for the PC, no one wants to get stuck with one of the two percenters. Software manufacturers cannot be relied upon to give you the right information. Often they play it safe by saying their software is not compatible with PCjrs when, in fact, it is. Most of the leading software written for the PC, such as Lotus 1-2-3, Symphony, WordPerfect, Wordstar, Microsoft Word, Multimate and Multimate Advan-

tage, Sidekick, Superkey, Turbo Pascal and all versions of DOS from 1.1 up will run on PCjrs with sufficient memory. Some games that boot up directly with their own operating systems, and some copy protected versions of software won't run on PCjrs, but they are rare. And there are some programs, such as the very popular game Starflight, which require a user installed patch to run on PCjrs. If you are in doubt about a program, try to find another PCjr owner who has run it, or check our list of PCjr owners favorite software, which we ran in our February and March issues. If you don't have those issues, the list is included on Disk #54 "The Best of jr Newsletter" (see page 13). We plan to publish lists of comptatible and incompatible software regularly in jr Newsletter so you can keep abreast of the newest programs.

Q. I get tired of having to reach for my DOS diskette every time my PCjr asks for command.com. Is there a way around this?

A. There is, if you have enough memory to create a RAM disk and still run your favorite programs. The jrconfig.sys that is included on "Jr Power Pack", Disk #52 in the Software Store, has instructions for doing this. Or, if you set up a RAM disk with other software, you can simply put these two lines in your autoexec.bat file:

```
Copy Command.com c:
C:command C:
```

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)

Using BASICA's FOR, NEXT Loops

By Ray Stroud

BASICA uses FOR, NEXT loops to do a lot of repetitive tasks. In this demonstration, we will use this method for drawing lines, and each line has a slightly different starting and stopping point...ideal for FOR, NEXT loops.

The apostrophe is used for remark and spacers so the user can better understand the program.

Here is a short program to draw a Mandala which is a Bhuddist design that creates a frame:

```
110 SCREEN 2          'High resolution, 200 x 640
120 KEY OFF
130 CLS
140 '
150 FOR I = 0 TO 20    '20 times through the loop
160 X1 = 32*I         'Next four lines locate points
170 X2 = 640 - 32*I     'on the X and Y axis for
180 Y1 = 10*I        'starting and ending the lines
190 Y2 = 200 - 10*I        'of the madala.
200 LINE (X1,0)-(640,Y1)    'Lines 200 through 230
210 LINE (X1,200)-(640,Y2)     'draw four lines in
220 LINE (X2,0)-(0,Y1)         'rapid succession.
230 LINE (X2,200)-(0,Y2)
240 NEXT I              'Returns to line 150.
250 '
260 END
```

To see the program operate a little more clearly, add this:

```
235 Q$ = INPUT$(1)          'Pause, then hit key
                                'to continue.
```

This will permit you to see each 20 sets of lines drawn one set at a time.

If you want to add an internal frame, do this:

```
260 FOR X = 160 TO 480 STEP 8          '
                'Starting at 160 pixels on the X axis,
270 PSET (X,70)             'increment each point by
280 PSET (X,130)            '8 pixels to point 480.
290 NEXT X
300 '
310 FOR Y = 70 TO 130 STEP 4        'Starting at 70
                'pixels on the Y axis, increment each point
320 PSET (160,Y)           'by 4 pixels to point 130.
330 PSET (480,Y)
340 NEXT Y
350 '
360 END
```

This little program demonstrates a couple of ways to make a frame.

(Originally printed in the OKC jr Orphans Chronicle)

Super Board Games — New Monopoly and Risk

We found a new version of Monopoly, which has excellent graphics, sound and playing modes and a fine version of the tactical world domination game, Risk. Both games are now on Disk #55 in the Software Store (page 13).

The Monopoly game, by Don Phillip Gibson, Winfield, Kansas, has gone through several versions and is a very well designed version of the popular board game. You never have to count your money with this one, it shows you exactly where you stand every time its your turn to roll the dice. And you don't have to clean up the board and put all the pieces away when you play Monopoly on your PCjr.

The graphics and colors are excellent, giving you a good view of the board, and each time you roll the dice you are treated to a sound effect (which you can turn off if you get tired of it). With this game, the computer is the banker, keeping track of all the details of who owns what and how much money is in everyone's bank account. You can do everything you can do with the board game (except cheat). Every time you land on a property, you see exactly what its status is — who owns it, what rent is due, etc.

This version of Monopoly is designed for two to four players, although one can play if you make up a fictitious opponent and make decisions for him/her. This is a more sophisticated version than the Monopoly game already available on Disk #31, but this new version requires 256K.

Risk is a graphics-strategy game for two to six players, based on the Parker Brothers board game of the same name. As with the original, the object of the game is to conquer the world by means of battle strategy and sly tactics.

The computer deals out the territories at random to the players, who then take turns deploying their armies. Players attack weakly defended territories in order to conquer them. Bonus armies are given to the winner of each battle, the number being determined by the computer. You have to plan your moves and outfox your opponents. There can be only one world dominator.

As with the Monopoly game, Risk leaves the calculating and board management to the computer. So all you do is try to make the right moves and have fun!

Have a Comment or a Tip?

