Sierra Pledges PCjr Support

Ken Williams, founder and president of Sierra-On-Line, has reversed his company's decision to abandon PCjr support and has promised to include PCjr compatibility in new software.

In a telephone interview with jr Newsletter, he said the company's decision to drop PCjr support for **King's Quest IV** was a mistake, and his company is now releasing versions of King's Quest IV with labels saying they will operate on PCjrs.

"I like the PCjr, it really gave us our start," Williams said, adding,"I was kind of depressed when we decided to drop support."

But, he explained, after an outpouring of complaints and a survey of PCjr users, "We were surprised at how many avid PCjr users there are." He said at first Sierra decided King's Quest IV ran too slowly on PCjrs, and they inserted a "PCjr detector" with a warning saying King's Quest IV would not run on PCjrs in the first versions of KQ IV.

Since then, he said, they have found ways to speed up the game when it is running on PCjrs. And now, he said, they can be proud of the way it runs. He noted that all of their latest titles: **Police Quest II, Leisure Suit Larry II, Space Quest III and Gold Rush**, will operate on PCjrs.

Any PCjr user who purchased an early version of King's Quest IV can return it for a current PCjr compatible version, he said. And from now on Sierra is going to support sales of its games to PCjr users.
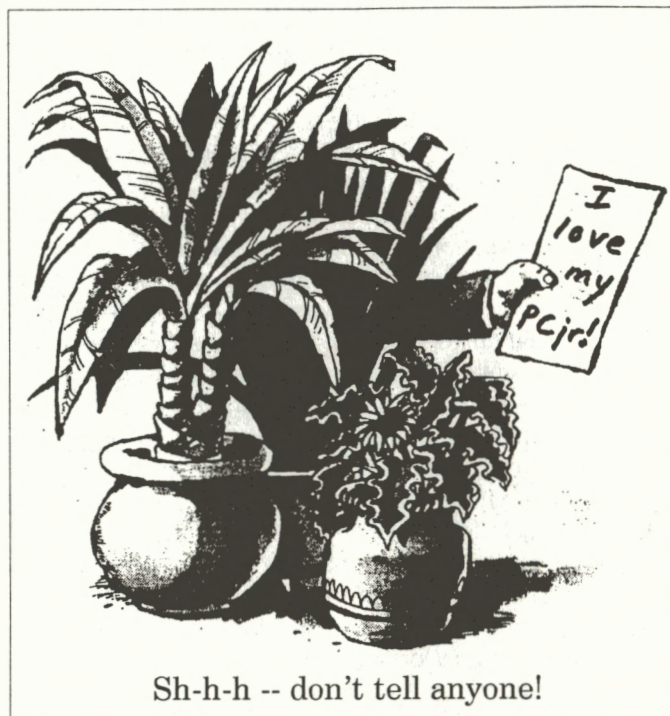
Sh-h-h -- don't tell anyone!

Sierra-On-Line was started by Ken and his wife Roberta in 1980. Their first big hit was a program called Mystery House, for Apple Computers. But their fortunes really took off in 1984 when they made King's Quest I, specifically for the PCjr. Using innovative three dimensional graphics and the PCjr's 16 colors, the game was a huge success. Sierra games are still perhaps the most popular of all with PCjr users and it came as a shock to learn that Sierra was dropping us with their first releases of King's Quest IV.

As part of jr Newsletter's campaign to encourage compatibility in new software, we contacted Ken and told him how disappointed our readers would be if PCjr users could no longer enjoy Sierra's fine games.

As we reported last month, several ingenious PCjr users had already figured out how to run King's Quest IV on their computers. Randy Pratt created a patch, which we immediately put on our latest version of our jr Patches Disk. Now, thanks to Sierra's renewed loyalty to PCjrs, the patch won't be needed.

We told Ken of our campaign to try to persuade software publishers to make their software compatible with PCjrs, and we asked if Sierra found it difficult to do so. "It's not hard to include jr compatibility," he said. "We you're already supporting Tandy 1000, it's really very easy." This is

INSIDE

PCjr Lives!

Who Needs Documentation Anyway?

by Beth Davies

As a technical writer, I write software documentation that (I think) is clear, concise and easy to understand. In our hearts all technical writers know that most of the documentation we write will not be read until disaster strikes, but we also know that most users are intelligent. We hope that users will realize that investing a few minutes or hours reading documentation before they begin using software will save them hours of frustration later. My older brother is one of those intelligent users that I envisioned reading documentation ahead of time. This MBA grad has been rising successfully up the corporate ladder in the hotel business for more than a decade. Promotion after promotion has led him to his current position of Vice President of Marketing for a major hotel chain. So he could be productive at all waking hours, he bought himself a PC and a copy of WordPerfect. In his spare time, he co-authored a marketing textbook that will be published this fall. He's obviously not stupid. And, being a top executive, he definitely does not like to waste time. So how can this business whiz be such a ditz using WordPerfect?

He handed me a floppy disk, on which resided a proposal he was writing. He asked me to review the proposal, concentrating on editorial and spacing issues. After I had marked up the text, I inserted the disk to make the changes. On the hardcopy, the text ran through the page numbers at the bottom of the page, but other than that, the changes weren't too drastic. I estimated I could have the whole revision completed in twenty minutes.

Two hours later, I called my brother through clenched teeth.

"Richard, have you read the WordPerfect manual?"

"No," he replied. "Why?"

"Because you don't need to press the return key at the end of each line," I said. "WordPerfect does that for you."

"It does?"

"Yes. And you know that tab key? It works! When you press it, it will automatically move your sentence over five spaces. You don't need to use the space bar!"

"I don't?"

"Did you also know there is a center feature in WordPerfect? You press two keys and POOF! Anything you want will be centered!"

"It will?"

I lectured him, to no avail, about how it would be to his advantage (and mine) if he just read the documentation first. He came to my house to pick up the document and I handed him a copy of some documentation I had written about WordPerfect. WordPerfect's documentation is excellent, but I thought my 25 page booklet, which highlighted the more widely used functions, might be easier for him to tackle.

Later he asked me to go over the document again. As I sat down to revise it, I chuckled to myself. All of the work I had put into correcting the document the last time would really pay off. I would zip through those revisions in no time.

An hour later I called my brother through clenched teeth.

"Richard, your hardcopy doesn't match what's on the disk."

"What?" he asked, surprised.

"You've given me two different versions of the document. How can I make any revisions if I don't know which version is most current?"

"Well," This brilliant MBA executive said, "I like the version that's on the paper better."

"That's fine," I said tersely. "But I'm not going to read through twenty five pages of single spaced text and compare the differences."

"Oh."

"And by the way," I said, sounding uncannily like our mother, "you haven't read the documentation I gave you, have you? You've been pressing the return key after each sentence again."

"I have?"

"For a small fee I'll show you everything you want to know about WordPerfect," I offered, sounding completely

Questions and Answers

By Rene Waldron

EDITOR'S NOTE: jr Newsletter gets questions in the mail from PCjr owners every day. So many, in fact, that we apologize for not being able to answer them personally. This Questions and Answers column is our way of responding to the questions readers ask about their PCjrs. We can't answer all of the questions we receive, but we try to answer those that are either asked by several readers or those we feel will be of interest to PCjr owners in general. If you have a question that you do not see answered here, or elsewhere in this newsletter, please feel free to write to us at jr Newsletter, Box 163, Southbury, CT 06488

Q. I recently saw an ad for a hand scanner. It was supposed to work with PCs and clones, but will this work with the PC jr? A scanner seems like it would be a useful tool for many things such as newsletters and graphics. F. E. Johnson, Big Bend WI and R. B. Hermon, N. Vancouver BC.

A. You are right about scanners being useful tools. The scanners we have investigated so far all require some kind of standard PC bus internal card, rather than a simple port input. If anyone knows of or is using a scanner which is compatible and works on a jr., we would be most interested, and would be pleased to publish such information. One note about input devices which "copy" data or graphics to your newsletters or graphics presentations: Be very careful about copyrighted and / or registered material! You do not have the right to use such material without the express permission of the legal holder of the registration or copyright! The law is very specific about this.

Q. I have a single-drive jr with the jr Hotshot 512k memory, giving me 640k. Recently I acquired First Choice v. 3.0 after reading the favorable review in the jr Newsletter. Have been unable to load past the message informing me that a two drive system is required. When I set up a (required 300k) RAMdisk, the message is insufficient memory to run the program. Excluding the addition of a real second drive, have you any ideas? L. M. Smalec, Forest VA.

A. You might try to delete various files from the second drive which are not absolutely necessary for whatever configuration you need with First Choice, thereby reducing the size of the RAMdisk. This would have to be done in stages until the program loads properly. At this point, you might still not have much memory left for the data files, so further reduction of the size should continue until you have the absolute minimum of files on the smallest possible RAM disk. Programs which need lots and lots of overlays (files) during operation are generally a pain, are slow and are memory hogs.

Q. I continue to have read/write errors with the original jr drive. The errors usually occur between tracks 25 and 39, usually side 1. I have had the drive adjusted locally but the problem persists. My set-up is as follows: Racore add-ons of 384k, parallel port, and DMA. It also has Nickle Express turbo board, V 20 chip, and Data Desk keyboard. I have tried changing the step rate of the drive head, but it makes no difference. T. Newton Kalamazoo MI.

