Peanut™

THE MAGAZINE FOR IBM PC*jr* USERS

$3

VOL. 1 NO. 2

JULY/AUGUST 1984

Peanut Power: 50-Plus Software Packages that Drive the Junior



Lotus Unfolds Plans for PC*jr* 1-2-3

Databases Demystified: How to Use Software that Gets You Organized

PC Users Groups Open their Doors to Junior



ELEVEN THINGS YOU CAN DO ON THE VERY FIRST DAY.

Your first day with PC*jr* isn't just exciting.

It's rewarding.

This IBM® personal computer quickly hooks up to the family TV. And there's a lot you can do right from the start.

PC*jr* MAKES IT EASY

PC*jr* was designed to make the whole family feel at home with computers.

The keyboard, for example, doesn't need a connecting cord. This refreshing bit of technology—the IBM "Freeboard"—frees you to get comfortable up to twenty feet away.

And the keys are color-coded, so even a beginner can find the right key for the right job.

Right away.



1. **Home Loan**
2. **Monthly Expenses**
3. **Word Race**
4. **Shopping List**
5. **Recipe File**
6. **Tile Game**
7. **Typewriter**
8. **Alarm Clock**
9. **Checkbook**
10. **Address Book**
11. **Telephone Connector**

YOU'RE OFF AND RUNNING

You can start using PC*jr* as soon as you set it up. The Sampler Diskette (included with diskette-drive models) gives you eleven useful mini-programs to choose from.

Including:

A home spreadsheet to help keep your expenses in line.

An electronic address book to help you sort out who's who and who's where.

A home loan calculator that can tell you interesting things about your principal.

An easy-access file for recipes. A checkbook balancer. And a challenging word game.

Of course, the Sampler Diskette is merely a taste of what you can do with PC*jr*. You can buy easy-to-follow programs to help you write letters, plan your finances, educate the kids, file tax data—to help the whole family use its time to better advantage.

Plus, PC*jr* runs many of the IBM Personal Computer programs that run on the IBM PC and PC/XT. So you can finish at home what you start at the office, and vice versa.

And when it's time to relax, PC*jr* is always game. Plug in an entertainment cartridge and let the fun begin.

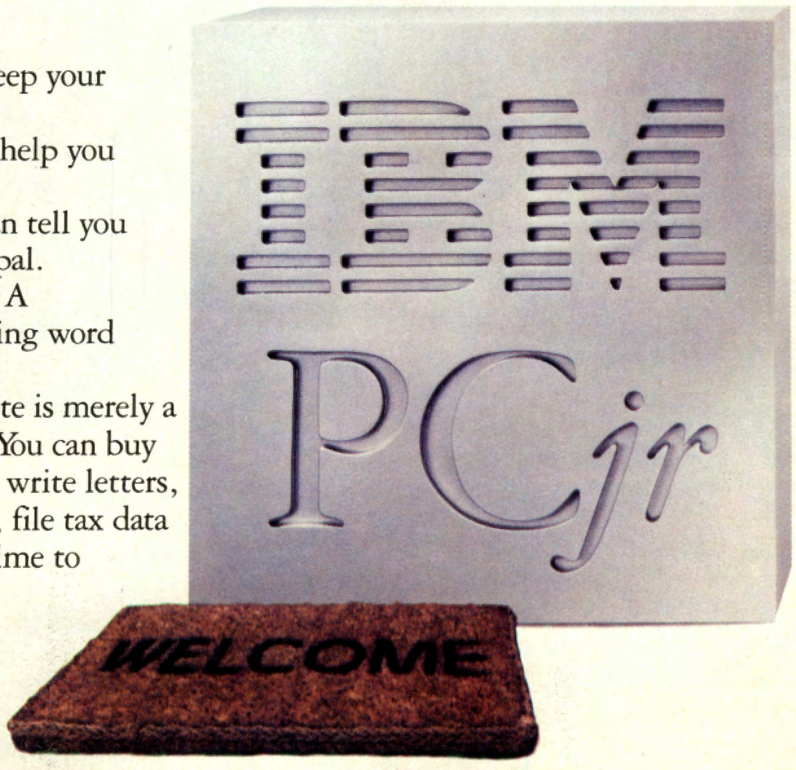
A COMPUTER THAT CAN GROW WITH YOU

PC*jr* is the most affordable of the IBM personal computers.

You can start with the 128KB model, equipped with a diskette drive, for about $1300. Or the 64KB base model, for about $700. (Prices apply at IBM Product Centers, and may vary at other stores.)

And as your needs become more sophisticated, PC*jr* can easily keep pace. With add-it-yourself options like a printer, diskette drive and internal modem for telecommunications, even the lowest-priced model can grow up fast.

Visit an authorized IBM PC*jr* dealer or IBM Product Center and see all the things PC*jr* can do. For the location nearest you, call 1-800-IBM-PCJR. In Alaska and Hawaii, 1-800-447-0890.



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Get the most computing power from your IBM/PC Jr. with these exciting Amdek monitors.

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COVER STORY, PAGE 9:

OK, I'VE GOT THE MACHINE. NOW, WHAT CAN I DO WITH IT?

PC*jr* software holds the answer to that question. Find out how more than 50 PC*jr* programs can help you:



11 MANAGE YOUR MONEY AND INVESTMENTS
Software that helps Junior earn its keep by helping you create and keep to a budget and analyze a portfolio.

12 WRITE
Word processing programs for every writer in the family.

16 COMMUNICATE WITH OTHER PEOPLE AND COMPUTERS
Turn your PC*jr* into an information terminal with communications software.

17 FIGURE YOUR TAXES
Now's the time to start planning for April 15th. Junior and a tax program can help ease the tax bite.

18 DRAW, PAINT, AND GRAPH
Software that brings out the artist and designer in everyone and creates professional-quality business charts and graphs.

19 LEARN
Excel in your SATs, learn BASIC principles with Junior, your patient computer tutor.

24 ORGANIZE AND ANALYZE INFORMATION
Swimming in a sea of facts and figures? PC*jr* file programs, database managers, and spreadsheets help you stay afloat.

26 PROGRAM
Logo and Pascal packages maximize your programming talents.

28 DECIDE WHAT'S FOR DINNER
Junior sees to *your* care and feeding with programs that suggest recipes based on what's in your fridge.

29 POWER JUNIOR UP WITH LOTUS 1-2-3
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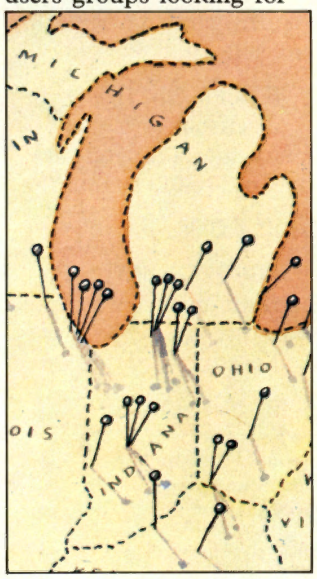
FEATURES

40 JUNIOR JOINS THE CLUB
Join a user's group for encouragement, advice, and free software. A map of PC users groups looking for

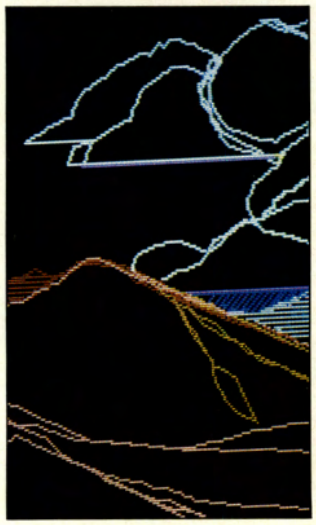


Junior owners, plus special news about PC*jr*-specific groups.

47 THE COMPLETE PEANUT BUYERS GUIDE TO MONITORS
This easy-to-understand guide and monitor comparison chart explains all the important features of a video display and helps you get the most monitor for your money. Plus test-programs to run on every monitor you consider before you write the check.

56 ONE OF THESE DAYS I'VE GOT TO GET ORGANIZED
Whether it's business inventory or birthday greetings, database management software can help you manage the information that fills our lives and overflows our desks. Included is a *pfs:file* project to start you off quick and easy.

64 PAINT BY PIXEL
A guide to the Peanut's graphics, with program-



ming projects that show off Junior's color and your creativity.

72 LETTER FROM COMPUTER CAMP
Ever try to sew a nametag on a disk drive? Know the difference between a short-sheet and a spreadsheet? There's a letter waiting for you . . .

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Peanut

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There's a wealth of free software out there—here's



how to find it! Plus advice on keyboard spills, non-system disks, and more.

38 PEANUT GAZETTE
Settle your bets with Junior at bat, analyzing this summer's baseball games. The latest word on PC*jr* exploits, including computing Italian style.

74 GUIDED TOUR
Keep Junior in perfect working order by using its built-in diagnostics. This step-by-step guide takes you beyond the manual to give you real familiarity with your system's hardware.

79 TELECOMPUTING
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92 NEW PRODUCTS
An expansion unit that gives Junior a second disk drive and 640K memory.

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Phone numbers that let you speak directly to the makers of products for the PC*jr*.

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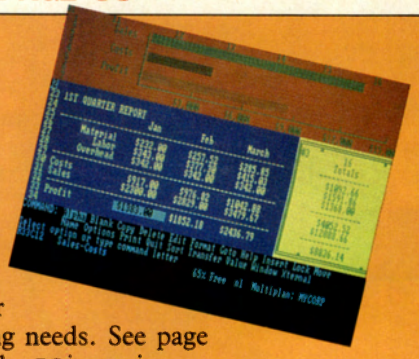

By all accounts, *Multiplan is* a top-notch spreadsheet program for your number-crunching needs. See page 84 for more on the PC*jr* version.

PRODUCTIVITY

84 MULTIPLAN
An award-winning spreadsheet with a multitude of home and business uses.

84 BANK STREET WRITER
This word processing program, originally designed for kids, has also captivated many adult fans.

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Even the littlest computer user can design funny, animated faces.

88 ARITHMETIC GAMES
Basic math skills are the keys to playing—and learning from—two engaging games.

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89 MURDER BY THE DOZEN
A challenging game that calls on your sleuthing skills.

90 ENCHANTER
A complex all-text fantasy represents the state-of-the-art in adventure games.

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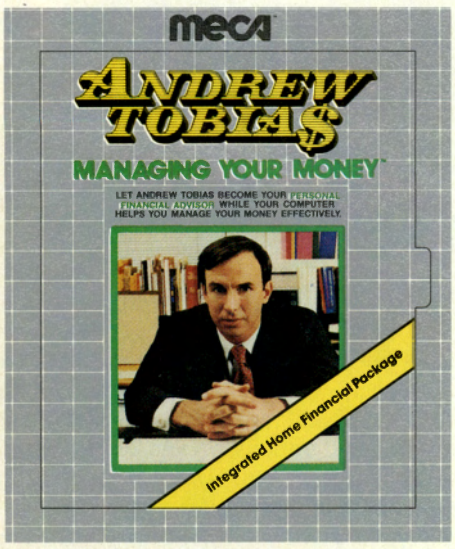

- Provides a complete checkbook and budget program.
- Helps you with tax planning.
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- Serves as an all-purpose financial calculator.
- Evaluates your family's life insurance.
- Stores memos on an electronic calendar.
- Allows you to record, code and analyze your investments.
- Tallies realized and unrealized gains and losses.
- Suggests optimal tax strategies.
- Prints your SCHEDULE D.
- Reminds you as investments are going long-term.
- Calculates tax shelter and rental property internal rates of return.
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- Keeps it fun.
- Keeps it useful.
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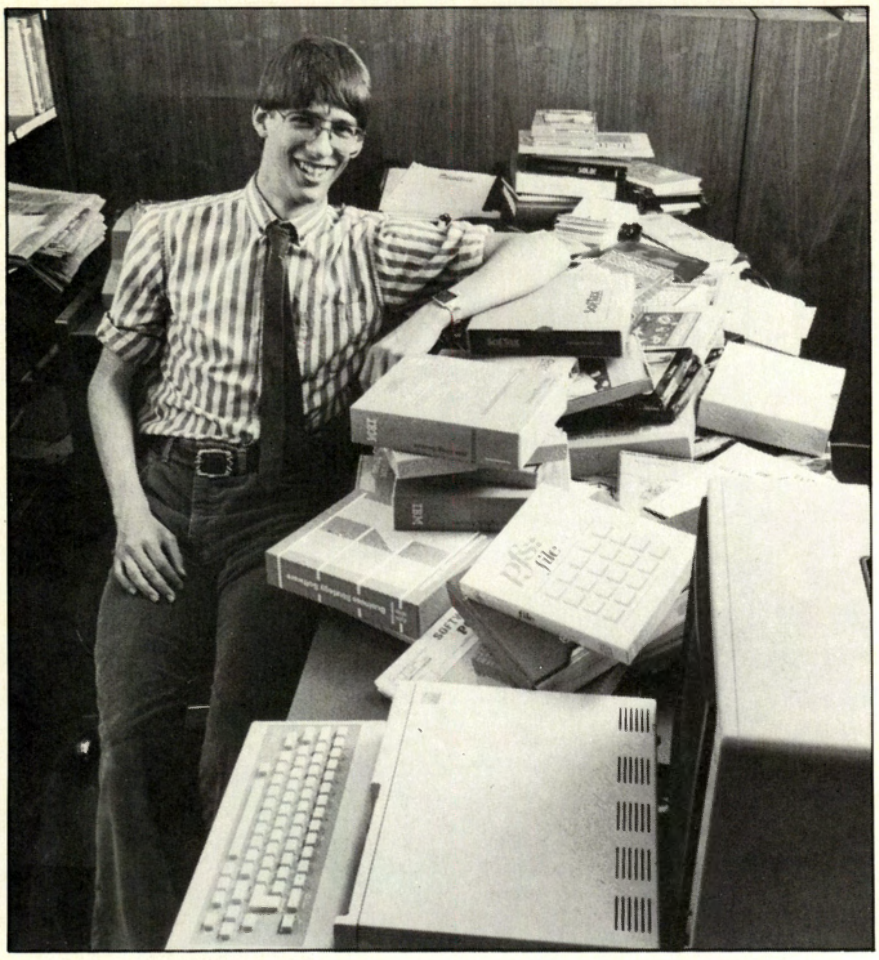


All Powered Up and Ready to Go

The big question for most people who have recently bought or are shopping for a personal computer is, "what can I do with it?" You'd think that more computer companies would try to answer that question for consumers. Instead, their ads only tell us how much memory the computer has and how long our kids will last in school without one.

There's nothing mysterious about what you can do with your PC*jr*. Actually, there's precious little most people will do with the computer alone. Only with the right software is the Junior utilitarian.

In this issue's cover story, we take a look at the growing PC*jr* software library and examine nine very specific things these programs help you do, from managing your money to deciding what's for dinner. In the course of preparing this article, we ran hundreds of programs on the Junior, singling out about 50 of the best to preview. As our offices filled up with new review programs, we often wondered who started the story that there's a dearth of software for the PC*jr*. Contributing Editor Mark Gollin, who is in the photo above, certainly found enough to keep him busy.

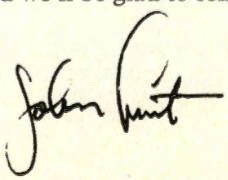
If we were to judge the Peanut simply by the number of programs that run on it just six months after its appearance in the stores, we'd say it measures up pretty well. But to infer that the best buy in a micro is the one with the most mylar beside it is a classic non sequitur.

First of all, for every program deserving review there are probably ten that aren't worth the paper sleeve they're packaged in because they don't do the job they claim to; they do the job but are clumsy to use; or they just plain don't work. Secondly, more and more software is of the "me-too" variety—the programs may all do the job, but if you've seen one, you've seen 'em all.

What counts is the variety of applications possible with a computer's software collection. Junior's software covers all the typical applications for business, education, home productivity, and recreation. If you're wondering what you can do with a PC*jr* or you know what you want to do and are looking for the program that does it best, our software roundup, which starts on page 9, is must reading.

For the past few years, the most talked about microcomputer programs have been the integrated business packages that combine a spreadsheet, database, and graphics program. The undisputed leader in the field is Lotus Development Corporation's *1-2-3*. By the time you read this, *1-2-3* will be available in a PC*jr* version. The concluding article of our cover story explains how *1-2-3* works and surveys expansion hardware systems that take Junior up to the 265K RAM that *1-2-3* requires.

This issue's foldout page is a special PC-PC*jr* user's group map that you'll want to check to see if there's a group in your hometown. The accompanying article explains what these support groups offer both new and experienced users. We've compiled the names of contact people for each group, along with their phone numbers and addresses, but space considerations prevented us from printing them. If you'd like to see the complete list, just drop us a note at 545 Fifth Avenue, New York, NY 10017 and we'll be glad to send you a copy.



THE GAME YOU CAN GET WRAPPED UP IN.





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When we asked Junior where he got his educational software, he said "BPTHGLL!"

So we told him about Vanpak, the PC, XT, PCjr Software Center with the largest, most complete library of software available from one source. Junior was thrilled, because now his mom and dad and brothers and sisters could take him to a Vanpak dealer and get lots of educational software. All Junior really cared about was another ride in the car, but the rest of the family was excited about more educational programs. Over 300 PCjr programs to choose from! Now when we ask Junior where he got his software, he says "Vanpak!" For information on a Vanpak dealer in your area, call 1-800-328-7847 today.

Software Strategies™ inc.

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Eden Prairie, Minnesota 55344
1-800-328-7847

A partial listing of available programs: Language Skills - $29.95; Vocabulary Development - $29.95; Solving Word Problems 2 - $29.95; Solving Word Problems 1 - $29.95; Nouns - $29.95; Verbs and Adverbs - $29.95; Adjectives - $29.95; Prepositions and Conjunctions - $29.95; Verb Tenses - $29.95; Word Choice - $29.95; Phrases and Clauses - $29.95; Possessive Case - $29.95; Punctuation & Capitalization - $29.95; Records Language Arts Series - $29.95; Pronouns - $29.95; The Author - $195.00; Personal Computer Tutor - $59.00; Letter Man - $34.95; Geography Quiz - $39.00; Typing Strategy -$34.95; Letter Man - $34.95; The Law - $29.95; Decision Making - $29.95; Succeeding - $29.95; Self Concept and Your Work - $29.95; New On The Job -$29.95; Friends and You - $29.95; The Age of Responsibility - $29.95; Credit - $29.95; The Job and You - $29.95; Consumer Fraud - $29.95; Tips On Buying A Used Car - $29.95; You And Insurance - $29.95; Law For Consumers -$29.95; Part-Time Jobs -$29.95; Map Reading - $29.95; Money - $29.95; Bar and Picture Graphs -$29.95; Pie and Line Graphs - $29.95; Understanding Chkbks - Statements - $29.95; Real Cost - $29.95; Diagnostic Disk 2 (705-709) - $29.95; Diagnostic Disk 1 (700-704) - $29.95; Basic Skills - $29.95; Startrek -$24.95; Football -$29.00; School Executive - $499.00; Math Drills - $39.00; Math Wizard™ - $19.95; Personal Math - $29.95; Math For All Ages - $29.95; All About Interest - $29.95; Metrics And You - $29.95; Fractions Percents and Decimals -$29.95; Businessmaster; Handbook II - $2100.00; Taxcomp™ - $100.00.

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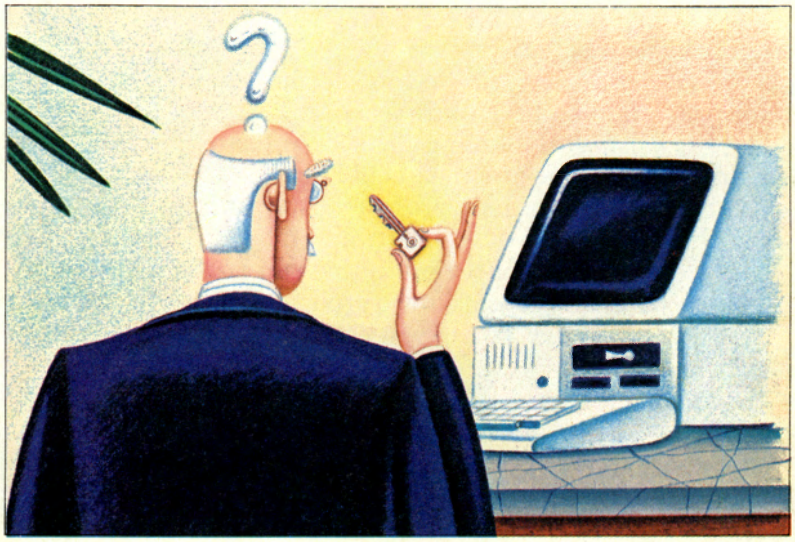
Okay, I've got the machine. Now, what can I *do* with it?

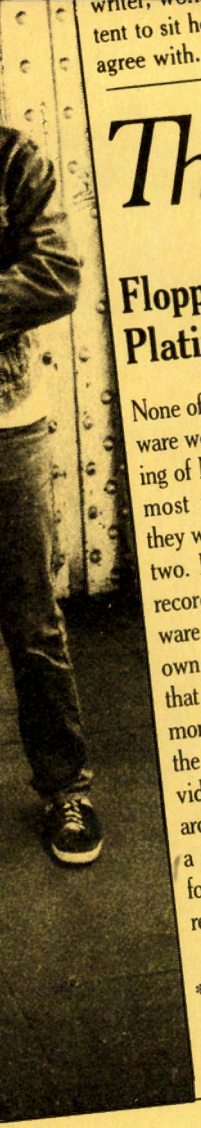
THE 50-PLUS PC*jr* SOFTWARE products reviewed in this article are the keys to answering that big question. After testing hundreds of programs on the Junior, we've grouped more than 50 of the best ones in nine categories that tell you exactly what the software helps you *do* with the Peanut: manage your money and investments; organize and analyze information; write; figure your taxes; draw, paint, and graph; learn; communicate with other people and computers; program; and decide what's for dinner. (Don't laugh—at the end of a long day, deciding on a dinner menu is tough, and these programs really help.)

Notice that all but one—program—are things most people do with or without a computer. The point is, your PC*jr* and the right software aren't meant to turn your life around; they'll help you do things you already do, in a better, faster, and maybe more pleasurable way.

Some of the software described was originally designed for the IBM PC and runs perfectly, without modification, on the Junior. Many



ILLUSTRATIONS BY DAVE CALVER



tent to sit here and represent something ... actly what they ... agree with. I'm convinced what we do is fair. I

The Software Bestsellers!

Floppy Disk Platinum

None of the stars of the software world have the following of Michael Jackson, and most programmers, when they wear gloves at all, wear two. But when it comes to record-breaking sales, software companies have their own hit parade—programs that make the top ten lists month after month. Here are the latest bestsellers as provided by over 150 retailers around the country. Notice, a good number are naturals for the PCjr. Others will be ready for the Peanut soon.

*coming soon for the PCjr.
**run on the PCjr.

BUSINESS

1. **1-2-3*** Lotus
2. **Multiplan**** Microsoft
3. **Friday!** Ashton-Tate
4. **PFS:Graph** Software Publishing
5. **SuperCalc³**** Sorcim
6. **VisiCalc IV**** VisiCorp
7. **Multiplan** Hesware
8. **Open Access** Software Products International
9. **SuperCalc²**** Sorcim
10. **CalcStar** MicroPro

HOME MANAGEMENT

1. **Bank Street Writer**** Broderbund
2. **Multiplan** Hesware
3. **Dollars and $ense*** Monogram
4. **PFS:File**** Software Publishing
5. **Home Accountant**** Arrays/Continental
6. **PFS:Write** Software Publishing
7. **PFS:Report**** Software Publishing
8. **PaperClip** Batteries Included
9. **Homeword**** Sierra On-Line
10. **Complete Personal Accountant*** Futurehouse

HOME EDUCATION

1. **Mastertype**** Scarborough
2. **Music Construction Set** Electronic Arts
3. **Math Blaster**** Davidson and Associates
4. **Kindercomp**** Spinnaker
5. **Alphabet Zoo*** Spinnaker
6. **Early Games**** Counterpoint
7. **The Most Amazing Thing**** Spinnaker
8. **Kids On Keys**** Spinnaker
9. **Story Machine** Spinnaker
10. **Computer SAT**** Harcourt Brace Jovanovich

Best Selling Software programs as surveyed by Eastman Publishing Company.

are new packages that are available in versions for a number of computers, including the PC*jr*. And some are written for the Peanut only, to take advantage of its color and sound capabilities, its high-capacity, high-speed disk drive, and its keyboard, which is designed for overlays that illustrate a key's function.

In order to give you a feel for the number of PC*jr* programs you have to choose from, we kept the reviews short. Not all of the special features and niceties of some programs could be included. And remember that these programs are just a part of the first wave of PC*jr* software; they don't make a complete list of programs that run on the Junior, nor do the categories we group them under mean this is everything you can do with a Peanut.

If your favorite office spreadsheet isn't mentioned here, don't assume it won't run on the Junior. We receive new PC*jr*-compatible software every day that our deadline prevents us from mentioning. Most of the scores of software publishers we talked to in writing this article are working on converting their programs for the Junior.

IBM is also stepping up its personal computer software publishing activity. The day this article went to press, nine low-priced ($60 to $150) PC-PC*jr* home and office productivity programs from IBM arrived in the office.

If you have questions about your software running on the PC*jr*, or have found an interesting new Peanut program, send us a letter. We are glad to share what we've discovered.

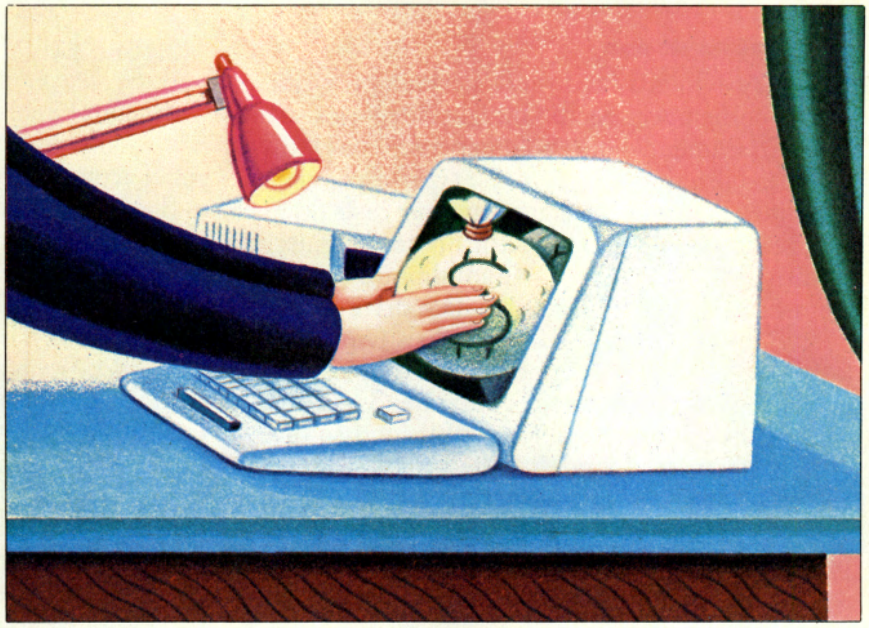
YOU CAN:

Manage Your Money and Investments 11
Write 12
Communicate with Other People and Computers 16
Figure Your Taxes 17
Draw, Paint, and Graph 18
Learn 19
Organize and Analyze Information 24
Program 26
Decide What's For Dinner 28

Manage Your Money And Investments

The programs in this category range from simple record keeping file systems to quite sophisticated investment guides. Those that offer advice are quick to point out that they are not responsible for any financial decisions you make. None of these programs are likely to take the place of a trusted advisor or accountant, but for the person who wants to take control of his finances and keep detailed records of where it all comes from (and where it all goes), one of these programs will prove helpful.

"I don't know a whole lot about computers and I don't want to. I just want the darn thing to work," says financial guru Andrew Tobias on one of the first screens in his new program, *Managing Your Money*. Tobias obviously didn't write this program, but his suggestions on how to budget your money, buy insurance, plan your tax strategy, and manage your portfolio are what this three-disk program is all about.



The program has a lot of nice features that sets it apart from simple budget or checkbook file programs. Help screens are always only one keystroke away, and they do more than display a list of function keys. For instance, one explains how your computer and peripherals can be used as a tax deduction. In fact, you can dispense with the written manual altogether—all the instructions you need are written into the program. The insurance planning section begins with a series of questions about you and your lifestyle that are used to calculate your mortality and recommend how much life insurance you need right now.

This program makes thinking about your financial situation fun—even if you haven't amassed a fortune. The only problem with running it on the Junior is all the disk switching required. ($200 from MECA. Requires disk drive, DOS, 128K.)

Home Accountant jr is the new PC*jr* version of this best selling program, designed to organize a family budget. Since it was created specifically for PC*jr* users the written instructions are easy to follow and the program requires little disk switching.

The program sets up models for recording information on all a household's transactions by cash, check (from up to five checkbooks), and credit cards. Once the data are entered onto a disk, the program can reconcile bank statements, search and display transactions in any of several categories (i.e., tax deductible payments), and print checks. It can also print reports of net worth, balances, and income and expense activity. Another nice feature is the software's ability to generate graphs and charts from all of this information. The program is designed to work with Continental's *Tax Advantage*, which is explained in the *Figure Your Taxes* section of this article. ($74.95 from Continental Software. Requires disk drive, DOS, 128K.)

Home Budget, jr is a financial record filing program that will keep track of your expenses and income just as long as you faithfully enter all the necessary information. This is true of every program in this category. *Home Budget, jr* and the others can be fast and efficient tools for keeping your budget in line and for making tax record keeping a lot easier. But only if you faithfully enter every transaction, every paycheck, every dividend check.

Home Budget, jr is a relatively inexpensive program to start with to see if this kind of record keeping is for you. Its written and on-screen documentation is very helpful for computer beginners. ($45 from IBM. Requires disk drive, DOS, 128K, cartridge BASIC.)

Financier jr is a personal and business expense recorder that keeps track of all income and payments. The program provides models for entering data about checking accounts, credit cards, cards, stock and bond portfolios, money market accounts, and so on. It will monitor your tax deductible payments, and there's even a provision for watching over specific budget categories such as entertainment, household expenses, or clothing. This is handy if you're the type of person who likes to keep a vise grip on your cash flow. *Financier jr* is designed specifically for PC*jr* users so disk swapping is kept to a minimum. ($99 from Financier, Inc. Requires disk drive, DOS.)

> "A program like our *Home Accountant* is a lesson in self-discipline for people who never save receipts or save them all in one huge box."
>
> JIM SAIDLER, CONTINENTAL SOFTWARE

Bluechip Portfolio Manager does one job—keep track of your stock portfolio. You enter information about your stocks—dividends paid, any gain or loss on a transaction, splits, and so on—onto preformatted models. The program keeps a record of everything for use at tax time or whenever you wish to analyze your holdings. ($79.95 from XOR. Requires disk drive, DOS.)

WRITE

Like the shrill whistle of yesterday's steam locomotive, soon the clackety-clack of the simpleminded typewriter will fade away. In our youth, if a single sentence didn't fit, or a word was misspelled, we muttered an angry curse, yanked out the offending sheet of paper, crumpled it into a ball, and hurled it into the wastebasket where it joined a ream of other fallen soldiers.

These days, with word processing programs, we can electronically erase, or relocate words, sentences, paragraphs, and even book chapters. Misspelled words are ridiculously easy to correct. Here then follows an overview of the word processors you might be thinking about for Junior.

Volkswriter Executive is easy to learn and easy to use. In fact, its commands require the fewest keystrokes of any word processor we're aware of as of this writing. There are two versions available, one on disk, the other on cartridge. Both run at about the same speed, with a slight edge running in favor of the cartridge.

Since *Volkswriter Executive* is compatible with the *PC Volkswriter*, a long-time bestselling word processor, you can use the PC version at work and the Junior version at home. We're not recommending you bring work home, simply pointing out that if you do carry work back and forth, the *Volkswriter* programs will save you from having to learn two sets of commands. (On diskette $195; cartridge price not available at presstime; from Lifetree Software. Requires 128K and DOS.)

Homeword's snazzy screen comes replete with icons representing different tasks. Want to edit what you've written? Then select the sheet of paper icon and polish your purple prose. Ready to file your work? Then select the file drawer icon and your masterpieces will be safely tucked away in a disk drawer.

Homeword operates rather slowly on the PC*jr*, but it is a leader in the ease-of-use category of word processors. Its documentation is written with the computer novice in mind. The on-screen icons are a nice touch for beginners; an equally thoughtful feature allows you to clear them off the screen for a larger typing area once you have learned all the editing, printing, and filing commands. ($75 from IBM. Requires disk drive, DOS, 128K memory.)

WordPerfect jr is the little brother of *WordPerfect* and has all of the features you're likely to need. That includes the ability to center text, automatically number pages, search text for key words or phrases, underline, move, or copy blocks of text, locate headers and footers at the top and bottom of pages, hyphenate, as well as change left and right margins.

To keep all of the commands straight, a color-coded template slips over the keyboard. The color codes tell you which keys to press when you want to take advantage of all those nifty features. In case you want to use the program with a PC at the office, there's a template included for that keyboard too. ($69 from Satellite Software International (SSI). Requires 128K, disk drive and DOS.)

Select Write comes in a gimmicky package; it's a program diskette slipped inside the back cover of a cloth-bound book. Inside this fancy

Pitching Software through Packaging

No more dull floppies in sandwich bags—today's software has as much flash and dazzle on the outside as on the inside.



MARIAN GOLDMAN

package are some crackerjack surprises. For instance, if you want to leave five blank spaces in a document, press the number 5 followed by the spacebar. An instant later, the five spaces appear. Want 50 spaces? Press the numbers 5 and 0 followed by the spacebar, and 50 blank spaces send the cursor scurrying across the screen.

Up front, you should know that *Select Write* was designed for an 80 column display. If you have an entry level machine with its 40 columns, the program will still run, but sentences longer than 40 characters wrap-around to the line below. Some folks find this feature a little confusing. ($99 from Select Information Services. Requires disk drive, DOS, 128K memory.)

WordPlus jr comes equipped with an overlay that slips over the top row of Junior's keys. You won't have to remember which sequence of keys to press in order to paginate or format a paragraph. Simply look at the color-coded overlay—it's like a guidebook telling you which buttons to push.

If you use a composite monitor or TV set, you'll find the color main menu barely readable. No problem. The ring-bound manual walks you through the menu. Naturally, if you own an RGB (direct drive) monitor the menu is crystal clear.

Here's good news, even if yours is a composite monitor. The actual program, still 80 column, shows up in white text with a grey background. It's very easy to read even with a composite monitor or TV. The advantage of having that 80 column readout is that what you see on the screen is what the printer prints. You won't have to guess how a 40 column display translates into an 80 column letter. ($149.95 from Professional Software. Requires 80 column/128K board, disk drive, and DOS. RGB monitor heartily recommended.)

Qwerty jr is a new, low-cost version of the *Professional Qwerty* word processor. A few features of the professional version—superscript, double underscore, font changes, custom printer selection—are left out of *Qwerty jr*, but these are not significant for most users.

Qwerty jr remains an easy-to-use word processor with clear written and on-screen directions for the PC*jr* user. Editing features such as search and replace, "cut and paste," and delete are carried out with simple function key commands. A cardboard overlay marks the top row of function keys with their purpose in the program.