Share your experience with other PCjr owners by writing to: jr Newsletter, Box 163, Southbury, CT 06488. We'd like to hear from you.

Solving Disk Drive Problems

By Boo Horan

With most of our PCjr's now two years old or more, the first "weak link" in the system has shown up for many of us. This is the failure of the internal floppy disk drive, which bears the IBM label, but is in fact a cheap Qume 142.

Many owners have simply cleaned and lubricated the head rails and thereby temporarily solved the problem. I decided to replace my drive with a better one. There are several that will fit into the jr with very little effort or expertise required. The Tandon 65-2L and the Fujitsu 2551 both are excellent replacement drives and are direct-drive floppys as opposed to belt-driven models. These cost a bit more than a Qume 142, but they are almost absolutely silent, which, when you are used to the Qume's characteristic grind and shudder during bootup, gives the impression at first that the computer is "locked up." Not so, and the absence of the usual drive noise makes the jr seem more like one of its expensive cousins.

I have personally used both the Tandon and the Fujitsu as replacements in two different machines. Believe me, I found it very easy to do and, if I can do it, anyone can with a little patience and care.

There are, undoubtedly, other floppy drives that will fit as a replacement for the jr internal drive. However, I found the Teac drives, for example, have a lever that is too long for the jr case, so it's worth checking to be sure someone has actually completed a replacement with a particular drive before you buy one.

Another word of caution: some of the early Tandon 65-2L models have had head alignment problems. I talked to Tandon in California about this problem and when I explained that I was using a Tandon model 65-2L part #211845-002, as a replacement drive, their staff member stated that I had an "immature" version of the disk drive. My thoughts at that moment are not printable. If you decide to buy a Tandon, the most "mature" versions are #211845-208 or #211845-108, the -208 presumably being the latest version of the drive. These part numbers are for drives with a black bezel. You can also get a beige bezel, part #211845-228. Whatever you buy, check the measurements of both the drive lever and the rectangular size of the bezel. These measurements are critical to a workable replacement for the jr internal floppy drive.

Remember to remove the terminal resister (it's normally the rear top and looks like an ordinary computer chip) and place the drive select jumper (it's a little piece of square plastic with two holes) in the second position.

Here's A Problem That Really Isn't

This is a message to those of you who have purchased software from our Software Store:

Occasionally there are problems caused by disk damage in the mail or by our (very rare!) mistakes. We are always willing to replace damaged disks for you, or to refund your money if you are not satisfied.

However one thing that causes many people to think they have defective disks, really is no problem at all. So we would like to clear the matter up for everyone right here and now.

Many PCjr owners have expanded their computer's memory beyond 128K. Usually this involves not only the addition of a sidecar or other hardware, but it requires a modification of the DOS disk you use to boot up with. Manufacturers of memory expansion unit don't usually tell you that you should not use the modified version of DOS when you want to run programs written in BASIC.

Some of the programs we distribute through our Software Store are written in BASIC, particularly games and educational programs. If you try to run those programs after booting up with a modified version of DOS, the software will not run.

Use Unmodified DOS

Fortunately, there is a very simple solution — simply boot up with an unmodified version of DOS.

One way to avoid running into this problem, is to read the directory of files on a disk that you intend to use. If you see that the program you want to run is written in basic, which you will know if you see a file extension .BAS, then reboot your computer with the original version of DOS (or a copy). Then you should have no problems at all.

All of the software we distribute through our Software Store has been tested on our PCjrs and found to be of excellent quality. So, unless a disk is damaged in the mail, you should not have any problems with any of the disks you order from the Software Store.

We guarantee your satisfaction or we will replace or exhange a disk, or refund your money. We want everyone who orders software from us to be satisfied. Fortunately, once people realize that booting up with an unmodified DOS diskette will enable them to run some of the excellent programs written in BASIC, they are very pleased that the "problem" wasn't a problem after all.

DON'T PLAY DISKETTE ROULETTE — MAKE BACK-UP COPIES!!

How A PCjr Fanatic Set Up His System

ternal disk drives in a power supply cabinet. Yes, that's A:, B:, and C: physical 5 1/4" disk drives. For the Junior to accommodate this addition, 2 integrated circuit chips (IC's, like your memory chips) had to be hardwired onto the DCB (drive controller board) inside the system unit.

Also, a handful of wires had to be soldered to and from places on the DCB, and that makes the DCB look like a bird's nest. However, to this day, this mess has functioned without a glitch, driving 2 Shugart SA455's.

Drives A: Through E:

Recently, the stand-alone disk drive cabinet gave way to a PC-XT case and 150 watt PC-XT power supply. And, one of the Shugarts gave way to a Toshiba 3.5" mini-drive. (My Junior sits on top of what looks like a PC-XT computer!). So as we add up the drive letters, we've got A: and B: being standard floppies, and C: is the mini-drive, which formats beyond 800K disk space by the way! Then there's D: as a ram-disk, and E:.

Here I can bluster a bit, because E: is a 20 meg hard disk, which keeps B: and C: company in the PC-XT case. The hard disk drive is connected to the Junior via a sidecar, in line with an IBM parallel printer port (and printer), and the Tecmar memory sidecars.