A. The problem seems to be one of signal timing at either the buss or the controller. It is showing up at the extreme end of the head travel (Tk 39) which probably means the problem is marginal. Sometimes, the Nickle Express board will expose various slow chips installed either in RAM or on controllers. Our experience is that the genuine IBM or Microsoft add-ons are OK with this board, while some others are not. The supplier of the turbo board will have information and recommendations for installation of this board. The speed rating of ALL the chips in the jr must be adequate for the new speed.

Q. We have PC Paint Plus. Our jr has 640k and a PC jr Mouse. The initial screen won't show the 16 color bar, but is interrupted with horizontal dark lines. The program does work in both 4 colors and 16 colors when we get into the "control box" for palette colors. Is it something we are doing wrong? R. G. Sattan, Barnegat NJ

A. We have heard that some paint type programs work well if you initialize them as if on a PS/2 model 30! Other than that, do you really care if the initial screen is a blotch? If you are, as you say following the proper procedures to get into the program, don't worry about it.

Q. I am having difficulty running Microsoft Works on my jr. Microsoft is of no help at all. I heard that there are patches for various Microsoft products. Is there one which would allow me to use Works with a mouse and/ or keyboard? D. C. Patton, New York NY

Questions and Answers

A. Assuming you have enough memory, and are booting up with at least 32k of reserved video RAM, the INT9.sys or the new Boot sector systems might work. These are available on Disk #56 from the jr Newsletter Software Store. It seems that 99% of recent Microsoft releases will work OK once these are installed. The mouse problem may be different. The drivers with whatever mouse you have should be 100% compatible with the Microsoft mouse software drivers. We don't know which mouse or drivers you have, but you could experiment. Note that QuickBASIC version 4.5 has a new MOUSE.COM included which can replace the MOUSE.SYS device driver. This does not go into the CONFIG.SYS file but can be typed in or put in any BATch file; it is completely compatible with the original.

Q. **We are still having trouble with the printing function of MultiMate (v. 3.20) and your suggestions don't work. We can only get it to print by re-booting. Any more ideas? Tom Porpiglia, Rochester NY**

A. We think our original question was about version 3.31, but that is no excuse if we did not make it clear. Our best information is that v. 3.31 works, and in a relatively small system such as 256k but more memory is always desirable. If a program such as MultiMate needs overlays to change from edit to print functions, there may be a need for an increase in the number of buffers and files because the files may not be closed when switching between functions. Set up at least BUFFERS=10 in your CONFIG.SYS file along with FILES=20. Use larger figures if necessary. If that doesn't do it, we are at a loss to help. We could suggest that you send it back to the people who wrote it.

Q. **I have a PC jr with Racore Drive 2 Plus. Is it possible to add or replace one of my drives with a 3 1/2" and/or hard drive without the expense of extra hardware? M. Bean, Merchantville NJ**

A. No. The reason is that the 3 1/2" drives need a different controller card as well as the proper software. A hard drive also needs a different controller than either your existing or the new 3 1/2" card. There may be a way to add both however, if a SCSI (Small Computer Systems Interface) is installed and the Hard drive AND the 3 1/2" drives accept the interface. One card, two drives... We understand that Paul Rau's hard drive interface is this type of adaptation. The MACs from Apple Corp. and others use this system. A bonus is that it has a pretty fast transfer time from disk to RAM and vice-versa.

Q. **Can you give more information about a math co-processor? Where can I get one, do they really speed up number crunching, etc.? (Various readers' questions covering the same subject.)**

A. Yes, they really do speed up number crunching, especially those math functions such as the trigonometry transcendentals (sin, cos, tan) division, multiplication, roots and powers, the ones most used in CAD programs. The calculating speed difference is terrific! Legacy Technologies sells an 8087 math co-processor. The board and chip cost about $200 last we heard. Their number is (800) 228-7257. Also, Tiac Manufacturing, 3080 Spring St., Port Moody, B.C., Canada, used to make them for PCjrs, but we don't think they do anymore.

Q. **I have a jr with 640k one disk drive and a Mouse Systems PC jr mouse. I also have an IBM XT-10 with 640k and two disk drives. Is there a cable or other device that I can buy to be able to connect the mouse to the XT? R. English, Vincennes IN**

A. Considering the mouse as a kind of simplified modem, here's how we think you should approach the problem: First try the advertisers in this issue which supply various cables for the jr. Remembering that this is actually "reverse" adapter cabling, and that if none of them can supply you with what you want, you might want to take care of the problem yourself if you have the know-how, (or as we strongly recommend, have a technician in a computer repair house do this for you.) The serial port signals of the jr. are standard (COM 2: levels) so there really isn't any reason it cannot be done.

You will need both male and female DB 25 serial cable connectors which will plug into each other. (They are available at electronic supply houses such as Radio Shack.)

Holding the mouse cable in your hand and looking into the square holes, they are numbered from RIGHT to LEFT, A1 to A8 TOP row, B1 to B8 BOTTOM row. Do Not read from left to right while holding the cable!

Here's the pin-out of the jr port and the signals for both it and a standard serial connector.

jr connector		Pin of standard DB 25 serial connector
		(the numbers are already labelled)
A1	Not Used	
A2	DTR	20
A3	RTS	4
A4	TR data	2
A5	CD 8 (probably not used w/mouse)	
A6	DSR	6 (not used w/mouse, unless as +5v power)
A7	CTS	5 (probably not used w/mouse)
A8	RC data	3
B1	Shld GND	1
B2	Sig GND	7
B3		
| through		
B8 Not Used		

Now comes the courage! Cut the cable about 8 - 10 inches from the jr connector. With an ohmmeter or light bulb
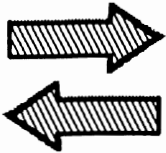
Reader Feedback
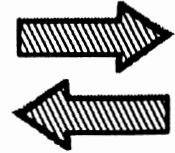
Computer Expert Loves His PCjrs

I really enjoy your newsletters and will continue to be a subscriber even if my jrs bite the dust some day. The info I get for my jrs is also extremely useful for PCs, XTs and even PS/2s!!!

Four years ago I retired from IBM and am now working for a State college (9000 students) where I have responsibility for about 200 PCs and compatibles, but no PCjrs. Three of my children (two are teachers) also have PCjrs and we're all doing just fine. People that think jrs are toys don't know what they're talking about. I work with PCs, XT-286s, ATs, and every configuration of a PS/2 except a model 80, and at least 90% of what I do can be done on my PCjr. The same people will probably have the same thing to say about the PS/2-25, but they probably will be just as ignorant about that system as they were about the PCjr.

I only have one complaint, by the time I get my jr **Newsletter** all the items in the classified ads are sold. My son in Houston receives his almost ten days before I do. How are they mailed, alphabetically, by membership, by state?

No matter what, keep up the GREAT job you're doing. I really appreciate it and I know many others who do also!!!

Tom Candy, Kearney, NE

EDITOR'S NOTE: As we mention in answer to the next letter this month, **jr Newsletter** is mailed Third Class. It just takes longer to get to the West Coast.

PCjr Classifieds Draw Many Responses from Coast to Coast

We wanted to tell you about the tremendous response we received from our ad in the **jr Newsletter** wanting to sell our PCjr and printer. We had at least 15 calls from all over the United States - Washington DC, New York, Texas, Nebraska, California and Washington.

Apparently there is quite a bit of difference in the time frame as to when the newsletter reaches the subscriber. The first call we received was from Washington DC and came several days before we even had our copy of the newsletter. In fact, he purchased the equipment immediately.

We had several rather irate callers from the West Coast who were upset when told the computer had already been sold and shipped and said they had just received their copy of the newsletter the day that they called. Therefore, the subscribers on the East Coast have the advantage when answering the ads.

Since **jr Newsletter** is sent by third class mail, I don't suppose there is much that can be done to correct this situation.

Apparently there is still a great deal of interest in the PCjr and it will probably be around for a long time.

Thank you for publishing our ad.

Will Witte, Tacoma, WA

EDITOR'S NOTE: We apologize to readers on the West Coast, but there is nothing we can do about the difference in delivery times between the East and the West. We are glad to hear, however, that when a PCjr is advertised for sale there are many computer users who are hungry for the opportunity to buy one. Yes indeed, the PCjr is still an excellent computer and there are many people who realize this.

Jr User Provides Information On Variety of Subjects

1. Re-Inking of Printer Ribbons

In a prior issue of the newsletter you gave the name of a source for the re-inking of printer ribbons. After much procrastination I finally wrote to the source and received the reply that is attached. I did call Computer Friends at 1-800-547-3033 and received a circular describing their services along with an excellent dissertation on the compounding of inks for dot matrix printers. You may consider excerpting some of the information for an article. As of this writing, the address of Computer Friends is in my desk at work, but you can place a call to the above number and receive the package that I did.

2. IBM Program "BASRUN.EXE"

After all that discussion about the availability of thebasic compiler named **BASRUN.EXE** in the November and December 1988 issues of the newsletter, I have found the

Reader Feedback

(Cointinued from page 5)

program in the most unlikely place and every junior owner has it. If you do an A:DIR of the junior sampler disk, you will find in the middle of the list, "BASRUN.EXE".

3. Need for a Modem Tutor

Like many others who are cautious individuals, I have purchased the PCjunior Internal Modem but am somewhat timid of trying it. It seems to me that there is a need for a tutor program that would get an uninitiated modem user acclimated to a modem before going "live" on the telephone lines.

Do you know of such a program? It occurs to me that this would be a welcome addition to the Software Store.