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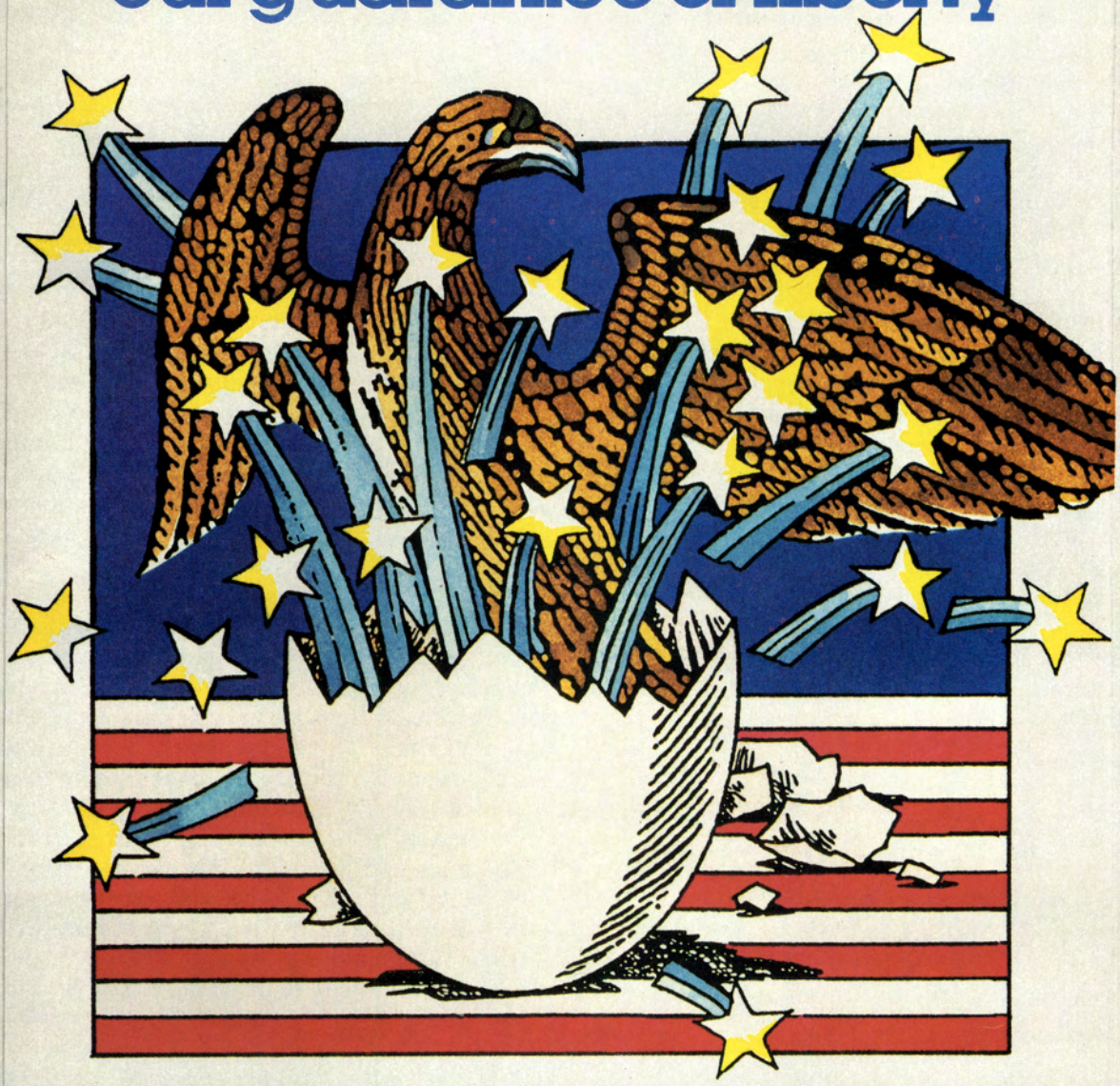

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Qwerty jr displays text in 80-column only, so an RGB color monitor or a good monochrome monitor is recommended. To make writing with Junior easier on the eyes, the program allows several different screen background and type colors, which you can test from the main menu. ($99 from HFK Software. Requires disk drive, DOS, 128K memory.)

PC Write differs from the other word processors we've mentioned. It operates similarly to most of the other programs, but it is distributed by a method called "Shareware." Under the Shareware "honor code," you can get a copy of the diskette (with all the documentation in one of the program's files) for $10. You also receive the publisher's blessings to make and give away as many copies of the program as you like. If you like the program, you are encouraged to send in $75 to "register" your copy. Registration brings you a printed manual, a source code diskette, the promise of free updates of *PC Write* whenever they appear, and a $25 commission for each program made from your original disk that the owner sends in to have registered. Computing "power for the people"—the 60's live on.

Best of all, *PC Write* is a fine word processor. It is fast and flexible. For instance, you can assign any program command to any combination of the control (CTRL) key and any other key. The manual alone is worth the registration fee. It includes an update for PC*jr* users and a tutorial for beginners. ($10 from Quicksoft. Requires disk drive, DOS.)

"We designed the PC*jr* version of our *MultiMate* word processor specifically for the executive or professional."

WILL JONES, MULTIMATE INTERNATIONAL

Cut and Paste is a new entry in the easy-to-learn category of home word processing programs. The publisher claims that if you "fiddle" with the program for about 20 minutes, you'll know enough to use *Cut and Paste* effectively. He's probably right. Most of the directions you need for creating a simple document such as a letter or memo are displayed in the menu that is always at the bottom of the screen. You can move between the basic modes—entering text, editing, printing, and saving—with single-keystrokes; no need to memorize arcane combinations of function keys just to edit a line. Another nice feature is the series of pre-formatted models for typing letters, memos, and envelopes. All necessary margins are set up for you; all you do is enter your text and print the document. ($50 from Electronic Arts. Requires disk drive.)

Finally, *Bank Street Writer*, still the standard for ease-of-use in word processors, is available for the PC*jr*; for a detailed review, see SoftSelect, page 84.

Communicate With Other People And Computers

If there's one area of computing that will surely grow in importance as we head toward the 21st century, it's telecomputing—the linking of computers via telephone. With the aid of a modem and the proper software, you can instantly be linked with information services, other computers, and ultimately, other human beings. For business people requiring instantaneous information, such as stock quotes, this is a real breakthrough.

The Dow Jones Reporter package includes a free subscription to the Dow Jones News/Retrieval Service, which provides extensive information on stocks, bonds, and commodities. In addition, there is a financial database; an electronic edition of the *Wall Street Journal*; Disclosure II, which contains corporate data not usually found in annual reports; and a number of other services. There is a fee for each minute spent connected to the service, but information can be downloaded onto disk to be read later. The software will automatically update a large number of portfolios, tabulate the current value, gain, or loss, and guide the user through analyses of individual stocks. ($100 from IBM. Requires disk drive and DOS.)

If you want instant or "real time" quotes on stock and commodity prices, consider *jr Quote*, a communications software package that gives you instantaneous price and volume information from any of six major U.S. stock and commodity exchanges. The program does not require a modem—the data is sent from the exchanges to a satellite, then to several "download" cities where the signal is relayed to you over the phone lines, all of which takes about one second.

When you buy the software and a subscrip-

tion to the telecommunications service, you are given a "decoder box" that accepts the signal and changes it to code that your PC*jr* can understand. This connects to the Junior with the standard cord for attaching any serial device.

jr Quote allows you to follow the performance of up to 40 stocks and commodities. These 40 may be changed at any time. The program will plot high, low, or final prices for any stock or commodity; this information can then be added to most popular spreadsheets and databases. You can also set price alerts and the program will let you know the instant a price moves above or below the levels you set. ($495 from Commodity Trading Systems; includes the software, installation fee, and subscription to service. Exchange fees, from $7.50 to $68 per month, are extra. Requires disk drive, DOS, 128K.)

Personal Communications Manager, from IBM, is "smart" terminal software, in the sense that you can send and receive electronic mail and other files. But while some "smart" software can overcomplicate matters for the new user, PCM gives clear instructions, both in the manual (which includes a tutorial) and on screen. Operating in the unattended mode, it automatically sends and receives messages to and from other computers. A tree-like structure of menus guides users through each of the functions, so you will not need to memorize a list of commands. Also included are three sample terminal options files, which set up communication between your computer and The Source, CompuServe, and the Dow Jones News/Retrieval Service, with a variety of handy functions. Display can be monochrome or color; 40 or 80 columns (for composite color monitors, only the 40-column width is comfortably readable). ($100 from IBM. Requires disk drive and DOS.)

FIGURE YOUR TAXES

April 15th, and the month or so preceding, are the taxpayer's purgatory, and the tax book seller's nirvana. It's no surprise that all the books about taxes gather dust from April 15th until just around Christmas time. Then comes the stomach-gripping panic. The working world wants to know: where can I shelter my income? How can I optimize my deductions? What *are* my deductions? And my God, where on earth is that bundle of receipts? Hold on—help is available.

SofTax is a tax preparation and analysis tool that plugs into the *VisiCalc* spreadsheet program. You don't have to be a *VisiCalc* expert, but will need at least a passing familiarity with its basic fundamentals to take full advantage of *SofTax*. But even if you don't "speak" *VisiCalc*, don't ignore this package. After an evening curled up with the manual and a warmed-up PC*jr*, you'll have a firm grasp of what makes *VisiCalc* and most other spreadsheets tick. Now back to *SofTax*.

The program comes in three versions—one for individuals, one for tax preparers, and a professional version for corporations, trusts, and partnerships. All three present models of standard tax forms; obviously, the preparer and professional versions contain more models. Once you have entered all your tax data, you can quickly test various options to see which is most advantageous to you. For instance, should you and your spouse file separate or joint returns? How will taking more losses reduce the tax bite this year? The program will print out all of your data on IRS-acceptable tax forms. ($199 for individual version; $499 for tax preparer version; $850 for professional version from Design Trends. Requires disk drive, DOS, *VisiCalc*, and a printer.)

PC Tax Cut asks you specific information regarding income and deductions, then computes your tax bill in accordance with current IRS regulations. Naturally, there's a provision that allows you to figure your return in a number of different ways, giving you the optimum advantage. When you've computed the most favorable return, push the button and your return, along with any supplemental forms, are printed.

One of the best features of this program is its extensive manual. While we're not tax experts, we can't imagine any tax situation that's not covered in this manual. Wondering about the amortization of pollution control equipment you installed at your plant? Spent a bundle to build your magazine's circulation and thinking of deducting some of the expenses? Not sure if the property you bought this year qualifies for the Investment Tax Credit? Answers to all these questions and many less arcane ones are in the *PC Tax Cut* manual. ($255 from Best Programs. Requires disk drive, DOS, 128K.)

Tax Advantage jr is designed to work with the *Home Accountant jr* program. (You'll find this program explained in the *Manage Your Money* section of this article.) The idea is to utilize the latter throughout the tax year, to record deductions, charitable contributions, and the like. At

the end of the year, those duly recorded dollars and cents are looked up by *Tax Advantage jr* and plugged into the appropriate boxes on the tax forms. The combination of these two programs, and their well-written manuals that reference each other throughout, just might be what you need to take the scare out of next year's tax season. ($69.95 from Continental Software. Requires disk drive, DOS, 128K.)

Tax Preparer presents on-screen facsimiles of 21 of the most often used tax forms and schedules. Enter your data into the form on the screen and the PC*jr* automatically performs calculations and transfers necessary information to other schedules. The program can also serve as a year-round record keeping and file program for tax information.

You can perform "what-if" scenarios with alternative tax strategies to see which method will save you money. This program comes with a very complete manual that explains all the forms and many of the possible deductions you might be able to claim. Yearly updates of the manual and the program are available at a nominal cost.

Tax Preparer states right up front that it is not a legal advisor; not the IRS; and not a substitute for thinking. The publisher suggests you "use the software as a labor saving tool rather than as a brain substitute, and you will find the preparation of tax returns can actually be fun!" Maybe not fun, but at least a bit less aggravating. ($295 from Howard Software. Requires disk drive, DOS, 128K.)

Draw, Paint, And Graph

This section is not about programs for scribbling on the screen—we look at five graphics programs that turn the Junior into the perfect tool for creating visual representations of data. While these programs are primarily aimed at the working world, precocious kids and at-home artists can have fun with them too. However, a better bet for computer graphics beginners is the programming language Logo with its turtle graphics mode. Look under the "program" section for versions of Logo that run on the PC*jr*.

Jr Draw may sound like a kid brother to the original version of this graphics program from Micrografix called *PC Draw*, but it's anything but child's play. *Jr Draw* is designed for any business person or professional who requires



high-quality diagrams, layouts, form letters, or charts of any kind.

Start with the tutorial diskette, which takes you through freehand drawing and moving built-in shapes around the screen, in addition to editing, saving, erasing, and printing your graphic designs. You can create graphics with *Jr Draw* by using the keyboard or a light pen (Micrografix sells one that plugs directly into the light pen connector in Junior's back panel). This program, designed with the Junior user in mind, provides excellent instructions on getting the software running and on using the program effectively. ($195 from Micrografix. Requires disk drive, DOS, 128K.)

The *Hypergraphics Graphics System* turns your PC*jr* into a sophisticated high-resolution graphics editor. The program includes all the customary graphics tools for creating charts or pictures and "animating" them if you choose. An extra operating mode called "Hyperplot" is very easy to use and quite useful for anyone who creates graphs or charts for inclusion in reports or for display to a group. "Hyperplot" contains several screens with models for entering information to be charted. Once the data are entered, the user can choose, with a single keystroke, between six different graphic models—line, bar, pie, area, stacked bar, and 3D bar. This mode also plots data from the *VisiCalc* and *Lotus 1-2-3* spreadsheet programs if you save the data in DIF files. Once you add DOS 2.1's GRAPHICS.COM file to the program, you can print all charts and graphs with the print screen (PRT SC) key. ($349 from Hypergraphics. Requires disk drive, DOS, 128K.)

The Grafix Idea lets Junior serve as a replacement for a slide projector by showing a sequence of text and graphics screens. You supply the images, and the program displays them on the screen in whatever sequence you command. The "slides" can be ones that you've generated from any graphics program, including *Lotus 1-2-3*, *VisiPlot*, *VisiCalc* and *dGraph*. The program also gives you some rudimentary tools to create graphics from scratch. ($79.95 from Idea Ware. Requires disk drive, DOS, cartridge BASIC.)

Image Builder is designed for all kinds of Junior users—programmers, business people, teachers, and those just curious about computer graphics. It gives the user the ability to create, modify, and save color graphics displays and any accompanying text for each screen. The program runs fine on the Junior, but the instructions offer little help in getting the software up and running on the Junior and using it once it's loaded. ($49.95 from PC People. Requires disk drive, DOS, 128K.)

LEARN

Educational software designed for adults and children to use on their own at home is just coming into its own. As computer owners realize the potential of the computer as tutor, software publishers are racing to provide the programs. An impressive number are available for the Junior.

LEARN TO USE YOUR PC*jr* MORE EFFECTIVELY. You can take courses and read books about the Peanut, or, if you want some hands-on help that you can use at any time, you can try some of the software designed to get you started using the PC*jr*.

Professor DOS teaches how to use the Junior's disk operating system—PC DOS. The program runs perfectly on the PC*jr* and includes clear directions on using it with a one-disk system. Although it covers versions of PC DOS (1.0, 1.1, and 2.0) that predate the Junior's DOS 2.1, the information about DOS commands, files, and editing applies to DOS 2.1. All that's missing are some of the new features of Junior's DOS.

Understanding PC DOS is a must for every Peanut user, since it controls communication and transfer of data between the software, the disk drive, and the PC*jr*. *Professor DOS* helps beginners understand the basic concepts of DOS and can teach an experienced user about more advanced topics such as line editing with DOS. ($59.95 from Individual Software. Requires disk drive, DOS.)

BASIC Jr is a tutorial on Microsoft BASIC, the "dialect" of the BASIC programming language that resides in every PC*jr*'s ROM. The program explains the important BASIC commands, statements, and programming concepts and techniques such as branching, loops, arrays, subroutines, and graphics.

The last two items on the program's menu are a graphics project and a lesson on programming a game. A quick reference card with the PC*jr*'s DRAW commands helps you create an image on the screen. The program lists the code for a game called "Runtime." You can study the techniques used in creating the game, then play it. ($49.50 from Courseware, Inc. Requires disk drive, DOS, Cartridge BASIC, 128K.)

RAISE YOUR SAT SCORES. Since the SAT purports to measure only aptitude, one might question whether a cram course—either with a human or a computer tutor—can raise scores. But at least one software publisher is so confident in its program's ability to raise SAT scores that it guarantees a 70 point rise in combined (math and English) test scores to any student putting in six hours with the program. Krell's seven-disk *College Board SAT Prep Series* covers all of the SAT verbal and math material, including two disks on the written English test. The IBM PC version runs on the PC*jr*, although there are no special instructions for Junior users. ($300 from Krell Software. Requires disk drive, DOS, cartridge BASIC.)

Harcourt Brace Jovanovich's *Computer SAT* tutors and drills students in all of the SAT question areas—analogies, antonyms, reading comprehension, sentence completion, arithmetic and mathematical reasoning, graphs, and so on. The package includes two double-sided disks (flippy floppies), a user's manual, and a workbook. The current documentation is for the PC only, although the programs run perfectly on the PC*jr*. The manual instructs you to place DOS files on the program disks; however, there is not enough room for Junior's version—DOS 2.1. So start your PC*jr* with the DOS disk in the drive and cartridge BASIC in one of the slots; type BASICA after the A > prompt, and when the OK prompt appears, type RUN "HBJ. ($79.95. Requires disk drive, DOS, cartridge BASIC.)

IMPROVE YOUR PERFORMANCE ON THE JOB. Educational software isn't just for kids anymore. Some of the most interesting educational programs for the Junior aim to help grownups im-

prove job-related skills—everything from making a sales call to managing an entire office.

The Management Training and Diagnostics series of programs from Thoughtware (the software publishing arm of the Institute for Management Improvement) is an elaborate yet easy-to-use self-help course for managers. Each of the three programs we ran on the Junior—*Leading Effectively; Defining Goals and Objectives*; and *Assessing Personal Management Skills*—is a combination of tutorials, case studies, simulations, and test questions. *Leading Effectively* helps you identify your "natural leadership style," assess its effectiveness in the workplace, and then compares it with other managers' styles.

Defining Goals and Objectives places you in simulations of a "real life" working environment to record how you go about setting individual and group objectives.

Assessing Personal Management Skills runs you through tutorials on managing people, meetings, stress, time, and so on. Your answers to a series of tests and simulations are compared to different samples of workers—first 40,000 managers, then 100,000 people from 3,500 different jobs. (*Assessing Personal Management Skills*, a one-disk program, is available for a limited time for $150. The other programs, each with two disks, are $350. All require a disk drive, DOS, and cartridge BASIC.)

Sold! teaches working and would-be salespeople how to plan and make successful sales calls, from researching a client to closing the deal. In the section named "Making the Call," you run through selling simulations, calling on everyone from sales managers to finance officers, closing or blowing sales every step of the way.

The second disk in this package—called *Sales Manager*—is a "dedicated" database, set up to create an electronic note card for each of your prospects and clients.

Sold!'s directions, both on screen and in the manual, are easy to follow and written specifically for PC*jr* users. ($79.50 from Courseware, Inc. Requires disk drive, DOS, 128K, cartridge BASIC.)

LEARN TO TOUCH TYPE. The most popular typing programs are based on arcade action games—as you type the characters and words that appear on the screen, you are rewarded by seeing and hearing them blasted out of sight. *Type Attack* is one such program now available for the Junior. This program doesn't spend much time teaching you—it simply shows you the position of the "home keys" in the manual and starts you practicing. Of course, as you type faster and more accurately, you set the program to send more difficult words at a faster pace. At the end of each lesson, the program displays your typing speed in words per minute and your game score—five points for every correctly typed letter, five points off for each error. The value of this program is that it turns typing "sad, fad, dad" over and over again into a fun challenge. ($39.95 from Sirius Software. Requires disk drive, DOS.)

POLISH BASIC ACADEMIC SKILLS. There are programs for the Junior that teach or provide practice in almost any academic subject imaginable.

Sesame Street characters come to the Junior's screen with two new programs on cartridges designed just for the Peanut. In *Ernie's Magic Shapes*, preschoolers identify and match shapes and colors. *Big Bird's Special Delivery* encourages young children to help the Sesame Street character deliver packages to the correct places. The activity gives kids practice in classifying objects according to their shape and function. Both software packages include booklets with off-computer activities for children and parents that reinforce skills taught in the program. ($39.95 each from CBS Software. Requires ROM cartridge.)

> "PC*jr* cartridges are easy to use and provide more permanent storage than disks. With a disk, spill your coffee and it's bye-bye program."
>
> PETER PIRNER OF LIFETREE SOFTWARE, PUBLISHER OF THE *VOLKSWRITER EXECUTIVE* WORD PROCESSOR, ON DISK OR CARTRIDGE FOR THE PC*jr*.

Fraction Fever combines arcade action and fraction facts in one of the most challenging math games we've seen. Quick reflexes and complete command of fractions are needed to match the fraction flashed on the screen with its corresponding visual representation. For anyone age seven and up. ($34.95 from Spinnaker Software on ROM cartridge or disk. Disk requires disk drive.)

The Arithmetic Classroom, an eight-disk math series designed for home and classroom use, is a more traditional math tutorial. The programs present math concepts from simple addition of two numbers to multiplication and division of decimals and fractions. Each disk comes with a workbook and test. The written instruc-

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Chapter 1

(Your picture here)

How *jr* Computerized the Books and I Saved $2,000



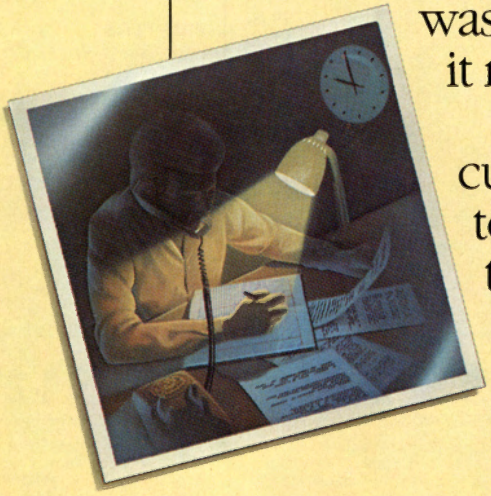
BY _____
(Your name here)

"My Own Rags to Riches Story"

I was an _____ [established, industrious, entrepreneurial] business person searching for a way to end the continual drudgery of bookkeeping. Oh, I had looked at computer "solutions." But the software was too _____ [expensive, complex, intimidating].

Then a salesperson I'd talked to at the local computer store called and said, "Come check out Rags to Riches.™ It was made for you."

I went over and tried it. The price was right. So was the price of the PC*jr* computer it ran on.



And it was so easy to use! No customer or vendor codes or names to type — just pre-assigned keys on the keyboard. It took just five basic commands to use all the modules I needed: _____.
[Ledger, Sales, Payables, Receivables, *All of them*]



Because they're integrated to work together, and all fit on one floppy disk (including my work), I didn't need a second disk drive or an expensive hard disk.

The dealer explained that Rags to Riches is the only package that's "RAM-based," so it works instantly and never makes you wait.

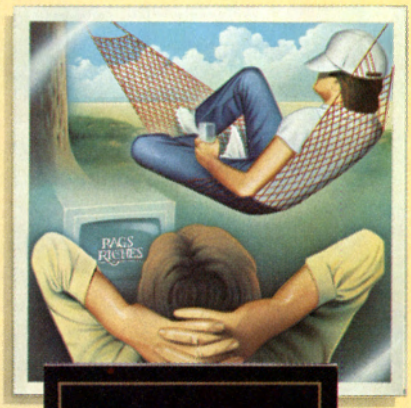
The clincher was the way Rags to Riches is customized to work like my business works. There are even Rags to Riches Solution Booklets™ to help make the most of my investment.

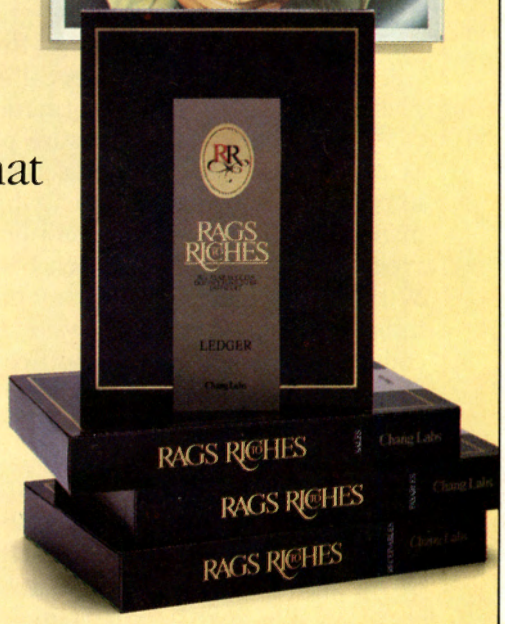
The whole system cost $2,000 less than others I'd seen. Because I hooked it up myself, and learned it so easily, I saved another bundle by not hiring a consultant.

Now it's business as usual, only better. Because my friendly new office machine has computerized my accounting—and more. Rags to Riches has "Open Architecture," meaning the data is compatible with hundreds of other programs. So my business won't outgrow it.

Thanks to Rags to Riches, I actually have extra time to _____. [work on increasing profits, drum up more sales, relax]

And, of course, to let my friends know that success doesn't have to be difficult anymore. (To be continued.)





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tions are directed specifically to users of the PC*jr*. ($49.95 each from Sterling Swift Publishing. Requires disk drive, DOS, cartridge BASIC.)

The *Speed Reader II* program is designed to improve anyone's reading speed and comprehension. Six lessons train you to read words in clusters, rather than pausing on every word. A timed reading pretest tells you how many words per minute you read. As you work your way through the lessons, you can periodically test yourself and get instant results to chart your progress. The program comes with progress charts and is intended to be used by anyone aged 12 and above. ($69.95 from Davidson and Associates. Requires disk drive, DOS, cartridge BASIC.)

Organize And Analyze Information

Address books, to-do lists, checkbooks, ledgers . . . the busier we get, the more information we have to remember and retain. With the following programs, your records can be saved and retrieved in an instant. Cross-referencing or analysis that might have taken days can be done in minutes, saving both business and personal time for more important activities.

File management programs can be extremely complex and difficult to run on a one-disk system like the PC*jr*. *Home File Writer*, however, not only includes a readable manual, but also a tutorial on disk, explaining the program and some basic concepts and definitions. First-time users will be able to create screens calling for both alphabetical and numeric information.

Part of a series of software products called *CODEWRITER*, this program actually allows users to create their own programs, which, in turn, manage records, accounts, and listings of all types. The programs can then be saved to disk. Without knowing BASIC or any other programming language, users of *Home File Writer* can computerize their home and office recordkeeping with software exactly tailored to their needs. For the range of its capabilities, this program is truly easy-to-use. ($79.99 from Dynatech. Requires disk drive, DOS, and cartridge BASIC.)

Real Estate Analyzer helps anyone with real estate investments—from an apartment above the garage to office towers in ten cities—enter, organize, and analyze information about their properties. The program provides several structured models for tracking different categories of information on each investment: the property's history, loans, depreciation schedules, rental income, operating expenses, and capital gains.

After entering all the information about each of your holdings, you can analyze the figures to forecast cash flow, return on investment, internal rate of return, and return on equity.

The program comes with a glossary of real estate and investment terms and an explanation of common investment decisions. ($250 from Howard Software. Requires disk drive, DOS, cartridge BASIC.)

Whenever you see the letters *calc* in a program's name, you know you have another variation on *VisiCalc*, the original electronic spreadsheet. *PlannerCalc*'s unique features are 25 separate "worksheets" that are written into the program. These are models, complete with prompts and tutorials, designed for a specific financial situation, from scheduling the amortization of a loan and planning a stock portfolio to organizing a checking account and planning vacation costs.

PlannerCalc can be used in a 40 or 80 column display mode, which means that you can use it with any type of screen, from a TV to an expensive monitor. (Created by Comshare, the program is available from IBM for $79.95. Requires disk drive and DOS.)

VisiCalc, the original electronic spreadsheet that has inspired countless "calc clones," is still on the job. First introduced in the late 70s, *VisiCalc* has changed the way thousands of businesses and individuals keep track of inventory, track sales, compute costs, and analyze the impact of financial decisions before they are actually made. Newer programs pack more features into a single software package, but the original is still worth considering, especially since this new version has been cleaned of all bugs contained in earlier editions.

VisiCalc, like all its imitators, allows you to set up interactive models of financial situations on a worksheet grid. Once you have entered all of your data into the worksheet, you can make changes and additions with a few keystrokes. And anytime you change a number, all other entries dependent on that figure will change automatically. This *VisiCalc* package contains a five-lesson tutorial that is very helpful for the beginner. ($200 from IBM. Requires disk drive and DOS.)

pfs:File works like a card file that also re-

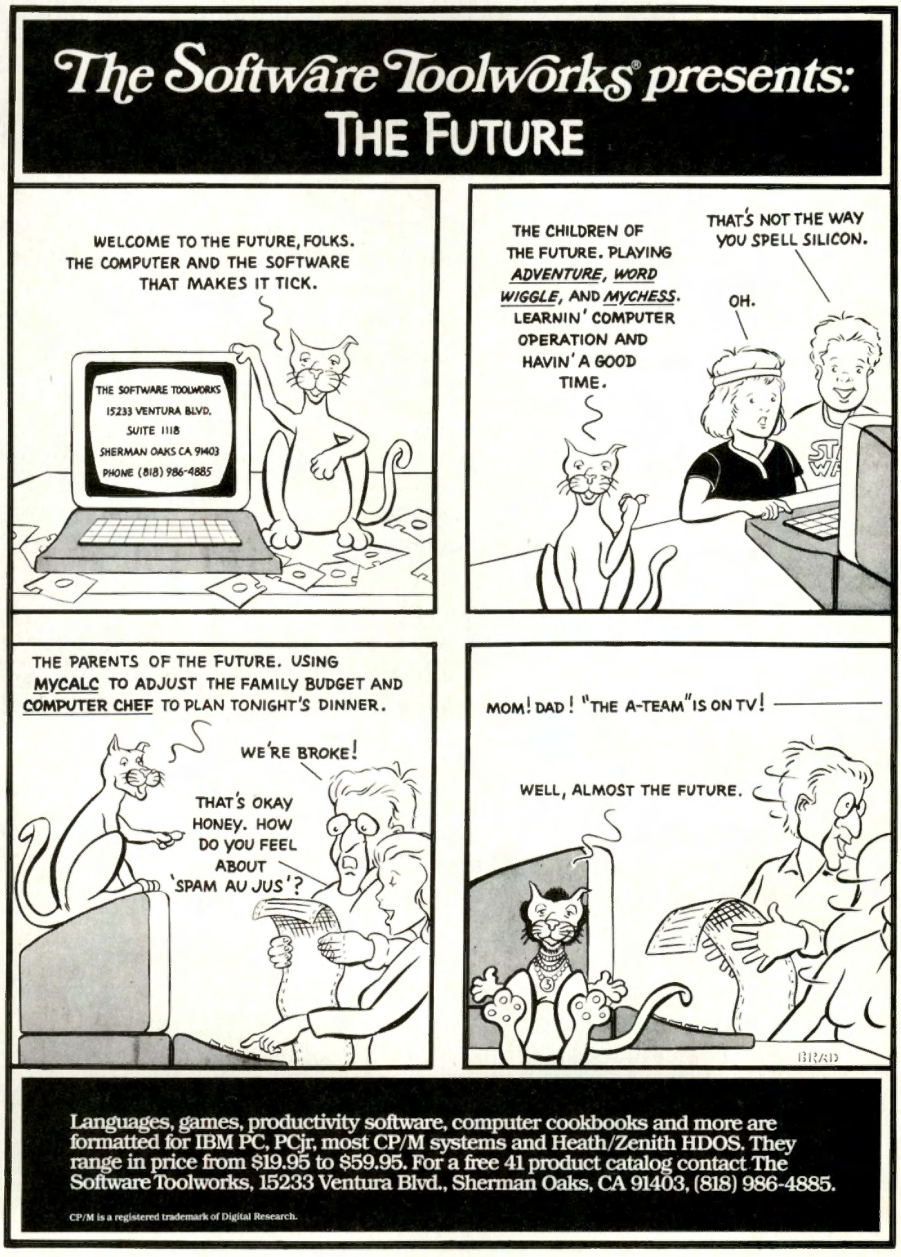
shuffles the information into a new order when required. Clear instructions, both in the manual and on-screen, help the user create the basic format (i.e., Name: Address: Phone number:). The data can be sorted alphabetically and chronologically by any of the criteria, and included later in other programs. ($140 from Software Publishing Company. Requires disk drive and DOS.)

pfs:Report takes the information entered in *pfs:File* and presents it in tables of up to 16 columns that can be printed and added to reports. Once information is entered into a report form, the user can sort the data alphabetically or numerically and perform calculations with the data. ($125 from Software Publishing Company. Requires disk drive and DOS.)

Task Manager allows managers to chart the work of many individuals, and keep track of complex projects. Entries for each task include a priority level, beginning and completion (projected) dates, the initials of the person responsible, the project category and subcategory, the projected amount of worker-hours, and the percentage of the project actually complete at any given date. The display can be in color (suitable only with a high-resolution RGB monitor if the program is in 80 column mode). While it cannot be called a simple program, *Task Manager* includes lucid documentation and a substantial amount of on-screen prompting. ($395 from Quala. Requires disk drive and DOS.)

Household Inventory Track-1 will store information on any of the 4,900 items you may own. While this number may seem excessive, consider the record, book, or camera collections of family members; also, there is no reason why this program could not be used in a business setting. Each entry includes purchase and current value, depreciation and appreciation, plus category and subcategory. The program can automatically repeat data from one item to the next, so that if you are entering, for example, a number of radios purchased for $49 each, that figure will be carried over from listing to listing. Files can be sorted by main category, subcategory, and room, and then displayed or printed. ($49.95 from Sapana.)

Magictable creates alphabetic/numeric files (called tables) that can be saved and reused. The sample provided on the disk is a record of employees, with names, addresses, phone numbers, and salary and bonus information. Calculations can be built in so that the information from two columns can be added together automatically to create a third, total column. Tables wider than the screen can be seen in sections. ($129.00 from Presta Digital. Requires DOS.)



Circle No. 119 on Reader Inquiry Card

Mycalc is a spreadsheet, and like any of the other calc-clones, its job is to provide touch-of-the-button answers when you pose "what if" questions. The program works with either 40 or 80 column display, so if you're stuck with a TV or composite monitor, you'll still have a clear picture. The *Mycalc* disk also comes with a template that's useful for figuring your income taxes. ($59.95 from The Software Toolworks. Requires disk drive, DOS and 128K.)

Family Roots is too complicated a program for your Christmas party invitation list, but for serious genealogists, it provides a comprehensive view of your family tree. Made up of 14 subprograms, it can print four different types of genealogy charts, a variety of sheets (i.e., the family group sheet includes husband, wife, critical dates and places for each, other marriages, the children from this marriage, spouses of the children, and sources) and indexes/lists. You may also search for names and keywords (such as place names) or dates. (There is also a text entry section for budding Alex Haleys.) If a fair amount of disk switching and an extensive manual doesn't put you off, *Family Roots* may serve you well. ($185 from Quinsept. Requires disk drive.)

PROGRAM

Some Junior users will probably never learn a programming language beyond a few simple BASIC commands. But many users write programs on the Peanut as part of their jobs or out of curiosity.

Perhaps the most impressive thing about Junior's BASIC is the way it displays graphics, plays melodies, and juggles sound effects. Another one of cartridge BASIC's valuable features is its built-in terminal program. With it and a modem, you can communicate with other computers. (Cartridge BASIC is $75 from IBM.)