I caught a really good price for a mail-order Volksmodem 12 modem, and it has seen countless hours connected to the IBM EBBS bulletin board. The modem slot is occupied by a speech board. Yes, my PC-jr can talk. While the speech is somewhat robotic, it can sing, talk, make funny sounds, and if you give it some wine, it might even make some rude comments. It can give me the time on the quarter hour in the middle of an application program, speaking it out after a chime. The speech board and the standard audio output from Junior are routed to some nice Radio Shack speakers via a small amplifier.

And then there is the Microsoft mouse. For most of the time, it sits in a corner of my desk, dormant. But for graphic programs, it comes out to run around. And then there's the joystick, a sturdy model with a button on the top of the stick. That makes flying programs so much more realistic. Oops, I forgot. With the mouse and modem together, I had to purchase an "A-B-C-D" serial port switch. But how many times do you find communications software that uses the mouse?

EPROM Programmer Installed

When I bought and installed a NEC V20 8088 CPU chip (the actual "brain" of the computer) I splurged and purchased an EPROM programmer board. This conveniently connects to the JrCaptain parallel port, LPT2:. Just an open circuit board with a special socket in the meddle for programmable IC chips, the EPROM programmer fit inside a clear plastic case, and now sits on my serial port switch. I hope some day I'll get the time to try my hand at making some custom cartridges.

"The best part.... is telling them it's all hooked up to a PCjr!

Oh, I found a source for the cartridges themselves, being "kits" with a plastic shell looking identical to our BASIC cart. (Integrity Technology, 105 Serra Way, Suite 230, PO Box 360604, Milpitas, CA 95035-0604 (408) 262-8640.) Program the EPROM chip, put it in the cartridge, and away you go. And speaking of chips, very recently I purchased a chip that replaces one of the (few) socketed chips in the Junior. It has a short wire that easily clips elsewhere on the system board, and it allows for standard characters (letters, numbers) AND an alternate character set that is virtually 1/2 as "thick". The thinner character style strongly imitates monochrome text clarity, and is keyboard switchable from "regular" to "thin". Price on that was very reasonable. (Synectics Software and Systems, PO Box 53501, San Jose, CA 95153-0501 (408) 281-7780.)

To round out the system, I'll mention one success and one failure. A power controller, that can apply power to all parts of the whole computer at the push of a button, sits under the PCjr RGB color display. That was the success. I wanted to build my own Light Pen, but try as I might, that project failed. There is a commercial Light Pen now available to Junior owners for the price of an inexpensive modem.

Now, I'm sure you are saying, "who has that kind of money to burn on crazy expansion stuff for a PCjr?!". Well, I'll grant you this system did take some bucks, especially the hard disk drive. But in the end, I wouldn't regret any expense. Just the fun and opportunity to learn more about different aspects of computing has made it worth it. But the best part is telling somebody what things make up the system, and then telling them it's all hooked up to a PCjr!

"Best of jr Newsletter"
Disk Features Past Articles

In response to the constant stream of requests for copies of back issues, we have put most of the major articles from past issues on one diskette.

This diskette contains articles from the first issue of jr Newsletter, published in June 1986, through the May 1987 issue — one year's worth of tips and information written especially for PCjr owners.

We investigated the possibility of reprinting back issues of jr Newsletter in order to make them available to those who requested them, but it would have cost about $3 per issue. With the articles on diskette, you can have the best of 12 issues for $9 from our Software Store (see page 13 for order form).

For those of you who recently subscribed, you'll find several articles on various types of memory expansion units for your PCjr, tips and instructions on solving software compatibility problems, how to silence noisy PCjr disk drives (they all are), and many other useful articles ranging from software reviews to using DOS.

Long time subscribers to jr Newsletter might find the disk a handy way to keep information on your computer readily available for reference.

Here is a sampling of some of the articles contained on the disk:

Comparing jr's Keyboard Alternatives
Pushing jr's Power to the Limit
Using BASIC with Expanded Memory
A Powerful, Low Cost Database Manager

Quad Drives for PCjrs
The Golf Game Even Golf Haters Love
Give Your Disk a Check-up with CHKDSK
How To Load A RAM Disk
Readers' Favorite Software — Survey Results
How to Shield the Internal Modem
Telecommunicating With Your PCjr
Great New Educational Software!
Hints for Starflight and King's Quest II
Creating Faster Batch Files
Adding A Hard Disk to Your PCjr
Software Compatibility and the PCjr
(several articles on the above)
Install-It-Yourself Reset Button
IBM's Pledge to Continue PCjr Support
Making a Pop-Up Notepad with DOS
How to Upgrade an IBM Sidecar
Getting the Most from Public Domain Software

These articles, along with others are included on the diskette, as are the PCjr Questions and Answers which are now a monthly feature of jr Newsletter.

<div style="text-align:center">*   *   *   *</div>

It is much easier and faster to look at the disk volume label with the (VOL) command than scroll through a spreadsheet looking for some clues to identify the 1987 budget. Leave a trail to show where you have been; give yourself a chance to figure out what happened two or three weeks or months ago.

(Reprinted from the Indy PC Newsletter of the Indianapolis PC Users Group.)