4. Use of DOS Command "ASSIGN":

Although this DOS command might have been written up before, I think that it is something that may need another setting in front of the readers. Recently, I purchased a copy of "Turbo-Tax" and found out that it requires two disk drives to run. Since I only have one drive, I had a problem. I was able to get around this problem by creating a 360K drive in my 640K of RAM, copying the files on the B: drive disk to drive C:, and using the DOS command "ASSIGN B = C". In doing this, one must remember to copy the data file created on drive C: back to the actual disk meant to be in drive B:. I could have put disk A into RAM and not had to copy the data files as the data disk would have been in an active drive. In this case the DOS command would have been: ASSIGN A = B C = A, perhaps the safer way because one does not have to remember to copy the data file out of the ramdisk.

Paul Watson, Salisbury, MA

Turbo-Tax is Great
If You Simulate 2 Drives

I thought your readers might like to know of my experience with **TURBO TAX**. I have a single drive PC with 640K. Last year I purchased TTAX version 5.01 and put the program in RAM (360K allocated) with the data disk in A:. It worked perfectly.

This year I purchased the 1988 version 6.01 and it is totally different. It was only through persistence that I got the program on to RAM C: due to the strange way it looks for "B" drive then "A" drive then "B" drive. When I went to print (using DOS Graphic) it gave me a blank page. The TTAX people were no help, saying I must have set up my

Epson RX-80 printer wrong (EPSON is the default). I took it to a friend's house with two drives and the identical printer and it worked fine. TTAX does say two drives is required and they mean it this year.

I guess it is time to buy a second drive or hard disk.

Robert A. Van Orden, Herndon, VA

EDITOR'S NOTE: You will see in the letter this month from Paul Watson that he found a way to get around the need for two drives by using the ASSIGN command. That strategy seems to have worked for him, and it's a good command for single disk drive users to learn.

DOS 3.3 Solves Problems With Reader's New 3.5 Inch Drive

I think your **jr Newsletter** is a great publication and I find it especially useful. I would like to tell you about installing a 3.5 disk II from PC Enterprises. It took me almost three months of trials and errors before I finally tried ATT MS-DOS 3.3 and used the DRIVPARM.COM to solve the problem. Now I have full compatibility. Aside from the DOS itself, the new DOS help disk is fantastic. Besides the DRIVPARM.COM, my CONFIG.SYS file has to include DEVICE = PCJRMEM.COM for the 640K RAM and then a complete spec for DRIVPARM = /D:1 /F:2 /H:2 /S:9 /T:80 for the 3.5 disk as A: and B:. DEVICE = DRIVER.SYS /D:1 /F:0 /H:2 /S:9 /T:40 for the 5 1/4 as an external C:. This now allows formatting the 3.5 disk with Format B: and using both disks as they should be able to.

The original patches and drivers with DOS 2.1 and 3.2 never gave complete flexibility.

With this arrangement I can now run **MS-Word, Symphony, WordPerfect, Beyond Word Writer** (fantastic word processor) and many more.

I thought this info might help someone else who is limping along with software that came with PC ENT DISKII.

Daniel J. Ryan, Westchester, PA

Reader Expands jr Above 640K And May Add Two 3.5 Inch Drives

I wish I had known about your newsletter long ago! When IBM abandoned us shortly after we bought their machine, our first and last IBM, I've been looking for a source of information.

Our jr has 786K installed, 128K original, a Microsoft

Play Ball With Your Dream Team!

by Andrew Fussner

There are two outs, bottom of the ninth, the count is three and two, and Ted Williams stands at the plate of Fenway Park. A fastball comes flying towards home plate, and with the crack of the bat, the ball soars out of the stadium.

If you are playing Earl Weaver Baseball by Electronic Arts in cooperation with the Baltimore Orioles' great manager, Earl Weaver, this situation could happen, with any batter, any pitcher, in any park. With Earl Weaver Baseball you can even make your own teams and design your own ballparks or use the eight teams of Hall-of-Famers, superstars and famous parks that come with the game. Earl Weaver Baseball isn't just playing and managing, but being an owner, general manager, and a commissioner.

The Game

The actual game of Earl Weaver Baseball is fast-paced, colorful, and exciting. You can pick from three levels of control: **Play & Manage** - where you pick the plays and control the players, **You Manage** - you pick the plays and the computer controls the hitting, pitching, etc. and **Earl Manages** - used in a one-player game. (Using Play & Manage, you also choose the level of playing difficulty.) The length of the game can be adjusted by using the Pitching Styles option: One Pitch or Full at Bat. You can also choose between League/Non-League Play, which allows players or pitchers who have recently pitched to play. (Just like in the Major Leagues, no pitcher can start two games in a row.) After selecting the line-up for both teams, a line-up can be printed before the actual game starts. Once in the game, offensive/defensive plays can be selected from the strategy menus, pitchers can be put in the bullpen, and line-up changes can be made. Some of the fifteen defensive plays that can be selected are: Infield/Outfield Depth and Shift, Charging 3rd or 1st, Pitch Out, and Conference, which allows your manager to go to the mound and talk to the battery. At select times your manager will come out of the dugout and argue with the umpire, even kicking dirt at him. The fifteen offensive plays include bunting, hit and run, stealing bases, suicide squeeze, and playing aggressive. Both sides can "Ask Earl" for advice from the statistical data-base.

When playing the game, many other commands can be accessed, including: Instant Replay, Radar Gun, Save Game, Umpire Call, Wind Conditions, and Announcer (which is a bar that announces the current batter. On Amiga's the batter's name is actually spoken.)

The General Manager

After playing awhile, you'll inevitably want to change your teams around. The General Manager option allows you to do this. You can trade players from one team to another or even re-draft the entire league. Did you ever want to have two Babe Ruth's? Well, you can with the Clone Player option. You could even make-up your own players or even whole teams with Edit Player. Everyone dreams of playing at the Polo Grounds and hitting a towering home run to win the game. With Edit Player you could bat .405, hit 50 home runs, and steal 100 bases if you like.

The Commissioner

You take the realism of this game one step further with the Commissioner option. Make and name your own leagues and teams. Even create and name your own parks, right down to the height of the left-field fence and the number of bleachers. Even grant the day off to all your players.

The 10th Inning

Select the Practice option to sharpen your hitting, fielding, and pitching skills. Select Display Stats to see your league leaders in home runs, batting average, and E.R.A. or 23 other statistics. Read the excellent manual and find tips

Modification Turns

EDITOR'S NOTE: The modification to PCjrs described in this article has been tested and we found that it enables a PCjr to run a variety of programs in 16 colors that would only operate in 4 colors on an unmodified jr.Although our tests and contacts with others who have performed this modification indicate that there are no adverse effects, we feel we should warn jr users who plan to do this that we will not be responsible for any problems that might result. This modification requires some experience with a soldering iro-nand some skill, although it is basically not difficult. If you want to do it, but feel you do not have enough experience, an electronics repair shop should be able to do it for you inexpensively.

The following software will run in 16 colors on a PCjr with this modification: Battle Chess, Flight Simulator 3, Deluxe Paint2, Deskmate Software (Radio Shack), Tetris,Grand Prix Circuit, Rack'em Billiards, Sorceror Lord Leisure Suit Larry II, King's Quest IV, Police Quest II. Many of these programs will run on an unmodified PCjr in 4 colors, or in 16 colors with a patch (See Disk #56 in the Software Store). But if you want to avoid using patches and enjoy the luxury of simply selecting the Tandy 1000 option when software asks you what computer you are using, then this modification may be for you. In general, software that previously showed horizontal black stripes on your PCjr monitor should operate well after this modification.

Theoretically, there should be SOME differences between the performance of a PCjr with this modification and that of a Tandy 1000 because the Tandy 1000 hasa CGA card installed, whereas the PCjr has its own variety of graphics, but wecould find no problems with it after several months of operation by several different people who performed the modification.

Our thanks to Tony Cooper who provided the original instructions for performing this modification.

Puget Sound PCjr Group Continues to Draw Members

Allen Sing of the Puget Sound PCjr Users Group reports that the group has recently attracted many new members. He says some members have dropped out because they have purchased new computers, but 27% of the membership has recently joined.

The group currently has 28 active members with 22 more up for renewal. They meet in Bellevue, WA, on the fourth Wednesday each month. For more information, contact Norm Shatz, President, 6021 140th SW, Edmunds, WA 98020 (206)745-9685.