IBM made sure that a version of the Logo programming language was available for the Junior from the beginning, because of its popularity with a wide range of computer users—from first graders to professional programmers. How can a computer language appeal to such a varied audience? Logo does it with simple yet sophisticated graphics abilities, called turtle graphics, and its ability to manipulate language, do mathematical calculations, and use advanced programming structures such as recursion. *IBM Logo* (written by Logo Computer Systems, Inc.) runs flawlessly on an enhanced PC*jr*. The language comes with a technical manual and a book for beginners. ($175 from IBM. Requires disk drive, DOS, 128K.)

PC Logo is a relatively new version of the Logo programming language. It provides Junior users with all the basic commands and functions of this easy-to-use language, including turtle graphics, list processing, and mathematical operations.

PC Logo builds on previous "dialects" of the language by adding new functions and primitives for using color and "property lists," which make it possible to assign more than one value to an object in a program. The *PC Logo* package comes with a comprehensive manual with sections for beginners and programmers. It also includes a "utilities" disk that contains special files for special uses of the language. For instance, the FUNCGRAPH file uses Logo to graph mathematical functions and INSTANT allows children to create graphics on the screen by simply pressing single keys. One more nice feature of *PC Logo* is that it runs on a PC*jr* with only 64K memory. ($149.95 from Harvard Associates. Requires disk drive, DOS.)

One of the reasons the language Pascal is popular is because it's widely taught in high schools and universities. And Pascal runs faster than the rather pokey BASIC.

Turbo Pascal is an amazing incarnation. It's fast and powerful. The compiler, the program that converts your code into machine language, resides in RAM. The result is that programs are compiled very quickly, saving you a long wait. Its price is excitingly low. Anyone wanting a beginning Pascal system would do well with this selection. Knowledgeable Pascal users will be pleasantly surprised by the bargain-basement *Turbo Pascal*. ($49.95 from Borland International. Requires disk drive and DOS).

Softech Microsystems *UCSD* (University of California, San Diego) *Pascal* is an entire development system. The package includes a phenomenal number of subroutine libraries. Beginners might be frustrated, because in order to get going, you'll have to learn the P system as well as the language.

Also, developing a program is slow going. Typically, the scenario goes something like this: First you write the program, then compile it. Often it won't run the first time, so you debug it, and recompile. Since this is such an extensive development system, the compiler needs to be load-

Introducing



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ed into memory each time you want to compile a program. That takes time. Additionally, it's extraordinarily difficult to use a P system with just one drive. ($399 from Softech Microsystems. Requires disk drive, 128K).

NCI Pascal is a stripped down version of the Softech system just described. While you don't get as many goodies with this version, there's still a good number of utilities and subroutines included with the package. Again, this system is a little difficult to use with just one drive. ($295 from Network Consulting Inc. Requires disk drive and 128K.)

Decide What's For Dinner

Recipe filing programs are everyone's favorite example of impractical "make work" software, because file cards do the job just as well and few kitchens are safe havens for a computer. But before you decide that nouvelle cuisine and computers weren't meant to be partners, take a look at the following programs.

Micro Cookbook is a recipe filing and management program that's much more than a simple filing system. What makes it really useful is its database of 154 international recipes and its ability to accept whatever original recipes or modifications to existing recipes you care to add.

Say you get home and find your rations are down to an onion, a few cans of vegetables, a hunk of cheese. Just tell the program the ingredients you have on hand, and the program will match them with recipes in its files and display your choices. Feel like a Mexican meal with hot chilis? Just punch in those two variables and the program searches out the recipes that fit. ($40 from Virtual Combinatics. Requires DOS.)

The Best of Wok Talk is a similar program with a database of more than 100 "classical Chinese" recipes. You search the database for a recipe by typing in a key word (i.e., "stir fry") or an ingredient, such as snow peas. The program then displays your choices. After you choose one recipe, the program explains the ingredients and the dish, then takes you through the preparation step by step. A nice feature is the program's ability to calculate the amount of each ingredient needed to increase or decrease the number of servings.

The same company publishes a similar program called *Computer Chef* that contains more than 70 recipes for everything from appetizers to desserts. And a program called *What's for Dinner?* adds 200 recipes to the databases of either of the main programs—one disk features main and side dishes; the other is just desserts. (*Computer Chef* and *The Best of Wok Talk* are $29.95 each; *What's For Dinner?* is $19.95 from The Software Toolworks. Each requires disk drive and DOS.)

Winners in the Works

SOFTWARE BESTSELLERS BEING READIED FOR THE PC*jr*

Over 800,000 served—not enough to compete with McDonald's, but then again, MicroPro's *WordStar* doesn't come on a bun with ketchup. *WordStar* was the first program to resemble a dedicated word processor when introduced in 1979, and even with the high list price of $495, it remains *the* best seller of all word processing programs.

Now MicroPro has plans to convert its mammoth program for the little PC*jr*. This time, however, MicroPro won't be first. With a shipping date for a Junior *WordStar* still to be announced, manufacturers of other popular programs have their plans all laid out.

Multimate International, whose *Multimate* wordprocessor is in the number three spot behind *WordStar*, will ship *Multimate jr* in July. A cartridge version will follow this fall or winter.

MicroRim will enter the Peanut market in the fall with *R:base 2000*. The manufacturer of database management systems is promising a leaner version of its *R:base 4000*, a best seller biting the tails of Software Publishing's *pfs:file* and Ashton-Tate's *dBase II* — both of which already run on the Junior.

As you read this, *SuperCalc 3*, Sorcim's super-fast spreadsheet program, should be available for PC*jr* users, as will Peachtree Software's *Back to Basics Accounting*, the Junior version of its top-ten *Peachtree Accounting*. Peachtree's Junior offerings also include the *Peachtree Home Software Library*, seven programs for money management, and wordprocessing, as well as education and entertainment.

Monogram's big-wig accounting program, *Dollar and $ense* is nearly ready for the PC*jr*, as is a newer money management hit, Futurehouse's *Complete Personal Accountant*.

Joining these home and business greats are some of the most popular games on the market. Microsoft's *Flight Simulator*, which puts the user in the pilot's seat of a Cessna 182, and gives 3D views at what seems for sure to be 37,000 feet, should be out any day in a new color version that runs on both the PC and PC*jr*. And Electronic Art's *Pinball Construction Set*, a game which lets you design your own video game is coming this summer, making for many more winners in the works for the Junior.

Junior Powers Up with Lotus *1-2-3*

BY CHARLES F. DURANG

It may have escaped your notice, what with all the noise about the keyboard and the baby carriages in the TV commercials, but the PC*jr* is a real computer. There has been some confusion, both within the IBM walls and about the countryside, as to whether we have here a "home computer" or an "assistant business computer."

But the announcement by Lotus Development Corporation that its powerful and popular *1-2-3* spreadsheet/database/graphics program will be available for the PC*jr* should help clear things up. It means that, given enough memory, the Junior is the equal of any micro on the market, including its big brother, the PC. Junior also becomes one of the lowest priced (if not *the* lowest) computers to run *1-2-3*.

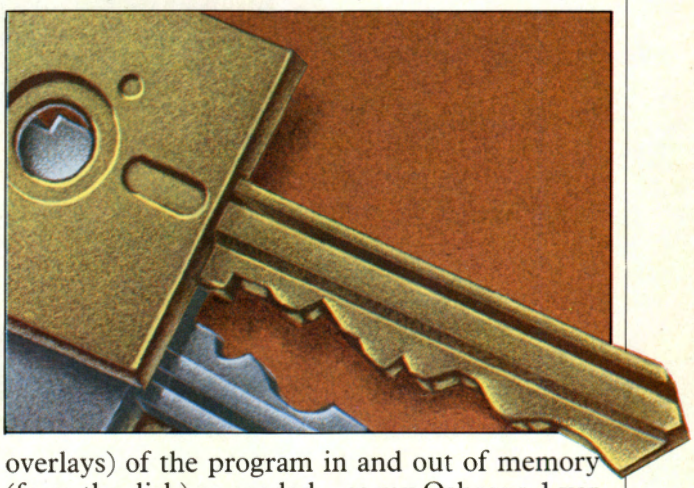
With the advent of *1-2-3* in June ("We are working at twice breakneck speed," says Jim Wilson of Lotus), your PC*jr* will be able to really flex its muscles.

The most important feature of Lotus's announcement is that the company has not created "1-2-3 FOR the Junior." Instead, it has made available "1-2-3 ON the Junior." The new product is simply an installation kit to make *1-2-3* (the whole thing, the original) run on the PC*jr*.

If you have, or are about to buy, a PC*jr*, you can simply purchase 1-2-3 at its regular price ($495) and ask for the "IBM PC*jr* Installation Kit." You'll get it at no extra charge, and all the features and capabilities of *1-2-3* will be available on your Junior. And if you already have *1-2-3* for your PC or PC-compatible, you can still get the Installation Kit free.

There is one catch: *1-2-3* is so large a program that it requires 256K of RAM to use it, and IBM provides Junior only at 64 or 128K. So you'll need to get some additional memory, which at this writing is not available from IBM. (Elsewhere in this article we'll tell you where you can get it.)

I asked the folks at Lotus why they didn't customize the program so it could fit in an enhanced Junior's 128K, by cycling modules (or



overlays) of the program in and out of memory (from the disk) as needed—as my Osborne-1 version of *WordStar* does. Besides the difficulty of redoing the code, the major reason is that the speed of the program—one of its major virtues—would be lost if it were not all immediately available in RAM.

WHY *1-2-3* ON THE JUNIOR?

For those who have been under the sofa for the past year, *1-2-3* is, according to Steve Miller

PC*jr* and Lotus *1-2-3*, the popular integrated software package, team up to lower the price of doing business.

of Lotus, "the best selling integrated program for microcomputers in the world today." (Independent market studies—a more objective source of stats—bear out his claim—over 350,000 copies sold.) It is well known in the business world, and can be used for "the business of running a home" as well. No matter how you use your PC*jr*—strictly as a home computer; as a stay-at-home complement to your office PC; as an office and

1-2-3 data disks prepared on a PC will run on PC*jr*.

home machine that you carry back and forth—*1-2-3* might be a program to add to your software library. Three key features of PC*jr* *1-2-3* make it an attractive buy for Peanut users of all persuasions:

1. It's free. Well, not exactly. When you buy, or if you have bought, *1-2-3*, you get the Junior "version" at no extra cost. Among other things, this means that if you already have *1-2-3* for a PC, you can use it on the Junior as well.

2. It's easy to install: you simply copy the Junior installation routines onto the *1-2-3* System Disk (perhaps on just one of the two protected system disks Lotus provides with *1-2-3*, keeping the other one configured for your "big" PC).

3. It's compatible: any *1-2-3* data disks you've prepared on a PC (for example, at the office) can be run on the Junior (at home, perhaps). This means that template programs that run "on top of" *1-2-3* are also compatible, since they are essentially data disks.

The Junior installation routines include drivers for monochrome monitors (not the IBM PC monochrome, remember), color monitors, and virtually any printer the PC*jr* uses, as well as routines for coping with the single-disk Junior as opposed to the standard dual-disk PC.

JUST WHAT IS *1-2-3*?

First of all, *1-2-3* is a spreadsheet program. On your computer screen, it sets up a grid of columns and rows. Each box formed by the intersecting lines is called a *cell*. All you have to do is fill in the blanks; you can put titles or labels in some of the cells, and numbers in others.

The most important single feature of a spreadsheet program is this: you can put formulas in some of the boxes. For instance, in box D3 (shown in figure 1), you type B3*C3 (* means multiply to the computer, since X is busy being the letter X). Another single command fills in a whole column with similar commands (D4 becomes B4*C4, D5 becomes B5*C5, and so on).

	A	B	C	D
1.		INVENTORY		
2.	ITEM	UNITS	COST	VALUE
3.	Wing Nuts	117	.57	B3*C3
4.	Flanges	45	2.10	B4*C4
5.	Gimcracks	60	1.44	B5*C5
6.	TOTAL			SUM(D3:D5)

FIGURE 1.

	A	B	C	D
1.		INVENTORY		
2.	ITEM	UNITS	COST	VALUE
3.	Wing Nuts	117	.57	66.69
4.	Flanges	45	2.10	94.50
5.	Gimcracks	60	1.44	86.40
6.	TOTAL			247.59

FIGURE 2.

	A	B	C	D
1.		INVENTORY		
2.	ITEM	UNITS	COST	VALUE
3.	Wing Nuts	114	.57	64.98
4.	Flanges	45	2.10	94.50
5.	Gimcracks	60	1.44	86.40
6.	TOTAL			245.88

FIGURE 3.

Not only does the program do the multiplying for you (figure 2), but if you change the number you put in B3, it automatically recalculates everything in the spreadsheet that depends on B3 (shown in figure 3).

Secondly, *1-2-3* is a database program. Database or filing programs have become popular because they are useful to so many computer users. They file away information in some kind of format, often one selected by the user, and allow you to sort, recombine, and recall it.

Another recent software development is the group of programs that allows the computer to draw graphs and charts to make information easier to understand and interpret. *1-2-3* does this, too.

By now, you have figured out why Lotus Development calls its product *1-2-3*: it includes all three of these functions and, most important, integrates them. You can take any amount of data from spreadsheet A and move it to spreadsheet B without retyping, reformatting, or performing any other editing.

The "What If" Factor

As mentioned earlier, you can change one number in a spreadsheet, then let the program calculate new values for every item that depends on the number you've changed. This has led to the celebration of a spreadsheet's ability to help you play "what-if" games. This is especially useful if you are preparing a budget or a business forecast: without a spreadsheet, it is an incredibly tedious exercise to recalculate an extensive worksheet for alternative assumptions in different entries. With a spreadsheet, it is a matter of seconds.

1-2-3 goes a step further. With a few keystrokes, you can see a graphic representation of your figures. You can create a line graph, change it instantly to a bar chart or to a pie chart, save the graph (and the spreadsheet, if you like), change a few numbers and repeat the graph-drawing process. You can see in just a few minutes not only alternative worksheets based on different numbers, but easy-to-understand visual representations of each alternative—which you can print out on your dot-matrix printer and look at side-by-side. Lotus calls this ability to generate quick and easy visuals "what-if-graphing."

Why Has *1-2-3* Been So Successful?

What makes *1-2-3* a best seller? First, the program is easy to use relative to the amount of work it does for you. (There are easier programs to learn, but this is because they don't do as much.)

It is menu-driven throughout. This is becoming true of more and more programs, but as recently as *1-2-3*'s debut in late 1982, the notion of a "moving cursor menu"—in which you simply move the cursor to your menu selection and then press ENTER—was a software breakthrough.

There is a two-line menu at the top of every screen. The first line gives you one-word names for the four to six choices available at each menu level; on the second line is a one-line expanded description of whichever of those menu items the cursor is currently pointing to. You can move the cursor to your selection, seeing different second-line descriptions of each item, or choose an option by simply entering the first letter of the word. Having chosen an option from the menu, you may be given a submenu of choices (select GRAPH, and you'll be asked if you want a bar graph, stacked bar, line graph, pie chart, exploded pie chart, horizontal or vertical grid lines, or the ability to specify labels for each axis and the whole graph). Often you can just hit ENTER and get a "default" choice (in the graphing case, a line graph without grid lines).

There are over 200 "help" screens. At any time, pressing a single "help" key gets you an explanation of what you can do based on what is currently on the screen. You can then move through as many help screens as you like, and return with a single keystroke to the place you left in your work.

The program is also highly visual, allowing you to make changes in the spreadsheet by using the cursor to "highlight" cells you plan to move or change. For instance, you can isolate a group of cells (called a "range") by moving the cursor from the first cell in the range—upper left corner—to the last cell—lower right corner. All the cells in between will be highlighted; you can then move the entire range to another location in the spreadsheet.

> If you have *1-2-3* for the PC, you can now use it on the Junior as well.

Second, *1-2-3* is truly integrated. It goes beyond sharing files to sharing a common data structure in which the spreadsheet is the data

base is the basis for the graph. There are no intermediate steps necessary to get to a graph from the data in a spreadsheet.

Third, the program is fast. The entire program resides in RAM at one time, available immediately. And the whole thing was written in assembly language by Jonathan Sachs, who warmed up for the assignment by creating three earlier spreadsheets.

Fourth, it's fun. I liken it to a fine sports car. A lot of programs will get you from here to there, but this one is fun to drive.

Finally, *1-2-3* is powerful and sophisticated without being intimidating. Steve Miller of Lotus again: "If you accept our defaults, there's a simple way to do anything." And yet, he goes on to point out, you can do it your own way—even to the point of creating your own commands and menu choices once you know your way around.

First you must boost Junior's memory to at least 256K.

Lotus founder and *1-2-3* designer Mitch Kapor built the program using the "encyclopedia method": he provided all the available material, indexed it so it could be easily found, and trusted the user to create with it.

Are there things that *1-2-3* can't do? Perhaps, perhaps not. There is no record of it preparing breakfast or dunking a basketball. And although *1-2-3* has a rudimentary memo or letter-writing function, the Lotus folks hasten to say they don't recommend it as a word processor. But then they note that at least one author has written a book using *1-2-3* . . .

About That Extra Memory

As we mentioned above, *1-2-3* requires 256K to operate (and the more memory you have, the larger the spreadsheet you can create and analyze). But even an enhanced PC*jr* has only 128K, and IBM has made no announced move to supply more itself.

Fortunately, the third-party support industry is already here with memory expansion alternatives that can bring your Junior up to a maximum of 640K (the same as the limit for a PC). There are a number of alternatives, some involving more than just memory expansion, from several companies we've found.

All of the expansion units require that you start with an enhanced Junior—128K—since RAM must be continuous for the computer to find it all. The choices we know about are:

From Tecmar, Inc. (6225 Cochran Rd., Cleveland, OH 44139, (216) 349-0600) come three expansion devices, each coming in white plastic housings that plug into the right side of your Junior. Each looks like the IBM Parallel Printer Attachment (Tecmar has a fourth item, which is a printer port plus a clock/calendar with battery backup).

The "jr Wave" comes with 64K for $295; 128K for $375; 192K for $445, and 256K for $495. To use *1-2-3*, of course, you'll need at least the 128K model.

The "jr Captain" adds the clock/calendar and parallel printer port to 64K for $315, and 128K for $395. You can even get it for $235 with no memory on board. It, like the jr Wave, has the circuitry needed to add the extra memory and is a prerequisite to adding the jr Cadet.

The "jr Cadet" plugs into the Wave or Captain to add another 64K ($195); 128K ($275); 256K ($445); or 384K ($595). Since the largest memory the Junior can recognize is 640K, you can assemble that configuration in various ways, but there is no point in picking up a 192K or 256K Wave and then adding a 384K Cadet.

Legacy Technologies (4817 N. 56th St., Lincoln, NE 68504, (800) 228-PC*jr*) provides RAM cards that plug into several expansion modules designed to sit on top of the PC*jr* system unit. Legacy I is an expansion bus unit that costs $395; Legacy II adds a second floppy disk drive and disk controller and sells for $799, and Legacy III includes a 10 megabyte hard disk with controller for $1595.

The memory cards, which need to be plugged into one of the above, retail for $199 for 64K; $299 for 128K; $399 for 192K, and $429 for 256K, the last being an attractive promotional price that, for the time being, makes 192K a less likely choice. (Legacy's expansion units were discussed in the *New Products* section of PEANUT, issue number one.)

Also mentioned in issue number one was Quadboard, Jr., from Quadram Corporation (4355 International Blvd., Norcross, GA, 30093, (404) 923-6666). In what may have been a premature announcement, PEANUT was told that Quadboard costs $395, includes a clock/calendar and parallel printer port and the ability to plug in RAM of 64K, 128K, 256K, or 512K. At this writing, Quadram is laying low, neither confirming

nor denying the board's existence. By the time you read this, you or your dealer may be able to order it.

(The advantage of adding a clock/calendar to your PC*jr* is that the current date and time will be added to DOS automatically.)

Rapport Corporation (80 S. Redwood Rd. N., Salt Lake City, UT 84054, (801) 292-9454) has announced the Drive Two Enhancement Package which, for $675, allows you to add a second disk drive and a parallel printer and additional memory up to 512K inside the box and more outside. The unit also has a clock/calendar with battery backup.

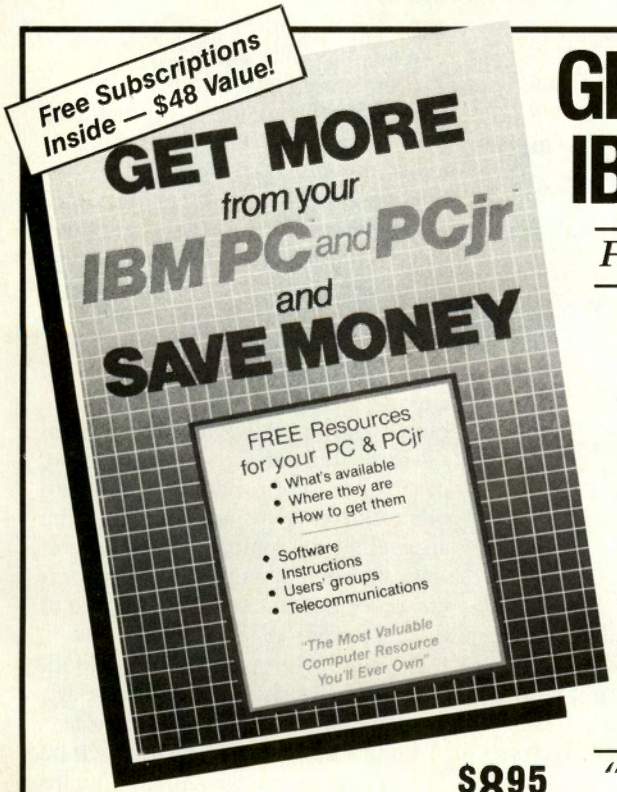
There are easier programs to learn, but few do as much for you.

A memory board that goes in the Package delivers 128K for $275, and provides sockets for 256K more in 64K units. (You—or your dealer—simply add generic 64K chips.)

MA Systems (2015 O'Toole Avenue, San Jose, CA 95131, (408) 943-0596) manufactures a Junior expansion module that will take the PC*jr* up to the 640K RAM limit. The basic module, which attaches to the right side of the Junior where the parallel printer attachment goes, comes with 128K memory, a parallel printer port, a clock/calendar with separate batteries, an expansion connector for other peripherals, *Genie+* software that includes a printer spooler, a PC*jr* tutorial, and an electronic RAM disk, and a slot for a 256K memory chip. The price is $549.

Finally, Falcon Technology (6644 South 196th St., Suite T-101, Kent, WA 98032, 1-800-722-2510) has begun to ship its "*jr* Extender," an eight-inch-wide expansion module that contains a 360K capacity disk drive, its own power supply, and slots for memory expansion boards to boost Junior's RAM by 256K. Optional features include a clock/calendar and a mouse port. With the clock/calendar option, the PC*jr* can turn itself on unattended, in order to send information out by modem. The system shuts off automatically, too. The basic module, without RAM chips is $995.

Charles Durang is a Massachusetts-based editor and writer with over 20 years' experience in the computer publication business.



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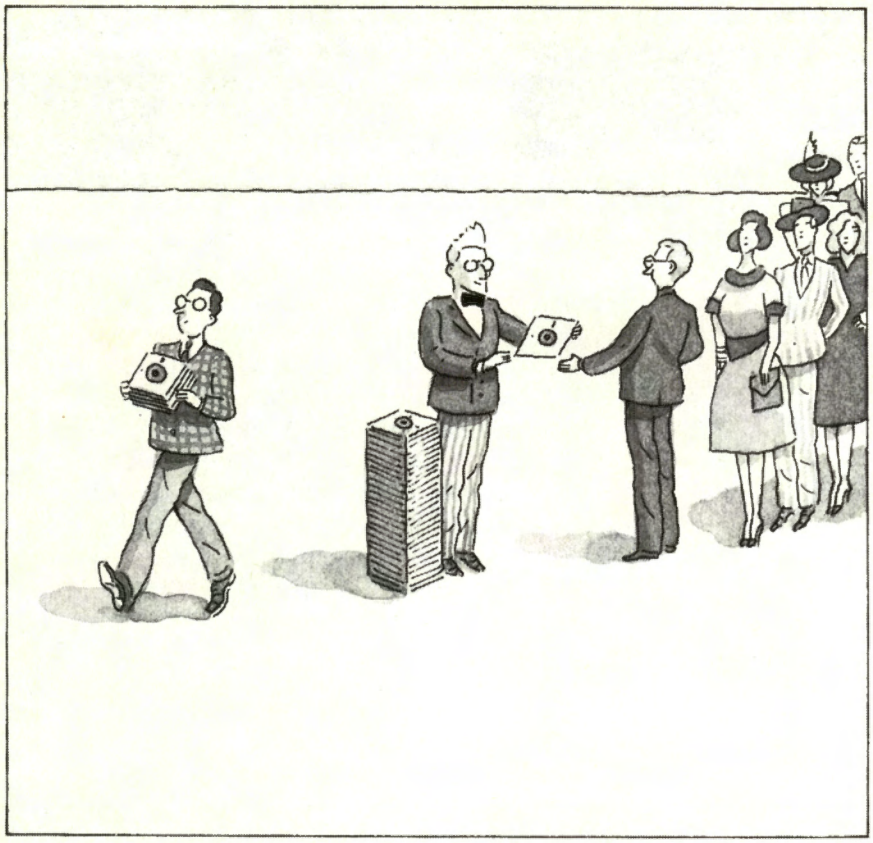


STEVEN GUARNACCIA

Free Software? Non-System Disks? Any Market for Used Computers?

Q: I'm interested in buying a PC*jr*, but only if I can sell my old VIC-20. What kind of a market is there for used micros?

A: "I got top dollar for my old Commodore VIC-20," says Mary Weddle of Charlotte, North Carolina. "I brought it for $70 and sold it at this year's Charlotte Hamfest and Computer Fair for $65."

By the standards of the used computer marketplace, Weddle's sale is something of a coup. "Generally, to put used computer equipment on the market for much over half of what it's currently selling for new is pretty much a waste of time," explains Jim Sparks, president of the Delphi Data On-Line Exchange, a two-year-old electronic hardware auction (Delphi Data, 3425 Meadowview Street, Riverside, California 92503; (714) 354-2020). But he agrees with Scott Hirsch, editor of the *Used Computer Guide* (Hanson Publishing Company, 8455 SE 37th Street, Mercer Island, Washington 98040; (206) 232-7709) who says, "to find out what your used computer is worth, just put it in the marketplace and see what happens."

You can find the market for your used micro a number of ways. Show your wares—system unit and peripherals—at a local computer fair like the one in Charlotte or advertise it via your modem in an electronic hardware exchange such as Data On-Line. Take out a classified ad in your local paper, users' group newsletter (*see Junior Joins the Club, page 40*), or in a national publication like *Computer Shopper* (407 S. Washington Ave., P.O. Box F, Titusville, Florida 32781; (305) 269-3211). You might also try selling or trading in your second-hand micro at a dealership that specializes in selling used equipment.

"There are 15 to 20 people who are professionally involved in selling and buying small (used) computers," says Hirsch, and "it's a phenomenon that's just starting to take off." Often, he says, these micro dealers started as part of the approximately 700 brokers who buy and sell used mainframes and minicomputers. Some sell on consignment, taking 15-30 percent of the eventual sale price for themselves. Others give you an up-front amount and risk reselling at a mark-up. For instance, Milton Goodman, a partner in Technical Data Corporation of New York City ((212) 595-0928) will buy used home computers for anywhere from 25-50 percent of the current list price, then resell them at a mark-up of about twice this amount. Since he also sells new computers, he'll take trade-ins as well, giving his customers 25-70 percent off the list price of their new purchase.

"We deal in everything," Goodman says. But he warns, "there are no fixed values." When a customer brought in an Atari 800 for which he had originally paid $600, Goodman could offer him only $100 for it. "Now you can get the equivalent brand new computer in the Atari XL series for less than $200," he ex-

plains. He adds that the more desired a particular brand is in the new market, the more he can give you for it used. For instance, because they're popular new, "Apples and IBM's depreciate no more than 10 percent a year," he says. A customer trading in one of these micros can get up to 70 percent off the list price of a new computer.

Hirsch confirms the value of a used computer whose new equivalent is in demand. "The most desirable computer on the used computer marketplace, with no surprise, is also the most sought after in the new marketplace. How many times have I heard, 'do you have a used IBM PC?' "

But while the demands, price cuts, and improved technologies of the new market have a direct effect on the value of used computers, the used marketplace seems to have a fickleness all its own, explains Edward Owens, president of Scientific Computer Systems, a used-computer brokerage firm in Boulder, Colorado ((303) 447-0353). Also using the example of the Atari 800, he says, "Yesterday it may have been worth $185, today it's only worth $175." Because of fluctuating prices, Owens prefers to sell on a consignment basis, taking 20 percent once the sale is made.

While Owens and Goodman deal in all kinds of used computers, other retailers are a bit shy of the used home computer market. The Used Computer Exchange in Washington DC ((202) 337-1303) has added low-end models to its inventory of used business micros only recently, and is still testing the policy. Mike Metzger, general sales manager of the Connecticut Desk Company in Darien, Connecticut ((203) 655-7061), says he avoids reselling home computers altogether. "They're generally a pain to get rid of and you're not going to make much on them anyway," he notes. The Interstate Computer Bank in Los Altos, California ((415) 968-6811), will not accept for resale what they consider "games computers." Julia Sideris, store manager, says, "We don't buy Commodore, we don't buy Atari, and we don't buy TI."

Besides meeting resistance from certain used computer dealers, you may also find that selling your used computer on your own is no bargain. A classified ad in the *Computer Shopper* costs 34¢ a word; a display table at the Ohio Computer Swap ((513) 891-5266), a fair held three times a year in a Cincinnati armory, costs $20 for a single day, $35 for two. The Delphi Data On-Line Exchange will soon be charging $34 a year for a subscription to its up-for-sale hardware and software database. And a copy of the *Used Computer Guide*, with its national listing of used computer dealers, costs $11 per issue.

You can download free software from many bulletin boards.

If you decide you can justify these costs, you may well succeed in unloading your used micro, and make some money in the process, too. In fact, as soon as you put your used Commodore tape drive up for sale, you may find a buyer who's been to six dealers and is still unable to find it new. But then again, as *Used Computer Guide* Editor Hirsch points out, "There are definitely computers that are keepers. Once you outgrow them, give them to your niece or nephew."

Q: Is public domain software any good? Why is it free, and how do I get it?

A: Public domain software is free, legal-to-copy software, developed by members of computer clubs and professional organizations, contributors to bulletin boards, and lone hackers toiling in their basements. It runs the gamut from games that allow you to "hunt the wumpus in its cave," and "make your fortune in the trucking business," to software utilities that examine and modify your disk sectors or reassign your function keys.

To see a free graphic demonstration of a blimp flying, or to try out a cash accounting system you won't have to account for cash-wise, visit your local user group meeting—many are good sources of these uncopyrighted programs. Your "free" software will actually cost $4 to $6 to cover the cost of the disk it's on. (*For more on user's groups, see page 40.*)

You can also contact one of the many libraries that collects public domain programs such as SMERC, the San Mateo Education Resource Center Library (333 Main Street, Redwood City, California 94063; (415) 363-5472). Its division called SOFTSWAP specializes in educational software for a variety of computers. Send $1 for a catalog and ordering information.

The Young People's LOGO Association (1208 Hillsdale Drive, Richardson, Texas 75081, (214) 783-7548 between 7 AM and 7 PM) provides its 15,000 members with "programs written by five year olds up to accounting and word-processing programs," says President Jim Muller. Membership fees are $9 per year for students 18 and under; $25 a year for groups and single adults.

The PC Software Interest Group has created a directory of public domain software that runs on the IBM PC. (Many will run on the PC*jr* as well.) Their book also contains a list of "user-supported" software that you can copy for free. If you like a program, the user-supported software honor system urges you to send a donation to its author. The directory costs $4.95 plus $1 shipping. Any one of their 135 disks is $6 each, with a set of the ten most popular costing $59. Add $4 per order for shipping and handling. (1556 Halford Avenue, Suite 130R, Santa Clara, California 95051; (408) 730-9291.)

To get your free software before anyone has had time to put it in a library or book, you can download it from one of the computer bulletin boards that post PC programs.

One last reminder: most public-domain software, being free or very inexpensive, comes with few guarantees. While some of the programs are comparable to commercial software in quality, they come "as is," with no promise of support from the source.

Q: How can I stop a program in mid-stream?

A: Say you've created a BASIC program that will list all your relatives in alphabetical order. As the

To stop a program, just hold down the function key and hit the pause key.

names speed by . . . Uncle Charlie . . . Cousin Jim . . . you realize when you get to Aunt Millicent that you forgot to send her a birthday card. To stare at her name in disbelief, just hold down the function key (FN) and hit the PAUSE key. When your shock is over, you can start the program up again simply by typing RUN.

Sometimes, though, you'll want to stop a program permanently. For instance, considering your recent blunder with your aunt, the following infinite loop, running on through eternity, may turn your twinge of guilt into prolonged agony:

```
10 PRINT "AUNT MILLICENT LOVES YOU"
20 GOTO 10
```

To end this string of sincere devotion from Aunt Millicent to thoughtless you, simply hit the FN key at the same time as the BREAK key, and you need not worry one bit more about poor Aunt Milly.

You can also stop a program by rebooting—either by pressing the CTRL, ALT, and DEL keys simutaneously, or by turning your PC*jr* off entirely. Just as long as you've saved your program, it won't be ruined.

Sometimes the escape key (ESC) can be a quick exit from doing something you don't want to be doing. This is true in a number of commercial software packages. For instance, if you're using *pfs:file* on your Junior and all of a sudden you catch yourself about to delete the name and address of a close relative, who never meant you any harm, a quick press of the ESC key will bring you safely back to the main menu.

Q: What happens if I spill something on the keyboard?

A: "I've heard you can spill Pepsi Cola on it," says Dave Foulger, a consultant at IBM's Yorktown, New York, research lab, "and nothing bad will happen to it." While Foulger has never taken the Pepsi Challenge himself, he's confident that, "short of being run over by a steam roller," the Junior keyboard should come through most accidents alive, and adds, "it's a beautiful keyboard for kids."

To find out why the Junior keyboard is practically indestructible, Peanut Solver took the cover off one to look inside. Placed in the hollow of each key are rubber suction cups that resemble the tentacles of an octupus. These cups are fixed onto a layer of rubber that guards the wiring of the keyboard underneath. The wiring itself is inlaid into another protective layer on bottom, sealing off the electrical contacts inside, and protecting them from any spills.

In fact, because the Junior's keyboard is so spill-proof, says Foulger, it's far more durable than the IBM PC and Apple keyboards. As founder of the Connecticut PC User's Group, he's heard of all kinds of things spilling on and harming one keyboard or another. "Eggs are particularly deadly," he says, explaining that the spark of electricity generated when you push a key down on a keyboard, "does interesting things to eggs."

Q: I have the telephone service "call-waiting"—where you hear a beep if someone's putting a call into you while you're already on the phone. I just got a modem and have found that if someone's trying to call while I'm using it, I see a blip in the information coming over the telephone lines to my PC*jr*, and then I lose the database service entirely. Is there any way to prevent this?

A: Foreign noises on your phone lines tend to garble any data you may be getting via a modem. Unfortunately, the beep-tone generated by "call-waiting" is a foreign noise that your modem recognizes all too well.

"Call-waiting basically emits the same tone as your modem's own hang-up signal," explains Dave Black, customer service representative at Novation, a modem manufacturer in Chatsworth, California. Adding that this phone service is "the bane of any modem manufacturer's existence," he warns that both dumb and smart modems, those with the additional ability to dial your calls automatically, are plagued by the problem. (Some owners of dumb modems will disagree, saying in this case, dumb is better. Often the less versatile modems, they say, are also less sensitive to phone line interference.)