PCjr Compatibility

case on other PCs. This means it is at a different physical address. If your program tries to write directly to the address where it thinks the buffer is, it won't work. This is especially true if your PCjr has been expanded beyond 128K, because the memory management software (PC-JRMEM.COM or equivalent) moves the video buffer so DOS can find the expansion memory. I have not run across many programs that fall into this category, but I suppose that is small comfort to those of you whose favorite game does. I do not know of any method of getting such programs to run on the PCjr.

The second problem is another that just takes money to solve. In addition to being in a different place, the PCjr's video buffer is mapped differently than the PC's. This means that a position in the PCjr's buffer corresponds to a different place on the screen than the same position in the buffer on the PC's Color/Graphics Adapter. A program that tries to manipulate data directly within the buffer will run, but the screen will look very strange. I ran across a game once whose title screen was garbage. I took a guess, pressed "any key," and the rest of the game ran fine.

As I said, all it takes to solve this problem is money. The mysterious little PC/PCjr switch on the back of Racore and Quadram second drive units is there for precisely this purpose. When you power up your machine with the switch in the PC position, and execute the PCVIDEO routine that comes with the hardware, the mapping of the video buffer is changed to match the PC's. After that, my game had a real title screen. If you

really want to, you can even run a PCjr using DOS 1.10 this way.

The vast majority of software written for the IBM PC will run on an adequately configured PCjr. In addition, we have discussed several ways to make programs that supposedly will not run on the PCjr work as well.

There are programs, though, that cannot be made to execute correctly on our PCjr machines. Most of these programs write directly to the hardware interface for the diskette drive or display. They do this to optimize performance, or to bypass some limitation of the interface supplied by the system BIOS. Some games and graphics programs write directly to the display to do fancy manipulation of the screen images and improve performance. Unless there is a PCjr version of these programs, you're probably out of luck.

A few programs rely on timing to run correctly. And finally, there are those programs that require some piece of hardware (like a math coprocessor) that cannot be attached to the PCjr.

All told, these problems represent a very tiny portion of the mountains of software available for the PCjr.

Performance Tips

The simplest, most effective thing you can do to speed up your PCjr is to add memory. There are three ways you can use additional memory to achieve a significant (up to 50 percent in some cases) increase in performance.

The first was discussed earlier. Some programs such as Writing Assistant and Planning Assistant come in two versions. One of these versions is structured to run in a 128K machine. It generally makes heavy use of overlays and goes out to diskette each time you invoke a new function. It works in 128K, but I hope you like the sound of your diskette drive grinding away. The other version, a resident version, loads completely into memory and

only needs to access the diskette for data files. An added advantage is that after the program is loaded, you can usually remove the program diskette and insert a separate data diskette. This gives you much more room for files on a single-drive system.

The second performance improvement you will gain from adding memory takes us back to our old friend, the video buffer. In order to keep the current image on the screen, the image needs to be refreshed every few microseconds. If you remember, the PCjr's video buffer is in main memory. Because of this, the cycles it takes to do this video refresh are taken from other jobs that are executing in main memory. (I'm not sure, but I believe one out of every three cycles is used for this purpose.) That is why the PCjr seems to process slower than the PC even though it has the same clock and 8088 processor The good news is that this impacts only the first 128K of memory. Programs that are loaded into expansion memory are not affected.

There are two ways to force all of your programs to load into expansion memory. The simplest is to use the "/C" parameter with PCJRMEM.COM in your CONFIG.SYS file. This causes DOS to fill the system's main memory with I/O buffers, and force all user programs to be loaded above 128K. It also allows the use of the PCjr's enhanced video modes, but that's another story.

The other way to fill up the first 128K is to define a RAM disk of at least 90K. This combined with DOS and the video buffer will fill the main memory, and your programs will be loaded into the expansion memory. **(EDITOR'S NOTE:** The program JRCONFIG.SYS on Disk #52 in the jr Software Store will also do this for you.)

Does it really help? I have a program called THATSALL.EXE that plays the well-known cartoon theme and writes "That's all Folks" across the screen. It takes about 26 seconds to run in main memory, but in expansion memory, it takes about 17 seconds, the same as on a PC or XT. That's a 35 percent improvement.

The third way to take advantage of additional memory takes us back to my old favorite, the RAM disk. Let's go back to those programs that had to overlay themselves to fit into 128K. Sometimes the full version is a separate product that will cost you either an upgrade fee or the full price for the product. If you don't need the additional features that may be available in the full product, you can still get near-resident performance from the PCjr version.

Just load the program and its required modules onto your RAM disk, and execute it from there. It will still go

through its overlaying process, but will do so at the speed of memory rather than the diskette drive. With a little experimenting, it's not hard to determine which files must be copied to the RAM disk to make this trick work. (Note: this technique does not apply to overlaid programs.) I use this technique to make the Personal Computer Picture Graphics program run almost as fast on my PCjr at home as it does on the XT with fixed disk at work.

Some programs, including the Assistant Series, allow you to specify a work drive for the program to use when sorting and doing various other tasks. By using your RAM disk for this purpose, many jobs will go a lot faster.