PCjrs into Tandy 1000s (Almost)
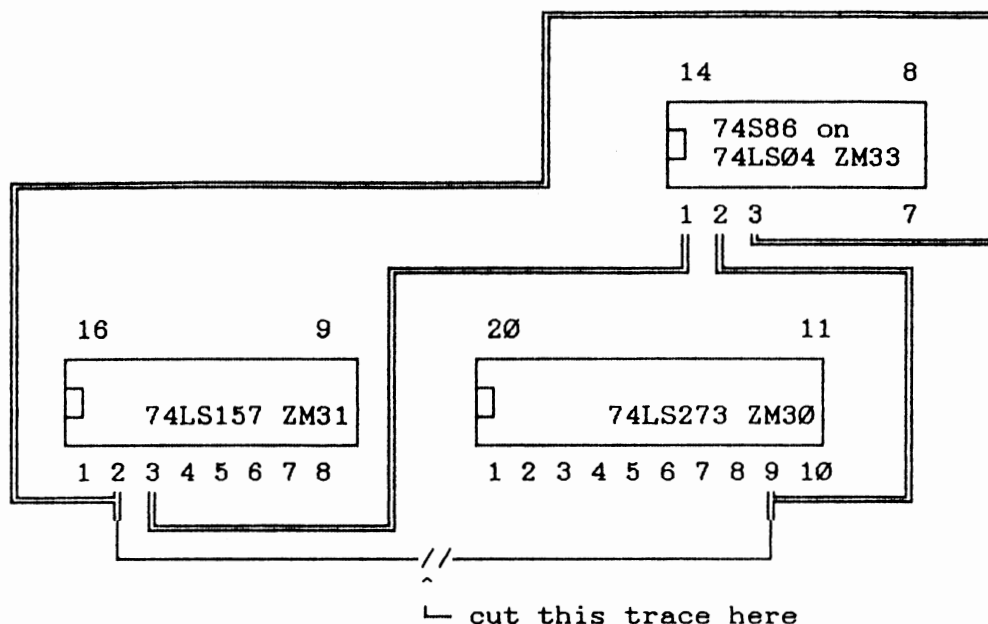
```
                            14            8
                        ┌─────────────────┐
                        │   74S86 on      │        74S86 Piggy
                        │  74LS04 ZM33    │        Backed on top
                        └─────────────────┘        of 74LS04.
                            1 2 3       7           Pins 7 & 14
                                                    attached. All
                                                    others lifted.
     16          9          20              11      Pins 1, 2, 3 of
   ┌──────────────┐       ┌──────────────────┐      74S86 are wired
   │ 74LS157 ZM31 │       │   74LS273 ZM30   │      as shown.
   └──────────────┘       └──────────────────┘
   1 2 3 4 5 6 7 8        1 2 3 4 5 6 7 8 9 10
                                                    Double lines are
                                                    added wires.
                                                    Single lines are
                 //                                 existed traces.
                 ^
            └─ cut this trace here
```
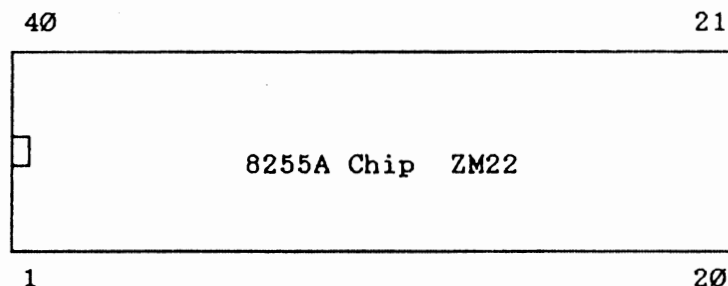
```
   40                                          21
 ┌──────────────────────────────────────────────┐
 │                                                │
 │            8255A Chip   ZM22                    │
 │                                                │
 └──────────────────────────────────────────────┘
   1                                           20
```

Steps:

1. Cut trace from pin 2 74LS157 (ZM31) to pin 9 74LS273 (ZM30)

2. Piggy Back a 74S86 onto (ZM33) 74LS04. Pins 7 & 14 are the only 2 that need to be soldered to the 74LS04. All other pins on the 74S86 should be lifted level so as not to touch the 74LS04. BE SURE TO PROPERLY ALIGN THE CHIPS PIN TO PIN... THAT IS PIN 1 TO 1, etc...

3. Add the 3 wires shown in the diagram above:
    a) pin 3 of 74LS157 to pin 1 of 74S86
    b) pin 9 of 74LS273 to pin 2 of 74S86
    c) pin 2 of 74LS157 to pin 3 of 74S86

4. Hint: When adding the wires, solder to the chip legs, not the board traces. It is much easier to add/remove if this technique is used.

5. Be careful when replace the disk drive. Wires and cables can easily be damaged.

6. The 74S86 is the correct chip to use. Do not try using another type of 7486 chip for this modification.

7. Use a 32K video buffer. Specify either Pcjrmem /c or /e. If you use Jrconfig, use the v32 switch and s1.

Helping Children Learn on the PCjr

By Mary LeCompte

Our five young children, ages two through eight, like learning with their PCjr. Over the past four years we have purchased over 50 educational programs ranging from those that help learn the alphabet to those that teach typing skills. The children often choose their PCjr over the television (and they really enjoy the television).

Also, it works! All of our school age children are at least a grade level above average in reading and math.

I know other families whose children barely use their computer. I want my kids to use computers not only for the skills that educational programs can introduce and reinforce, but also because computers will be an integral part of their future schooling and careers. Here are a few ideas I have found effective in making the PCjr a useful tool for teaching children:

AVAILABILITY: My family started out with one PCjr four years ago. Between my increasing use of it for budgeting and correspondence, and my husband's use of it for work, we found ourselves telling the kids more than occasionally that they could not use it when they asked. Finally, we bought a second junior just for them, available whenever they wanted to play.   LOCATION: Another thing that encourages the kids to use the computer is its location. I spend much of my time in and around the kitchen, and the kids often want to be around me. Locating their PCjr on a small desk in the corner of the kitchen lets them be near me and gives them something to do other than what I'm doing. This arrangement lets me conveniently alternate between the work I have to get done and the assistance (and encouragement) they frequently need when taking on a new computer challenge.

FREEDOM TO INVESTIGATE: Initially I learned how to use programs in order to teach my children how to use them. One program, Donald Duck's Playground, particularly baffled me. My then six year-old daughter stood at my side nagging me to let her try. I was having a lot of trouble trying to catch things in the "Produce Bin". My daughter was watching me struggle, saying "Let me try it! Let me try it!"

Finally, I gave up and let her try, thinking she would be back to have me help her. She spent 14 hours at the computer and then taught me to use the program! One of the best programs we have, I presented at a PC Club meeting and had my daughter demonstrate it. Children approach the computer with no fear. They have no inhibitions about trying things. They explore, find things, and use the computer very creatively. (And they have much better eye-hand coordination than their parents, as my experience with the "Produce Bin" in Donald Duck's Playground proved to me. After that, I taught my children how to turn on the computer and how to handle a disk and I allow them free access to the computer and their programs.

ALTERNATE MEDIA WITHIN A LEARNING ROUTINE: For my pre-school and elementary school age children, I have found scheduling a set "computer time" to be effective in using the computer to teach mundane skills. Every morning and every evening, including weekends, they spend 30 minutes with school work. On a rotating basis, one of them is allowed to use an arithmetic, spelling, or vocabulary game on the computer for that period. The ones who are not on the computer read books or work in reading or math skills workbooks. They all look forward to their turns on the computer for the sake of variety in learning methods. Their enthusiasm carries over to their free use of the computer during the rest of the day also.

VARIETY OF PROGRAMS: When children have only a few games to play over and over, they come to look at the computer as a dose of medicine. As I said above, I have over 50 educational games. We have programs for learning geography, math, reading, spelling, matching skills, numbers, and so on. Some of them I have obtained at practically no cost from bulletin boards using my modem. However, the best things in life are often not free, so I usually buy them at a discount store that allows me to "test drive", such as Egghead Discount Software. Ask before you buy whether you may try the program in the store, or at least return the program if it is not to your satisfaction. Before buying, check to see whether the program is copy-protected. If so, check the terms for obtaining replacement disks. I try to make copies of all of the programs I purchase using CopyIIPC, because my kids sometimes act like children! If your child ruins an original program disk and you don't have a back-up, you're sunk. Some programs, even though they cannot be copied, allow you to make a "working copy". You then boot up the game with the original, put the original in a safe place, and run the game with the copy. Over four years, I have had to replace only two original disks at a cost of $5 each.

Trouble Balancing Your Checkbook? If So, You Need Check Processor

Check Processor, Disk # 59 in the jr Newsletter Software Store, is an easy way to handle your financial record keeping. It will balance your checkbook, provide a quick way to keep track of your budget, as well as other financial chores. And doing these things on your PCjr makes it almost fun.

Tricks To Try When Software Won't Work

Most software that runs on PCs will run on PCjrs, but you may find some software that needs "special handling" before it will operate. Some recent games and other programs, particularly those that make use of graphics, at first may seem to be incompatible with your PCjr, but don't give up without first trying these methods. Many programs that appear to be incompatible, will in fact operate well on your PCjr with this "special handling."First of all, you need to know what a config.sys file is. This is the file that gives your PCjr instuctions when first starting up. When you have more than 128K on your PCjr, you must have a config.sys file to use that expanded memory. So every memory expansion unit for PCjrs comes with instructions for setting up the right config.sys file for your unit. Check those instructions to remind you, if you've forgotten.To see what your current config.sys file says, put your DOS disk in drive A:, and at the A> prompt, type: TYPE CONFIG.SYS.To change your config.sys setting with your DOS disk in Drive A> type: COPY CON CONFIG.SYS. Then type in the lines you want to have in your config.sys file. At the end, type F6 or Fn6, then press Enter, and you will have a new config.sys file. Before you change your config.sys file, though, it's best to make a copy of your old one in case you want to go back to it.Ok, lets get to the steps to follow if your normal methods won't work with new software.....

IBM Expansion Units -- If you have expanded your PCjr with IBM sidecars, try using a config.sys setting: device = pcjrmem.com /c   This creates a video buffer of 96K and makes all graphics modes operable. Using this setting does, however, mean you will have about 128K less memory to run the software. Some software, especially when paging is involved, will run better with the /e setting.

Other Expansion Units -- For other brands of memory expansion, use the config.sys setting that does the same as the IBM description above. (check your manual) Or Use jrconfig, which is available on jr Newsletter's Jr Power Packs (Disks #52 and #65). This is easy to install and works well with all types of memory expansion units. Installation instructions are on the disks.