If you rely on your call-waiting service heavily, you probably won't want to tie up your phone with your modem too much longer anyway. Get a second phone line, and your problem will be solved.

Q: I just tried to start up the computer with a program that is advertised to work on the PC*jr*. The message on the screen reads "Non-system disk or disk error. Replace and strike any key when ready." Do I have a defective disk?

A: Your disk is probably fine. This message means that you are trying to start up your computer and activate the disk drive with a disk that does not contain the disk operating system for the PC*jr*—PC DOS 2.1. This doesn't mean that your disk won't work on Junior; it simply cannot be used to start, or "boot," the computer and the disk drive.

To run the program contained on the "non-system" disk, follow one of these two procedures. First, load DOS by placing your DOS 2.1 disk in the drive and pressing the CTRL, ALT, and DEL keys all at once if the computer is already on, or, if the computer is off, just put DOS in the drive and turn on your PC*jr*. When you see the A> prompt, remove the DOS disk from the drive, insert the program disk, and type in the "code name" for that program. (For instance, to load the word processor *WordPerfect, jr,* you type WPJ.) Your program should then be loaded and ready to use.

Your program is still not on a "system" disk, however, and cannot be used to start up the computer. If you want to bypass loading DOS and boot the system with your program disk, you must add DOS 2.1 to that disk. In many cases you cannot simply add DOS to disks with programs already on them unless they are reformatted. And you *never* use the FORMAT command on a disk containing any data that you value, since formatting erases every bit of information on a disk.

The proper procedure is to for-

mat a blank floppy disk and then copy your program onto the newly formatted disk. This leaves you with a working back-up copy of your software on a formatted disk.

Sometimes you can copy DOS directly onto your program disk. Check the instructions that come with your program to see which method the publisher recommends. Use the SYS command in either case.

Q: What is ASCII code?

A: ASCII is a code that almost all micros are programmed to understand. It is an acronym for the American Standard Code for Information Interchange. When you hook your Peanut up with a modem and send information over the phone lines, the computer on the other end knows how to interpret the message you send because both computers "understand" ASCII code. In other words, the receiving computer assigns the same value to the ASCII code numbers as your Junior does. Anytime your Peanut sends a message, such as "Hello, Mr. Smith," it turns the letters and punctuation marks in your greeting into code numbers that Mr. Smith's computer will recognize and be able to convert back into your written message. This way, your message arrives intact, and Mr. Smith can respond in kind.

The number of characters your Junior can send in code form to another computer totals 256. These are your standard alphanumeric characters such as those you see on your keyboard, plus more exotic symbols that you sometimes see on the screen in arcade games, including omegas, smiley faces, squares, hearts, and spades. Some are actually non-visual, including beeps and commands to your printer to move its paper up or down. To see a screenful of all the visible ASCII characters, load DOS and after the A> prompt type: TYPE GRAPHICS.COM. *(Your Peanut's diagnostics program can get you a similar screen. See Guided Tour, page 74.)*

The code numbers that match each of these characters are your key to taking advantage of them. For instance, if you type the code number for a beep (7) after the BASIC command for "print the following ASCII character," you'll hear a beep. And while PRINT CHR$ (7) will get you one beep, FOR X = 1 TO 20: PRINT CHR$ (7): NEXT X will bring you 19 more. To see all the ASCII characters and their corresponding numbers, type in and run this BASIC program:

```
10 FOR X=0 TO 255
20 ?X, CHR$(X)
30 FOR T=1 TO 200
40 NEXT T
50 NEXT X
```

With BASIC and ASCII, you can give the Peanut's keys new powers.

Now that you've seen them, and you can print them, what can you do with them? With some simple BASIC commands and ASCII code, you can reprogram your keyboard, giving your Peanut's keys new powers.

Suppose you're a closet millionaire with a disturbing tendency toward conspicuous consumption. You're looking for some quick therapy, just a quiet way to keep the pressure off the Joneses next door. The BASIC command INKEY$ and ASCII code 36—the one that corresponds to the dollar sign key—are for you.

Type in this line of BASIC:

```
10 A$=INKEY$: IF A$=CHR$(36) THEN 30 .
```

The INKEY$ command will check to see if a designated key's been pushed; in this case, you've designated 36 or the dollar sign key. When you hold down the shift key and hit the number 4 key as if to type a dollar sign, your Peanut knows to go to line 20.

Type in the rest of your program this way:

```
20 GOTO 10
30 PRINT "YOU'RE IN THE MONEY."
40 GOTO 10
```

Now, run the program, and every time you hit the dollar sign key (and only when you hit this magic key) your Peanut will tell you, "You're in the money."

Want to trade in the Rolls for one of those little foreign jobs? Hit the dollar sign key.

Every time you feel the urge for garishness coming on, just run your little "You're in the money" program, and with the help of ASCII and your favorite key, you can give yourself all the subtle reminders of wealth that you need, keeping your dignity intact.

Q: Why has IBM warned PC*jr* owners to keep their monitors at least six inches from their Junior's system unit? What could go wrong?

A: "Please note:" begins the message included in every PC*jr* box. "If your IBM PC*jr* has a Diskette Drive, diskette errors may occur if your display is within 17 centimeters (6 inches) of your IBM PC*jr* . . ."

Polite, but no shock value, says Peanut Solver. The day your monitor starts displaying error messages you don't understand is the day you're least likely to remember IBM's good advice: "This problem may be easily cured by moving your display away from the PC*jr*." In fact, when you put in your favorite disk and the display says "boot failure" or "seek error reading drive A," you're far more likely to cry out in anguish than to realize that you're experiencing just a minor case of electromagnetic interference (the current flowing through your monitor has created an electromagnetic field that is confusing your disk head as it tries to read the magnetic signals on your disk).

To prevent this electrical tragedy from happening to you, you can buy the new color monitor that IBM has designed specifically for the PC*jr*. This monitor can sit on the system unit and will not interfere with your disk drive. Otherwise, Peanut Solver recommends that you surround your PC*jr* work area with small reminders to jolt your memory when necessary. Such tasteful items as a plaster replica of Benjamin Franklin engraved with the words "I get a charge out of you" should keep you well aware of the electromagnetic hazards you and your PC*jr* may encounter.

Got a Question?

PEANUT SOLVER has the answer. This column will tackle any questions about the PCjr and personal computing in general, from technical fine points to computer ethics. PEANUT SOLVER also welcomes reader comments. Send questions, comments, and tips to PEANUT SOLVER, PEANUT MAGAZINE, 545 Fifth Avenue, New York, NY 10017.

THE PEANUT GAZETTE

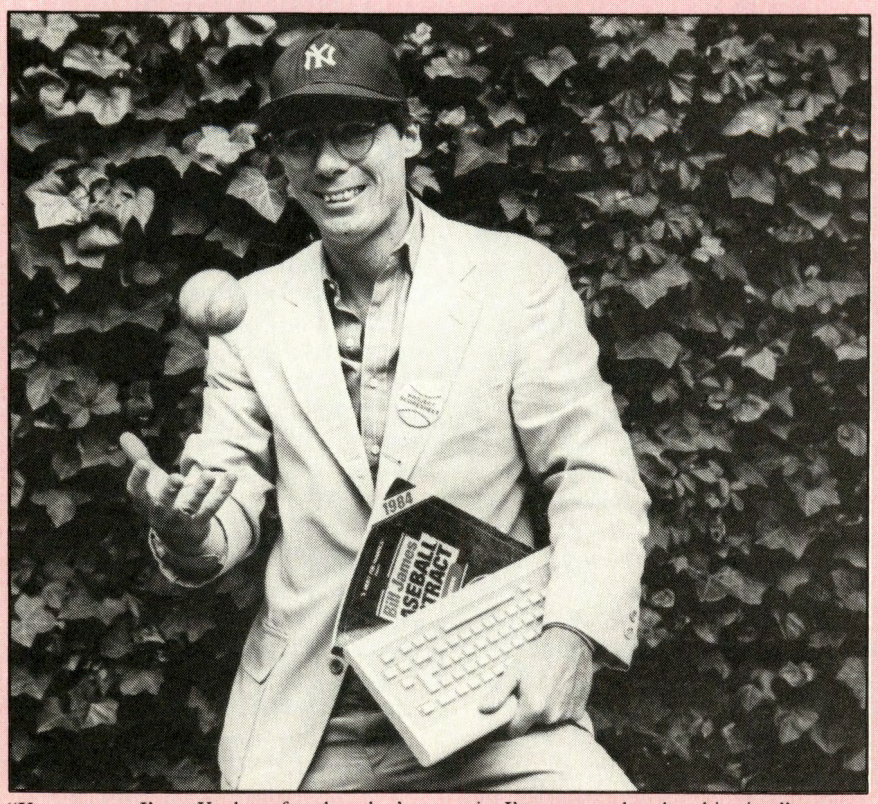
JULY/AUGUST 1984 VOL. 1 NO. 2

PEANUTS AND CRACKERJACK

How well does George Foster handle a left-handed power pitcher versus a left-handed breaking pitch artist? "You cannot get that information, it doesn't exist, and nobody in the world is going to figure it out for you," says Bill James, baseball guru and oracle of the bestselling *Baseball Abstract*. But now, under James' tutelage, 300 avid baseball fans from around the country will be gathering these facts, and more, in a grass roots organization called *Project Scoresheet*.

As director of the project, Ken Miller explains it, the Project's participants will record the results of every plate appearance in this year's 2,100 major league baseball games into three PC*jr*'s and a PC, where they will be analyzed, eventually, in Miller's Washington, DC-based PC with a hard disk. After a season's total of three million keystrokes, this massive collection of data, should "settle a lot of barroom debates," says Chuck Waseleski, who, as division captain of the American League East, will develop excellent typing skills this summer on one of the Juniors.

While Project Scoresheet's annual book will supply fans with many of the statistics they've not seen before, it won't replace the daily box scores in newspapers, Miller says. After all, he explains, the average fan is not the "rabid fan" who keeps his own detailed account of every game. Only a true baseball nut does that—like Mike Bodak. The team captain for Pittsburgh, Bodak was unable to find a scorer for the Pirates' second game, so he recorded it while driving to work, talking into a tape recorder, and scribbling down notes at red lights.



"You can say I'm a Yankees fan, but don't stress it. I'm supposed to be objective," says Ken Miller, director of Project Scoresheet.

BIG, BIG BLUE GIVE-AWAY

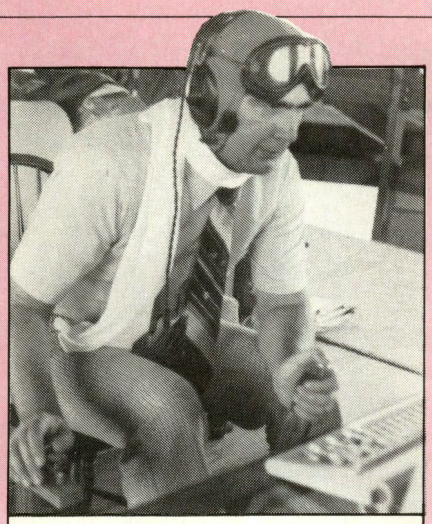
IBM is spending $12 million to teach 200,000 teachers and students about the benefits of computing. Besides involving Immense Bins of Money, the ambitious project, dubbed the Computer Literacy Program, includes summer school for participating teachers. Once the teachers return to school this fall, some 2,000 IBM-donated PC and PC*jr* systems will return with them, helping to establish computer courses in 28 selected school systems around the country.

THE JUNIOR CONNECTION

"It is definitely the first PC*jr* that has gone to Italy," says Alessandro Scotto of the Peanut he booted up in Milan in March. The U.S. representative of Datamont, an Italian IBM dealer, says he expects the Junior to be a hit with Italian businesses once it arrives in bulk in the next year: "You can hook it up to television." In Italy, he explains, "all the people have television in their office."

DON'T LEAVE HOME WITHOUT IT

IBM, not quite sure what to do with all the *cash* when it first went retail in 1980, has now come out with its own credit card. The silver plastic is available at any IBM Product Center. "You can walk into the center, fill out the application, and get a line of credit within a half an hour," says IBM rep Tom Mattia. If you want, he adds, you can even charge your typewriter ribbons.



So that he never has to leave the ground, Joseph Ennis of Niceville, Florida, plays Microsoft's *Flight Simulator* on a PC he's hooked up with full-size airplane controls. *Flight Simulator* is available in a new color version for the PC*jr*.

POWER PLAY

"The program is better than 90 percent of the players in the U.S. Chess Federation," says Max Harrell of Chickasaw, Alabama. After testing *Sargon III*, Hayden Software's electronic chess program, against master chess players around the country, Harrell has managed to get it rated by U.S. chess officials at a score of 1789. What does this mean? "It means it plays very good chess, is what it means," says Harrell. Any chance *Sargon*, which runs on the PC*jr*, could beat the world's best players? "It's really unpredictable," says Harrell. "For instance, during this last tournament we had a power failure."

PLOTTING HER CAREER

"I'm not a young kid, you understand," says 65-year-old Eudice Feder. Six years ago, when she switched from painting to computer graphics, it was only to learn "what this new, fascinating, and totally baffling computer work was," Feder says. Currently an instructor in the computer graphics lab at the University of California at Northridge, she is chairing the panel of judges at the first CalComp International Computer Art Competition. CalComp, whose eight-pen, Model 84 plotter works with the PC*jr*, will be accepting entries through July 2. Winning artists will receive up to $5,000. For more information contact Robert Maples at CalComp, 2411 W. La Palma Ave., Anaheim, CA 92801; (714) 821-2142.

VIRGINIA TECH GOES HI-TECH

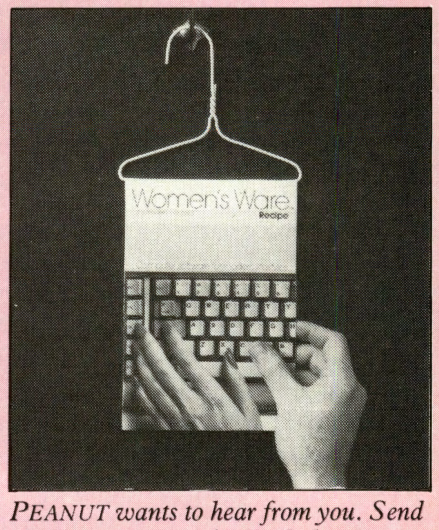
"In four years it'll sort of ripple through the college, and at the end of four years, everybody, all engineering students and faculty, should have computers," says Paul Torgersen, dean of engineering at Virginia Polytechnic Institute and State University, in Blacksburg, Virginia. Effective this fall, his decision to require all 1,200 entering engineering students to choose an IBM PC*jr*, PC, or PC portable, will change the way these students learn their laws of thermodynamics. So that no one feels the heat financially, Virginia Tech and IBM are subsidizing all purchases. The PC*jr* option, which includes a Tecmar (Cleveland, Ohio) expansion board to bring the Peanut's memory up to 256K, a color monitor, and a two year maintenance plan, should keep everyone out of the cold at $1450.

'FREEBOARD' ASSOCIATION

Are you down about work, sex, or your goldfish dying? Talk to *Psyche*, a new artificial intelligence program for your PC*jr*. Just make yourself comfortable on the couch with your IBM cordless keyboard, and type in your latest dreams and idiosyncracies to this electronic psychoanalyst. *Psyche*'s thoughtful responses cannot replace those of a human counselor; at the same time it will never remind you when your hour is up. The 96K program requires 80 character display, and sells for $49.50 plus $2.50 shipping and handling. Contact Balis Computing, Inc., P.O. Box 273261, Boca Raton, FL 33427; (305) 391-4610.

NEON'S SLIP IS SHOWING

According to Neon Software's public relations firm, HWH Enterprises in New York City, "keeping track of the man in your life . . . is a snap"—with the help of Neon's *Calendar* program. But managing a marketing campaign is never that easy. Neon's promotion for its *Women's Ware* line of software—seven PC and PC*jr* programs for the home—has been called sexist by some. While Ed Wennerstrand, Neon's Vice President, says, "Nothing could be farther from the truth," he decided to take no chances. An informal visit with Gloria Steinem of *Ms.* magazine convinced Neon to repackage its product: what was once "computer software for the modern woman," is now "for modern men too!" And, in bold, the package reads, "Computer software for modern lifestyles." Says Steinem, "I understand their dilemma, because most software is not directed at women." Citing Neon's last minute changes, she adds, "I think they deserve credit for trying to be sensitive."



*PEANUT wants to hear from you. Send us your computer tips and short news items about people who use the PC*jr*. We pay $25 for each submission published in Peanut Gazette. Write to Peanut Gazette, 545 Fifth Avenue, New York, NY 10017.*

Junior Joins the Club

Computer users groups provide information, lively discussion, and free software—and PC*jr* owners are welcome!

BY RUTH ROSEN

Poor Rocky Martin. They ate him alive last December. The IBM representative knew that the New York IBM PC Users Group had a reputation for outspokenness, but Martin made a fatal mistake: *He didn't bring a Junior to the meeting*. Slides wouldn't appease this byte-thirsty crowd—they wanted the real thing. "If Junior's so portable, how come you didn't bring one with you?" was the cry.

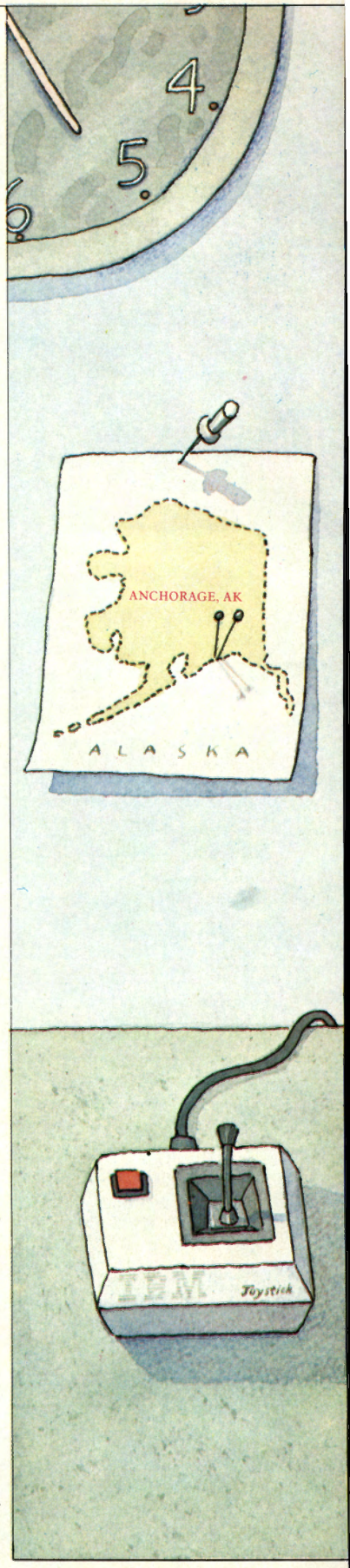
Martin did what he could, answered the questions Big Blue would allow ("Is the PC*jr* bus-compatible?" "Yes and no.") and then finished his talk. When the meeting took a break, though, disgruntlement turned back into curiosity. Scores of club members streamed up the aisles after Martin, eager to devour whatever information he could or would provide to their many queries about the new computer.

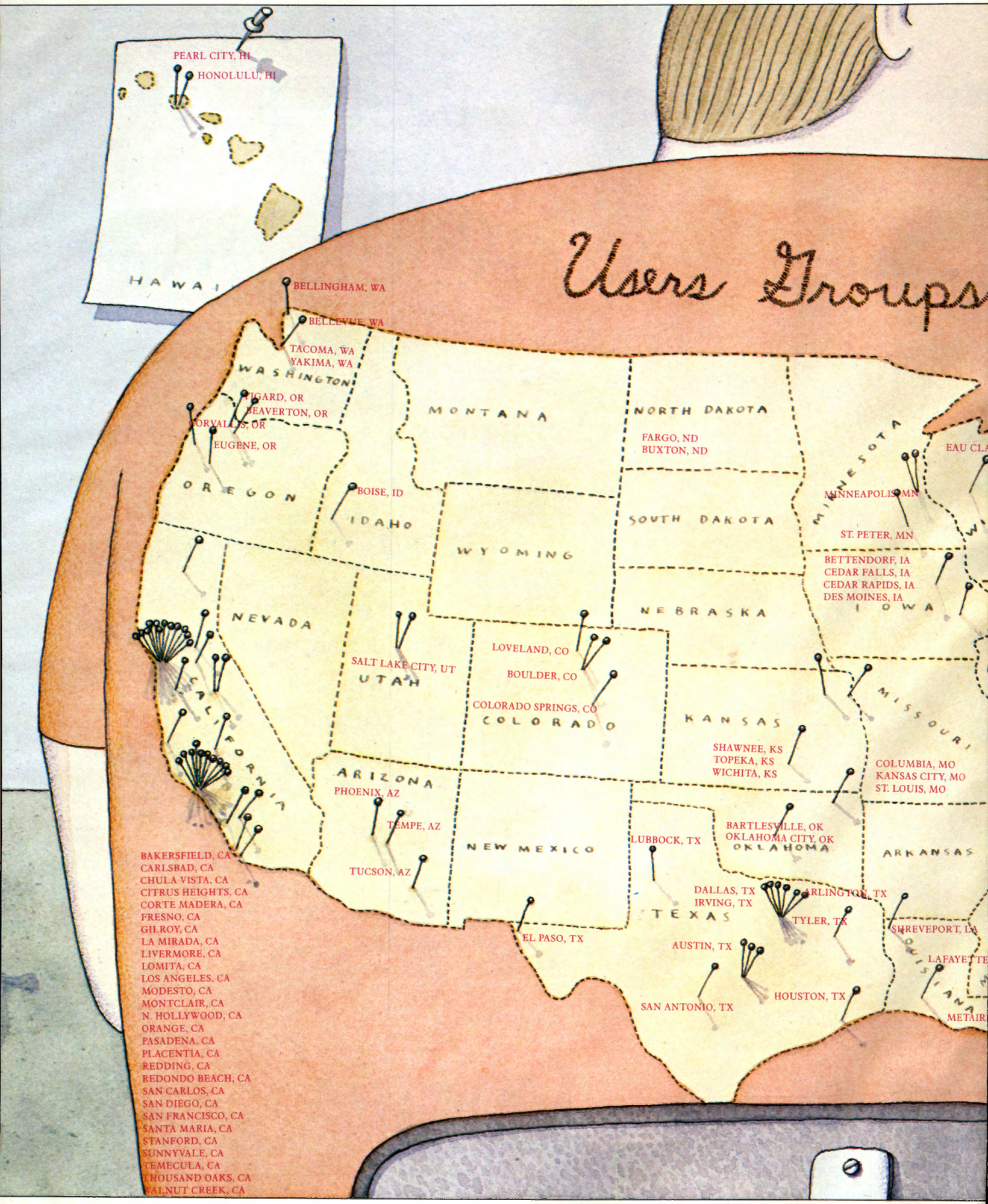
Other PC users groups around the country scheduled their PC*jr* demos for January, or even later in the year, when the machine was available for inspection, and as club members were beginning to purchase their own. And while it's still a bit early for PC*jr*-only groups to be forming, IBM PC groups have welcomed new Junior owners into their ranks.

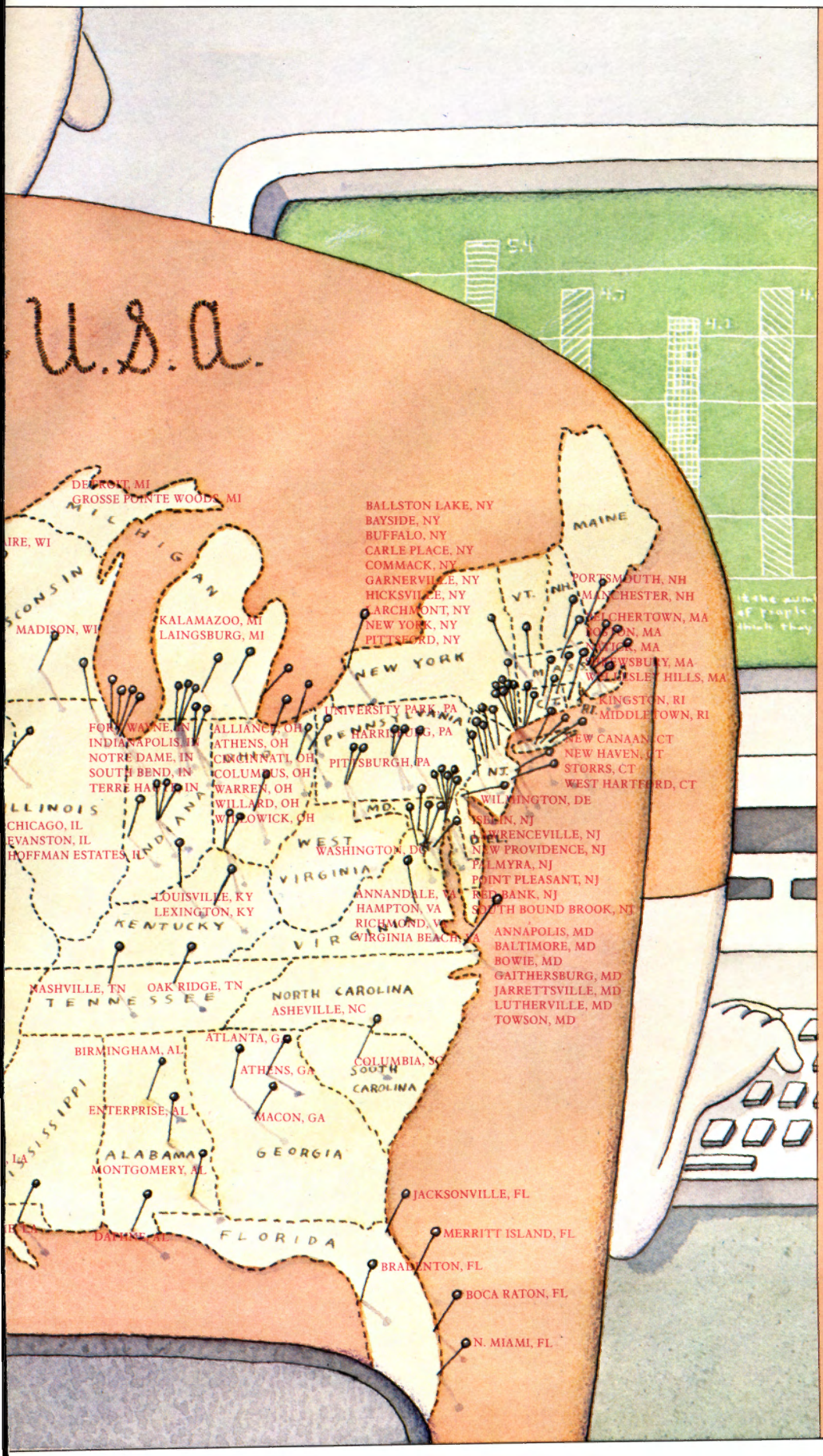
A SEARCH FOR SOFTWARE

Not all users groups are as vocal as the New York club. But curiosity is the common denominator that brought together computer users—present and prospective, professionals and amateurs, to form the first users groups devoted to the IBM PC. When IBM released its personal computer in 1981, relatively little software was available. "I was one of the early purchasers of an IBM PC," says David Foulger, president and founder of the Connecticut IBM PC Users Group. "A lot of people were developing their own software. I thought we could save a lot of time by sharing the fruits of our labors. We were people getting together to help each other."

Some PC groups grew out of larger computer clubs, like the Boston Computer Society. One of the first and largest of the computer clubs, the BCS now has over 40 subgroups, each with




Users Groups
HAWAII
PEARL CITY, HI
HONOLULU, HI
BELLINGHAM, WA
BELLEVUE, WA
TACOMA, WA
YAKIMA, WA
WASHINGTON
PIGARD, OR
BEAVERTON, OR
CORVALLIS, OR
EUGENE, OR
OREGON
BOISE, ID
IDAHO
MONTANA
NORTH DAKOTA
FARGO, ND
BUXTON, ND
SOUTH DAKOTA
WYOMING
NEBRASKA
NEVADA
SALT LAKE CITY, UT
UTAH
LOVELAND, CO
BOULDER, CO
COLORADO SPRINGS, CO
COLORADO
KANSAS
SHAWNEE, KS
TOPEKA, KS
WICHITA, KS
MINNESOTA
MINNEAPOLIS, MN
ST. PETER, MN
EAU CLA
BETTENDORF, IA
CEDAR FALLS, IA
CEDAR RAPIDS, IA
DES MOINES, IA
IOWA
MISSOURI
COLUMBIA, MO
KANSAS CITY, MO
ST. LOUIS, MO
CALIFORNIA
BAKERSFIELD, CA
CARLSBAD, CA
CHULA VISTA, CA
CITRUS HEIGHTS, CA
CORTE MADERA, CA
FRESNO, CA
GILROY, CA
LA MIRADA, CA
LIVERMORE, CA
LOMITA, CA
LOS ANGELES, CA
MODESTO, CA
MONTCLAIR, CA
N. HOLLYWOOD, CA
ORANGE, CA
PASADENA, CA
PLACENTIA, CA
REDDING, CA
REDONDO BEACH, CA
SAN CARLOS, CA
SAN DIEGO, CA
SAN FRANCISCO, CA
SANTA MARIA, CA
STANFORD, CA
SUNNYVALE, CA
TEMECULA, CA
THOUSAND OAKS, CA
WALNUT CREEK, CA
ARIZONA
PHOENIX, AZ
TEMPE, AZ
TUCSON, AZ
NEW MEXICO
LUBBOCK, TX
BARTLESVILLE, OK
OKLAHOMA CITY, OK
OKLAHOMA
ARKANSAS
DALLAS, TX
IRVING, TX
ARLINGTON, TX
TEXAS
TYLER, TX
SHREVEPORT, LA
EL PASO, TX
AUSTIN, TX
LAFAYETTE
SAN ANTONIO, TX
HOUSTON, TX
METAIRIE



Is there a PC User's Group near you? Check this map to find out!

Flash!
Junior's First Local Club:
The Capital Area IBM PC*jr* Computer Club
c/o Lowell Denning
12611 Beachfern Ln.
Bowie, MD 20715
(301) 262-8275

PAUL MEISEL

its own directors. Mike Rohrbach, director of the IBM PC Special Interest Group (SIG) reports that more than 300 people attend each meeting.

Typically, users group meetings are held once a month. While many may end up as a "B.S. Session," (that's "Beer & Sandwiches," according to the New York Amateur Computer Club), the formal section of most meetings is held in school auditoriums, computer stores, or other convenient locations.

The Picture City Personal Computer Programming Club had its first meeting at the Rochester, New York, Computerland in February, 1982, "with ten members in attendance," according to Club President Dale Dewey. With more than 200 members now, they've moved to larger quarters at the University of Rochester.

One question was mailed in from Indonesia.

Most meetings include announcements of club news and member activities, as well as a period for questions. In one "Random Access" Q & A session of the New York group, questions included a request for a BASIC programmer, one for a recommendation of good books on PC DOS, and another on legal software for producing wills. A WordStar question even came in by mail from Indonesia. Since members may often be programmers, data processing executives, hardware wizards, Computer Science students, and computer retailers, there's a good chance that most questions will get an answer. At very least, someone will know someone who knows someone . . . who *knows*!

The main event at most meetings is a talk/demonstration by either member experts or outside presenters. Representatives from hardware and software companies bring in their latest wares, giving members an opportunity to try out and question new products before purchasing.

The technical level of talk usually matches that of the majority of group members. "Most of our group are beginners, and the most important thing we want our programs to do is teach more about the basic things about using a personal computer," says Diane Skoll, founder and chairwoman of the Bluegrass IBM PC Users Group, Lexington, Kentucky. Speakers "talk about different software, and point out important features of a program, because most members don't feel they are very knowledgeable yet."

Novice members of the Athens, Ohio IBM PC Users Club are helped out of their digital dilemmas by Charles Harrington. Founder and president of the group, Harrington is an associate provost at Ohio University, with many years of experience in both mainframe and microcomputer applications. The Beginners' SIG has been meeting twice a week in his office.

There's no stigma attached to being a new user, either. "There are a large number of expert users who come to the beginners' sessions anyway. They find it profitable, usually learning something new and are eager to share their knowledge," remarks Foulger of the Connecticut group.

Club dues vary, from $10 to $25 per year, with family memberships frequently offered. "We have husbands and wives, mother and son . . . there are a lot of families getting involved, and over the summer, we might have more kids," says the Bluegrass Group's Skoll.

WHO BELONGS?

Membership is generally open to anyone who's interested, although most have IBM PC or compatible models. So, can Junior join the club?

"Absolutely!," replies Ted Kohan, secretary/treasurer of the Athens, Ohio group. "We would welcome new members with PC*jr*'s and encourage people in our group to have different types of IBM hardware and software." Agrees Deirdre Quinn, secretary of the San Francisco PC Club, "We would happily welcome any new PC*jr* owners."

Included in most memberships is

a subscription to the club newsletter. Besides listing meeting and SIG whereabouts, the mailings also include product reviews, members' articles and editorials, plus advertising. Some clubs also operate public access bulletin boards where members can post items for sale and ask knotty questions that may come up at 3 AM.

Groups buy software and hardware in volume to cut costs.

One of the most valuable services that clubs provide is a library of public domain software. While some software can be downloaded from the club's bulletin board via modem, it is more often available on disk by mail or at the meetings. Public domain software consists of programs that are not protected by copyright, and may have been donated to the club by its creator. (While some groups allegedly allow the duplication and/or sale of copyrighted, commercially available software, this practice is illegal.)

Generally, club members either bring their own disks in for copying or order the software for a nominal fee. Picture City Club members pay $4 per volume (each volume includes a number of programs) including disk, or $1 per volume if they supply their own. A few clubs offer software free of charge. "The biggest asset in our club is our software library," says Bluegrass' Skoll. "We acquire 'freeware' and we don't charge for the diskettes; that's where the majority of our dues go. That's what everybody is really interested in." PC*jr* owners check with the club's librarian to see of the PC programs will run on the Junior.

Some groups sponsor software and hardware buying groups, purchasing in quantity at a discount. Others buy disks wholesale and share the reduced cost.

A popular special interest group for many clubs is the Lotus 1-2-3 SIG. Says Foulger: "About half the number of people who come to the regular meetings also attend the Lotus group meetings." For PC*jr* owners who have recently added more memory to run *1-2-3*, a Lotus SIG may be the place to catch up on the intricacies of this popular "integrated" software package.

Junior's Own National Network

"The User's Group," based in Lubbock, Texas, is a thriving organization for PC*jr* owners. The national group, formed by Brian Gratz, offers information and Junior products to its members. Gratz, formerly the international users group coordinator for Texas Instruments, saw a need for a national exchange for the PC*jr*. The group's newsletter, which does not accept advertising, includes product reviews and offers discounts to members on hardware, software, accessories, and supplies.

Unlike most computer clubs, The User's Group is a for-profit venture. Dues are $15 a year. Members can also participate in the User's Group Program Exchange, trading an original program of their own in exchange for two programs written by other members. (Contact The User's Group at 4620 50th Street, A-9, Lubbock, TX 79414.)

Joining In

Check the fold-out map of IBM PC Users Groups across the nation. If your area isn't represented, check with nearby computer stores or in the Computer Science department of the nearest college or high school.

Whether you choose to start your own Junior-specific group, or join a local IBM club, you'll find one of the best byproducts of this electronic age is the capacity of a so-called "cold" machine to bring together people of all ages and backgrounds—bright, curious folk, eager to share their knowledge and questions with other computer users. Can Junior join the club? In a word: Absolutely!

Ruth Rosen is PEANUT's associate editor and a member of the New York IBM PC Users Group, and the New York Amateur Computer Club.