Are you tired of having to swap back to your DOS diskette every time you want to use an external command such as DISKCOPY, CHKDSK, PRINT, FORMAT, etc.? Why not just copy those programs that you use often onto your RAM disk when you boot the system? Then they will be right there on drive C for you to use whenever you need them. It's almost like having a small fixed disk.

The one caution to remember about a RAM disk is that when you reboot, or if a power fluctuation causes the system to do a power on/reset, the contents of your

New Adventure Software
For Novice Players

You are the hero of the story in a text adventure game, reacting to your surroundings, which are usually exotic, and picking up clues as you explore unfamiliar territory.

Castaway and South American Trek, the two adventures on the new Disk #53 in the Software Store (page 13), both offer a good introduction to text adventure games for those who haven't had the pleasure of trying one yet. And, since South American Trek was designed to teach the player about geography in an entertaining way, this disk is especially suitable for young people.

In Castaway, you are shipwrecked somewhere in the Pacific and you have to survive without any supplies. You find your way to an island, which you must explore in order to find the things you will need to stay alive until you can be rescued. The game includes hints, which you can get by simply typing "help" at any point in the game.

South American Trek takes you to South America by submarine. Your mission is to explore the land and gather facts for the US Geographical Bureau and then return to the submarine. You have fun traveling and you learn a lot about South America as you go.

Both programs will run on 128K and either color or monochrome monitors.

PCjr Compatibility

RAM disk are lost. Therefore, you should not put any non-recoverable data on a RAM disk. I'm a little gutsy, so when I use Filing Assistant, I copy my file to the RAM disk, update it there, and then copy it back. *(Editor's Note: Don't be gutsy in South Florida, where lightning often causes power outages.)* I figure that, at worst, I may have to reenter the session's updates if something happens before I can copy the file back to diskette. In the eleven months I have been operating this way, I have never had a problem. Not only does it seem as if I were using a fixed disk, but I've also saved a lot of wear and tear on my diskette drives. If you are using Reporting Assistant, the effect is truly amazing.

Summary

I hope this has been of some help to you. I have tried not to go too far away from the intended subject. For example, there has been no discussion of the PCjr's advantages over the PC (video, music, and a smaller footprint), or the fact that the PCjr comes with things that you have to add to a PC (like a display adapter, serial port, game port, etc.) My objective has been simply to show that the PCjr is a much more useful machine than it is generally given credit for.

Our Readers' Favorite Games

These games have been selected based upon a combination of reviews in major magazines, awards, and recommendations by our readers. Only the highest rated software is listed here — for your continued enjoyment.

Where in the World Is Carmen Sandiego?

Family Computing selected this for a Critics' Choice Award and said, "One of those blockbuster packages that comes along every now and then." Your assignment is to track down an international thief whose trail cf clues leads you all over the world. Great fun and an excellent way for kids to learn. Comes with a World Almanac. 128K
Retail $39.95   Our Price $31.95

Where in the USA Is Carmen Sandiego?

The highly praised sequel to "Where in the World". It's the same high quality, but your detective work is done within the USA. 16 suspects and 1500 clues. For ages 9+. 128K
Retail $44.95   Our Price $35.95

Starflight

This is currently the hottest space adventure software in the country — one that challenges you to explore 270 star systems and 800 planets, each with unique ecosystems. Stunning graphic simulations of rotating planets, landing sequences, laser battles contact with alen races. This one may take you months to master. PCjr patch includec 512K
Retail $49.95   Our Price $39.95

All Games PCjr Compatible

King's Quest I
King's Quest II—Romancing the Throne
King's Quest III

There's no doubt about it — this is the adventure game that set the standard for graphic quality and imagination on the PCjr. If you haven't played King's Quest I, you've missed out on a classic. And the later versions just get better and better. (128K ok for I and II. Need 256K for III.)
Retail $49.95   Our Price $39.95 (I, II or III)

Black Cauldron

Some say it's an even better adventure than King's Quest. You get extended play life because the game can be "solved" in a variety of ways. For ages 12+. 128K
Retail $39.95   Our Price $31.95

Silent Service

This is arguably the best of several excellent submarine simulation games. As captain of a realistically detailed WWII sub, you have to make quick decisions as you convoy across the South Pacific because the simulated time scaling never lets you rest! Family Computing says "It's a sure winner for all levels of play," and gave it four stars (highest rating) for overall performance. Compute says, "Silent Service's detail is astonishing." 128K Joystick Optional.
Retail $34.95   Our Price $27.95

Micro League Baseball

Excellent graphics, 20 teams, complete with stats, see ball, players running, sliding, etc. For ages 8+.
Retail $49.95   Our Price $31.95

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jr Newsletter Software Store

This software is the best public domain and user-supported software for the PCjr we've been able to find. All the programs in this collection have been tested on our PCjrs and are highly recommended. Some of these programs are equal to or better than commercial programs costing hundreds of dollars.

The programs in this collection are available for $9 per disk or $7 per disk, if you order four or more.