With jrconfig use -t3 and either -v32 -v64 -v96, depending upon how demanding the software is. You may have to experiment a little.

Also, with large database or integrated software, it sometimes helpsto add FILES=20 to your config.sys file, no matter what type of memory expansion unit you are using.

NOTE ON DOS: If you are using DOS 2.1, it should be patched to fix a few of its bugs which can cause your computer to lock up. Patchesare on jr Newsletter's Disk#40. Using DOS 3.21 or higher can solvesome problems, but takes more memory.

NOTE ON SPEED OF OPERATION: Software will run faster when it's loadedinto "high memory" -- that is, above the 128K "lower memory". So, filling up low memory with a ramdisk, or large video buffer can speedslow running programs up considerably.

Try these methods before giving up on software you want to run on your PCjr. You'll be surprised how often a little experimentation will work. Specific notes on which settings work best on specific software are included on the latest version of the PCjr Compatibility Disk, Disk #60 in the jr Newsletter Software Store.

and then use it when they should be using a database program. If the information you want to computerize could be recorded conveniently on separate file cards or forms, you probably need a database.

I use **PC-File III** for my address books at work and home. I've already paid for the upgrade to PC-File +, but I just haven't found the time to install it. Like most database programs, PC-File is easiest to use with the data disk in one drive and the program in another drive or on ramdisk. With 640K of RAM, you only need one disk drive.

Communications

Selecting a communications program was simple for me. I tried **Procomm** version 2.4.2 and liked it. It was easy to learn, worked well, and did everything I needed as far as connecting to computer bulletin boards.

I call our group BBS at least once a week to check for messages, and call other boards less often to upload or download programs. My column gets to the Newsletter editor every month via the BBS. I upload it with Procomm, and he downloads it for that month's issue.

I sent in my registration fee for Procomm shortly after trying it and then paid for the upgrade to Procomm Plus. I'll switch over to the Plus version soon. I have to revise my dialing directory to add a 1 in front of every phone number outside our area code, and that's the time to switch. Until then, I'm still using the old version.

Graphics

Graphics programs can be a lot of fun as well as useful. For any serious drawings which require accurate scale or fine detail, I use **AutoSketch**. I reviewed this slick CAD program for Computer Aided Design last year and continue to be impressed by how friendly it is. AutoSketch requires 512K or more RAM and two disk drives for large, detailed drawings.

For fun doodling, I use an old program called **IBM PCjr ColorPaint**. It is the only cartridge program, other than BASIC, that I use. This program is easy and colorful, taking full advantage of the four colors available in 640 x 200 graphics mode on the PCjr. A mouse is required.

A mouse is highly desirable if not essential when you get to any type of drawing. I'm very keyboard oriented for most applications, but for drawing a mouse is the appropriate tool.

Another graphics application is making banners for special occasions. **Print Master Plus** does these for me. It provides several fonts and a library of art work which can be included in the banner, card, or poster. If you've visited our booth at any of the local computer shows, you've seen the banners I've done to advertise the benefits of membership in our users group.

Utilities

Utilities is a catch-all category for those small programs which make computing easier. I love utilities and often play with them just to see how they work even if I have no use for them. I guess utilities are my computer games. Here are some which I keep on my boot disks because they are truly useful.

SD.COM lists the directory of a disk in two columns unsorted or sorted by name, extension, date, or size. I send this output to my printer in compressed mode to make an index to keep with every disk.

DirMagic from **PC Computing** magazine is wonderful for cleaning up and organizing disks. It provides a directory listing sorted in the same way as SD.COM, but you can also mark files to copy or delete, rename files, change attributes, read text files, and more.

Sideways from Funk Software prints files sideways, just as the name implies. I use this to do addresses on envelopes because the sprockets on my printer won't spread far enough apart to accept a normal business envelope. There are also shareware programs which do the same thing. **Baker's Dozen** from Button has one plus many other programs.

Finally, **Terra*Time** is a shareware program which puts a map of the world on my monitor and shows the time of day in the major cities of the world. With my son living in Tokyo and business associates in France, Holland and Brazil, this lets me know when to phone.

Well, that just about sums up all the programs I use on a regular basis. What else is there? Well, I'm just starting to look at money managers. These are specialized database programs to help with budgeting. Also, I'd like to get **Prodigy** running. This is an inexpensive communication system that I want to investigate. And there are always new utilities to try.

(The above article was originally published in the San Francisco PCjr Users Group Newsletter.)

"Software I Use and Like"
Experienced PCjr User Lists His Favorites

By John King

Almost all software for personal computers can be categorized as part of the Input/Output system, a programming language, or an application. Most of this article will be about applications, the programs that allow my PCjr to do useful things for me. However, a few comments about software in the first two categories will set the stage.

The I/O system controls Input from the keyboard or floppy disk and Output to a monitor, disk or printer. The primary software which handles this is DOS, the Disk Operating System. The DOS programs are read from your boot disk into the computer's memory when your computer is first turned on. They remain there to assist the other programs which you run.

I use IBM PC-DOS version 2.10 on my PCjr. Later versions don't offer many advantages for systems without a hard disk, but they do take up quite a bit more memory. Memory management programs and ramdisks are important extensions of the I/O system, but I'll skip over them for this article.

Programming languages can be used to write new application software and create new or better uses for your computer. The programming language which I use most often is Assembler. DEBUG, which comes with DOS, allows everyone to write small programs in Assembler, as regular readers of this column know. For larger jobs, I use the **Microsoft Macro Assembler**. I also experiment with BASIC occasionally. If I wanted to write a serious program in BASIC, I'd use either **Boreland Turbo Basic** or **Microsoft QuickBasic** because both of these run much faster than IBM BASICA.

That's enough about I/O and programming. Most of the time, I use my PCjr without even thinking about these things. I use it for fun or to do a job. Right now, I'm using it to write this article. The application software which I'm using is a word processor, an example of the third class of programs.

Other applications besides word processors are spreadsheets, databases, communications, graphics, utilities and games. You may use several programs of some types and none of others. For instance, I've never gotten hooked on computer games. For me, the real game is making the computer do what I want it to do. On the other hand, I use several word processors.

Almost all the programs I'll discuss will run on a PCjr with 256K of RAM and one disk drive. If anything more is needed, I'll note it. Here are the programs I use regularly.

I use **WordPerfect 4.2** for major jobs and jr.WordPerfect for almost everything else. WordPerfect 4.2 runs best with at least 384K of RAM. A second disk drive adds convenience but is not essential. Jr.WordPerfect is small, less than 60K bytes, so I copy it to a ramdisk. Then I can call it up quickly without having to change disks whenever I want to do some writing. This column and all the letters I write are done in Jr.WordPerfect.

The third word processor which I use is **Ted**, a very small one for editing AUTOEXEC.BAT, CONFIG.SYS, and other batch files. This is a rudimentary program often called a text editor instead of a word processor. You could use EDLIN from your DOS disk for this work, but frankly, I hate that program.

PC magazine published TED.COM, the Tiny EDitor, in the November 15, 1988 issue. TED lacks margin settings, word wrap and other standard word-processor features, but it takes up only 3K of disk space, so it can be on every one of my boot disks and copied to a ramdisk for easy access at any time. One disadvantage of TED is that it won't run on a 128K PCjr. However, I'll put a patch in our library to correct that.

You will probably want more than one word processor also. You might need a high powered one for formal reports or term papers to handle footnotes, create an index, and print text in columns. A second program without these advanced features would be fine for letters and notes. Of course, it's easier to use two programs if many commands are the same in both. WordPerfect and Jr.WordPerfect as well as **PC-Write Versions** 3.01 and 2.55 compliment each other in this way. In addition, TED or EDLIN is useful for touching up batch files.

Spreadsheets

I rarely use spreadsheets, but when I do, I use **Lotus 123** because it is on my computer at work. Setting up our budget every year used to be a nightmare. The manpower, salary and outside expenditure figures for twenty or thirty projects had to be added up across the rows and town the columns. Every time one number was changed, others had to be revised, and the totals never came out right on the first try after a change. With a spreadsheet, you specify the arithmetic, and all the calculations are done automatically and correctly every time. It's like magic.

If you have any jobs like this, get a spreadsheet immediately. It will add years to your life. Try the shareware spreadsheets, such as **As Easy As** and **PC-Calc** first to determine your real needs.

Databases

Databases are frequently overlooked. Perhaps it's because many people become familiar with a spreadsheet

What To Do When Your PCjr Breaks Down

By Carl Haub

BeepBeep. Ever get that when you boot and nothing else? What do you do? What if you turn on the machine and nothing happens at all? These are problems which may well confront you, particularly if your PCjr is getting on in age. While unsettling at best, many of these problems can be diagnosed or even fixed by you, the user.

This article is written, not by a technician, just by a PCjr user who can't tell a resistor from a transistor, but who has futzed about by trial and error and who also came across an unusually detailed list of IBM "error codes." If I can do it, you can.

First, don't be afraid to have a look inside jr, even if you never have before. Lift the lid by popping it off with a quarter. What's inside? Working from left to right as you face it from the front, the first circuit board is the power supply. You may have either the older "short" card or the newer "long" one which reaches to the front of the machine. A failure here is often caused only by a blown fuse. Just to its right, in a metal RF shield is the 64K memory board which brought your original machine to 128K. The first 64K chips are on the motherboard, the large board which completely covers the bottom of the machine.