The Complete Peanut Buyer's Guide to Monitors

All you need to know to outfit Junior with the perfect display screen.

BY TIMOTHY P. BANSE

As you know, the PC*jr* doesn't come with its own monitor or screen. We consider that a real plus for the Junior, since no one type of monitor can possibly satisfy every type of user. A computer that's locked into a black and white monitor, for instance, locks out the possibility of using programs—from games to business graphics programs—that use color as an integral part of their design.

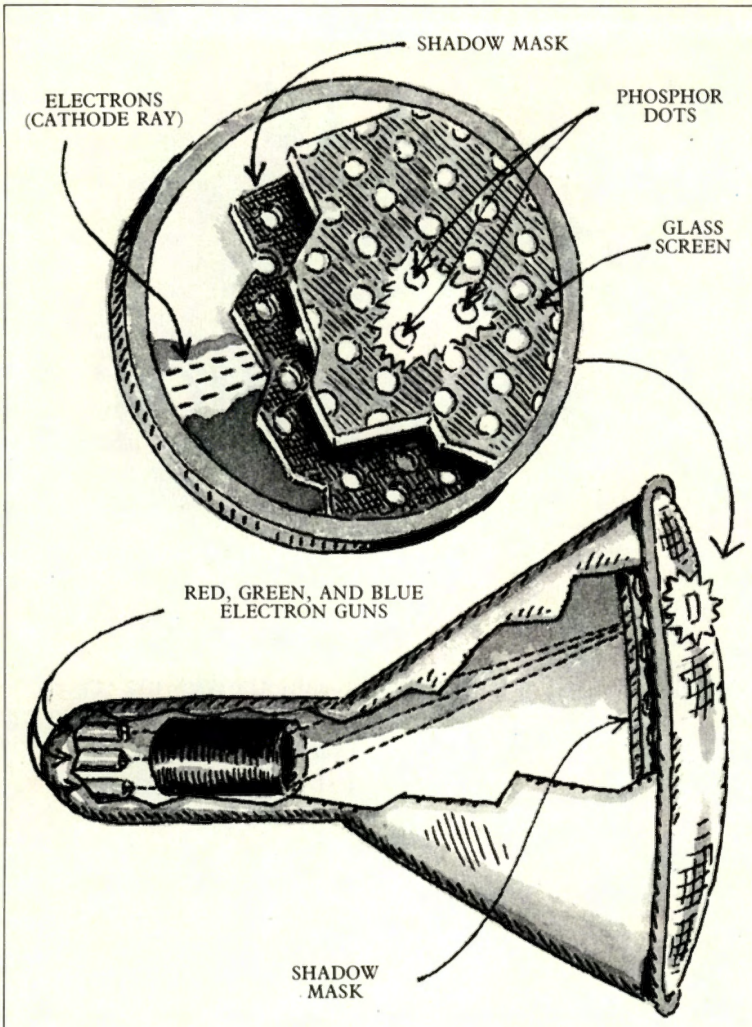
So the choice of a monitor is up to you. And, as you might expect, the features, quality of design, and prices of PC*jr*-compatible monitors vary widely. Where do you start? This article breaks that problem down into two parts: learning what makes a monitor tick, and testing out monitors to find one that fits your needs. We'll give you a primer on important monitor features to look for; some test programs to run on any monitor you're considering; and, finally, an up-to-date comparison chart of PC*jr*-compatible monitors. Everything you need to make a wise purchase.

Ever hear the term "CRT"? The acronym stands for Cathode Ray Tube, which is just a fancy name for a picture tube. This cathode ray, or electronic beam, scans the viewing screen on a monitor or TV from left to right. As the beam sweeps across the top of the screen, it shoots out electrons at the thousands of tiny phospor-coated dots on the screen, setting some to glow and leaving some dark. Phosphor is used to coat the inside of video display screens because this rare material emits visible light as it is struck by these electrons.

The electronic beam traces a line across the top of the screen until it gets to the rightmost border. When it does, the beam shuts off, and swings its aim back to the left border, drops down one line (called a *scan line*) and continues its rightward trace pattern. After 262 of these horizontal lines fill the screen, the beam turns off and aims again at the top left corner. Each top-to-bottom scan of 262 lines is a *field*. A pair of fields stacked on top of one another is a *frame*.

Monochrome monitors, those that display a single color—usually white, green, or amber—on a dark background, draw 60 frames a second in this manner. Since the human eye is blind to goings on any faster than 1/30th of a second, we see a rock steady image. In fact, a monitor, and even the lowly family TV set, are a lot like a movie projector, only instead of celluloid frames, they project electron-

JEFF FARIA



Inside a color monitor.

ic frames made up of glowing or dark dots.

Color monitors are a little more sophisticated than monochrome monitors and TVs. Instead of just one electronic gun, they have three: one apiece for red, green, and blue. And instead of a series of single glowing or dark dots, each horizontal scan line consists of clumps of three dots—again, one each for red, blue, and green. Each triad of dots displays a single point on the scan line.

To help aim the electron beams, monochrome and color monitors have a perforated sheet of black metal, ominously known as the *shadow mask*, mounted behind the phosphor screen. This shadow mask is most important in color monitors because all three color beams shoot through the same hole in the mask. This arrangement prevents electrons from striking the wrong dots, which would cause color errors. When the red beam is aimed at its dot, and shoots an electron, that dot glows red. It works the same way for the blue and green ones. Colors other than red, blue, and green come to life when the three primary-colored dots are mixed, like the colors on an artist's palette. The gun can also regulate the intensity by brightening or darkening a dot, which changes the shade.

The biggest difference between different types of color monitors is how the video signal (the electronic impulses that tell the monitor's color guns when to shoot electrons at which cluster of phosphor dots) gets from the PC*jr* to the screen. RGB (standing for red-green-blue) monitors use a separate wire to send each color's signal or information from the PC*jr* to the monitor. Composite-video units send all the brightness and color information via one wire. Because they can control individual color signals, RGB units boast more sharply defined images and truer colors. The IBM PC*jr* Color Display is an example of an RGB monitor. Composite monitors are limited to displaying 40 columns of text across the screen and offer lower resolution than RGB, but higher resolution than TV.

A monitor's *resolution*, or how clearly it displays graphics and text, is largely due to the number and spacing of those aiming holes on the shadow mask. The more holes on the mask, and the tighter they are squeezed together, the finer the image on the screen. This spacing between the holes on the shadow mask is referred to as *dot pitch*. Color TV sets come with dot pitches of 0.62 millimeter, or larger. Medium-resolution cathode ray tubes come fitted with dot pitches from 0.40 to 0.62 millimeters, while the dot pitch of monitors with high-resolution and the sharpest picture is usually smaller than 0.40 millimeter. Because dot pitch is really only a factor when displaying high-resolution color graphics, most manufacturers of monochrome monitors don't specify this figure.

Since dot pitch is a vital specification when comparing color monitors' resolution, you'll find each monitor's

rating listed in the monitor comparison chart accompanying this article. Consult these figures once you've begun researching the possibilities. In the meantime, read on about resolution.

Resolution is measured in dot pitch and also by the number of actual phosphor dots coating the screen. Each of these dots is called a picture element, *pixel* for short. (Some manufacturers refer to picture elements as PEL's.) As you probably already know, different graphic screens have different resolutions, measured by the number of pixels across the width of the screen. The PC*jr*'s Alpha, or text, screen needs 160 pixels; medium resolution needs 320 pixels; while high-resolution demands 640 pixels. Again, in the comparison chart we've listed each monitor's resolution by giving the pixel specifications. Ultimately you want a resolution of 640 horizontal pixels. Many color monitor manufacturers also list their monitor's vertical pixels. However, the computer being used with a particular monitor determines the number of vertical pixels, and, in the case of the PC*jr*, 200 is the maximum number of vertical pixels possible. So our chart lists only the horizontal pixel figure.

Consider Screen Speed

Another important consideration is the *bandwidth*, or how long it takes the monitor's electronic circuitry to change the pattern of glowing and dark pixels on the screen. Every time you type in a new character, or a program instructs the PC*jr* to change text or an image on the screen, new information needs to be drawn on the monitor faster than the blink of an eye. In general, the higher the bandwidth, the faster the screen update and the steadier and sharper the image. Can the monitor you're considering buying keep up with the speed of the PC*jr*'s different screens? If you only use 40-column text, you can sneak by with a monitor rated at 4 MHz. Medium-resolution graphics need at least a 7 MHz rated monitor, while high resolution needs at least 14 MHz.

One more feature to consider is how many colors a monitor can display. A few can only display eight but most will show a full 16. Since the PC*jr* can display up to 16 colors at a time, with a less capable monitor you won't fill your screen with the full rainbow of colors. On the other hand, if you only care about word processing, you needn't worry about color.

Not-So-Friendly Flicker

Recall when we said the aimed electron beam strikes a phosphor-coated dot and glows for a fraction of a second. If the phosphor-coated dots keep glowing even after the electron beam has lit up a new pattern of pixels in another frame, you'll see ghost images smearing the top of the screen, even after the text or graphic display has moved to the bottom. Different phosphors hold their light for different lengths of time. Monitors with phosphor dots that continue glowing for a relatively long time (remember, we're still talking about fractions of a second) will produce this kind of "smeared" screen when screen displays change. These monitors have a long *persistence*, which means the dots glow, or persist, longer.

These friendly hauntings may, at first, seem to be a nuisance, especially when using a program with fast-moving animated graphics. But long persistence phosphor dots have their benefits too: by holding their glow longer, they reduce screen flicker, the annoying rapid movements of characters and figures on the monitor.

So there's a tradeoff here: reduced flicker is easy on the eyes, but gives you a temporarily smeared screen. If you plan to run a lot of programs with high-resolution graphics, a monitor with short persistence and a bit more flicker is the wise choice. However, if you spend from 9 to 5 in front of your PC*jr* working with a word processor or electronic spreadsheet, go for a long-persistence monitor. Such all-text programs change screens relatively seldom anyway, so smearing will only be an occasional problem. And the steadier image will be a blessing to your eyes.

Ultimately, you'll want a resolution of 640 horizontal pixels.

The higher the band width, the steadier and sharper the image.

WHAT KIND OF DISPLAY IS RIGHT FOR YOU?

The decision may be easier than you think. Entry level PC*jr*'s, those limited to 40 column display, can make do with a TV set, but will show off clearer text and graphics if hooked up to a composite video monitor. If you don't want, or need, color display, monochrome monitors are relatively inexpensive and provide 40 to 80 column text display. White letters on a black background is a popular choice, but amber or green on a black background is easier on the eyes. Of the three contenders, amber on black is reputed to be the easiest for long stretches.

Even though a composite color monitor will show off clearer text, it's limited to just 40 columns. Users of enhanced PC*jr*s, those with the 80 column board, can thump along on one cylinder with composite video, or really cruise with an RGB monitor. With a higher-priced RGB, dry, reddened eyes find cool relief, drinking in the vivid display of colors and crystal clear images. But the cost of such salvation is precious. Here are some prices we think you'd like to know about. Acceptable monochrome monitors can be found in the $99 to $250 price range. Composite video monitors start at around $200, and top off at about $1,000. The kind of RGB you will ultimately be looking for runs in the $400 to $1,000 price range. Check the comparison chart to see the full range of prices.

KICKING THE TIRES

Don't be a tirekicker when it comes to shopping for a monitor. Start your search for the perfect picture with an idea of how to test more than the on/off switch. Know what questions to ask the dealer. Here are some tools and techniques to use when you're choosing a monitor for Junior.

IBM conveniently outfits DOS 2.1's *Supplemental Programs* diskette with the SAMPLES.BAS programs. In addition, we'll provide a few easy-to-enter program lines. Between the two, you'll have enough BASIC programs to test drive a display in the showroom.

Begin by inserting the BASIC cartridge into either slot. Place the DOS 2.1 disk in Junior's disk drive and turn on the computer. When the DOS A> prompt appears on the screen, enter the command BASICA. Remove the DOS disk from the drive and insert the disk labelled *Supplemental Programs;* it is in the sleeve at the back of the DOS manual. Then enter: RUN "SAMPLES.BAS".

At the menu, select H for the color bar program. When you do, the screen will fill with 16 color bars. If viewing a monochrome display, the bars will appear as different shades of the foreground color. Some won't even be visible; this is normal. Monochrome monitors are solely intended to display text characters, so it won't matter that the shades of grey are invisible. When evaluating a composite video monitor, notice that not all of the bars match their stated color. Even if you fiddle with the knobs until the out-of-true colors are properly tuned, ultimately, those zeroed-in at the beginning will fade off the mark. An RGB monitor, however, can lock in a color as solidly as the Bureau of Standards.

Once satisfied you've got a clear picture of a monitor's color range, you'll want to check out the persistence. Press the ESC key. After a few seconds of blank screen and disk drive whirring, you'll soon be back at the SAMPLES menu. This time type the letter G, which will call up the bouncing ball program.

With a long-persistence monitor, smears trail the ball as it bounce-bounce-bounces across the screen. That's great for text work, but irritating with animation. So which do you want, flicker-free word processing, or ghostless animation?

You may want to dabble with some of the other sample programs. Selection B calls up the art program, drawing a city that would make any mayor proud. But, in this test, you're the building inspector. It's your job to make sure all the skyscrapers' lines are straight, and all the squares are square. Selection E calls up a donkey program.

Its animation provides another look at long-persistence, or the lack of it, based on the degree of smearing.

CAVEAT MONITOR

If you're thinking of buying a no-name monitor at a too-good-to-be-true price, we invoke the axiom: "Let The Buyer Beware." When looking at bargain-basement monitors, watch out for poor *convergence*, or when the three electron beams don't converge properly on one or more set of red, blue, and green dots. You can test for this unsightly condition by filling the screen with white letter As. After you type in and run the program listed below, examine the letter in each of the four corners. Be on the lookout for rainbow-like shadows and fuzzy letters that spell poor convergence. The malady can be caused by improper factory assembly or adjustment that's wandered over the course of several months' worth of computing. Admittedly, this is a rare problem, but why suffer the eyestrain, or endure the hassle of having it corrected by a technician?

```
10 CLS: KEY ON
20 WIDTH 40
30 SCREEN 0, 1
40 COLOR 7, 0
50 A$ = STRING$(40,65)
60 FOR X = 1 TO 23
70 PRINT A$;
80 NEXT
90 KE$ = INKEY$: IF KE$ = "" THEN 90
```

Make the changes listed below to test 80 column resolution. When you run the modified program, all of the letter As should be easy to read. If not, and you're planning on extensive word processing, scratch the monitor from your list of possibilities.

```
20 WIDTH 80
50 A$ = STRING$ (80,65)
```

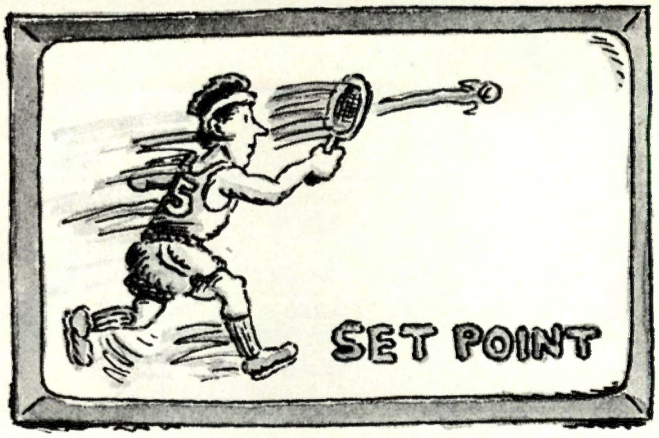
Finally, here's a gentleman's (or woman's) resolution test that doesn't require any programs. In fact, switch off the monitor altogether for this test. A nose length away from the screen, peruse the shadow mask. Can you see the tiny perforations? If you can't see the holes, odds are good they are .31 millimeter or smaller, qualifying the display as high resolution. Even so, it would still be a good idea to also check the product specifications sheet to be sure.

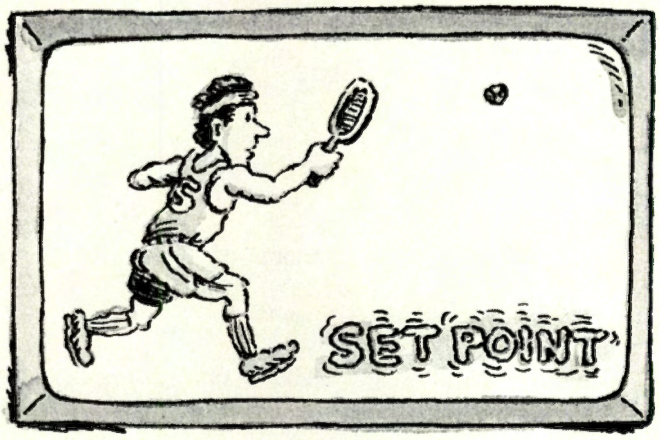
One last warning: be wary of monitors that are offered with the PC*jr* (or any other computer) as part of a package deal. These are often poor-quality monochrome or composite video displays that are no bargain in the long run.

If you are looking to keep your initial computer investment low, connect Junior to your TV at first. After you realize that televisions are hopeless eye burners, you'll want to shop for a quality monitor, not one that is hardly an improvement on your low-tech TV.

Timothy P. Banse is an Iowa City-based freelance writer and a contributing editor to PEANUT. His latest book is Home Applications for the PC/PC*jr* *(Little Brown).*

With a long-persistence monitor, images get smeared. That's OK for text work, but irritating with animation.





A monitor with short persistence gives you a clear image but text tends to flicker.

JEFF FARIA

PEANUT'S COMPLETE BUYER'S GUIDE TO MONITORS

Color

Manufacturer	Model number	Display size	Color signal	Dot pitch (mm)	Resolution (horizontal pixels)	Bandwidth (MHz)	Audio output	List price
Amdek Corp. 2201 Lively Blvd. Elk Grove Village, IL 60007 (312) 364-1180	**Color-I**	**13"**	**Composite video**	**.56**	**260**	**4**	**Yes**	**$379**
	Color-I Plus	**13"**	**Composite video**	**.56**	**260**	**4**	**Yes**	**$399**
	Color-II Plus	**13"**	**RGB**	**.43**	**560**	**12**	**No**	**$559**
	Color-IV	**13"**	**RGB**	**.31**	**720**	**16**	**No**	**$799**
Amtron Corp. 2260 De la Cruz Blvd. Santa Clara, CA 95050 (408) 748-8500	**CD1902CA**	**19"**	**RGB**	**.31**	**1280**	**100**	**No**	**$3,760**
Aydin Controls 414 Commerce Dr. Fort Washington, PA 19034 (215) 542-7800	**8810**	**13"**	**RGB**	**.31**	**600+**	**25**	**No**	**$1,500**
	8830	**19"**	**RGB**	**.31**	**700+**	**25**	**No**	**$1,800**
Dynax, Inc. 5698 Bandini Blvd. Bell, CA 90201 (213) 260-7121	**SC10**	**13"**	**RGB**	**.43**	**640**	**30**	**No**	**$599**
Electrohone Electronics 809 Wellington St. North Kitchener, Ontario N2G4J6 (519) 744-7111	**ECM1301**	**13"**	**RGB**	**.31**	**720**	**25**	**No**	**$1,495**
Hitachi America 401 West Artesia Blvd. Compton, CA 90220 (213) 537-8383	**CM1481B**	**13"**	**Composite video**	**NS**	**260**	**4.7**	**Yes**	**$379.95**
IBM P.O. Box 1328 Boca Raton, FL 33432 (800) 447-4700	**5153**	**12.5"**	**RGB**	**.43**	**640**	**15**	**No**	**$680**
	PC*jr* Color Display	**13"**	**RGB**	**.63**	**640**	**15**	**Yes**	**$429**
NEC Home Electronics Personal Computer Div. 1401 Estes Ave. Elk Grove Village, IL 60007 (312) 228-5900	**JC-1215A**	**12"**	**Composite video**	**NS**	**250**	**3.2**	**Yes**	**$199**
	JC-1216 DFA	**12"**	**RGB**	**.36**	**640**	**10**	**Yes**	**$599**
	JC-1460 DA	**14"**	**RGB**	**NS**	**500**	**10**	**No**	**$499**
Princeton Graphic Systems 1101-I State Rd. Princeton, NJ 08540 (800) 221-1490	**HX-12**	**12"**	**RGB**	**.31**	**690**	**15**	**No**	**$695**
Quadram Corp. 4355 International Blvd. Norcross, GA 30093 (404) 923-6666	**CH8400**	**12"**	**RGB**	**.31**	**690**	**15**	**No**	**$695**
Sakata U.S.A. Corp. 651 Bonnie Lane Elk Grove Village, IL 60007 (800) 323-6647 In IL: (312) 593-3211	**SC-100**	**13"**	**Composite video**	**.65**	**280**	**Under 4**	**Yes**	**$329**
	SC-200	**13"**	**RGB**	**.39**	**640**	**4**	**No**	**$649**
Sanyo Electric, Inc. Communications Products Div. 1200 West Artesia Blvd. Compton, CA 90220 (213) 537-5830	**DMC6500**	**13"**	**RGB or Composite video**	**.64**	**Composite: 650; RGB: 340**	**Composite: 3; RGB: 5**	**No**	**$495**
	DMC7500	**13"**	**RGB**	**.42**	**480**	**7**	**No**	**$725**
	DMC8500	**13"**	**RGB**	**.31**	**690**	**7**	**No**	**$999**

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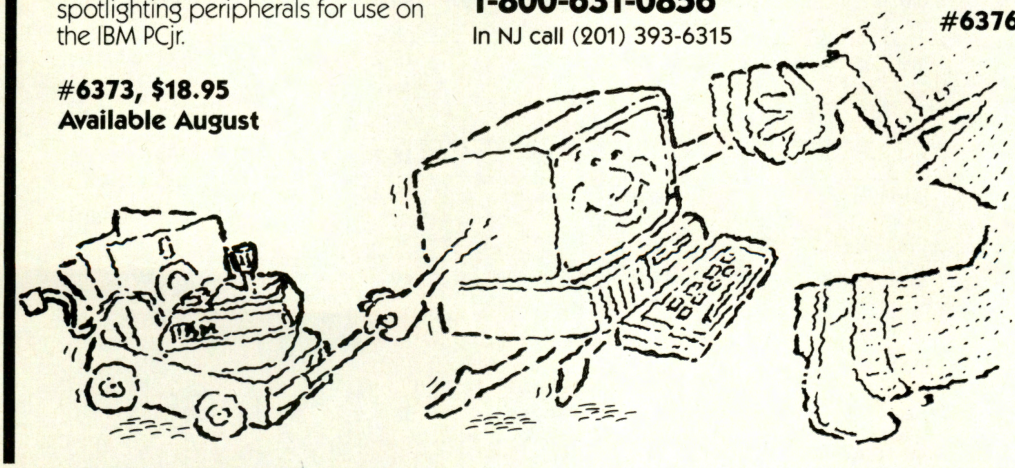

Dr. Aron's Guide to the Care, Feeding, and Training of Your IBM® PCjr
(Aron & Aron), #6368, $16.95
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(Anderson), #6353, $19.95
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Manufacturer	Model number	Display size	Color of phospher	Resolution (horizontal pixels)	Bandwidth (MHz) pixels)	Audio output	List price
Sony Video Communications Sony Dr. Park Ridge, NJ 07656 (201) 930-1000	**KX1211HG Profeel**	**12″**	**RGB**	**.40**	**600**	**10**	**No**	**$895**
	KX1901A Profeel	**19″**	**RGB**	**.60**	**520**	**10**	**No**	**$850**
	KX2501A Profeel	**25″**	**RGB**	**.60**	**520**	**10**	**No**	**$1,200**
Taxan (TSK Electronics) 18005 Cortney Ct. City of Industry, CA 91748 (800) 772-7491 In CA: (213) 810-1291	**400**	**12″**	**RGB**	**.63**	**380**	**over 15**	**No**	**$399**
	415	**12″**	**RGB**	**.38**	**640**	**18**	**No**	**$699**
	420	**12″**	**RGB**	**.38**	**640**	**18**	**No**	**$699**
Techland Systems, Inc. 25 Waterside Plaza New York, NY 10010 (212) 684-7788	**6001**	**14″**	**RGB**	**.31**	**895**	**18**	**No**	**$1,195**
	6002	**14″**	**RGB**	**.31**	**895**	**18**	**No**	**$1,290**
Teknika Electronics Corp. 353 Route 46 West Fairfield, NJ 07006 (201) 575-0380	**MJ-22**	**13″**	**RGB or Composite video**	**.50 Slot**	**RGB: 506; Composite: 320**	**RGB: 18; Composite: 3**	**Yes**	**$539**
USI Computer Products 71 Park Lane Brisbane, CA 94005 (415) 468-4900	**1400C**	**14″**	**Composite video**	**NS**	**260**	**4.2**	**Yes**	**$398**
Zenith Data Systems 1000 Milwaukee Ave. Glenview, IL 60025 (312) 391-8860	**ZVM 131**	**13″**	**RGB**	**NS**	**390**	**6**	**Yes**	**$379**
	ZVM 135	**13″**	**RGB**	**.43**	**640**	**20**	**Yes**	**$599**
Monochrome								
Amdek Corp. 2201 Lively Blvd. Elk Grove Village, IL 60009 (312) 364-1180	**Video 300**	**12″**	**Green**	**900 (center) 800 (corner)**	**18**	**No**	**$179**
	Video 300A	**12″**	**Amber**	**900 (center) 800 (corner)**	**18**	**No**	**$199**
Dynax, Inc. 5698 Bandini Blvd. Bell, CA 90201 (213) 260-7121	**AM30**	**12″**	**Amber**	**600**	**20**	**No**	**$176**
	GM30	**12″**	**Green**	**600**	**20**	**No**	**$176**
Hitachi America 401 West Artesia Blvd. Compton, CA 90220 (213) 537-8383	**MM1218**	**12″**	**Green**	**NS**	**15**	**No**	**$222.95**
Leading Edge Products, Inc. 225 Turnpike St. Canton, MA 02021 (800) 343-6833 In MA: (617) 828-8150	**Gorilla**	**12″**	**Green**	**800+**	**18-22**	**No**	**$99**
	Gorilla	**12″**	**Amber**	**800+**	**18-22**	**No**	**NS**
Micro Display Systems, Inc. 1301 Vermillion St. P.O. Box 455 Hastings, MN 55033 (800) 328-9524 In MN: (612) 437-2233	**Genius VHR**	**15″**	**White, green or amber**	**720**	**80**	**No**	**$1,150**
MicroTouch Systems, Inc. 400 West Cummings Park Woburn, MA 01801 (617) 935-0080	**Point-1 Touch Sensitive**	**12″**	**Amber**	**1024 (touch screen); 350 (composite)**	**18**	**No**	**$1,495**
Sakata U.S.A. Corp. 651 Bonnie Lane Elk Grove Village, IL 60007 (800) 323-6647 In IL: (312) 593-3211	**SG-1000**	**12″**	**Green**	**900 (center) 800 (corner)**	**18**	**No**	**$129**
USI Computer Products 71 Park Lane Brisbane, CA 94005 (415) 468-4900	**900A**	**9″**	**Amber**	**1000 (center)**	**20**	**No**	**$225**
	900G	**9″**	**Green**	**1000 (center)**	**20**	**No**	**$199**
	1200A	**12″**	**Amber**	**800 (center)**	**20**	**No**	**$225**
	1200G	**12″**	**Green**	**800 (center)**	**20**	**No**	**$199**

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One of these Days I've Got to Get Organized

BY ROGER DIONNE

To the consternation of one mother, two wives, eight bosses and most of all myself, I've led a disorganized life. Letters unanswered, papers misplaced, hours searching for car keys, airline tickets, a telephone number jotted on a napkin. You know the sort of thing.

In matters that really counted (as far as I was concerned) I really tried. In grammar school I had all my baseball cards carefully arranged in boxes by number, but if I wanted to dig out, say, Yogi Berra or Hoyt Wilhelm, I couldn't always find him. I could have found him if I had arranged the cards alphabetically, but then I wouldn't have been able to tell at a glance which cards in a series I was missing.

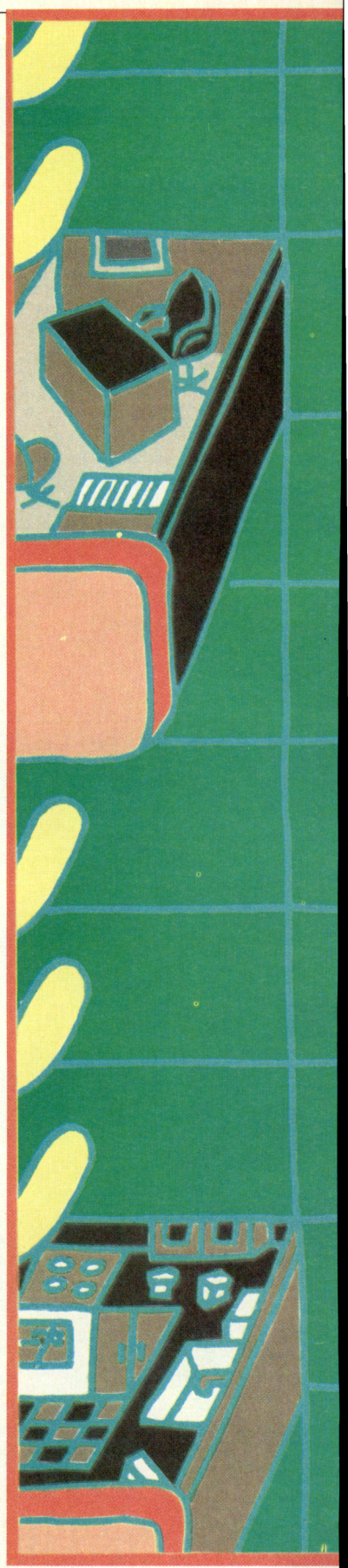
Later, as an English teacher, I accumulated scores of literary anthologies that publishers hoped I'd unleash on my legions of students. One day I started a 3 by 5 inch card file of all the stories in the anthologies. (Later, maybe, I'd tackle the poetry.)

I made a laudable start, but the next day there was a Red Sox-Yankee game on television. The day after that, something else came up, and the day after that the project didn't seem important anymore. The short story file never got done.

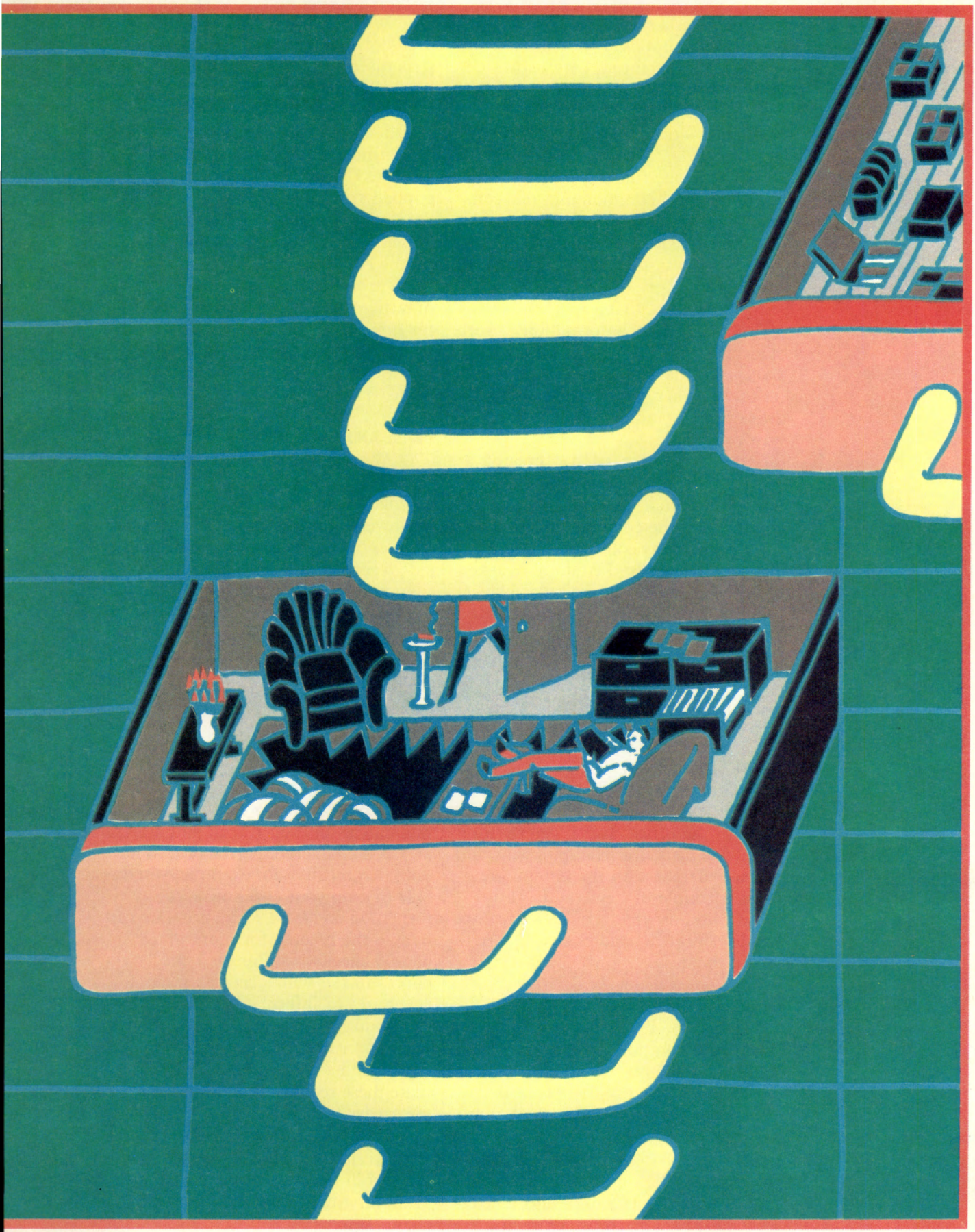
A database program is like an electronic file drawer. It won't change your life, but it can make it a lot more efficient.

Last October I joined blackjack pro and computer writer Ken Uston to write a series of computer guides. We were not the most organized writing team. Ken had subscriptions to a slew of computer magazines, which kept piling up around our office. But if we wanted to know the latest on, say, *Lotus 1-2-3*, we had to pore over endless contents pages and skim hundreds of magazine pages with no guarantee that we'd find anything of use.

It seemed pretty ridiculous that



PETER ROSS



Most lower-priced database software handles only one kind of information, such as names and addresses.

we were writing about computers, which were supposed to make life so terrifically efficient, yet we hadn't devised a way to use our new-found knowledge to organize our library of magazines—or anything else around the office.

Then, one fine day, I discovered one of the most common uses of a computer—something called database management. I had heard the term before, but it was such high-faluting jargon I ignored it.

It turns out that a *database* is simply a collection of information, a sort of electronic file drawer. And *database management* is a method of searching for the information you need in the file drawer and arranging it in whatever way you want.

For example, if I had created a database for my baseball card collection in grammar school, I could have commanded the computer to show me the players in my collection alphabetically or numerically. I could have asked to see the entry for a particular player. I could have asked to see all the Red Sox players, or all the pitchers, or all the hitters with lifetime batting averages of .300 or better. As long as I entered the information properly in the database, I could command the computer to arrange it in just about any way I chose.

A database sounded like just the thing to keep track of the computer articles in the office. If we were writing about *VisiCalc*, for example, we could put our database in the computer, press a couple of keys, and presto! We'd find out what articles we had on hand on *VisiCalc* and exactly where to locate them.

DEDICATED DATABASES

Naively, I assumed I could go down to a computer store, spend a hundred dollars or so, and come away with exactly the program I needed. What I discovered is that most inexpensive databases are called *dedicated* programs. That is, they're pre-structured to handle one kind of information only, such as names and addresses, checkbook records, or recipes.