THE BEST OF JR NEWSLETTER. The best and most informative articles from twelve issues of jr Newsletter (June 1986 through May 1987 ssues) are contained on this disk. More than 50 articles on compatibility, problem solving, software, maintenance, memory expansion, how-to projects, tips on using DOS, and more! 128K (Disk #54)

PC-WRITE. This extremely popular word processing program is both powerful and easy to use. A review in PC World said "PC-Write may well be more versatile than WordStar — it's certainly more straightforward." Version 2.5 runs well on 128K. Version 2.7 has more features, comes on two diskettes and requires 256K to run without the spelling checker, which requires 384K. (Order Disk #1 for 128K V2.5. Order Disks #2A and 2B for V2.7)

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)

PC-CALC. A versatile spreadsheet program that can do up to 26 columns of adjustable size and 256 lines. Features on-screen prompts, many math and statistical functions, hidden column capability, many formatting options. 64 character cells, automatic global recalculation, and more. Has some limits on 128K, but still very useful. (Disk #5 runs on 128K, Disk #6 requires 320K and two drives.)

EASYRITE AND LABLFILE. Easy Rite makes your jr perform like a typewriter, without learning complicated commands. On screen prompts are easy to follow. Lablfile is also easy to use for printing labels and storing information. Runs well on 128K with Epson/Gemini coded printers. (Disk #7)

PROCOMM. This powerful, yet easy to use telecommunications program has become the one favored by more PCjr users than any other. Dialing directory, auto redial, XMODEM, Kermit and other file transfer protocols, auto logon, DOS gateway, keyboard macros, exploding windows and many other features. The editor of PC Magazine called Procomm "competitive with the best comm programs on the market." Manual on disk. 256K (Disk #15)

PC-OUTLINE. Review in PC Magazine called this program "really fine" and it outperformed many commercial programs. Word processing functions are merged, allowing greater control. Many customizing features. Nine windows. Many useful features. 128K, plus DOS 2.0 or higher. (Disk #17)

PC-TOUCH. Designed to teach and practice touch typing. As you type, an on-screen line shows the number of erroneous keystrokes, and your accuracy rating as a percentage of keystrokes. 128K. (Disk #18)

3 X 5. An information management program that works just like a 3 x 5 card file. It offers speed, versatility 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)

PC-DESKTEAM. Enables you to have an alarm clock, calendar, typewriter, calculator, and phone book accessible from your keyboard. Can be a resident program while you are using other software if you have the memory. 128K will run it alone. Need more to run it with other software. (Disk #22)

PC-PROMPT. A memory resident program that provides the format for DOS commands in an on-line mode. Help screen toggles on and off. Also help screens for BASICA, Turbo Pascal, Debug and EDLIN. 128K. (Disk #23)

PC-DOS HELP. Similar to PC-Prompt, but takes up less memory (16K) as a resident program. Geared to DOS 2.1 with special PCjr commands included. 128K (Disk #24)

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

MINICALC. A small, easy to use, spreadsheet program. 11 columns by 22 rows. On-line help function and manual on disk. In additionnto performing calculations, will generate bar graphs. 64K. (Disk #27)

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.

NEW KEY. Powerful, popular program that allows you to redefine keystrokes and assign series of keystrokes to one or two keys. Customize software to meet your needs. Many other useful features included. 128K. Disk #35)

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)

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)

PRINT HANDLER — Excellent software for printing banners, sideways, etc. Contains custom font generator, print spooler, and other useful print control utilities for Epson and compatible printers. 128K. (Disk #51)

IMAGEPRINT. Produces letter quality print on dot matrix printers. IBM Graphics Printers, Proprinters, Epsons and compatibles. Contains many format features, three quality levels, interfaces with word processors. 128K ok (Disk #50)

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, screensaver, print spooler, and more. 128K. (Disk #52)

SUPER UTILITIES. The 15 utilities in this collection include Undelete, to recover a mistakenly deleted file; a powerful command editor; a clock, notepad, time and calendar; another to redirect file contents from printer to disk...and many more useful utilities. Under 128K ok. (Disk #28)

MORE SUPER UTILITIES. A collection of excellent screen and keyboard enhancements, useful file managers, color selectors, and more. Under 128K ok. (Disk #29)

DOS 2.1 FIX. Patches to fix the bugs in DOS 2.1. Cures most problems encountered when running memory intensive programs. Also patches to run BASIC and BASICA on DOS 2.1 without having Cartridge BASIC installed. 128K ok. (Disk #40)

DOSAMATIC. A nifty way to view the contents of disks, easily manipulate files and carry out DOS commands. Features a Mac-like "point and press" interface which allows you to select the commands you want from pull down menus. Also permits loading several programs at once and jumping from one to the other. 128K ok, but more memory needed for "multi-tasking." (Disk #49)

GAMES

GAMES. An assortment of games for hours of fun and excitement. Includes Spacewar, Airtrax, Life, Wumpus, Wizard and more. All good with 128K. (Disk #8)

DUNGEONS & WARS. In Dungeon Quest you can choose to be a dwarf, elf, magic-user, fighter or other type of character. You select your strengths and weapons, too. Then you enter the dangerous dungeons on your Quest. Thermonuclear War pits the US vs the Soviets in a very real demonstration of what a nuclear war might be like. Combat is a strategic battle on the ground. 128K ok. (Disk #9)

PINBALL RALLY. A colorful collection of amazingly realistic pinball games. Using the Shift keys as flippers, the games get more and more complex until you get to Twilight Zone, which is the hardest because some parts are invisible. Runs on 128K. (Disk #10)