Just to its right are two "slots." The first holds the jr's 300 baud internal modem, if you have one. The second will have the disk controller board in it with a flat grey cable running to an edge connector on the disk drive. The cooling fan sits on the back of the disk drive. Both the fan and the disk drive are connected to the power supply card, which is how they get their power(!). If the fan goes bad, by the way, it can be replaced for $9.95 from PC Enterprises.

The square silver "box" in the front is the infrared sensor which accepts input from the jr's cordless keyboard. You can remove this by gently pulling upwards if you never use batteries in the keyboard. It saves a little strain on the power supply and keeps the machine a bit cooler.

If you get the "two beeps" when you boot, it indicates some sort of problem. The problem may not be serious. It could indicate that a connector such as the light pen or serial port (which you may not use) has a defect. Bent pins from careless attachment of plugs are a common problem. Or it could be something else.

You can troubleshoot the machine yourself. Try removing one board at a time. Turn off the machine. Work from right to left. Unplug the disk drive from the controller board by removing the flat grey cable. Reboot. No beeps? It's something in the drive circuits. Still two beeps? Remove the controller board. Then try taking out the 64K memory card, then the infrared sensor. If the problem still exists with all of that stuff removed the problem is in the power

supply, motherboard, or monitor. Often, simply removing these components (and possibly cleaning the slot contacts with a clean gum eraser) will put your machine right back into operation. Dirty contacts, likely in an older machine, are a common source of failure in electrical components.

The error codes, if any, shown on the monitor screen provide more clues. During the Power On Self Test (POST), these codes appear on the screen and normal use can often be continued by hitting the enter key if the failed part is not essential. The following details the possible error conditions you may encounter.

1. Two beeps and a horizontal line across the top of the monitor screen and that's all. Errors in CPU registers, ROM chips, 64K memory on motherboard and/or 64K memory board, or something called an 8259 Interrupt Error. This usually calls for replacement of the motherboard (a $75 exchange item from IBM) or the 64K board. "Chip-level" diagnosis can, however, often locate the problem part for replacement at less cost. Few shops, or IBM, are willing to perform that type of detailed repair, but some of our PCjr advertisers will. This could also be a bad power supply, frequently fixed with a 50 cent fuse.

2. "Error A" shows on the screen. Memory error on motherboard, 64K card, or memory sidecar. If the latter, this can be caused by dirty pins on the attachment bus for the sidecar. Try removing and blowing any dust away or cleaning the pins. On Tecmar boards, this can be caused by looseness in the plug on the heat sink (the flat plate inside the sidecar).

3. Two beeps and "Error B" on screen. Almost always, this is because you touched a key during while booting. This is a no-no; don't know why, but it is. It can also indicate a bad infrared receiver, however. If it happens again when you didn't touch the keyboard, that's it. Replace it from IBM or get a keyboard cord.

Error B can also refer to the monitor, a little known fact. If none of the above seem appropriate, B may be indicating an error in the CRT/CPU page register logic (gate array, 6845, or associated TTL glue). In other words, your monitor is has gone over the hill. DO NOT attempt to repair a monitor yourself unless you know what you're doing. CRT's store large, potentially fatal, voltages. REPEAT, leave the inside of the monitor alone.

4. Two beeps and "Error C." Unlikely since it indicates

Reader Feedback

(Continued from page 6)

sidecar booster with clock and mouse, and the Racore add-on with 512K, clock, DMA and second floppy, plus an NEC V-20. When I first installed the Racore (post MS booster), the screen showed a successful test of all 786K. As I could not address it all, I reconfigured the DIP switches as recommended and 'lost' the top 128K, which I'd like to add to my RAMdisk. Hopefully disk #52 will help me do this. I'd like to replace both floppies with 3.5 inch drives, as the jrs are too slow and a hard disk seems a waste given the price and the computer's speed. Is this easy to do?

Michael Hay, Temecula, CA

EDITOR'S NOTE: Yes, jrconfig, which is on both disk #52 and #65 will allow you to recognize memory over the 640K limit. As far as replacing both floppies with 3.5 inch drives, we know plenty of jr users who have either replaced one of their original drives with a 3.5 inch, or they've added a 3.5 inch drive to their original drive (or drives), but we don't know anyone who has replaced both. We don't see a problem, though, as long as you have the right controllers and the right version of DOS.

User Finds Virus
Is Source of His Problems

I have something to add to the letter I sent to you two weeks ago. Last fall I wrote you about a problem I had been experiencing, on occasion, when my DOS disk would suddenly fail to boot properly. We both suspected a virus, but I dismissed the idea since my COMMAND.COM file had not been altered.

A couple of weeks ago it happened again! It seems that a virus was the culprit after all. The morning after the latest incident I took a closer look at the disk and discovered that one of the system files had been altered. The date and time stamp of the IBMDOS.COM file had been changed! To correct the problem I had to transfer the system files from my original DOS disk back to all my backup DOS disks as well as all my other self-booting disks.

I'd like to warn other readers to take precautions so that this doesn't happen to them First, NEVER download a file directly to a hard disk (if you have one). Secondly, be extremely leery of any program that doesn't come with any documentation. There ought to be at least a brief file describing what a program does and how to use it.

In my case the infection had apparently been present for some time so I have no idea when it occurred or which program might have had the virus. Fortunately, it's unlikely that I still have the file since, as a rule, I don't keep what I don't use. I consider myself fortunate that I got off as lightly as I did. It could have been much worse, especially if I had had a hard drive on my jr! As it was it was more of a pain in the neck than anything else. It didn't result in any lost data.

Steven S. Miller, Grand Terrace, CA

Legacy Hard Drive Problem Solved

Recently I was having problems with my jr Hard Drives. I called Legacy Technologies (I bought the HD controller from them) and they said that more jr users were having problems with their HD controllers. The controller, after so many years, tends to have some kind of problem. Mine sometimes would boot all right, others would not, usually in the morning when first booted. During the day, as it got worse, it would stop accessing one of the hard drives.

Legacy could not help me because they did not have any more of the controllers, or parts, or schematics to fix it, but they did give me the phone number of Western Digital (this company was the manufacturer of the controller) and the part number of the controller, which can be found on it, and is WD1002-HD0. So, I called Western Digital at 1-800-847-6181 and was told that they sold that item to RMT Systems and game me their phone number which is 1-714-863-1092. Then I called RMT Systems. They do sell that controller and also repair them. They cost $225.00 new and $50.00 to repair.

So, if there are more jr owners with HD controllers from Legacy that are not working correctly and Legacy can't fix, RMT Systems will. Or if someone wants to buy this controller because it controls up to 3 hard drives, this is the place.

I am not absolutely sure that this is the controller, but Legacy thinks so, and because it is not likely that both drives got bad at the same time, I sent it to RMT to be repaired.

Antonio D. F. Martins, Bridgeport, CT

Sierra Pledges PCjr Support

a point we've been trying to convey to other publishers. Unfortunately, Ken did not provide us with a set of instructions for PCjr compatibility to give other software publishers.

More Memory Required

John Williams, Sierra's Director of Marketing, pointed out that the high quality of Sierra's games puts great demands upon the computer running them, both in terms of graphics management and available memory. Expanding upon Ken Williams' pledge to support PCjrs in the future, John said, "In exchange for that support, we're going to ask a little more from PCjr users. We encourage them to upgrade their memory and install speedup boards so our games will run best."

The newest versions of King's Quest IV require 640K to run properly on PCjrs, he said. The new KQIV boxes state that 640K is required for PCjrs. King's Quest IV is the only new Sierra game that has a special 256K version for PCjrs. Although **Gold Rush** will run with 256K, John said, "Gold Rush will probably be our last 256K adventure."

With the creation of King's Quest IV, Sierra began using new game design software. It's better than the software they used before, but it creates games that require more memory to operate. John said Sierra conducted a survey of PCjr users and found that there were many who had upgraded to 640K. Enough to comprise a substantial market for future game software.

Compatibility Note

Now that Sierra is committed to PCjr compatibility, PCjr users should be aware of the fact that Sierra has included all the necessary elements to recognize memory above 128K and to configure PCjrs to run the games properly. Ken Williams warned against booting up your PCjr with other config.sys setups. He said this will conflict with the instructions Sierra has included in its software. So Sierra advises booting with a "plain vanilla DOS" (DOS that has not been modified to recognize your PCjr's additional memory, ie. the original DOS disk. If you don't have an original version any more, you can just make a copy of your DOS boot disk and delete the config.sys file and the autoexec.bat file. This will give you a "plain vanilla" boot disk.)

Sierra is the only software publisher that we know of which includes specific PCjr configuration programs in its software. So we don't advise booting your computer with a "plain vanilla" DOS when attempting to run other software. Another article in this month's newsletter includes specific steps to follow in order to get seemingly incompatible software to run on your PCjr.

Other news regarding our compatiblily campaign this month involves Accolade, makers of **Mean 18, Test Drive, 4th and Inches, Grand Prix,** and other titles. Charlotte Taylor, Public Relations Director, admitted that PCjr compatibility is not a major concern for Accolade, since the company targets its new software to computers that are currently selling well. Since PCjrs have been discontinued, they do not appear as computers that should be given much consideration in Accolade's marketing plans.

However, after we informed Ms. Taylor of our contact with PCjr users around the country and that there are an estimated 500,000 PCjrs in the hands of the computing public, she said she would forward any information we could provide on how Accolade might make future titles PCjr compatible to the director of marketing.