Well, if I were sending out hundreds of invoices every week, a pre-structured electronic mailing list would be fine. But for most of us, a pocket address book or a desk-top Rolodex is all we need. As for recipes, old-fashioned cookbooks and maybe a tabulated accordian file for tasties clipped from newspapers and magazines seems much more efficient. Somehow, I can't see anyone setting up the PC*jr* on the kitchen counter just to be prompted to measure a teaspoon of tarragon and a cup of dry white wine for *supremes de volaille a la creme et estragon*. Sooner or later that wine is going to get splashed all over your disk drive. Then what?

dBASE AND COMPANY

What I wanted, of course, was a database that I could structure myself, a program that would let me create whatever filing system I needed—one for computer articles, another for my jazz record collection, another for the thousands of books I've saved over the years, and so on. Baseball cards, anthologized short stories, tax-deductible expenditures, and, yes, maybe even recipes and names and addresses.

There are plenty such programs out there. The best known is *dBASE II* (from Ashton-Tate), which is what those in the know call a *fully-featured* program. You can store as many as 65,535 records in one file with 32 separate entries in each record and a total of 1,000 characters per record. What does that mean if, for example, you decide to keep your checking account information on *dBASE*? The program can handle the records for more than 65,000 checks, and for each check you enter, *dBASE* will accept 32 separate categories of information, such as check number, date written, amount, whether or not it's a tax-deductible expense, and so on. And you can manipulate these records in all kinds of complex ways.

The trouble with *dBASE* and other powerful programs like it is that you just about need a degree in programming to set them up and use them. What's more, they tend to cost

from $400 on up. That's fine for large companies with plenty of money to spend and tens of thousands of records to keep. However, all I wanted was a modest program to keep track of computer articles in a dozen or so magazines—a database where I could store and manipulate a few hundred or at most a few thousand records. The important thing was that it be easy to use. I imagine that's what most home and many business users want.

Finding the Middle Ground

After testing a number of dedicated filing programs and some top-of-the-line databases, I resigned myself to the fact that the computer revolution, for all its putative benefits to mankind, was not going to cure me of my disorganized ways. Then, quite by chance, I came upon a beauty of a database program called *pfs:file*. It's produced by Software Publishing Corporation of Mountain View, California, for the IBM PC, the PC*jr*, and IBM-compatible computers—and sells for under $150.

There are, in fact, several relatively simple, moderately priced database management programs on the market. But many software experts and users rate *pfs:file* as one of the best of the lot.

True, *pfs:file* can't manipulate 65,535 records in a single file, but who really needs that? It can efficiently manipulate a couple of thousand, and it's so easy to use that even a computer beginner will feel comfortable with it afer a few minutes.

The program commands (printed here in capital letters) are common English verbs that describe just what it is you're doing. First, you DESIGN the form for the records you intend to keep. Then you ADD the records to the forms you've designed. And later you use the SEARCH/UPDATE mode to pull out any records you want in whatever arrangement you want. You can also PRINT data from the file in any arrangement you want.

Now I was ready to file those computer articles. The initial step in creating a database is the most important—designing the form on which you're going to enter the information you want to keep on file. Two things are important—1) creating places for every aspect of a subject you might later want to check; and 2) making those places large enough to hold all the information you intend to enter.

I created a very simple form:

```
ARTICLE TITLE:
AUTHOR:
MAGAZINE:     DATE:     PAGES:
HARDWARE:
SOFTWARE:
OTHER:
COMMENTS:
```

For every computer article I want to file, this blank form appears on the screen. If an article is about the PC*jr*, I enter *PCjr* after HARDWARE. If an article is about the *Microplan* spreadsheet program, I enter *Microplan* after SOFTWARE. And so on. If I want, I can type in a summary of the article under COMMENTS.

Later, if I happen to want all the articles we have on hand on *Microplan*, I use the SEARCH/UPDATE mode, move the cursor to SOFTWARE, type *Microplan*, press a couple of keys, and the record of every article on *Microplan* I've entered into the database will be presented to me. I then know exactly where to locate what I'm looking for.

Who Needs It?

I suppose nobody really *needs* a database. The human race has stumbled along without databases for several thousand years now. But anyone who has a bunch of things too numerous to locate from memory can save a lot of headaches, frustration, and time with a simple database program like *pfs:file*. In general, anytime you'd like to set up a little card file of things (and maybe you just never got around to setting up that little card file), you can do the same thing more quickly by creating an electronic database, and you can use it far more efficiently than you ever could a card file.

On the other hand, if you don't have shoe boxes or file drawers full of information, or if you don't have large collections of things, then you probably have no use for a database at all.

I use *pfs:file*, a middle-of-the-road database in price and features that's easy enough for beginners.

Certainly you don't need to keep track of, say, fifty or a hundred bottles of vintage wine with a database; but if you have a whole cellar of vintage wines, a database can help you keep track of exactly what you have—the kind of wine, where it originated, the vintner, the year, what you paid, what it's currently worth, and anything else you want to record.

Here are a few more "real-life" situations where a database might help:

□ If you collect anything at all, from books to records to antique dolls, a database can tell you exactly where each item in your collection is located.

□ If you invest in the stock market and subscribe to various newsletters, you can start a database of pertinent articles in the newsletters. (You can do the same for newsletters on any subject—business or hobby—of which you want to keep informed.)

□ If you dine out so much you can't remember what was particularly good at what restaurant at what price, you can keep track of all that with a database.

□ If you panic as tax time approaches, a file for keeping track of all your tax deductions might ease the anxiety that April 15th causes.

□ If you play the horses or bet sports, a carefully designed database could turn you from a loser into a winner.

□ If you're a trivia buff, you'll be in seventh heaven setting up the appropriate databases.

I can imagine how much more profitable my years at college would have been if I had had a PC*jr* and something like *pfs:file*.

Spending perhaps a half-hour a day, I could have entered class notes into a database, which would have made reviewing for an exam a piece of cake. Similarly, I could have kept a file of every article and book I'd used when researching, which would have eliminated a lot of hours at the library looking up materials I'd already used once. Then, I could have kept all my library research notes in a database, which would have made organizing the dozens of papers I had to write considerably easier. Most importantly, I could have kept a database of all the girls I met. (Unfortunately, it would not have been very large.)

KEEPING IN TOUCH

Suppose you want to turn over a new, thoughtful leaf, by sending birthday cards each year to relatives, friends, and business associates. A simple database can get you to the mail box on time without fail.

The initial and all-important step is to design a form with categories for every piece of pertinent information.

First, you need the basic address-book stuff:

```
FIRST NAME:    MIDDLE:    LAST:
STREET:
CITY:          STATE:     ZIP:
```

We'll assume you don't want to check your birthday list every day. No doubt twice a month would be enough. So, in addition to the specific birth date, you enter a category such as HALF-MONTH OF BIRTHDAY. The listings in this category would be on the order of Jan 1-15; Jan 16-31; Feb 1-15; Feb 16-28; Mar 1-15; Mar 16-31; and so on.

About December 27 or so, you'd go to the birthday file and use the SEARCH/UPDATE mode. Next to HALF-MONTH OF BIRTHDAY, you'd type in JAN 1-15 and press the proper function key. *pfs:file* would immediately produce the forms for all the people in your file whose birthdays fall from January 1 through January 15. You then send out the cards for that two-week period and are done with it. *pfs:file* can even address the envelopes for you. About January 10, you'd do the same thing for the period January 16 through 31.

Computers and computer programs are not mind readers; they're just highly efficient slaves. Therefore, it's very important to be consistent in the way you enter data in a database. For example, if under HALF-MONTH OF BIRTHDAY you enter MARCH 1-15 for one of your acquaintances, *pfs:file* will not produce his form if you later type in MAR 1-15, because the program

A database program might ease your anxiety at tax time.

does not understand that MARCH 1-15 is the same as the abbreviated MAR 1-15.

Suppose you want to go further toward spreading good will and send out anniversary cards as well as birthday cards. All you need are two more categories—ANNIVERSARY DATE and HALF-MONTH OF ANNIVERSARY. At the same time you get all the birthdays from January 1 through 15, you can also get all the anniversaries during the same period.

You might use the same database to keep track of the people with whom you exchange Christmas cards. You'd include two more categories—CHRISTMAS CARD SENT and CHRISTMAS CARD RECEIVED. When you send out cards next Christmas, you enter 1984 under CHRISTMAS CARD SENT, and, under CHRISTMAS CARD RECEIVED, you'd enter 1984 on the form of each person who sent you a card.

Let's say that in 1985 you decide to send Christmas cards only to the people from whom you received cards in 1984. Using the SEARCH/UPDATE mode, you type in 1984 next to CHRISTMAS CARD RECEIVED, press a function key, and *pfs:file* produces the forms of only those people in your database who sent you a Christmas card in 1984.

If you're an avid letter writer, you might want to use the same database to keep track of who owes who a letter. You create two addition categories—DATE LETTER SENT and DATE LETTER RECEIVED.

Sending cards can be effective public relations for small businesses. For business purposes you'd probably want to add the company and your contact person's position in your file. You might also want to keep on record such things as spouses' and children's names and possibly create an entry for additional comments. As I said earlier, the important thing when you design a form is to have a category for any piece of information you might later want to look up.

When you're finished designing it, the form in your database for business contacts would look something like the following:

FIRST NAME:	MIDDLE:	LAST:
COMPANY:		POSITION:
STREET:		
CITY:	STATE:	ZIP:
HOME ADDRESS:		
CITY:	STATE:	ZIP:
BIRTH DATE:		MONTH OF BIRTHDAY:
ANNIVERSARY DATE:		MONTH OF ANNIVERSARY:
XMAS CARD SENT:		XMAS CARD RCV'D:
DATE LETTER SENT:		DATE LETTER RCV'D:
SPOUSE'S NAME:		
CHILDREN'S NAMES:		
COMMENTS:		

OK, Where's That Article?

After discovering *pfs:file*, I plunged with enthusiasm into the project of entering all our computer articles into a database. It was a Thursday evening, I remember. At about 10:00, a friend called wondering if I wanted to play backgammon. "What the heck," I thought. "I don't get to play backgammon that much these days." The next night I had a date. On Saturday there was a party, and on Sunday I had too much money wagered to forego watching football. I think I worked on the database on Monday—or maybe it was Tuesday.

"Where's that article we were talking about on *SuperCalc 3*?" Ken asked a few days later.

I knew it was in one of the magazines around the office. But I knew it wasn't yet filed in my database. Seems I stopped cataloging the day before that magazine arrived. Which brings me to the last important thing about a database management program. It cannot do all the work by itself.

Soon, when I can set aside a couple of days, I'm going to bring my database of computer articles right up to date. Then, every Monday morning I'll add articles from the new magazines we received during the previous week. Maybe I'll even start sending birthday cards to all my relatives. Yessir, one of these days I'm *definitely* going to get organized.

Roger Dionne is a San Francisco-based freelance writer and editor.



The Bettmann Archive

Lucille Le Sueur made a name for herself.

She called herself Joan Crawford. Because a star needs a star's name. One that commands attention. And gets it.

MultiMate International is that kind of a name. Replacing Softword Systems. A good name too, but one that no longer suits the company we've become.

Today, MultiMate International spans four continents. MultiMate, the word processor that redefined the IBM PC, has been translated into five languages. Its similarity to Wang has resulted in phenomenal growth, both in acceptance and sophistication, and fueled our own phenomenal growth as a company.

MultiMate International. It's the name we deserve. Because it's the name we've earned.

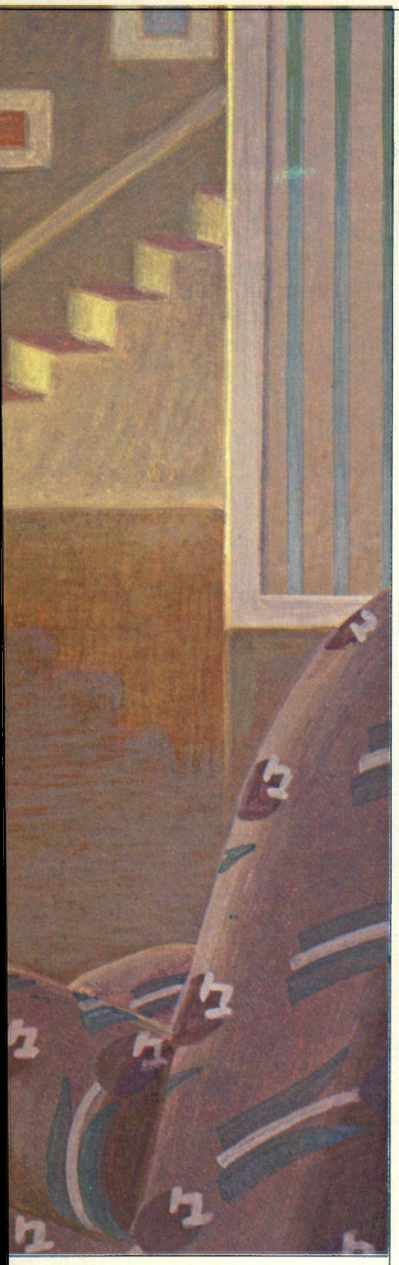
MULTIMATE
INTERNATIONAL

We've made a name for ourselves.



CHRISTOPH BLUMRICH

Paint by Pixel



BY SANDRA MARKLE

Do you have a budding—even blooming—artist in your family? Or do your kin have trouble drawing straight lines and round circles? Whichever category you and yours fit into, the PC*jr*'s color graphics are well worth exploring.

Using the rainbow of rich color commands that generate perfect shapes, you're able to move figures, change their size, and alter colors in a flash. Besides expressing your creativity in a new way, you'll be able to liven up your own programs and understand how color is added to your favorite games. Junior also sneaks in a little geometry lesson, too, since kids can investigate geometric shapes, spatial relationships, and coordinate points by simply having fun with the Peanut's palette. (And there'll be no crayon masterpieces on the walls.)

No long list of terminology is necessary to make you wise in the ways of Junior graphics. If you know what pixels are, and what resolution is, you'll be on your way.

A *pixel*, short for picture element, is a tiny dot of light on your TV screen or monitor. The image on your monitor as well as the picture on your TV set is made up of thousands of pixels. With your nose pressed to the screen, both Pac-Man and *Dynasty* look like a "pixelated" blur, but when you sit further back, your eyes turn those dots into a unified picture. By the end of this article, you'll be able to control every pixel on your computer's screen, even one by one, if you like.

The other important term is *resolution*. This refers to the amount of detail that can be clearly displayed on your screen, and is determined by the number of pixels on a horizontal line. To understand the importance of how many pixels are on a line, draw an outline of a circle, using only six dots. Then draw a circle using 20 dots. Since each dot is like a pixel on a television screen, it's clear that more pixels mean a sharper image. In the low-resolution mode, the PC*jr* has 160 pixels across; in medium resolution, 320; and in high-resolution, 640 pixels.

A picture may be worth a thousand words, but pixels are strictly numbers to the computer. Junior has six screen modes, allowing you low, medium, and high resolutions, plus color to work with. You'll discover that the PC*jr* is really the peacock of the PC family, needing no special attachments to display its many colors.

GETTING GRAPHIC

You'll need to have a color TV or color monitor in order to take full advantage of Junior's graphics. Load cartridge BASIC to begin. If you think you will want to save any programs on disk, then load the operating system and type in BASICA. Then type in SCREEN 0 and press ENTER.

Junior's vivid colors and BASIC graphics commands give you an easy-to-use electronic canvas.

This moves the computer into what is called *text mode*. This is a high-resolution mode because letters and numbers are easier to read when they are made up of a lot of pixels. SCREEN 0 will not respond to any of the special graphics commands. To prove this, type CIRCLE (160,100),55 and press ENTER. Junior will display ILLEGAL FUNCTION CALL, meaning "Hey, you can't do that!"

SCREEN 0 may be strictly for text, but you'll find a very colorful display format in this mode. You can choose from 16 different foreground colors (31 if you count blinking colors separately), eight different background colors, and 16 different border colors. Type in COLOR 1,4,14 and press ENTER. You should now have blue letters on a red background with a yellow bor-



This electronic landscape was created by artist David Newman, using the Sketch5 program

der. (If you see only shades of grey, type in SCREEN 0,1 and then COLOR 1,4,14.) If you would like to see the entire background filled in with color rather than just the area around the letters or numbers you are entering, type CLS and press ENTER. This clears away what was already being displayed, but spreads your background color out like a slate ready to receive your work. See how you like green text on a light cyan background with a magenta border. Then try blinking white text on a blue background with a red border. Any color code number over 15 will be blinking. Type 31 for blinking white. Experiment—what kind of wild and pleasing combinations can you come up with for SCREEN 0?

Introducing Graphics Modes

Unlike text mode that only allows very general control of the block where a letter, number or symbol appears, graphics modes let you manipulate each individual pixel on the screen. Screens one through six are all graphics modes, meaning that you can display graphics images while the computer is in that mode. Take a quick tour of these screens before you settle into one for some creative action. Type in SCREEN 1 and press ENTER. Notice that the cursor appears as a small, solid square. The cursor's characteristics are a clue to the resolution and color capabilities of each mode—something you'll want to watch for in each screen.

In SCREEN 1, the color command controls the background display first—allowing you a choice of all 16 colors—and then the foreground palette (0 or 1). Type in COLOR 9,1 and press ENTER. You should now see a light blue screen. To use the palette you selected, palette 1, type in CIRCLE (160,100),55,2 and press ENTER. The circle the computer displays for you should be outlined in magenta. That's color 2 on palette 1. The computer will also accept any even number as an instruction to use palette 0 and any odd number as an order to use palette 1 in the COLOR command (i.e., COLOR X,3 or COLOR X,5 will both give you palette 1 foreground colors.)

Notice that the circle appears centered. The video screen functions like a piece of graph paper with points where pixels can be displayed arranged in vertical columns and horizontal rows. The dimensions for SCREEN 1 are 320 horizontal rows by 200 vertical columns except that numbering actually begins with zero. The highest row number is 319 and the highest column number is 199. All of the screens will have 200 maximum vertical columns but the number of horizontal rows of pixel points will change. The greater the number of pixel points, the higher the resolution. SCREEN 1 is medium resolution, and the coordinates 160,100 are the center point of the screen.

You can also use the PALETTE command, which is unique to the Junior, to make fast color changes in screens 0 and 1. This command lets you change a stored color to another color. To change the background display you have now from dark blue to red, type in PALETTE 0,4. You had ordered Junior to make the background 9 (light blue), but it had stored the background as 0—the original screen color when you entered SCREEN 1. The 4 orders up the new background color. PALETTE can also be used to change the color of any foreground object. This command must always contain the old color code followed by the new code.

Next, type in SCREEN 2 and press ENTER. Did you catch the change in the cursor's appearance? It's now tall and thin. SCREEN 2 is high resolution—640 (horizontal) by 200 (vertical)—but has no color capabilities. Try the COLOR command that you used with SCREEN 1 to check this. Then type in CIRCLE (160,100),55 to look at high resolution graphics. More pixels means a rounder, less jagged edge on the circle, but the image is also smaller. The higher the resolution, the smaller the display image because the rows are closer together. The circle is no longer centered because 160 is not the center row. What row number should you use instead for the circle's row coordinate? Try it. The number 55 is the radius of the circle. If you want a bigger circle, change this to a larger number. See how big a circle you can display in high resolution without having the image run off the screen.

JUST FOR JUNIOR

Ready for SCREEN 3? Type it in. While SCREEN 0, SCREEN 1, and SCREEN 2 function the same as those modes on the IBM PC, the rest of these screens are unique to PC*jr*. The emphasis here is on enhanced graphics capabilities, and SCREEN 3 is designed especially for use with a TV set. The big, fat, colored cursor signals that this is a low resolution, full 16-color screen. Use COLOR 11,5 to give yourself a light cyan foreground with a magenta background. Type in the usual circle instruction—CIRCLE (160,100), 55,15—adding a color code to make the outline white. Oops! In low resolution, the screen dimensions are only 160 (horizontal) by 200 (vertical) so 160,100 puts part of the circle off the screen. Notice how huge the circle looks in low resolution and how ragged the image edges appear. Type in CLS to clear the screen. Then create a new circle command statement using half of 160 for the center row and 10 for the radius.

SCREEN 4 is just like SCREEN 1 except the PALETTE and PALETTE USING commands lets you select any three out of the 16 possible colors for the foreground. If you'd like to try picking your own palette colors, check your IBM PC*jr* BASIC technical manual, pages 4-257 to 4-261, for directions.

THE SUPERSCREENS

SCREEN 5 and SCREEN 6 are super graphics screens that were developed just for Junior. However, because these screens have medium and high resolution and use the full complement of 16 colors, more than the standard 16K reserve of memory is needed to handle these two modes. First, your PC*jr* must be a model with 128K of memory. Then, before you can type in the command to shift Junior to either SCREEN 5 or SCREEN 6, you must enter CLEAR,,,32768! which will change the memory space reserved for screen handling to 32K.

Once you're in SCREEN 5, enter COLOR and foreground, background codes. Check out the appearance of the SCREEN 5 cursor and type in CIRCLE (160,100),55 for the usual graphics check. The circle should remind you of the one Junior displayed in the SCREEN 1 mode. SCREEN 5 is also medium resolution (320 horizontal by 200 vertical), but this time you have the full 16 colors available for both foreground and background. Want to make your circle diappear? Use PALETTE to change the foreground color outlining the circle image to the same color as the background.

Type in SCREEN 6 to investigate high resolution color graphics for the first time. Take a quick look at the cursor before issuing color instructions. You have the full 16 colors available for the background, but you are limited to the two palettes with their range of three colors each for the foreground. Try out CIRCLE (160,100),55 in this mode. Like SCREEN 2, this makes a small, high-quality image that is off-center. SCREEN 6's dimensions are 640 (horizontal) by 200 (vertical). Remember how you changed the circle image in the SCREEN 2 mode to center and enlarge it? Try those same alterations here.

Now, move back to SCREEN 5.

Move figures, change their size, alter colors in a flash.

It's time to explore creating graphics images with Junior. There are actually two different sets of graphics commands available on Junior—formula commands and DRAW commands. You've already discovered the formula command for a circle. To light up just one pixel on the screen, use the command PSET (x,y). The x is the horizontal coordinate and the y is the vertical coordinate. Type PSET (160,100). Where will that put one dot? In the center. To practice plotting other points, use a piece of graph paper and number the rows and columns to match the dimensions of SCREEN 5. Try to place a dot in the center at the very top of the screen and another in the center at the bottom of the screen. You'll have to look closely because the dots will be small. PSET (160,0) and PSET (160,199) will do it. Remember, row 319 and column 199 are the last

PC*jr* is the peacock of the PC family.

ones visible on the screen. To change the color of the pixel, add a comma and a color code after the PSET (x,y) command.

Since a straight line is the shortest distance between two points, the formula command to make Junior display a line is just the combination of two PSET coordinates. Try LINE (50,100)—(200,199) and see what appears. Draw the printed capital letter I on your graph paper and plan what line commands you'll need to make the computer display this letter. Because you will have to use three line commands, type this in as a short program and then RUN it to see the finished results. If the three lines forming the capital letter don't fit together perfectly, experiment until the image is what you had in mind. The LINE command can also be used to form boxes by giving Junior the upper left corner coordinate

Create Your Own PC*jr* Artworks

CONE

```
0 REM CONE.BAS, MARKLE, 3/17/84
1 REM COPYRIGHT (c) 1984, COMPUQUILL, IN
C., ATLANTA, GA.
5 CLS:KEY OFF:SCREEN 3:COLOR 15,11
6 GOTO 10
7 SAVE "CONE":END
10 CIRCLE (80,100),30,15
20 PAINT (80,100),13,15
30 CIRCLE (80,70),30,2
40 PAINT (80,50),14,2
50 LINE (60,100)-(80,180),15
60 LINE (100,100)-(80,180),15
70 PAINT (80,160),6,15
80 END
```

STAR

```
0 REM STAR.BAS, MARKLE, 3/17/84
1 REM COPYRIGHT (c) 1984, COMPUQUILL, IN
C., ATLANTA, GA.
5 DEFINT A-Z:GOTO 10
7 SAVE"STAR":END
10 CLEAR ,,,32768!:KEY OFF:CLS:SCREEN 5
20 XMAX=319:YMAX=199
30 COLOR 14,1:RANDOMIZE TIMER
40 LINE (160,32)-(120,152)
50 LINE (96,80)-(224,80)
60 LINE (96,80)-(200,152)
70 LINE (120,152)-(224,80)
80 LINE (200,152)-(160,32)
90 CIRCLE (160,100),24,1
100 PAINT (160,100),14,14
110 PLAY"MB MN O3 L4 T188 V12"
120 PLAY "CCGGAAG2":GOSUB 200
130 PLAY "FFEEDDC2":GOSUB 200
140 PLAY "GGFFEED2":GOSUB 200
150 PLAY "GGFFEED2":GOSUB 200
160 PLAY "CCGGAAG2":GOSUB 200
170 PLAY "FFEEDDC2":GOSUB 200
180 END
200 FOR I=1 TO 16
210 X=RND*XMAX:Y=RND*YMAX:R=RND*2
220 CIRCLE (X,Y),R,14
230 PAINT (X,Y),14,14
240 NEXT:RETURN
```

and lower right corner coordinate for the box you want displayed and then including the command code B. For example, type in LINE (40,100)—(120,175),15,B and press ENTER. The 15 tells the computer to draw the box in white. If you'd rather have a solid-colored box, type BF (box filled) instead of B, and the box will be solid white.

THE PAINTERLY PEANUT

The PAINT command is a formula command that can be used to fill in any shape. To see this in action, start by clearing the screen (CLS), setting the background and foreground colors (COLOR 15,1), and giving Junior instructions for creating a circle (CIRCLE (160,100),55,4). Once the circle is displayed, type in PAINT (160,100),14,4. The coordinates direct the computer to any spot inside the area you want painted. The first color code number tells Junior what color to use for the fill, and the second color code clues the computer as to which color edge to check for as a PAINT limit. You may want to write these commands as a short program and then RUN it to see the computer display and paint the circle.

Feel like you're getting the hang of it? Well, here are two projects to challenge you: 1) Make a double dip ice cream cone—one scoop lemon cus-

To save time: press ALT + S for SCREEN, ALT + C for COLOR.

HOUSE

```
0 REM HOUSE.BAS, MARKLE, 3/17/84
1 REM COPYRIGHT (c) 1984, COMPUQUILL, IN
C., ATLANTA, GA.
6 GOTO 10
7 SAVE "HOUSE":END
10 KEY OFF:CLS:SCREEN 3
20 COLOR 15,11
30 LINE (0,150)-(159,199),10,BF
40 LINE (40,100)-(120,175),14,BF
50 LINE (30,75)-(40,175),4,BF
60 LINE (28,72)-(42,75),15,BF
70 LINE (80,50)-(35,100),9
80 LINE (80,50)-(125,100),9
90 LINE (35,100)-(125,100),9
100 PAINT (80,51),9,9
110 LINE (70,125)-(90,175),2,BF
120 LINE (47,115)-(63,150),8,BF
130 LINE (97,115)-(113,150),8,BF
140 CIRCLE (73,150),2,14
150 PAINT (73,150),14,14
```

SKETCH 3

```
0 REM SKETCH5.BAS, MARKLE, 3/17/84
1 REM COPYRIGHT (c) 1984, COMPUQUILL, IN
C., ATLANTA, GA.
5 DEFINT A-Z:GOTO 10
7 SAVE"SKETCH5":END
10 CLEAR ,,,32768!:KEY OFF:CLS:SCREEN 5
20 XMAX=319:YMAX=199
30 X=XMAX\2:Y=YMAX\2:C=15:B=0:GOSUB 510
100 F$=INKEY$:IF F$="" THEN 100
110 Z=ASC(F$):IF Z>96 AND Z<123 THEN F$=
CHR$(Z-32)
200 F=INSTR("UDLREFGHCBXQ",F$):IF F=0 TH
EN BEEP:GOTO 100
210 ON F GOSUB 310,320,330,340,350,360,3
70,380,400,500,600,700
220 IF F$="X" THEN GOTO 20 ELSE 100
310 GOSUB 1000:GOSUB 1500:RETURN
320 GOSUB 1100:GOSUB 1500:RETURN
330 GOSUB 1200:GOSUB 1500:RETURN
340 GOSUB 1300:GOSUB 1500:RETURN
350 GOSUB 1000:GOSUB 1300:GOSUB 1500:RET
URN
360 GOSUB 1100:GOSUB 1300:GOSUB 1500:RET
URN
370 GOSUB 1100:GOSUB 1200:GOSUB 1500:RET
URN
380 GOSUB 1000:GOSUB 1200:GOSUB 1500:RET
URN
400 C=C+1:IF C>15 THEN C=1
410 GOTO 510
500 B=B+1:IF B>15 THEN B=0
510 COLOR C,B:GOSUB 1500:RETURN
600 CLS:RETURN
700 END
1000 IF Y=0 THEN 2000
1010 Y=Y-1:RETURN
1100 IF Y=YMAX THEN 2000
1110 Y=Y+1:RETURN
1200 IF X=0 THEN 2000
1210 X=X-1:RETURN
1300 IF X=XMAX THEN 2000
1310 X=X+1:RETURN
1500 PSET (X,Y),C:RETURN
2000 BEEP:RETURN
```

tard, one scoop strawberry delight—on a light cyan background. 2) Make a picture of the front view of a yellow house with a dark-blue roof. Put a red chimney with a white cap on the left side and include two dark-grey windows, a dark-green door, and a yellow doorknob. Use graph paper to draw the designs and plot the coordinate points as you work to decide which commands will give you the shapes and colors you need. There is no one right program for these graphics, so enjoy whatever you create. To see a sample program for each of these challenges, check on pages 68 and 69. After you've typed in and RUN the samples, you might also enjoy adding other embellishments to those programs. Try adding a third scoop to the ice cream cone or putting a cherry on top. Or maybe you'd like to add a tree and bushes to landscape the front yard.

DRAW makes giving graphics commands easier.

You can also create graphics using DRAW statements. Just as the PLAY command allows you to signal the computer to play a specific note without giving frequency and duration information, DRAW makes giving graphics commands simpler. It's possible to construct shapes and sketch lines without providing screen coordinate locations. The code letters for DRAW commands are U (up), D (down), R (move right), L (move left), E (move diagonally up and right), F (move diagonally down and right), G (move diagonally down and left), and H (move diagonally up and left). A number following the code letter tells the computer how far to travel. The string must be surrounded by quotation marks—for example, DRAW "U100 D50 R100".

Experiment using DRAW commands to create a triangle, a

SKETCH 5

```
0 REM SKETCH3.BAS, MARKLE, 3/17/84
1 REM COPYRIGHT (c) 1984, COMPUQUILL, IN
C., ATLANTA, GA.
5 DEFINT A-Z:GOTO 10
7 SAVE"SKETCH3":END
10 KEY OFF:CLS:SCREEN 3
20 XMAX=159:YMAX=199
30 X=XMAX\2:Y=YMAX\2:C=15:B=0:GOSUB 510
100 F$=INKEY$:IF F$="" THEN 100
110 Z=ASC(F$):IF Z>96 AND Z<123 THEN F$=
CHR$(Z-32)
200 F=INSTR("UDLREFGHCBXQ",F$):IF F=0 TH
EN BEEP:GOTO 100
210 ON F GOSUB 310,320,330,340,350,360,3
70,380,400,500,600,700
220 IF F$="X" THEN GOTO 20 ELSE 100
310 GOSUB 1000:GOSUB 1500:RETURN
320 GOSUB 1100:GOSUB 1500:RETURN
330 GOSUB 1200:GOSUB 1500:RETURN
340 GOSUB 1300:GOSUB 1500:RETURN
350 GOSUB 1000:GOSUB 1300:GOSUB 1500:RET
URN
360 GOSUB 1100:GOSUB 1300:GOSUB 1500:RET
URN
370 GOSUB 1100:GOSUB 1200:GOSUB 1500:RET
URN
380 GOSUB 1000:GOSUB 1200:GOSUB 1500:RET
URN
400 C=C+1:IF C>15 THEN C=1
410 GOTO 510
500 B=B+1:IF B>15 THEN B=0
510 COLOR C,B:GOSUB 1500:RETURN
600 CLS:RETURN
700 END
1000 IF Y=0 THEN 2000
1010 Y=Y-1:RETURN
1100 IF Y=YMAX THEN 2000
1110 Y=Y+1:RETURN
1200 IF X=0 THEN 2000
1210 X=X-1:RETURN
1300 IF X=XMAX THEN 2000
1310 X=X+1:RETURN
1500 PSET (X,Y),C:RETURN
2000 BEEP:RETURN
```

Electronic Sketch Commands for *Sketch3* and *Sketch5* Programs

U **Move up**	E **Move diagonally up and right**	B **Change background color**
D **Move down**	F **Move diagonally down and right**	C **Change line color**
R **Move right**	G **Move diagonally down and left**	X **Clear screen**
L **Move left**	H **Move diagonally up and left**	Q **Quit the program**

pentagon, and a rectangle. Then type in the programs labeled *SKETCH3* and *SKETCH5* for some graphics in the SCREEN 3 or SCREEN 5. You'll also have a chance to practice using the DRAW command codes because these are the keys that will let you move up, down, left, right, and diagonally. The program also includes several special commands just for fun. Pressing B will change the background color. Touching C will change the color of the line Junior is sketching. The computer beeps to warn you when you run into the edge of the screen, and X lets you clear the screen for a fresh start if you don't like what you see. The best part about computer graphics is that your imagination is your only limit. If your time becomes more limited than your imagination, press Q to quit the program.

Want to have background music accompany the showing of your graphics masterpieces? Simply add a PLAY command heading (PLAY"MB MN O3 L4 T188 V12") with instructions to make this background music and to set the octave, tempo, and volume. Then include PLAY statements for the musical notes of the song you want Junior to perform. Before you finish, type in the STAR program to get Junior to perform for you. Lines 200 through 240 are the tricky little subroutine that sprinkles the screen with stars. Use the command RANDOMIZE TIMER (you'll need to load DOS 2.1 first) and plug it into a graphics program of your own.

In this article, we've just skimmed the surface of the PC*jr*'s color graphics capabilities. Articles in subsequent issues will explore Junior's graphics power in even greater detail.

Sandra Markle is a contributing editor to PEANUT.



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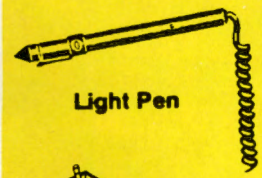



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LETTER FROM COMPUTER CAMP

Dear Stanley—

You were right. Two weeks at a computer camp was a great idea. I love Camp 128K. In fact, I'm writing this letter on a computer! I've really come a long way since that time you told me you wanted a word processor and I brought home a Cuisinart. As I recall, it didn't do a great job with your essay on William Penn, Quaker Statesman.

Nah, but seriously, Stanley, word processing is great. If I had typed this on the typewriter at home and made a mistake, I would have to hit the Correct key and then type the right letter. With my wp program I just hit Correct Mode and type the right letter. It's great.

Camp 128K has got a lot of colorful bunkmates, Stan. I don't think that Peter Pornitelli has gotten the hang of this place yet. He keeps trying to get Gilligan's Island on his monitor. It's only worked once so far. (The one where Gilligan thinks he's a vampire.) Constance Tutone has become an excellent programmer, though. She insists her latest program will actually speed up the evolutionary process. I think she just *trained* those raccoons to throw a successful party.

I'm doing pretty good at programming, too. In my last disk driving lesson, I wrote a program that generates jokes! To run it, you have to use a computer specially outfitted with "corn" chips. Which, of course, are made out of silly-con. But I kid my PC, junior . . .