REFLEX POINT. Patterned on the TV show Cobotech, this game follows the show's storyline, with the Freedom Fighters trying to reach the Reflex Point and destroy the evil Invid Prince. 128K ok. (Disk #12)

TRIVIAL TOWERS. A computerized version of Trivial Pursuit, with three levels of difficulty and the option of creating and saving your own questions. Runs on 128K with one drive, but two drives are better. (Two Disks — #13A and 13B)

ADVENTUREWARE. Six different text adventures with titles like "Island of Mystery," "Terror in the Ice Caverns," and "Moon Mountain Adventure," all test your wits and take you to strange and mysterious places. 128K (Disk #14)

ARCADE GAMES. Includes Kong, Pango, PC-Golf, Pyramid and other exciting, colorful games for hours of fun. 128K. (Disk #30)

BOARD GAMES. Play Monopoly against the computer. Backgammon, Yahtzee and Four — a game your jr is especially clever at. 128K. (Disk #31)

GAMES, GAMES, GAMES. A wild assortment of games to test your wits and skills. Includes Slither, Xwing, Torpedo, ABM2 and Overeact, where you are in charge of a nuclear plant. 128K (Disk #34)

PC-CHESS. A full color many-featured chess program, with four levels of play. You can play against the computer or another human, save games to disk, set up the board yourself and switch sides if you want. It has two clocks for elapsed time for each player, allows castling, en passant and pawn promotion with validity checking, plus other features. 128K (Disk #44)

ZAXXON/GALAXY TREK. Two exciting high tech shoot-em-up games. In Zaxxon you fly through an obstacle course, shooting while you go, up and over walls, and eventually through space. Galaxy Trek makes you the commander of a Star Ship which you maneuver through the universe seeking to destroy a fleet of Megaton warships before they conquer the planets. 128K. (Disk #45)

PHRASE CRAZE. Based on the TV show Wheel of Fortune, you get to be the guest who guesses the mystery phrases and wins piles of money! The wheel spins to select the amount of money you win for correct guesses. It gets harder with each round you play. You can add your own phrases tl this game or try to guess the ones provided on the disk. Lot of fun for adults as well as older kids. 128K. (Disk #46)

GOLF/SAILING. Two great games for sailors and golfers! The golf game has three courses, user definable club ranges, and a swing control that determines whether you hit a slice, hook or straight shot. Three nine hole courses (Novice, Pro, and Sadistic). In the other game, you try to sail the three legs of the Bermuda Triangle, avoiding if you can, the creeping mists, alien crystals, vortexes and storms. Your boat is equipped with radar, rudder and sail (all of which you control) and an engine for emergencies. 128K ok for sailing. Need 256K for golf. (Disk #47)

BOARD GAMES. Eleven different games on one disk! Hours of fun with Monopoly, Yahtzee, Cribbage, Backgammon, Othello, and others. All run great on your PCjr! 128K (Disk #31)

CASTAWAY/S. AMERICAN TREK. Test your survival skills as the survivor of a shipwrek in the South Pacific. Or as an explorer of South America. Two novice text adventures from Jim Button. Ages 12 and up. 128K (Disk #53)

SUPER BOARD GAMES. Excellent versions of two popular board games — Monopoly and Risk. Very much like the board versions, except your computer keeps track of everything for you. All you have to do is make the right moves and have fun. 256K (Disk #55)

EDUCATIONAL SOFTWARE

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 (Disk #39)

PLAY AND LEARN. Educational games for kids five and up. Word match games, find-a-word puzzles, word scrambles, etc. made for PCjrs by school teachers. 128K. (Disk #32)

WORD PROCESSING FOR KIDS. Simple, fun and easy-to-use word processor designed especially for beginning writers. Allows children to express their ideas easily and then print them out in large type on your printer. Colorful opening menus make learning the simple commands very easy. Parents/teachers manual is on the disk. 128K (Disk#41)

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 (Disk #42)

EARLY LEARNING. A collection of colorful educational games for children ages 6-8. Sing-along alphabet, letter matching, alphabet tutorial, number/counting game, maze, pattern matching and time telling. 128K. (Disk #48)

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PCjr Questions and Answers

should have picked up, there is another common cause of internal moddem failure — interference from the power supply of a second disk drive. This can be solved by adcing a shielding material between the modem and the power supply. This solution has been suggested by the Racore technical support people (801) 596-0370, but it could easily be applied to other brands of second drive units. The installation is quite easy.

Q. I would like to add a fixed disk to my PCjr, but I want to do it as inexpensively as I can. Is there a way?

A. As you will notice by checking some of the ads in this newsletter, hard drives are available for PCjrs for about $600 and up, depending upon the size. The most economical way to add a hard (or fixed) drive to your PCjr is to buy an interface kit made especially for the PCjr and assemble it with the hard drive, cabinet, power supply, etc. yourself. The key element is the interface hit, which must be designed especially for PCjrs. The reason for the higher cost of adding a hard drive to PCjrs is that there are fewer of us and therefore the PCjr elements are not mass produced as they are for PCs and compatibles.

Q. I would like to install a jr Hotshot memory expansion in my PCjr, but I understand that I can't do it myself if my 8088 chip is soldered instead of socketed. What should I do?