We told Ms. Taylor about our current efforts to come up with a set of instructions for software designers to help them include PCjr compatibility in future releases. "If it's not too difficult, that's something we should definitely consider," she said. This is hardly a committment, but it's an opening. We intend to follow up on it as soon as we've assembled the instructions.

Do Your Part

We encourage you to help in the effort to persuade software publishers that there are many PCjr users who love our computers and who will purchase new software that is compatible.

Please contact the publishers of software you currently use to urge them to keep on producing software that is PCjr compatible. If they ask for more information, tell them to contact us at jr Newsletter, Box 163, Southbury, CT 06488. We'll be happy to send them compatiblity information as it becomes available.

Write and Play Music With Jr Music Machine!

Did you know that your PCjr is a great Music Machine?

If you haven't discovered it yet, you have a pleasant surprise waiting for you. You can write and play your own music in three voice harmony right on your own PCjr!

PCjrs were among the first color computers capable of playing music in several "voices." Jr Music Machine, (Disk #62 in the Software Store, pg.23), was written especially for PCjrs and it takes advantage of your computer's color and sound capabilities. (And if you want to boost your PCjr's sound even further, see page 10 of the December, 1987 issue for how to do it for less than $30.)

With Jr Music Machine, you can write your own music and play it back through your PCjr's sound system. Although Pianoman (Disk #36) also does this, Jr Music Machine is easier to use and was written especially for PCjrs, so it's probably the better choice to start with.

Here's what the program's author, Sidney Nolte, says about his software: "I developed this program as part of a process of my learning about music. Not being a musician nor knowing very much about music, I found that the machine that I had, my little PCjr, had some tremendous capabilities not found in the other members of the PC family. These include music with as many as four voices and graphics which allow for as many as 16 colors where the PC has only one voice and 4 colors.

Sidney wrote a nifty program -- an amazing accomplishment for someone with no knowledge of music. Jr Music Machine allows you to write each "voice" in your composition separately, adjusting the time signature, key, volume, tempo and note values with your keyboard. You can write a single "voice" tune first, just to get the hang of it. Then, using all three "voices" you can create three part harmony.

The disk comes with 15 tunes already on it. You will probably want to play a few of them at first, in order to see what your PCjr is capable of doing. You might also call up some of the existing tunes to see the music displayed in your PCjr's 16 colors. Each note is highlighted in yellow on a blue background as you move through the tune. Jr Music Machine gives you a chance to move it up or down in the same key, or to adjust it for sharps and flats, or change its value. It even has staccato and slur special effects at your command.

As we mentioned earlier, the value of it over Pianoman seems to be that it's easier to use. On the other hand, Pianoman has more features -- although they tend to be features such as macros and block editing that may not be required by many PCjr musicians. The resulting music that Jr Music Machine produces is just as good.

In short -- if you want to fill your computer room with delightful sounds of your own making, try Jr Music Machine. See page 23 for ordering information.

Use That Modem On Your Jr To Explore A jr BBS

If you have a modem on your PCjr, there's a lot of valuable information available. It's ready to be accessed by your PCjr, any time you want it. Here are a few of the best sources of PCjr info as well as places to chat with other PCjr users:

jr BBS ,operated by the Metro PCjr Users Group, (301)468-0984.

San Francisco PCjr Users Group BBS (415)997-4874.

Many PC users groups around the country support the National PCjr Help Conference, where PCjr users exchange information. Try calling your local PC BBS and see if they provide access to this system.

Compuserve, the commercial BBS, has a PCjr Forum with PCjr info as well as downloadable software. Once you join, you can hook up with Compuserve through a local phone number and pay a fee based upon the time you spend.

Who Needs A Manual?

unlike our mother (she never charged us for her knowledge). "It'll take two hours or less."

He laughed. He thought I was joking. He still couldn't see the importance of investing a few hours, whether it be reading documentation or receiving a one-on-one tutorial on the software. My brother was a shrewd businessman whose career centered around maximizing profit. Couldn't he see that his stubbornness about not reading documentation was costing him time, and therefore money, each time he sat down to use the software? All of a sudden, my brother was seeming less smart to me after each conversation.

As I hung up the phone, I wondered what would get this business dynamo to learn the package properly. He didn't read my short booklet and obviously didn't read the on-line help. Then it occurred to me. Maybe he was the smart one. After all, he doesn't need to read all of this documentation. He has me!

(Beth Davies is a Technical Writer at Bentley College in Waltham, MA.)

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Questions and Answers

tester, mark or write down the colors of the wires with the corresponding jr connections. You can now see how to connect each wire to the DB 25 connector, using the above chart. The wires FROM the Mouse are connected exactly color for color, number for number to the other connector. Be sure this is the connector which will plug into the XT! For those PCs with a DB 9 (9-pin) serial port connector, just get a 25 to 9 pin adapter and plug it in. If there is a second cable, it should be for the +5v and System Gnd, and should be tapped from the keyboard cable of the XT. Two wires, a male and female phono plug should take care of this. Take care that the polarity is correct. The mouse is now usable on both the jr and the XT by just disconnecting at the DB 25 and the phono plugs.

Now that all this has been said, why not just buy a second mouse ($29.00 to $59.00 or so) with a serial connector and use it on the XT? The parts alone for the job above could approach the low-end price of a mouse! The addition of technical labor costs (if needed) would make this complicated adaptation even more costly.

Q. Addendum to the above question. Will the $29.00 mouse above work with my jr?

A. Yes, but... The power (+5v adapter) cord supplied is for a Standard PC, XT or AT keyboard cable, so if you have already gone this route, there is no problem, you already have the round DIN 5 pin adapter.

If you don't have the 25 pin serial adapter cable sold by most of our advertisers, you will need one because serial mice all plug into standard serial RS 232-C receptacles, just like modems. You will also need the jr keyboard cable.

If you have the jr keyboard and cable you will only need 3 inexpensive items.

1) A 3 or 4 foot length of telephone wire with a CLEAR plastic snap-in jack connected to one end only.

2) A "Y" or second telephone set adapter. This is a connector which allows two phones to be connected where there is only one outlet.

3) A female power plug. (Radio Shack part# R-S 274-152 "Coaxial Power Plug" should do it, but compare in-store with the one which comes with the mouse to be sure!)

Looking at the end of the telephone snap-in plug you will see SIX grooves, even though there are only four wires attached. With the snap lever on top and the END facing you the numbers of the GROOVES are 1 through 6, LEFT to RIGHT. The wire in GROOVE 5 which will be +5 volts (usually yellow) is to be connected to the (short) INSIDE connector of the power plug. The wire in GROOVE 3 (usually red) which will be Logic Ground, is to be connected to the (long) SHELL of the power plug. NEITHER of the other two wires is to touch anything, cut them short and be sure they are out of the way!

Unplug the existing cord from the keyboard. Plug the two-way phone adapter into the keyboard. Plug the keyboard cord into one of the adapter receptacles and the cable you just made into the other. Push the power plug of the cable you just made into the serial mouse connector and off you go! This is a very inexpensive adaptation for a very inexpensive opto-mechanical ball-controlled mouse.

Earl Weaver Baseball

from the master tactician (wise words from Earl) and a small article on setting up your own league by Russell Sipe. You can also order season disks containing current players like Jose Canseco and Nolan Ryan.

What makes Earl Weaver Baseball so enticing is it's realism and what could beat America's favorite pastime? (Earl Weaver's Baseball runs on PCjrs with at least 384K.)

PCjr Lives!

Fixing Your PCjr

an error with a cassette tape storage "wrap back." Who uses cassettes?

5. Two Beeps and "Error D." Serial port ("S plug") on back of machine failed. Bad news only if you use an external modem or a serial printer (the more usual dot matrix uses the parallel port).

6. "Error E." Modem failure. At least it's (probably) not your jr.

7. "Error F/G." Error F means an error in ROM on the motherboard (the chip can be replaced). G, more specifically, indicates an error in the ROM cartridge space. The high order byte is shown following the letter.

8. "Error H." Disk Drive error. It's the disk drive.

If nothing at all happens when you turn on the machine, it's probably a power transformer (the "black brick"). These are available from IBM and, lately, from Lolir Computer in Texas for only $9.95. Call (214)-416-5155 to order a spare brick and for information on current availability. This is a great buy on a vital spare part and they won't be in stock at that price forever.

In our user group, the Metro PCjr Users Group in the Washington Area, we have a "first Saturday" workshop held at the Capital PC User Group offices. Area jr owners come by with nonworking machines and the group officers try to help. One owner had a jr which worked fine except that it wouldn't format disks. Inspection showed an LED swinging freely above the disk drive. We pushed it back into the hole in the locking arm on the drive and all was well. Apparently, it senses the indexing hole on the disk to begin the formatting process and won't work when it's out of position. The point here is that none of the assembled group that day knew that problem existed, but it was fixed.

On another day, a woman had a Tecmar jrCaptian that did not seem to work. Turned out that the machine she had bought from a friend had a bent pin on the sidecar bus. That was that. Bent pins, by the way are a very common problem. An Achilles' heel of the jr is the flimsy pin connectors on the back. When plugging things on DON'T reach around the back and just shove it in. Make sure that you have the plug right side up and in the correct port. Use a good light if necessary and don't force a recalcitrant plug. The pins can sometimes be repaired, but not always; that means a new motherboard.

There, that's it. A brief tour through the problems I hope you don't see. Hardware problems often cause unneeded anxiety. You may not be able to repair the problem, but the chances are quite good that you can at least isolate it and get the offending part fixed.