Probably my favorite time so far was last night. Everyone gathered around a glowing monitor, snacked on s'mores, and Counselor Dot Matrix told the story of The Mad Hacker, a crazed though brilliant camper who sits at his secret keyboard long after lights out. The fiend tries to access our computers and wreak havoc with out programs. Very scary. Thank goodness it's just a story.

Yesterday we learned all about modems. I managed to access your school's main computer. Stan, I only meant to read your grades, but I guess I hit the wrong keys. You're off the basketball team, you are now second piccolo in the school orchestra, and you might think about brushing up on your Latin. It's amazing how easy it can be to contact another computer over the phone—even the one at the Pentagon! By the way, if anyone in an Air Force uniform comes to the door, tell him that Daddy is very, very sorry.

Let me tell you about a typical day at camp. Every morn

ATTENTION! THIS IS . . . THE HACKER! (DUM DE DUM DUM!)

DO NOT ATTEMPT TO ADJUST YOUR MONITOR. I AM IN CONTROL OF YOUR COMPUTER. I CONTROL THE DISK DRIVE. I CONTROL THE KEYBOARD. ALWAYS BE ON THE LOOKOUT FOR THE HACKER. YOU NEVER KNOW WHEN I WILL STRIKE NEXT.

YOU MAY NOW CONTINUE YOUR LETTER TO YOUR SON.



LLYNNE BUSCHMAN

Well, maybe it's not just a story.

Day after tomorrow is color war—well, it's not *exactly* color war. It's more like monochrome war. I'm on the High Resolution team. My event is the Floppy Discus, but I'm looking forward to the talent competition. Pete and Donald are going to do their "Laurel and Hardisk" routine. I know I'll be scrolling in the aisles. But some campers are taking this whole thing too seriously, Stanley. Last night we caught some spies from the Low Resolution team trying to replace all of our floppy disks with 45-rpm records of "Theme From The Brady Bunch."

By the way, I wrote a song for a the talent competition. Want to hear it? Here goes:

(Sung to the tune of "Beat It")

BOOT IT

You say you want computer literacy?
You wish you knew what you could do with your PC?
You'll find out how to cram
Whole novels into RAM
And Boot It
You'll Boot it

(CHORUS)
Boot It
Boot It
There's no way that you'll dispute it
Camp 128K
It's the best around
Our resolution's up there
Our chips are never down
So Boot It

You say you want to run, to swim and to dive?
And learn how to get the most out of your disk drive?
Come breathe our country air
And try out our hardware
Just Boot It
You'll Boot It

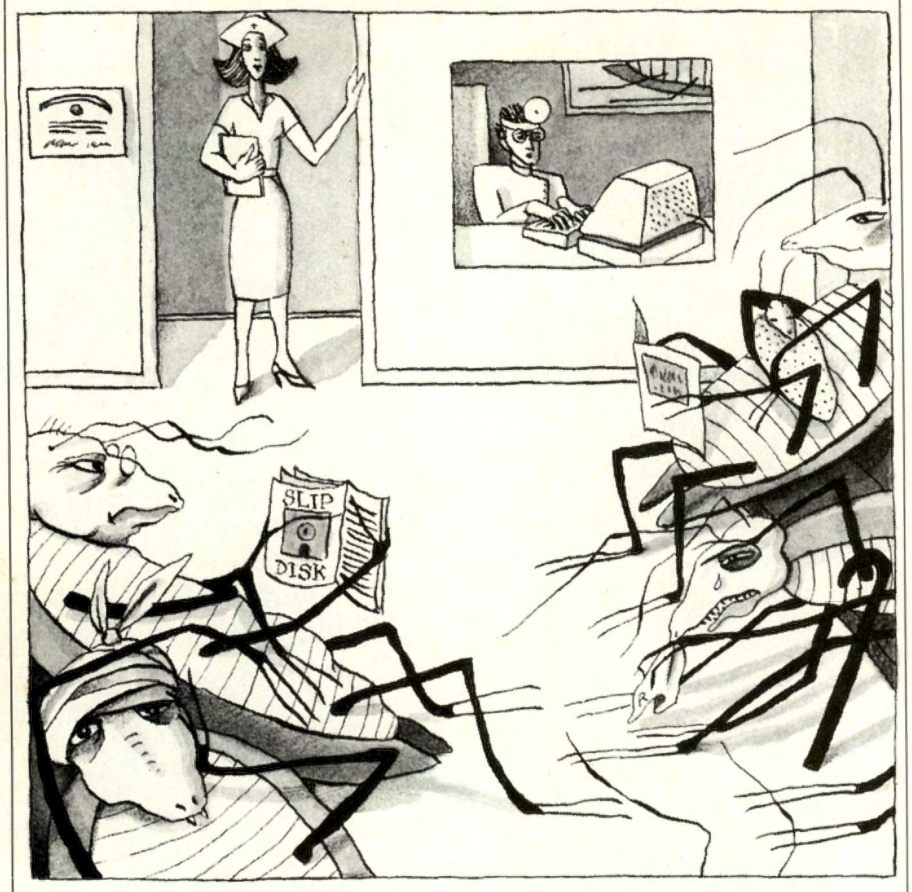
(CHORUS)
Boot It
Boot It
Dial up a bank and loot it
We know all the passwords
Log-ons that don't fail
(Cover all your tracks, though
Or you'll end up in jail)
So Boot It

Boot It
Boot It
Swim in the lake—don't pollute it
Don't have to be a hacker
Don't have to be a nerd
Every camp backpacker
Will process every word
Just Boot It
Boot It
Boot It
Boot It . . . (fade)

Well, Stanley, I have to close now. It's movie night and I want to get a good seat for the first short, *The Three Kluges*. (You know—Modem, Larrydem and Curlydem.) Don't forget to floss regularly, and keep those care packages coming. Thanks again for urging me to go to computer camp. I not only feel like I understand computers a bit better, I feel like I understand my son a little better too. I'll see you soon.

Love,

Dad



VALERIE WARREN

Diagnose Bugs with Junior's Built-In Tests

BY MARK A. GOLLIN

The TV goes from living color to black and black. The dishwasher leaks. The turntable won't turn. What do you do when a household appliance starts acting strange—or or stops acting at all? Unless you're a Mr. or Ms. Fixit with time on your hands, you probably call the repair shop and let *them* worry about it.

What about this new machine you've brought home or added to the office? What can go wrong with the PC*jr* and what can you do when something's awry with Junior's insides?

Let's look first at the types of problems to which the PC*jr* is susceptible. Computer errors fall into two categories, long known in computerdom as *bugs* and *glitches*. A bug is a programming error, a problem with the software you're using, while a glitch is an electrical problem in the hardware.

Most people realize that computer "error" is a misnomer. Usually it is not the computer but rather the person who programmed it who is at fault. So the most common problems you will encounter with your PC*jr* are software bugs, whether you're using a commercial program or one you wrote yourself. This is not because computers are infallible—a computer is a sophisticated appliance, but it's as vulnerable to problems as your TV set.

Now that we've defined our terms, we're ready for this month's PC*jr* tour. We'll look at the many ways Junior has of letting you know about a problem and run through several methods of isolating the part of the computer with the glitch.

JUNIOR'S UNIQUE SELF-TEST PROGRAMS

The PC*jr* is one of the few computers with diagnostic programs designed to help you track down problems that are programmed into ROM (read-only memory). This means that the diagnostics are always in your computer's memory; you don't need a disk or cartridge to run them. There are two sets of diagnostics in the PC*jr*—the automatic "power-on" test and the advanced diagnostics. The first set is automatically run each time you turn on your PC*jr*, and is responsible for the initial delay before the disk drive activates. The only way you influence this set of tests is by turning Junior on and off.

Before we run the automatic or power-on diagnostics, check your PC*jr* to make sure it is hooked up correctly. Are all the connections tight? Are all the cables plugged into the appropriate connectors? If you are not using the optional keyboard cable, are the batteries in your wireless keyboard relatively fresh? Are both the system unit and your monitor or television set plugged in?

When you can answer yes to all these questions, turn the computer and monitor or TV set on. If you have a disk drive, insert the DOS 2.1 disk in the drive and close the door before turning the computer on. If all is well, an IBM logo should appear, and in the lower right hand corner of the screen a number should appear followed by the letters KB (for kilobyte). This number should increase until it reaches the amount of memory you have installed in your PC*jr*. The power-on test is running as the numbers change. If the test detects nothing

wrong, it will signal the PC*jr* to beep once, and then activate the disk drive.

If you cannot complete this procedure for any reason (no image on the screen; no beeps or too many; disk drive won't activate; wrong amount of memory indicated; or strange, unreadable text on the screen), the power-on diagnostics detected a glitch, or you have a problem with the way your computer is set up. If this is the case, call your dealer. Don't attempt to troubleshoot your way out of this one. The automatic diagnostics catch blatant and serious electrical problems with the PC*jr*, such as the failure of critical "chips." These aren't the kind of problems the average user should tackle. Tell the dealer that you are unable to successfully complete power-on diagnostics. He should be ready to help you rectify any errors in the way you have set up your computer and provide service if necessary. If you find that your dealer isn't willing to provide this kind of support, try to find a dealer who will, or look for a user's group nearby. There are many IBM PC and PC*jr* user's groups throughout the country, and your dealer will probably be able to put you in contact with at least one. *(Also see Junior Joins The Club, starting on page 40).*

ADVANCED DIAGNOSTICS THAT ARE EASY AND FUN TO RUN

The automatic diagnostics don't test every component in the PC*jr*. You might well get through the power-on test only to find Junior acting up in the middle of a program. In order to check the operation of the keyboard, printer, disk drive, or other peripheral devices, you will have to use Junior's second set of built-in tests—the advanced diagnostics.

Don't be put off by the name; these tests are as easy to activate and run as turning on the computer. Simply press the CTRL, ALT, and INS keys simultaneously and you'll be presented with a screen containing six pictures or icons of parts of your PC*jr*. They represent (from left to right, top row first) the disk drive; the display (monitor or TV); the joystick; the Junior's sound-generating chip; the keyboard; and the internal modem.

Pressing the INS key alone when the cursor is on the internal modem icon (the last one on the screen) carries you to the second page of advanced diagnostic tests. This page contains three icons: one for each of the two IBM printers compatible with the Junior and one for the RS-232 serial interface. In addition, an omega symbol (Ω.) will appear in the lower right hand corner of the screen, signifying that this is the final diagnostics menu page. Don't worry if all the icons described don't appear on your screen; some only show up if the device is connected.

Below each icon is one or more letters or numbers. Each of these characters represents a test that you can run. (The set of all the letters or numbers listed below the icon for a device is known as its ID.)

If diagnostics senses that a device is connected to the Junior, the ID under the icon will blink. The IDs for the joystick and sound will always blink because the circuitry for these devices is in every PC*jr*. This does not mean that a joystick or speaker is necessarily installed. If you have any one of the devices pictured on the screen installed in your PC*jr*, and its ID is *not* flashing, you have a hardware problem with that piece of equipment.

PC*jr* is one of the few micros with diagnostics programmed into ROM.

Before you call your dealer with news of Junior's malaise, run the specific test programmed for each device to zero in on the exact nature of the error. Press the INS key until the cursor is on one of the characters below the picture of the device you want to test and press ENTER. Some devices, such as the display and the keyboard, have more than one test you can run for them, which is why they have more than one character below the icon.

Once you press the ENTER key, a new screen display will appear. What you should see on the screen if your PC*jr* is operating properly (or hear in the case of the sound test) is described in IBM's red three-ring manual, *Guide to Operations*. We suggest that every Junior owner (especially beginners) buy this book. It explains how to set up the PC*jr* and all its peripherals and, of course, how to test their operation.

However, IBM has left out explanations of many of the screens. The manual simply asks if the picture on the screen matches the picture in the book and instructs you to go on to the next test. Some of the tests are self-explanatory, but many of them are worth exploring beyond what the manual instructs you to do. Here are some notes that take you behind the screens of Junior's diagnostics.

□ Always make sure you use a blank disk for the disk drive test. Any information on that disk will be destroyed!

□ If you have the Memory and Display Expansion Card, always use display test "8." If you don't, use test "4." The only difference between the two is that test "8" also checks the additional memory and graphics modes provided by the expansion card.

□ The screen full of different characters in both the "4" and "8" display tests contains all the characters the PC*jr* can generate in ASCII code order. ASCII code is an arbitrary numeric code for letters, punctuation, and all other characters a computer may need to print out. For instance, "A" (capital a) is ASCII code 65.

□ The three screens in test "8" that are labeled at the top "40x25" and "80x25" (there are two of these, one in black and white, one in color) show the size and clarity of text displayed at 40 and 80 columns across the screen. Display test "4" shows only the "40x25" screen.

□ In the display tests ("4" and "8"), each screen that displays a set of different colored squares tests one of the PC*jr* graphics mode. The mode is described with text in the upper-left hand corner of the screen. There you will find a message such as 160x200x16. The first number (in this case 160) is the horizontal resolution (the number of dots that can be displayed across the screen) of that graphics mode, the second number (200) is the vertical resolution, and the last (16) is the number of colors available.

□ In both tests "4" and "8," there are eight screens that display a single digit (0-7) covering the screen. These screens test the per-

formance of the display with the video memory positioned at eight different places in the PC*jr*'s memory map.

□ Test "5" is for light pen users only. If you have a light pen, this test allows you to draw free-form patterns on the screen. Pressing the pen to the yellow square will make the screen clear to a white background.

□ Pressing the function key (FN) and the BREAK key at the same time will get you out of any test that you are running and return you to the diagnostics menu page (the one with the pictures of all the devices).

□ You can use test "6" to center your joystick if you find that the auto-centering does not work. You should check the centering of your joystick regularly, as the joystick used by IBM (made by Kraft Corporation) has a tendency to "drift" from a centered position. See the *Guide to Operations* for more joystick information.

□ You will not hear the results of test "9" unless you have your PC*jr* hooked up to a TV, a monitor with a speaker, or a separate speaker attached to the audio (A) plug in the back of the system unit.

□ Pressing the function keys (FN and one of the number keys) twice while running the keyboard tests (either "J" or "K") will produce some unexpected results. Some play music, others alter the color of the screen. Try them all. (F2 gets our vote for most sublime effect. Check it out.)

□ Why are there two keyboard tests ("J" and "K")? None of the IBM manuals answer this question. In running the tests, PEANUT found that while the position of keys shown in keyboard test "J" corresponds to the layout actually found on the PC*jr* keyboard, the layout of keys in test "K" corresponds not to Junior's keyboard, but rather the keyboard found on the IBM PC and PC/XT. What does this mean? Could it be that IBM may release the PC keyboard modified for the PC*jr*? The *Guide to Operations* simply comments that test "K" is "reserved for future use."

Using these diagnostics is simply a matter of running the tests for the device you suspect is malfunctioning. After each test is completed, you will be returned to the screen showing the icons of the various devices. If the test was successfully completed, an asterisk should appear below the letter or number of that test you ran. If you do not see an asterisk, the test failed, and your PC*jr* may be in need of service.

The tests are worth exploring beyond what the manual tells you.

These diagnostics are interesting to run, but not something you want to do every time you use your PC*jr*. So how can you tell if something is wrong with the Junior's or some peripheral's hardware without working through the diagnostics? Here are some signs to watch for:

□ No screen display, or extra nonsense characters on the screen.

□ Prolonged, repetitive ratcheting noises from your disk drive (not to be confused with the noises your disk drive normally makes while operating).

□ Error messages such as "unable to read," "unable to write," "mem err," or any other message that indicates a problem that you can't correct. (A tour of these error messages alone would take up volumes.)

□ No response to pressing any key at all on the keyboard.

□ Incorrect response to pressing a key on the keyboard.

This is by no means a comprehensive list. If the PC*jr* does something you didn't expect it to, or doesn't do something you did expect, it could be a sign that you're dealing with a bug or glitch.

What should you do if you experience a problem like one described above? The first thing is to try the procedure that caused the problem again. If the problem doesn't recur, then you may have done something wrong the first time, or it could have simply been a freak occurrence. If the problem does crop up again, either every time or just occasionally, it's time to turn to the diagnostics.

As I mentioned in the beginning of this column, many of the intermittent problems you'll encounter in running the PC*jr* are caused by bugs in the software. If the diagnostics tell you that the Junior is fit, but you still encounter symptoms of a problem, check the written and on-screen instructions of the program you're running to make certain you're following proper procedures.

If you are absolutely sure that you are using the program correctly, and you still have a problem, the program may have a bug. This is more likely with software that you or a friend has written than with off-the-shelf software. If you are a programmer, you might be able to correct the bug, but unless it is your program, this "debugging" is quite difficult. If you have purchased a program and find it has a bug, inform the publisher. Many companies provide updated versions of their programs, correcting bugs that customers have reported.

Knowing a little BASIC and understanding Junior's diagnostics does not qualify anyone to start safely tinkering with the innards of the PC*jr* or a commercial program's code. However, these tests are the first step toward understanding just what makes Junior run.

Finally, here's a bit of preventative "health care" for Junior that will decrease the likelihood of a glitch turning up at all.

Don't expose your PC*jr* to excessive heat or cold. Like you, it prefers to be kept at a comfortable temperature (60 to 90 degrees Fahrenheit). Try to keep your PC*jr* in a relatively hair and dust-free environment. Letting your cat curl up on the Junior is not a good idea!

Don't smoke in your PC*jr*'s immediate area. Smoke can get into the disk drive and cause it to work less reliably. Eating or drinking near the Junior is also a bad idea because of the risk of crumbs or spills.

If you live in an area that has poor quality power (lights flicker, frequent brownouts or blackouts) you might consider purchasing a surge protector for your PC*jr*. A good surge protector will filter out power fluctuations and surges that might damage the Junior.

And remember, pounding on the Junior's keys will never produce any beneficial results. Take out your frustration on something a little less delicate.

Mark A. Gollin is a contributing editor to PEANUT.

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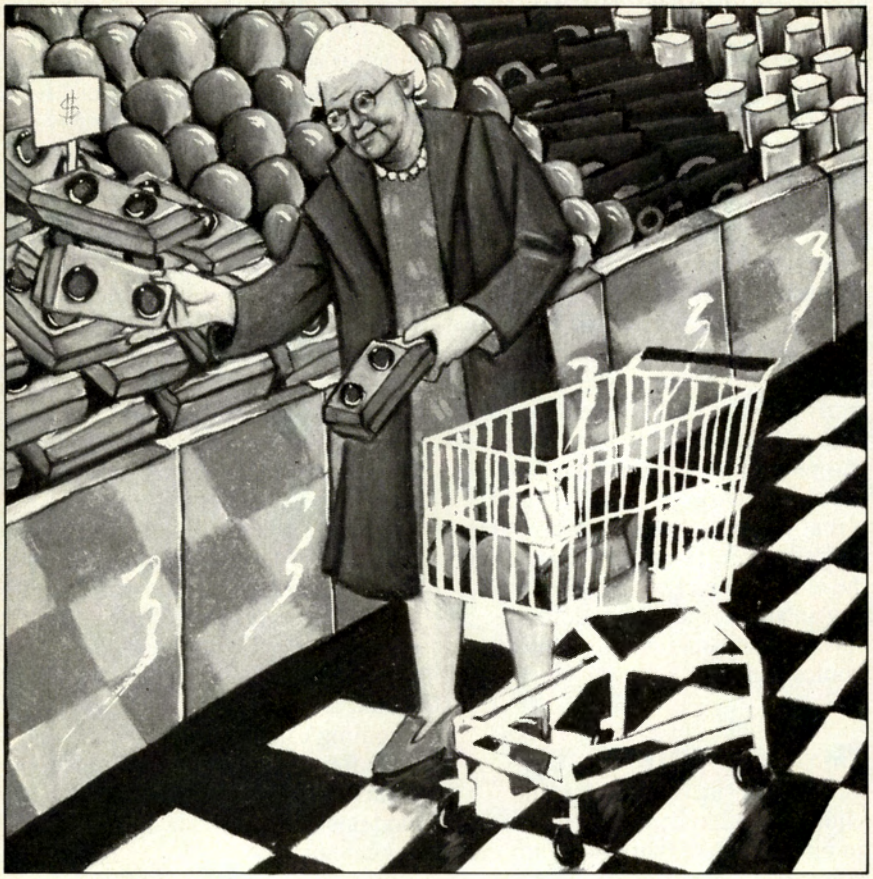

Choosing a Modem and Communications Software

BY HOWARD KARTEN

In his novel, *Howard's End*, E.M. Forster exhorts readers to "Only connect! . . . Live in fragments no longer." Good advice, but not so easy to carry out. A PC*jr* ready to communicate by modem and the phone lines won't tie up all the loose ends of your life, but it will connect you with people and information impossible to reach any other way.

In the last issue of PEANUT we looked at people and places you can reach electronically. Several of you wrote to ask how to shop for a modem and communications program, the hardware and software that connects your PC*jr* with those people and places.

There is only one way to buy a modem: know what the important features are, what each feature adds to a modem's capability and cost, and then ask yourself, "which features do I really need?"

Here are the four key features to consider. The first is baud rate, the speed at which information can be sent or received over the phone line. The other choices are between acoustic coupling and direct or electrical connection; internal and outboard mounting; and dumb and intelligent modems.

Before you make those decisions, however, there's one attribute you should look for on any modem you're considering: the Bell protocol. Modems that operate at 300 baud should meet the Bell 103A protocol; 1200 baud modems should conform to the Bell 212A protocol.

A protocol is simply an agreed-upon method of doing things. Shaking hands is a pretty universal protocol: if two people want to shake hands, they will each extend the right hand, at about waist level, grip the other person's hand, squeeze moderately, shake up and down a few times, and then withdraw their hands. If shaking hands were a different procedure in each state, meeting people as you travel could get tricky.

The Bell protocol serves the same purpose as a handshake. It lays the groundwork for communication—in this case between computers—by making certain that both sender and receiver are using an accepted standard for transmitting information.

It's not necessary to understand the details of Bell protocol. The point is that it's the most widely used standard, and therefore the one that makes communication between computers easiest. If the advertising or specifications don't state clearly that the modem meets the Bell 103A or 212A standard, it may not. Be sure before you buy.

GETTING UP TO SPEED

Do you need a modem that will operate at 1200 baud, or will a slower 300 baud device be sufficient? Virtually all modems on the market today operate at 300 baud; some operate only at 1200 baud, and many operate at both baud speeds. (Baud stands for *bits audio*, and measures the number of bits, or electronic impulses, that are sent or received per second.)

Naturally, you pay more for a higher-speed modem. For modems capable of 1200 baud operation, the lowest price I've seen is around $280; the highest, a full-featured device that does everything but pay the phone bill, runs around $600.

A 300 baud modem receives or sends information at the rate of 30 characters per second, which equals 1,800 characters per minute, or a little less than one full screen of text (25

80-column-wide lines) per minute. A 1200 baud modem operates four times faster.

Modem speed is an important consideration for two reasons: telecommunications costs and convenience. If your primary use will be in sending and receiving short messages, such as notes to associates via electronic mail or stock quotes from a financial database, you won't gain much from a higher-speed modem. However, if you're planning on using your modem to retrieve large amounts of information from remote databases, especially information to be read or analyzed after it is received, the higher-speed modem may be a wise investment.

A 300-baud modem transmits a screen full of text in about a minute.

When accessing remote computers that charge for the amount of time you use, the cost advantages of higher-speed modems come from two sources: long-distance charges and connect-time charges. Your long-distance calls to electronic information services will take four times as long with a 300 baud modem, and therefore be four times as expensive.

Furthermore, if you are using consumer services such as The Source or CompuServe, during prime time (weekdays, 7 or 8 AM to 6 PM), the faster speed may be economical. Since 1200 baud modem users can pull so much more information out of a data bank in a given length of time than can someone with a 300 baud modem, most information services charge more for access time using the faster modems. During prime time, CompuServe charges $12.50 per connect hour for 300 baud service and $15 an hour for 1200 baud. However, since you're receiving information four times as fast, you end up paying less for what you receive via the faster modem.

The next choice, this one between acoustic coupling and direct electrical connection, is simpler. With an acoustic coupler modem, you insert the telephone handpiece into two stiff rubber cups. The cups hold the telephone fast to the device, and help shut out some of the noise in the room. There are two drawbacks to acoustic couplers. First, since they are designed for use with the standard telephone handset, you might have to literally tie your Princess or designer phone to the modem. Second, the rubber connection cups may admit room noise and interfere with your data transmission.

Direct-connect modems plug directly into the wall jack of a modular phone. You just unplug the phone and plug in the modem. The only drawback to direct-connect modems is that you must have the proper telephone socket. However, if you have the older, four-prong plug, you can buy an adapter for a few dollars at most hardware, computer, and electronics stores.

"Inside Information"

One of the most important choices you have to make is whether to buy a modem that plugs into the assigned modem slot inside your PC*jr* or one that sits on your desk. The chief advantage of a modem that plugs in is convenience—fewer components and cables to move around, fewer connections to make, less desk space used, and the Junior's serial port left available for some other peripheral, such as a printer.

The disadvantages of the internal modem are that: a) the modem will drain some juice from the PC*jr*'s power supply; b) internal modems don't have indicator lights (LEDs) to let you know at any moment what step of the communication process is occurring; c) troubleshooting can be more difficult—it's trickier to determine if the modem is the source of your problems; and d) you will not be able to use the same internal modem on any other computer.

The internal modem IBM offers for the PC*jr*, currently the only modem that will work in the Junior's expansion slot, lists for $199. Operating at 300 baud only, the unit features automatic dialing and answering, plus error detection and diagnostics. (These features are explained below.) Once you've pried off the top of your PC*jr*, installation is easy.

Is A "Dumb" Modem A Smart Buy?

The final consideration in shopping for a modem is whether to save money and give up some special features with a dumb modem or pay up for the bells and whistles on an intelligent modem.

Dumb modems (that's a description, not an opinion) are passive, manually operated devices. Using a dumb modem to make a connection with another computer is quite simple. First you dial the telephone number of the service (database, bulletin board, and so on). When you hear the answering modem's tone (called a carrier signal), you push a button on your modem to turn it on.

Smart modems have some memory and can accept commands issued through the PC*jr*'s keyboard. They can do a variety of neat tricks, such as dialing a call automatically, redialing in the event you get a busy signal, and automatically answering incoming calls. Of course you pay extra for every feature that adds to a modem's "intelligence." Smart modems with all the bells and whistles cost over $500.

Prices for 300 baud, external, dumb modems usually start at around $100. If, at some point in the future you decide to trade up to a faster or more intelligent device, it will have lost comparatively little of its value and should not be difficult to sell on the used computer market that's now emerging.

No matter what kind of modem you buy, the odds are pretty good that once you get it working, it will give you years of trouble-free service. Moreover, it's highly unlikely that your modem will become obsolete in the near future. The Bell 103A and 212A standards are well-enshrined in computer use, so although future modems may offer additional features and ease of use, the odds are overwhelming that today's Bell standards will continue to be accepted as the norm in the future.

Software To Communicate With

Undoubtedly, the toughest call in buying communications-related items for your PC*jr* is the software. Because it is hardware and therefore more limited, the modem is a com-

paratively passive item in your communications system. But the software will be, as they say in Silicon Valley, your gating component—the one that either imposes limits or truly opens vast new communication horizons.

When it comes to buying communications software, there are eight key functions at which to look. Any communications program you're considering should give you, at the very least, the eight capabilities listed below. The advanced functions discussed later may be nice, but you should carefully consider if you really need them; fancy features in communications software don't come cheap.

Features To Insist On

Choice of speed. The most common communications speeds used today are 300, 1200, 2400, 4800, and 9600 baud. For technical reasons, ordinary telephone lines are limited to 300 and 1200 baud. However, some day you might wish to connect your PC*jr* directly to a larger computer and transmit at 4800 baud. Or, you might want to communicate with one service at 300 baud and another at 1200. Therefore, your software will have to be flexible.

Communications parameters. Information sent out via modem goes out as a stream of 1's and 0's. This information on your telephone line can be unintentionally altered by static, resulting in a garbled message. One way to prevent this is with *parity checking*, which adds an additional bit to every group of 8 bits, as a consistency check. The three most common forms of parity checking are *odd parity*, *even parity* and *no parity*; any software package you buy should support all three forms.

Record to disk. Once incoming information has been received by your computer, you can do whatever you like with it. In most cases, it will be displayed on your monitor or TV. But if you have a disk drive, you may want to record everything on disk (called downloading). A good package will let you turn the record-to-disk feature on and off as you like.

Print incoming information. Similarly, a well-written communications program will allow you to set your printer to print everything you receive over the phone lines. It should be easy to toggle this function on and off with one keystroke.

Full-duplex modems send and receive data simultaneously.

Transmit from disk. If you plan on transmitting documents from disks you've previously prepared, you can send the documents directly, without re-keying. This too should be available with only one or two keystrokes.

Break signal. This feature allows you to interrupt what's being sent to you, without disrupting the communications link. That is, if you've unwittingly instructed the U.S. Census database to send the name of every American under the age of 95, you may want to send a BREAK command so that you can use Junior next week.

Echo on/echo off. Modems with a feature called *full duplex* allow a computer to transmit and receive information simultaneously. In *half-duplex*, the computer can quickly alternate between receiving and transmitting, but performs only one function at a time. Often, with full duplex, the computer will echo back the characters you transmit, as an additional check on correctness. Make sure you're able to turn off the display when this occurs; looking at a fully-echoed screen can be distracting.

Source code. Another feature that's nice to have, but not an absolute requirement, is the program's source code. Source code is another name for the actual instructions in a program, as written by the programmer. (Some programs are listed just as object code, which means they appear only in numbers.) Having access to source code either printed out or on disk means that you can modify it when and if you wish.

Something Extra

Most computer communicators will be able to get along without the following features in their software, although you may enjoy the convenience they provide. Some of these features require the use of a smart modem—one with a small amount of memory built in, and which can accept and perform the commands issued that are from the computer.

Auto dial. With some software, you can press a key and have the computer dial the number and establish the connection to the remote computer.

Auto log-on. With this feature, your Junior can automatically connect to another computer. It's handy if you have different passwords for different services and, like me, you have a habit of forgetting what password goes with which service.

Redial. This feature will turn your computer into a paragon of persistence that won't take "busy" for an answer, dialing and redialing a number until the connection is made. Very useful for bulletin boards, which may only allow one user on at a time.

Auto answer. If you travel and wish to transmit information to your computer by phone, or want others to do so in your absence, you need an auto-answer modem and software.

Remote control of your computer. With this advanced feature, a remote computer can issue commands for a variety of functions. For example, if a friend wants to receive a file you have stored, you can provide her with the correct commands to start a file transfer. This feature is useful combined with auto answer.

Buying Time

Before you start looking for communications software, ask yourself how you plan to use it. If your primary use will be exchanging electronic mail with another person (either directly or via a service such as CompuServe), you won't need an elaborate package. However, if you know you'll be using three or four different database or electronic mail services, you may want some of the more advanced features.

Next, get information on several different packages. At the least, any software should include different types of parity checking, and, if your modem can communicate at 1200 baud, a choice of speeds.

Don't forget to look at the documentation. Is it clearly written and easy to understand? Remember, while you probably won't read it cover-to-cover, you may need quick answers from the manual while you're electronically attached to CompuServe—at $12.50 an hour.



Circle No. 120 on Reader Inquiry Card

See both software and hardware in action wherever you can—at your dealer's store, at work, at a friend's house. If you're set on a particular package, try to arrange a demonstration by the retailer you've chosen—and be sure it's executed on a PC*jr*.

Price should be a relatively unimportant consideration. Most communications software will range from $50 to $200. The cost is low enough that you should take advantage of the features you will need and enjoy.

Happily, there is not necessarily a direct relationship between what you pay for communications software and what you get. In truth, the Cadillac of communications software will not necessarily be an easy vehicle for you to drive; and the Volkswagon will not necessarily limit the voyages you can take.

There is one point on which buyers should be wary, and that's communications software that is oriented toward a particular service. When a general-purpose item is sold for a specialized use, vendors often charge more than for the general-purpose item. In such cases, don't be surprised to find that a package purveyed as perfect for the XYZ database service costs more than competing, general-purpose products. Another reason to avoid that type of specialized product is that it may lock you into using only one particular service. This means that later on, you may have to buy different software.

A final word: Once you've purchased the modem and software most suitable to your needs, the fun of telecomputing begins. Your next problem? Remembering to eat, sleep, and get to work on time as you become drawn into late-night coast-to-coast conversations and conferences. Don't worry. This form of "terminal" curiosity is healthy, can make you wealthy, and will certainly make you wiser. Happy Modemming!

Howard Karten, a contributing editor to PEANUT, *works at home and uses his dumb modem to communicate with a wide variety of information services. At the risk of sounding smug, he suggests that real telecommunicators don't use smart modems. He welcomes reactions to that sweeping generalization at either* PEANUT *Magazine, 545 Fifth Avenue, New York, NY 10017, or on CompuServe at 70465,1171.*

SOFTSELECT



A GUIDE TO PROGRAMS FOR THE PCjr

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MURDER BY THE DOZEN ENCHANTER

BUD LAVERY AND LAUREL DAUNIS

PRODUCTIVITY

MULTIPLAN

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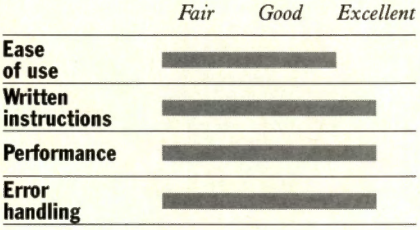

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Hardware *Disk drive; 128K*
Terms of sale *Limited warranty covers defective disks for 90 days.*
Publisher *IBM, P.O. Box 1328, Boca Raton, FL 33432; (800) 447-4700*

Multiplan is one of the best of a new generation of electronic spreadsheets. It incorporates all of the functions, commands, and formats that have become standard in spreadsheet packages, plus a whole lot more.

Similar to the original spreadsheet *VisiCalc*, *Multiplan* allows the creation of a worksheet matrix 255 rows deep and 63 columns wide. (Unlike *VisiCalc*, both rows and columns are identified by a number.) The intersection of each row and column is called a *cell* and may contain either text, a number, or a formula that lets *Multiplan* compute a number to be displayed. Appearing in the bottom left corner of the display screen is a *status line* that identifies the cell being worked on by the notation R(ow)1 C(olumn)1.

Multiplan, however, is not just another "Visiclone"; it offers some practical new features, easy use, and top-notch instructions—both printed and on disk. Here are some of *Multiplan*'s new spreadsheet functions: *Multiplan* computes standard deviation (STDEV) and internal rate of return (IRR). It sorts columns and tables of data within specified ranges in ascending or descending order. (The information can be sorted either alphabetically or numerically). With the worksheet title always remaining visible on the screen, you can "page" the worksheet up or down, and left or right, which makes working with large matrices much easier. You can create up to eight "windows" on the screen that allow you to view different portions of the model simultaneously. This feature is most convenient when comparing data. Another improvement over *VisiCalc* is the readily accessible HELP screens. They provide the user with an almost instantaneous response to a question, and frequently will save the user the trouble of thumbing through the manual. For instance, to obtain information on the GOTO command, all you do is move the command menu pointer until it rests on GOTO then press the ALT and H (for help) keys. The *Multiplan* worksheet disappears and is replaced by the help text.

I'm impressed by the way the *Multiplan* worksheet is displayed. Along with the worksheet's clearly numbered columns and rows appears a *command line*, a *message line*, and a *status line*, all clearly labeled with the cell and command highlighted. The command line contains common functions that may be performed with a single keystroke—C for copy, H for help, I for insert, and so on. The message line prompts the user with appropriate responses—an excellent way to familiarize the new learner with the mechanics of the program and remind the experienced hacker of the appropriate options. The status line indicates the amount of storage space remaining, a constant reminder of the limits imposed by the computer's memory on the size and complexity of the program being developed. The entire display is crisp, business-like, and informative.