A. Approximately 5% of PCjrs have soldered rather than socketed CPUs. It's worth knowing whether yours is one of few soldered ones if you want to add a jr Hotshot or a V20 chip, which replaces the 8088 with a faster processor. The only way to find out is to look. We know there are a lot of you out there who quake at the thought of fooling around inside your computer, but it's very easy and quite educational to explore the inside of your PCjr. You will have to go inside eventually if you intend to install a jr Hotshot or a V20, so you might as well dive right in beforehand to save yourself from the disappointment of finding out your chip is one of the few soldered ones after you have purchased a jr Hotshot. The 8088 chip is the large rectangular chip located under the disk drive. It is six rows back from the cartridge slots. If you examine it carefully you should be able to see whether or not it is soldered. To be absolutely sure, carefully pry up each end of the chip to see if it will move. All is not lost if you have a soldered chip. Most of the advertisers in this newsletter will install a jr Hotshot for you if necessary.

New Family History Disk

A new, compiled version of the popular Family History software has been added to the Software Store (page 13) this month.

Family History is an excellent program designed to help you organize information about your ancestors and create a detailed family tree. Essentially, the new disk (Disk #33A) operates the same way as Disk #33, except for the fact that it has been compiled, so it runs much faster. This makes it more fun to work with, because by the time you have loaded it up with names, dates, etc., the earlier version got to be very slow.

For those of you who have tried the first version, you know how well the program works, so if you are bothered by its lack of speed, try Disk #33A.

Those who haven't tried either version will need both disks (#33 and #33A) since the instruction manual is on Disk #33 (it wouldn't fit on #33A).

*   *   *   *

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You can have your very own copy delivered to you once a month. Just send $18/yr. to: jr Newsletter, Box 163, Southbury, CT 06488.

* * * PCJR CLASSIFIEDS * * *

PC JR ACCESSORIES: IBM,Parallel Printer Port Sidecar, Microcom 300-1200 baud modem w/software and manuals, and J&M Systems 2nd Drive (360K) w/controller card & software. Paid over $650 new, asking $225 for all, but will split up. Dave Vollmer, 175 Hoyt St., Fond du Lac, WI 54935 (414) 931-5349 after 4 p.m. Central. (8)

PC JR with Racore expansion 512K, 2 disk drives, DMA, IBM color monitor, 2 IBM joysticks, PC keyboard adapter, DOS 2.1, DOS 3.1, PCjr Tech Ref, PC ID cartridge Lotus 123, Managing Your Money, More. Call (617) 993-1045 after 6 p.m. Waldo Peckham, 206 James St., New Bedford, MA 02740. (8)

TECMAR JR CAPTAIN 512K memory expansion board with parallel port, clock calendar with battery back-up, Treasure Chest of Software, Executive Writer WP and Numberworks Spreadsheet. Almost new $195. **WORDSTAR FOR PCJR** by Micropro. New, in factory sealed pack. $55pp. Wm F. Shimonkevitz, 8927 Park Forest Dr., Springfield, VA 22152 (703) 451-1751. (8)

PC JR ITEMS — IBM Parallel printer port $60; Jr Financier Disk Program, $10; Avatex 600 External modem (300 or 600 baud), $65. Steven Bulger, 270 Aviador Ave., Millbrae, CA 94030. (8)

WANTED - IBM memory Expansion sidecar with either 128K or 512K. Also would like cartridge slot games for the jr. Contact Eric Jeltrup, 7431 Timber Ridge Dr., Charlotte, N.C. 28212 (704) 545-9914. (9)

TECMAR JR CAPTAIN 128K memory sidecar with sotfware and manuals for $100. IBM PCjr parallel printer attachment $40. Financier jr and Home Budget jr financial software packages $10 each. Bob Feak, 202 Ridgewood Dr., North Syracuse, NY 13212 (315) 458-4593. (9)

IBM SERIAL COMPACT PRINTER in working condition $35 plus delivery. Al Palumbo 199 Senate Dr., Pittsburgh, PA 15236 (412) 655-2368. (9)

IBM PCjr 128K with color monitor (bad flyback), parallel port, DOS, games, plus 2 joysticks. $350. Sim Smith, 1932 Queenswood Dr., Tallahassee, FL 32303 (904) 562-1451. (9)

PCjr ROM CARTRIDGE KITS Integrity Technology, 105 Serra Way, Suite 230, Milpitas, CA 95035-0604. (9)

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Disk Drive Replacement

Some floppy drives number these positions zero to three while others number them one to four. The Qume drive uses zero to three, so you will notice that the jumper is in the "1" position on your old drive. Place the jumper in the comparable position on your replacement drive before installing it.

I personally like the direct drive motors and the almost absolutely silent condition they provide for the PCjr. The extra cost amounts to twenty to thirty dollars, at most, but should buy you a superior piece of equipment. (This article was originally printed in the Metro PCjr Journal.)

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FREE to a Friend

Do you know another PCjr owner who would like to receive helpful information about his computer every month? Send your friend's (or friends') name(s) to us and we will send a free copy to them. Just send the name(s) to: jr Newsletter, Box 163, Southbury, CT 06488.

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