* PCjr CLASSIFIEDS *

* * * PCjr CLASSIFIEDS * * *

WANTED - IBM sidecars: 128K memory, parallel printer adapter, and power pak. Also need IBM joystick and mouse. I'm interested in some programs for my grandchildren. Tom Candy, 33 S. Central Ave. Kearney, NE 68847 or call M-F daytime (308) 234-8364, after 6:00 pm & weekends (308) 234-6329. (4)

WANTED TO BUY - jr Newsletters from June 1986 thru October 1988. Keytronics KB 5151jr or KB5151jr Keyboard. PCID & Quicksilver cartridges. Send COD or will send check upon receipt. Confirm prices with Les Helmus, 203 Sandringham Road, Cherry Hill, NJ 08003. (4)

GOLF SOFTWARE - for the PCjr. Mark's Course. 18 holes of golf features 16 color graphics, music, animation. Creates a new course with sand, water and rough every time you play. $15. Also IBM compact serial thermal printer. $50. Mark S. Foster, 908 Panna Lane, Cleveland OH 44109 (216) 398-0498. (4)

IBM PCjr SYSTEM - Excellent condition. Includes IBM Color Display, Improved PCjr keyboard with keyboard cable, 128K memory, 360K floppy disk drive, DOS version 2.1. IBM Filing Assistant Software, PCjr Guide to Operations and Hands-On Basic manuals. Asking $225 or best offer. Russell Stark, 3100 Cambridgeshire Drive, Carrollton, TX 75007 (214) 492-2721 after 5:30pm cst. (4)

WANTED - Additional memory for my PCjr. Would prefer Jr. Hotshot, but others will be considered. Ken Elkins (404) 327-1444 or (404) 571-8513

IBM PCjr - 128K, PCjr color monitor, one drive, V-20 processor, all documentation, manuals and software that originally came with it including IBM DOS 2.10 and IBM Writing Assistant. All excellent+. $375 + UPS. All of the foregoing plus Racore Drive II Plus with DMA and 512K added memory, with complete original documentation, also excellent+, $725 + UPS. Call Bill at (703) 451-1751 after 8:30pm. (4)

IBM PCjr - 640K, 2 drives, parallel printer port, cartridges that allow true "IBM PC" compatibility and operation, cartridge expansion slots and Microsoft mouse - $550. Also, Brother M1009 dat matrix printer and parallel cable - $90. All original documentation available and jr Newsletters since May 1986. Call Rick at (214) 907-6716 days and (214) 985-9772 eves and weekends. (4)

FOR SALE - jrVideo & Quicksilver cartridges. IBM Compact Printer. Internal 300 Baud Modem. Make me an offer. Software for sale: King's Quest I, Space Quest I, Wizardry I, plus many more! Write me for a complete list. Jim Carter, 585 W. Sierra. Apt 236, Fresno, CA 93704. (4)

BRAILLE PROGRAM - We are looking for a program to run our jr to act as a Brailler. Call (716) 586-9029 or (716) 381-3101, Karl or Susan. (4)

WANTED TO BUY - PCjr, also interested in buying accessories for PCjr. Jack Vinik (407) 276-2116. (4)

PCjr 128K - Disk Drive, 2 Compact Printers with $50 worth of paper, Manuals, Games, Typing, Copywrite, and other software in original cartons, $300.00, Shipping Pd Call Doug Keeler (209) 834-2722. (4)

PCjr JOYSTICK (2) - jr Parallel Printer Sidecar, jr Color Display Cable, BASIC & Clock cartridge. DOS 2.1, many more .. Larry Young (408) 262-8640. (4)

FOR SALE - 20 Meg SPC Hard Drive for the IBM PCjr. Includes driver software. Also, Microcom 300-1200 baud internal modem for the PCjr. Includes software and manuals. $500.00 for both, OBO. (Will split up.) Dave Vollmer, (414) 921-5349 eves or (414) 929-5818 days. (4)
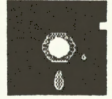
PCjr 2 DRIVES - 512 RAM, Color Monitor, PC style keyboard, joystick, 300 baud internal modem, serial adaptor, RS-232 switch box, original keyboard, Keytronic key pad, Cartridge Basic, DOS 2.1, IBM Technical Reference Manual, IBM Hardware & Service Manual, clock & parallel port, some software. Call Murphy Horner (303) 226-5467. (4)

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 $5.95 per disk.

* NEW VERSION * PCjr COMPATIBILITY DISK v2.0. Lists over 800 software titles, along with info on how they run (or don't run) on PCjrs. Also tips on how to make software PCjr compatible. 128K. Updated Feb. 1989. (Disk #60)

* NEW VERSION * PCJR PATCHES V.4.0 Patches to fix software that ordinarily won't run on PCjrs. V.4.0 adds patches for the 512K version of King's Quest IV, and for running Loderunner with a V-20 chip. Also patches for Flight Simulator V.3, Arctic Fox, Managing Your Money V.3, Autocad, King's Quest II (PC version), Turbo C, Quick BASIC V.3.0 and 4.0, Starflight, Advanced Flight Trainer, Double DOS, Bard's Tale (16 colors), Turbo BASIC, and BASICA. (Disk #56)

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)

SCOUT. Excellent memory resident (or not) file manager, DOS shell. Move, copy, rename, volume label, search, sort, printer control, view files, and more - fast and easy. Best we've seen. (Disk #81)

SPELLING BEE. A game that builds spelling skills from Grade 3 level to adult. You are an Olympic athlete representing your country. Excellent color graphics. Four skill levels from very easy to very difficult words. Fun way to become a spelling champ! 128K ok (Disk #82)

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)

AS EASY AS. Excellent, easy to use, spreadsheet program. Works like Lotus 1-2-3, with all spreadsheet functions. Can load and operate 1-2-3 files. 256K ok (Disk #67)

GALAXY. One of the easiest to use word processors we've ever seen, Galaxy has all the features you need to write letters and do most word processing. It has many, but not all, advanced features. Its strength is its simplicity, with help menus always ready to assist you. You probably won't even have to read the manual. 128K ok. (Disk #69)

PC-STYLE. Perhaps the best of many programs that help you make what you write more readable. Jim Button made this a very slick, useful tool for improving your writing. It reads and analyzes what you write, then gives you a detailed analysis based upon several useful standards. Fasy, easy to use. 128k (Disk #76)

COMPUTER TEACHER. For those who want to learn how to use DOS commands and to undertand basic computer hardware terms, this interactive software will help you become computer literate. Helps you better understand those manuals and computer magazines, as well as how to do more with your computer. 128k (Disk #77)

RAMDISK. Use ADJRAM to create a RAM disk of any size and adjust its size at any time without losing the contents. Or use JRCONFIG to set up your PCjr. Both programs with complete instructions for creating and using RAM disks on you PCjr. Need 256K. (Disk #75)

MIND READER. Experience the wonders of artificial intelligence! Use a full-featured word processor that guesses the words that you're about to type. Works like a charm! 128K ok. (Disk #74)

IMAGEPRINT V1.5. Produces near 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)

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

JR POWER PACK II. Disk full of programs to make your PCjr more useful and powerful. Fix compatibility problems,

set up ram disks, tiny wordprocessor, set up 3.5" drives, use DOS easily, and more. Need 256K for some, 128K ok for most. (Disk #65)

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)

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

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-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)

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.

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)

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)

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)

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)

BOYAN. Selected Best of the Year by PC Magazine, this outstanding telecommunications program will astound you with its smooth functioning and innovative features. Supports all protocols. Need 384K. (Disk #61)

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)

BAKER'S DOZEN. 13 powerful utilities by shareware star Jim Button. Recover zapped files, save screen to files, print sideways, sort files, file management, locate text, pop-up calendar, powerful one screen spreadsheet, set screen colors, and more. (Disk #73)

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)

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)

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)

GALAXY. One of the easiest to use word processors we've ever seen, Galaxy has all the features you need to write letters and do most word processing. It has many, but not all, advanced features. Its strength is its simplicity, with help menus always ready to assist you. You probably won't even have to read the manual. 128K ok. (Disk #69)

NAMEPAL. An excellent utiiity 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)

CROSSWORD CREATOR. Helps crossword fans design their own puzzles. Handles puzzles up to 200 words and clues. Makes a standard cross-word puzzle print-out, or can save the puzzles for solution on disk. Requires 256K and Epson or IBM compatible printer for printouts. (Disk #71)

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. Provides memory resident notepad, alarm clock, appointment calendar, typewriter, calculator, phone book, auto-dialer. Some say better then Sidekick! Quick, easy, powerful. (Disk #22 V1.04)

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)

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)

**See March Issue
for Additional
Software Titles.**

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jr Software Order Form

1	2a	2b	3	4	5	6	7	8	9	10	12	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29
30	31	32	33	33a	34	35	36	37	38	39	40	41	42
43	44	45	46	47	48	49	50	51	52	53	54	55	56
57	57a	58	59	60	61	62	63	64	65	66	67	68	69
70	71	72	73	74	75	76	77	78	79	80	81	82	83
84	85	86	87	88	89	90	91	92	93	94	95	96	97

_____ disks @5.95 each = $ _____
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TOTAL $ _____

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Prices are U.S. funds.

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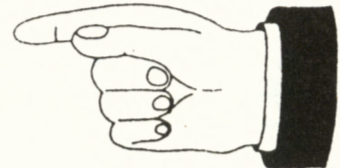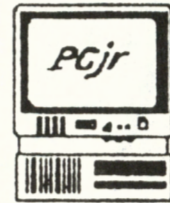
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April 1989