It seems the developers of *Multiplan* thought of everything, including mechanisms that make it very difficult to do anything to crash the program or seriously disrupt your worksheet. In the course of reviewing this program, I spent almost as much time intentionally trying to crash the program as I did trying to learn its subtleties—I did manage to learn the fine points, but could not crash it. The program is well protected against accidental keystrokes by double entry routines. Attempts to clear or quit the current worksheet generate a second question asking if you are sure that this is what you want to do. Commands that are not available among the options identified generate a "beep" to let you know that they are not appropriate, but are otherwise ignored.

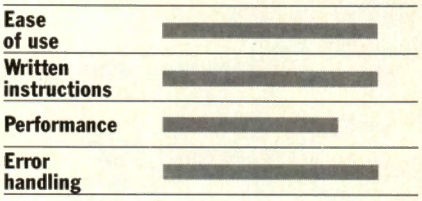
The *Multiplan* package contains a manual, a program diskette and a tutorial diskette. The tutorial serves as an excellent introduction to the capabilities and use of the program. And once you are in the actual program, you still get lots of help when you need it. The program does not require the user to know a host of commands; lists of available options can be called up on the screen with the touch of a key. And help screens, which explain every special function in the program, are also just a keystroke away at all times.

Overall, *Multiplan* is such a powerful, easy to learn, and easy to use program, that it may become the new standard for future electronic spreadsheet programs. IBM made a good choice in adding *Multiplan* to the PC*jr*'s initial software library.

John Marchisotto *is the director of computer education for the Huntington School District, New York.*

THE BANK STREET WRITER

This word processor designed for children is so simple that even a grown-up can use it.



Price *Broderbund version $69.95 (includes backup disk); Scholastic version $95 (includes 2 backup disks).*
Hardware *64K, disk drive, cartridge BASIC, 80-column enhancement.*
Terms of sale *Lifetime disk-replacement warranty.*
Publishers *Broderbund Software, 17 Paul Dr., San Rafael, CA 94903, (415) 479-1170; Scholastic, Inc., 730 Broadway, New York, NY 10003, (212) 505-3000.*

Is the microcomputer industry too young for anyone to be talking about a software hall of fame? If not, I'd like to nominate *The Bank Street Writer* as a charter member.

Before this neat little utility program came along, word processors

generally seemed to be patterned on the *Wordstar* model: they used about eight zillion commands, few of which bore any mnemonic reference to their functions (to retrieve a file you might press the unlikely key combination of CTRL Z); and their instructional manuals were so clumsily written that reading them resembled an adventure game. For this the user was expected to pay upward of $300.

Since its introduction last year, however, *The Bank Street Writer* has established a new standard for word processors. While it lacks some of the more sophisticated formatting capabilities of the "professional" programs, *Bank Street* is more than adequate for home, school, and small-business uses, and it is attractively priced. Best of all, its writing, editing, and file-management functions can be mastered quickly, even if you've never used a word processor before.

The Bank Street Writer takes its name from the Bank Street College of Education in New York City—the same school for educators that gave us *The Bank Street Reader* in the sixties. It was developed by teachers at Bank Street and an educational software and book publisher located in Watertown, Massachusetts, called Intentional Educations.

All functions in the IBM version of *The Bank Street Writer* are controlled from just two screen displays, one for writing, the other for editing and file management; you use the ESC key to toggle back and forth between them. When you're in the writing mode, all you do is enter text. You'll notice that words at the end of a display line do not "wrap around" as with some word processors. Rather, the entire word is transferred to the next line. You type continuously, pressing the ENTER key only when you want to begin a new paragraph or, for whatever reason, to skip to the next line. The text automatically scrolls upward about 15 lines whenever you reach the bottom of the screen. Use the BACKSPACE key to erase the last text entered. To make corrections elsewhere in the text, move the cursor to the desired location using the four cursor-control arrow keys. The new text is inserted at that location as you type. To erase text to the right of the cursor, use the DEL key.

For more complex text changes, press the ESC key to enter the editing mode. A menu of functions is displayed in a text "window" across the top of the screen. You can use the TAB key and SPACEBAR to move a highlighter over the desired function, then press ENTER. The ERASE command allows you to erase up to 15 lines of text at once; with UNERASE you can change your mind and restore the text as long as you haven't returned to the writing mode in the meantime.

MOVE and MOVEBACK work in a similar manner to allow you to move a block of up to 15 lines of text to another location in your document. Using COPY, you can duplicate a block of text (again up to 15 lines) and place the copy anywhere in the text without erasing the original.

The average ten-year-old can pick it up with no help at all.

REPLACE is the command that some word processors call "global editing." You use it to find a particular letter or word in your text, and replace it with another set of characters. This function is particularly handy when you find that you've been systematically misspelling a word. *Bank Street* allows you to replace the wrong letters in the misspelled word automatically throughout your document or to highlight each occurrence of the misspelling and replace it selectively. You may also choose to replace the wrong letters only if they appear as a whole word. (Without this last option, a command to replace "ant" with "aunt" throughout the text would also turn "pants" into "paunts".)

The other menu selections—SAVE, RETRIEVE, etc.—are used to create, manage, and format files in which to save your writing. To save a document you have created, first be sure you have a DOS-formatted data disk in your disk drive, then highlight the SAVE command. (The procedure of formatting blank disks is clearly explained in the printed and on-screen instructions.) You have the options of protecting your file with a password and of saving only a portion of your text if you so wish. To load a saved file into your computer, insert your data disk, enter the RETRIEVE command, and type in the name of the file (and the password, if you used one in saving it). When you have saved a file and want to begin work on another, use the CLEAR command to erase all text from memory.

PRINT is your choice when you want to run off a hard copy of your document on a printer. The program guides you through a series of formatting prompts regarding line length, page numbering, page headings, and so on. Here you have the option to view the document on the screen exactly as it will appear on paper (as long as you have not specified a line length of more than 80 characters). You may also save your printing specifications in the file along with the text.

The FORMAT command allows you to change a number of printing and screen-display formats. These are too numerous to detail here, but they include tab settings (useful for organizing your document in columns), margins, the number of spaces between lines, and the positioning of page numbers, to name just a few. The menu selection OTHER takes you to still more functions such as formatting a disk with DOS, deleting a file from a disk, and printing out the directory or listing of files saved on a disk.

Still more formatting functions can be accessed directly from the text-writing mode. You can get a listing of these functions by pressing the ALT and K keys at the same time. All the formatting functions are single-key commands that can be used to move rapidly through your document, set tabs, indent or center a line, and begin a new page at a specified place in the document. If your printer has the capability, you can specify text to be underlined or printed in boldface. You can also display a message telling you how much space is left in memory. If you are writing a long document, and you run out of space in one file don't worry; the program allows you to print successive documents from different files on the same or separate disks without a break on the page.

This description provides only an

outline of *Bank Street*'s features—yet for all its versatility, the most outstanding feature of the program is its ease of use. Its structure is compact (there are only two main screens), its commands are quite logical and easy to remember, and all the prompts you need in a particular mode are displayed on the screen. The ability to insert or delete text without changing between the writing and editing modes is a notable improvement over the Apple version of the program; the IBM version also responds more quickly to commands.

Bank Street is almost completely foolproof. If you enter commands that will erase a file, the program warns you that what you are about to do may be a mistake. If you enter a command from the wrong mode, the program simply ignores your request. And there is no combination of keys that you can strike that will harm the program or the documents you have saved in files.

A step-by-step tutorial on the flip side of the disk provides an easy introduction to the word processing in general and to *The Bank Street Writer* in particular, though it does not concern itself with the formatting or file-management functions. For a more detailed run-through of the program, users can refer to an outstanding manual.

Or rather, two manuals. Two publishers, Broderbund Software and Scholastic, Inc., have been licensed to distribute *The Bank Street Writer*. The software is identical in both editions; it's the printed instructions that differ. While both manuals are clearly written and logically organized, the Broderbund version is oriented toward home use, while Scholastic's is more appropriate for the classroom. Besides a step-by-step account of the program and its functions, Scholastic includes a review of possible sources of difficulty in question-and-answer format; suggestions for teachers on using the program in various classroom applications; and a set of lesson plans. I was a little disappointed that Scholastic hasn't provided IBM users with the same notebook-format, large-type manual that comes with the Apple version.

Still, while adults will find *The Bank Street Writer* useful for nearly all but the most specialized word-processing needs, I think the program's greatest value is as an educational tool. Any child with more than the most rudimentary language skills can learn to use this program with a little help, and the average ten-year-old exploring the program can pick it up with no help at all.

As a tool that makes writing so much easier, *The Bank Street Writer* has enormous educational value. It motivates children to write, and thereby to develop their communications skills. Children who are discouraged by poor penmanship or intimidated by the enormous task of correcting and rewriting (a chore even with a typewriter) will find making changes easy—and even fun.

Since *Bank Street*'s release, other publishers have been scrambling to come out with inexpensive, "user-friendly" word processors, but they've yet to match *Bank Street*'s combination of quickness and ease of use. Because *The Bank Street Writer* has made word processing technology available to children, I see it as the most important educational software package to come along so far. When putting together a software library for home or school, I'd suggest starting out with *The Bank Street Writer*.

Mark Falstein *is a freelance writer, and the founder and former editor of* Courseware Report Card, *a journal of educational software reviews.*

EDUCATION

FACEMAKER

Create and animate cartoon faces with a program that helps kids sharpen their memory skills.

	Fair	*Good*	*Excellent*
Educational value			
Ease of use			
Written instructions			
Fun/motivation			

Price	*$34.95*
Age level	*4-12*
Hardware	*Cartridge: Entry model PCjr. Disk: 64K; disk drive*
Terms of sale	*Defective disk or cartridge replaced free within 30 days of purchase; $5 charge thereafter.*
Publisher	*Spinnaker Software, 215 First St., Cambridge, MA 02142; (617) 868-4700*

From the time their eyes first open, children are bombarded with the sight of adults making silly faces at them. Fortunately, they seem to enjoy it. Making faces is a natural activity for young children, and *Facemaker* is a natural activity for kids using a computer.

The program helps children build faces on the screen; introduces them to simple concepts of programming as they animate their cartoon faces; and gives them memory games to play with their animated faces. Let's get to know these "faces" a bit better.

Facemaker, which is available in disk and cartridge versions, is easy to use. You insert the disk in the disk drive or the cartridge in either of Junior's cartridge slots, turn on your computer, and the program loads and starts automatically. You must first make three yes/no decisions: whether you want sound, white background, and help. If you answer yes to the help option, you are asked if you wish to 1) build a face; 2) animate a face; 3) play the memory game; or 4) change your choices about the sound and background. These choices remain displayed at the bottom of the screen in single-word format throughout the program. A note about the background choice: if you are using a color monitor, choose the white background; with a monochrome monitor, a solid black background is best.

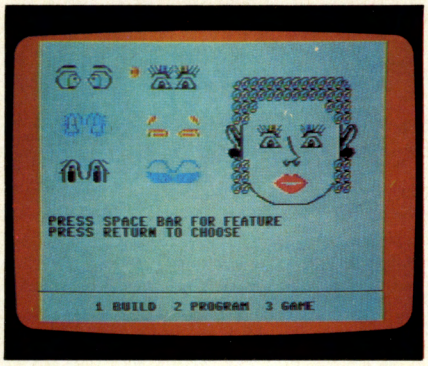
Start by typing 1 to build a face. An outline of a face and a "menu" with pictures and text appears on the screen; the images include a nose, mouth, eyes, ears, and hair. The instructions read, "Press SPACEBAR for feature. Press ENTER to choose." Each time the spacebar is pressed, a different facial feature is highlighted on the screen. When you press ENTER the options for the highlighted feature are displayed. If you select mouths, a menu of mouths appears. The same two keys allow you to select the mouth you want. After it is selected, the new feature appears in the proper place on the face. You can continue to select (and re-select) features, changing your creation from male to female, sad to happy, until the face is just as you like.

Now the action begins. Press 2 to animate the face. These options appear to the left of your face: W = wink; F = frown; S = smile; C =

cry; T = tongue; E = ear; and a dash (—) = delay. Press S and your face smiles. E makes its ears wiggle. And, as you probably guessed, T allows it to stick out its tongue most impertinently. Each movement is accompanied by an appropriate, unique sound.

You may also write a computer "program" that will put your computer face through a series of movements. Press the spacebar and a program box appears to hold your program. You might type: SW-CCTTT. These instructions are *not* executed as each key is pressed. Instead, they are "run," one after the other, when the ENTER key is pressed. In this example, the face would smile, wink, delay, cry twice, and finally stick out its tongue three times (clearly a tragic story of flirtation, rejection, and retaliation!). In some ways, then, *Facemaker* is like an electronic, animated "Mr. Potato Head."

Option 3 is a memory game. It is similar to the old favorite, "I'm going on a vacation and taking . . ." game, in which each person must remember all the previous items. The computer makes a face, then you press the key that would make that face. If you are correct, a "happy" sound is heard and the computer makes two faces. You must press the two matching keys in order. If you do, the computer makes three faces, and so on until you



make a mistake. Because each type of movement, such as a smile, is accompanied by a specific sound, children can use both visual *and* auditory cues to remember the series of actions.

Since children may want to play without adult help, it's good to know that *Facemaker* loads and runs flawlessly. It loads frequently (and sometimes rather noisily) from the disk; therefore, the disk must stay in the drive throughout the use of the program. This also causes some short delays. The cartridge version runs a bit more smoothly. The menus and options are simple to use, and the organization is easy for even preschool children to understand. The computer ignores any key being pressed other than the "correct" ones, so a child using the program alone can't "crash" it. It contains well-designed graphics—attractive, bold yet detailed, and humorous.

The brief documentation is adequate and clearly written, although only adults and possibly older children will refer to it. The entire program is stored in Spinnaker's familiar sturdy and attractive book-like container.

After I had played with the program sufficiently on my own, I tried it out with a group of preschool children—neighbors, who come to the house daily and ask my wife, "Does he need the 5's (5 year olds) today?"—and first and third graders at a local school. It was unanimous—they loved it. "Programming" the face to move was the favorite task of the third graders; the younger children enjoyed building the faces.

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There are several ways to get published in PEANUT. Manuscripts that you can submit without a proposal or query are news items and computer tips for *Peanut Gazette* and original programs for the *Peanut Post-It Program* page.

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Gazette items and articles must be typed (double-spaced) on one side of 8½" x 11" paper. Programs, including those for *Post-It,* must be submitted on a formatted disk along with a written explanation of the program and a printed listing of the program commands. Mail disks between two pieces of cardboard or in a special disk mailer. Put your name and address on each page and disk you submit. Enclose a self-addressed, stamped envelope with each submission.

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There was much discussion about the program, especially the options. For example: "We're going to give him a real long nose." "Ohh! Pig nose!" "Try this one. It looks like Bob Hope!"

The third graders understood almost all of the program by themselves, without any adult guidance or help from the documentation. The memory game was a bit difficult for the young children, who did not express interest in playing it a second time. All the children built faces and animated them for long periods of time (two even had to be "forced" to go to recess after 45 minutes).

Facemaker is fun, but is it educational? When asked what they thought about the program, the children giggled and remarked, "It's funny." When asked what they learned, they were honest: "We don't know. It is a pretty good memory game, though." Option 3, the game, may encourage children to use a memory strategy known as "chaining," remembering items in a series by connecting each new item with the one that comes before. However, *Facemaker*'s greatest value may lie in its ability to familiarize children with using a computer, sequencing instructions, and writing a simple "program."

Facemaker is recommended by the producer for ages 4 through 12. While people of every age enjoy the program it is more educational for children at the lower end of this range.

I have only trivial criticisms of the program. Typing mistakes are not allowed (they cannot be corrected) in the memory game. The rationale for this is not clear. A choice to erase the face and start over might be provided on each return to option 1. The children also had few criticisms of the program, and only a couple of suggestions. For example: "They should have had the nose wiggle!" I like that—how about it, Spinnaker?

Douglas H. Clements, *a former preschool and kindergarten teacher, is an assistant professor of early and elementary education at Kent State University. Working with young children and computers is the most fun he has had since he was 13, when everyone stopped giving him toys.*

ARITHMETIC GAMES

Kids challenge the computer or a human opponent to a round of computation games.

	Fair	Good	Excellent
Educational use		■	
Ease of use			■
Written instructions		■	
Fun/motivation		■	

Price	*$65*
Age Level	*8-14*
Hardware	*Disk drive; 64K*
Terms of sale	*Limited warranty covers defective disks for 90 days.*
Publisher	*IBM, P.O. Box 1328, Boca Raton, FL 33432; (800) 447-4700*

" . . . 6 times 6 is 36; 6 times 7 is 42; 6 times 8 is 48; 6 times 9 is 54 . . . . " A familiar refrain and a part of all our childhoods.

Ever since I saw a kindergartner who could not read or figure out on his own how to play a computer math game, I have felt that the computer can and should be a lot more than a simple drill master. Parents and educators should be looking for programs that both challenge the creativity of our children and use the computer's power to teach important facts and skills. Happily, IBM and SRA (an experienced publisher of print and electronic educational materials) have produced a pair of math practice games that do just that.

The most exciting of the two math games, called *Rockets*, is played on a grid drawn on the PC*jr*'s screen. Each player has a "spaceship" that is randomly placed in one of the grid squares. This outer space grid map also has five or six obstacle blobs distributed on it (they are called black holes in the instructions). The goal is to move your ship to a position where you can fire a rocket at your opponent. Your ship can only fire horizontally and vertically, so to score a hit you must try to move into an unobstructed row or column that contains the "enemy" ship.

How do you move across the grid? Here's where the math comes in. The computer provides each player with two or three randomly chosen numbers (depending upon the level of difficulty chosen by each player). You must combine them using arithmetic operations to create a resulting "move number." For example, if you chose the easy level and the computer gave you 3 and 6, you could add them (3 + 6); subtract them (6 − 3); multiply them (6 × 3); or divide them (6 ÷ 3). Once you do this the computer asks you to type in the result (9, 3, 18, or 2 in our examples) and if you answer correctly you can move your ship that number of squares in the direction of your choice (up, down, right, or left). Once you have moved, your ship fires in all four directions, and if you have moved onto an unobstructed row or column containing your opponent's ship, you hit him and he loses the ship (each player has a reserve of five ships). The challenge is to combine your numbers for a result that puts you in a good shooting position. Players must be able to think of lots of different ways of combining numbers and operations; this becomes a real challenge if you choose the difficulty levels where you get three numbers. With three numbers and four possible operations, there are more than 15 possible equations you can construct.

There are many math drill games on the market. This one is different because instead of simply giving the student a problem and asking him to solve it, *Arithmetic Games* requires the player to construct his own problem out of many possibilities and do the computation correctly. (If a player makes an error in calculation the program displays the correct answer, but the player loses his chance to move.)

This game allows for a number of different strategies. For instance, if you can't get to your opponent you can play defensively and move to a spot on the grid that is safe from your opponent's fire. And once you discover that you can bounce off the side of the grid, the mathematical questions of how far to go in which direction become much more complex. I also discovered that you can even use exponents in your calculation. If you get 2 and 3 and 1 you can enter 3^2 + 1 (which the computer interprets as three squared plus one) to get 10!

One of the nicest features of the game allows each player to play at a different difficulty level. Player one can play the easy level while player

two can play at the top level, which allows all members of a family to play together and have an equal shot at winning. And what if you don't have a brother, sister, or a friend to play with? You can play against the computer. As an opponent, the computer gets numbers and creates equations to try to catch you. It plays a smart game and provides a good model of possibilities for the other player. In fact, playing against the computer is the ultimate challenge for some players. I have seen kids who, instead of playing against each other, prefer to team up against the computer.

This program requires the computer to be more than a simple drill master.

If you don't like the action play of *Rockets*, the other game on the disk, *Beano*, may be for you. *Beano* uses the same format of asking each player to create equations from randomly generated numbers, but instead of shooting down your opponent, you try to match numbers on your *Beano* card to create five in a row. (People outside New England will recognize this game as an electronic *Bingo*.) The skills and challenge are the same, only the method of applying the skills is different and may have more appeal for some students.

I like SRA's *Arithmetic Games* because it does not reduce both student and computer to a mechanical level of activity. It uses the power of the computer to challenge youngsters at a variety of levels, and even provides for different interests and learning styles. In addition, by allowing the computer to be a player, it uses the computational power of the machine to provide a model from which students can learn by example.

One pleasing discovery was what happens if you take the disk out of the disk drive too soon. Rather than some typical computer jargon message such as "I/O error #36" you get the following: "Stanley Stickyfingers may have removed your disk." Here is a program that is not only "user friendly," but also has a sense of humor. Although you do need the manual's written instructions to understand how to play, the setup of the screen and the error messages make playing very simple. One final plus is each game's appealing use of color, sound, and animation.

Arithmetic Games has few faults. I think the *Rockets* game could be extended, however, by adding even more possibilities: an option for a time limit on equation making, more targets to increase the strategic thinking necessary, and maybe a random rocket that could penetrate the black hole obstacles. The program's biggest drawback is its price; $65 is steep for a single educational disk. Still, this program offers students a mathematical challenge—learning to combine numbers flexibly—that most children do not get in a standard elementary math curriculum. It's a challenge that demands mastery of basic facts and points toward the kinds of mathematical manipulation and flexibility they will require to do algebra.

Richard Carter *is director of the Educational Computer Center at Lesley College, Cambridge, Massachusetts and a contributing editor to* PEANUT.

GAMES

The game reviews in this issue are written by the editors of Games Magazine.

MURDER BY THE DOZEN

Test your crime-solving skills against rival detectives in 12 separate murder mysteries.

	Fair	Good	Excellent
Written instructions		■■■■■■■■	
Graphics	**NA**		
Playability		■■■■■■■■	

Price	*$34.95*
Hardware	*64K; disk drive; Cartridge BASIC*
Terms of sale	*Limited warranty covers defective disks for 90 days.*
Publisher	*CBS Software, One Fawcett Pl., Greenwich, CT 06836, (203) 622-2503*

The lovely little town of Micropolis, though billed as "The City of Friendly People" on the map displayed near



the beginning of the game, is anything but a safe place to live. Twelve of its citizens have been murdered, furnishing armchair detectives with a dozen different cases to solve. Besides the game disk (an IBM PC program that is fully compatible with the PC*jr*), the package comes with a Detective Manual, Clue Book, Detective Notepad, and Solution Book.

Except for the map and a few symbols used as visual aids, *Murder by the Dozen* is an all-text game. One to four can play, although we found solitaire play much less interesting than the competitive game.

After choosing one of the 12 cases, players are presented (both on screen and in the Detective Manual) with basic starting information, such as who was killed and where. Each player controls a detective who can move around town to any of 28 locations. At each location, the detective will be offered six choices of what to do—usually, to interrogate any of three individuals or to search any of three specific rooms or areas. A seventh choice, to go to a new location, is always available. When the player indicates his choice, the computer displays from one to five different numbers on the screen, ranging from 1 to 700. These numbers correspond to clues that the player must look up and read in the Clue Book. (Had these clues been stored on disk instead, the other players would have to look away from the screen at this stage.) The player is on his honor not to cheat by looking at additional clues. Sometimes one or even all of the clues may simply say "no clue"; more often, a clue suggests other parts of town to visit, or helps narrow the range of suspects. Multiple, "no clue" entries usually prevent the other players from knowing that a particular choice

of actions is fruitless.

The object of the game varies slightly with each case. Generally, a player must name the murderer and learn enough to either explain the motive or locate a key piece of evidence. When he thinks he's solved the case, a player on his turn looks up the appropriate case in the Solution Book. If he's right, he wins the game; otherwise, he is eliminated, and the other players continue.

Perhaps the game's most innovative feature is that play is not always sequential. After each turn, the computer checks to see which detective has taken the least time (based on the actions he has chosen) and gives him the next turn, even if he has just played. Thus, while one player takes a long trip across town, the other may be able to talk to two or three suspects at a particular location.

Decisions about where to move next and how many things to do at each stop are crucial—the player who avoids false trails and carefully reasons out his next moves should win most often, although sometimes another player may get lucky and stumble upon a key clue. An interesting strategy is trying to find shortcuts by watching what the other players are up to. Suppose, for example, your opponent asks some questions in a bar, then heads directly for an apartment building that you would otherwise have had no reason to visit. It's a fair assumption (unless your opponent is very devious) that you now can gamble on skipping the bar and go right to the apartment yourself. The success of this ploy may not be particularly realistic, but it helps keep the games close and exciting.

In some of the cases, we would have liked a bit more complexity, such as more false leads that temporarily implicate innocent suspects. But mystery games are always easy to criticize on this count, and by most standards this one is quite satisfying to play—except as a solitaire, when most of the decisions players have to worry about in a competitive game become meaningless.

Murder by the Dozen is not an adventure game in the usual sense, and will not necessarily appeal to adventure game fans. It is more of a lighthearted family game, requiring both luck and skill, and it should have great appeal to most mystery lovers.

ENCHANTER

For adventuresome wizards, this magical all-text game will cast a spell.

	Fair	*Good*	*Excellent*
Written instructions			
Graphics	**NA**		
Playability			

Price	*$49.95*
Hardware	*64K; disk drive*
Terms of sale	*Limited warranty covers defective disks for 90 days.*
Publisher	*Infocom, Inc., 55 Wheeler St., Cambridge, MA 02138, (617) 492-1031*

Not content with the high standards they've already established with the *Zork* trilogy, *Deadline*, *Planetfall*, and other all-text adventure games, Infocom now brings us *Enchanter*, a complex, tricky, very ingenious masterpiece of magic and illusion.

Like all Infocom games, *Enchanter* uses no screen graphics. First of all, the company believes that well-written text can evoke a scene better than any computer-generated picture can; and second, that the portion of disk memory reserved for generating graphics can be better used to make the game itself more interesting or complex.

You can't argue with success. For example, in *Enchanter* there's a massive door guarded by a five-headed, multi-tentacled monster/serpent that is belching fire, swinging its deadly tentacles, brandishing all manner of fiendish weapons, and screaming for the devil himself to hear—a creature much more terrifying in the mind's eye than it could ever be in a flat, static picture. As described by the authors, you can almost hear the beast.

And if it's complexity you want, look no further. Indeed, *Enchanter* may be *too* complex—some of its problems and puzzles can be solved, we believe, only by enchanted beings. Many lesser gifted and experienced mortals may find the constant difficulties more frustrating than pleasurable. However, if all else fails, you can call toll-free (800)262-6868 and order, for $7.95, a map of the game and a booklet of clues, which will at least give those of less than expert skill a fighting chance to solve the game—eventually.

Enchanter should be approached as you would any serious adventure game—by shaking hands with it. First read the documentation carefully. Not only is it imaginative and funny, it also contains a lot of valuable information. Then start to play, using paper and pencil to draw a map of the game's territory as you move through it. When you've done all the mapping you can (some areas can't be reached until you've learned a trick or two) and have figured out some basic survival techniques, you're ready to play in earnest. This means learning how to use magic spells. You're only supposed to be a novice enchanter, so you can't be expected to know too much, but you've got talent, ambition, and courage—and no choice. The Circle of Enchanters have sent you to rid the world of the evil influence of Krill, who is supposedly living in the castle that stands ominously before you. His magic is powerful and this is his turf, but your magic has the blessing and authority of the Thaumaturgy Guild, and if you use it well you can defeat him.

Some of your magic is contained in the Spell Book with which you start out, but most of the really important spells must be found on scrolls squirreled away in various locations. To use a spell once you've found it, you must transcribe it (on disk) in your Spell Book, and "memorize" it just before you think you'll need it. You can keep only a limited number of spells in the disk space alloted for your memory at once, most of which can be used repeatedly, although a few can be used only once in the game. A spell can't be cast before you've memorized it, even though you may be carrying the scroll it's written on, and it can't be memorized until it's been copied into your Spell Book. (Which brings up a tough question: What do you do when you find a scroll containing just the spell you've been waiting for, and can't record it in your book because it's too long and complicated? Don't ask us.)

We can't discuss certain other problems because even knowing of their existence could spoil your fun in discovering them for yourself. But we *can* tell you that *Enchanter* is one of the deepest and richest adventure games on the market, and well worth its cost. Just don't expect to solve it in one weekend, or in ten, for that matter—unless you're a sorcerer.

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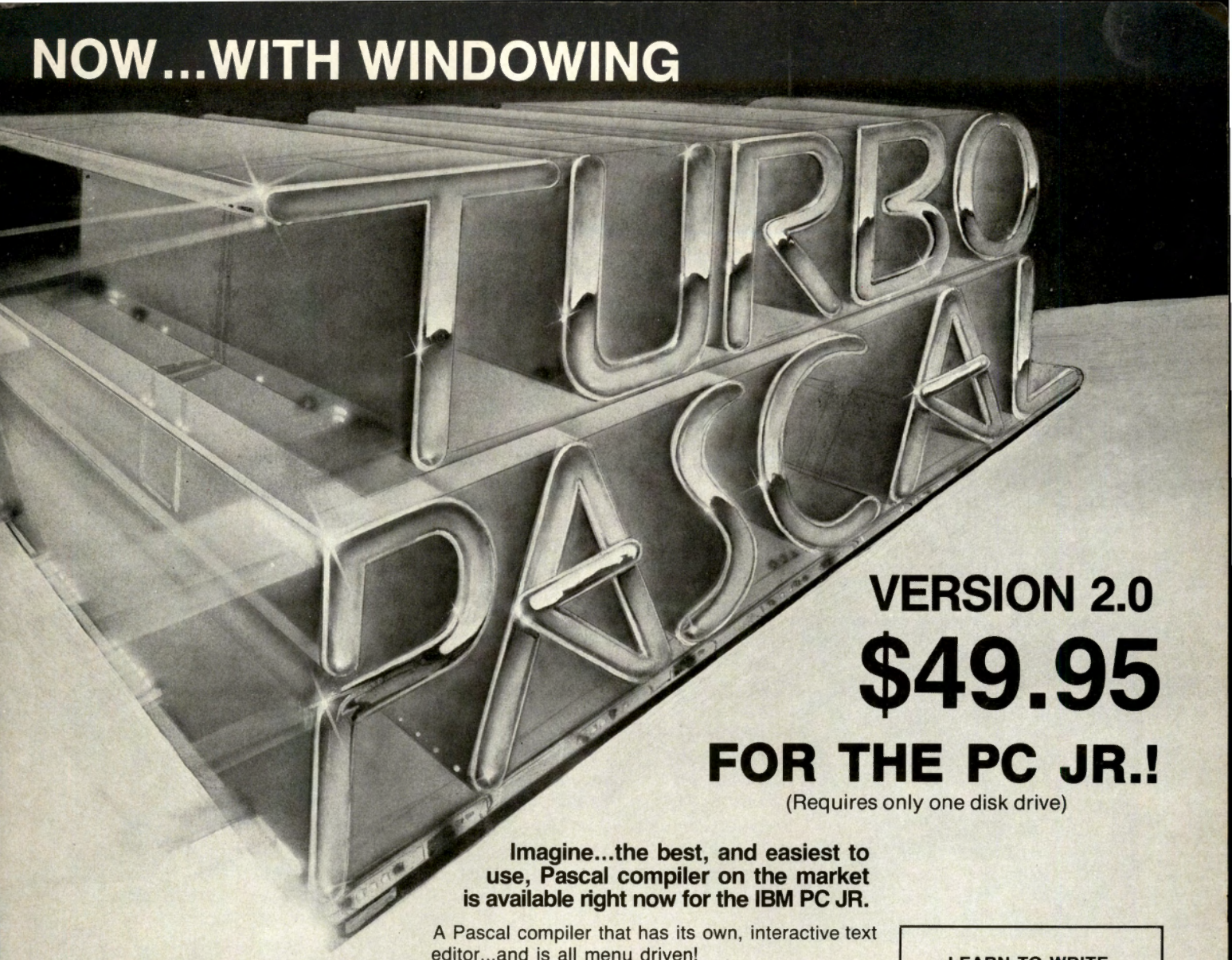

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New Products

Jr. Expansion Kits

A snap-on enhancement package that allows the Junior to run virtually all PC software has been introduced by Rapport Corporation.

The $675 expansion kit, called the Drive Two, extends the capabilities of a single-drive, 64K PC*jr* to that of a dual-drive unit with up to 512K memory.

The kit includes a 360K disk drive, a parallel printer port, a clock calendar with battery backup, and an



expansion slot that allows memory capacity to be increased to 512K RAM.

Rapport also makes the Drive One Enhancement Package, which upgrades the entry level PC*jr* to the capabilities of an enhanced version. The package includes a 360K disk drive, 64K memory, and allows 80-column text display. The cost is $595.

The memory chips needed to boost Junior's memory are also sold by the company. The 128/384 Memory Expansion Package includes 128K memory and expansion sockets for 256K. Memory chips can be added in 64K increments. The package costs $275.

Other Junior accessories from Rapport include a keyboard cable that allows you to use your PC keyboard on the Junior ($29.95); and an audio amplifier with speaker that plugs directly into the PC*jr* and emits sound through any monitor ($24.95).

For information on any of these products, contact Rapport Corp., Dept. PM, 80 S. Redwood Rd., N. Salt Lake City, UT 84054; (801) 292-9454.

Wireless Keyboard

A replacement keyboard for the PC*jr* has been introduced by Cherry Electrical Products Corporation.

The keyboard, which is similar in layout to the standard IBM PC keyboard, can either be hooked up to the Junior with a cord or used with an infrared, wireless connection. It has 84 keys with the functions printed on each.

The keyboard, Model KXN3-8451, costs $190. If you plan to use it as a wireless keyboard with a computer other than the Junior, you must also buy an infrared receiver for a total cost of $275.

For more information, contact Cherry Electrical Products Corp., Dept. PM, 3600 Sunset Ave., Waukegan, IL 60087; (312) 578-3522.

More Books For Junior

Several more books written exclusively for PC*jr* users have joined those Junior-specific volumes already in the bookstores.

Hey, Jr!, Using IBM's Most Personal Computer, details the practical benefits of home computing. Written for new computer owners, it includes discussions of application software, computer graphics, shopping for software, using DOS, and programming in BASIC.

Co-authored by David Arnold and David C. Cortesi, it costs $14.95. Contact Holt, Rinehart & Winston, Dept. PM, 383 Madison Ave., New York, NY 10017; (212) 872-2525.

IBM PCjr BASIC Programs in Minutes, by Stanley R. Trost, contains more than 65 BASIC programs and subroutines for a variety of business, educational, and personal applications for the owners of an enhanced PC*jr*.

The programs, all relatively short and easy to enter, include applications in real estate, data analysis, and record keeping. The cost is $14.95 for the 160-page book. Contact Sybex Computer Books, Dept. PM, 2344 Sixth St., Berkeley, CA 94710; (415) 848-8233.

PCjr: The Affordable IBM, teaches users how to program in BASIC on the enhanced PC*jr*. The book comes with a floppy disk containing 15 ready-to-run programs for home use, including recipe filing and address keeping. It also features trivia games and a program that projects life expectancies. This otherwise practical book does not include a table of contents.

Written by Robert W. Stat, it costs $29.95. Contact Banbury Books, Inc., Dept. PM, 353 W. Lancaster Ave., Wayne, PA 19087; (215) 964-9103.

Color Monitor

A color monitor designed specifically for the PC*jr* is new from IBM.

Because of modifications in the unit's electronics, the RGB monitor can sit directly atop the PC*jr* system unit without interfering with the disk drive. The monitor features a 13-inch display area, 80-character mode, a nonglare screen, a speaker for Junior's four tones, and an earphone connector. It costs $429.



Contact IBM, Dept. PM, P.O. Box 1328, Boca Raton, FL 33432; (800) 447-4700.

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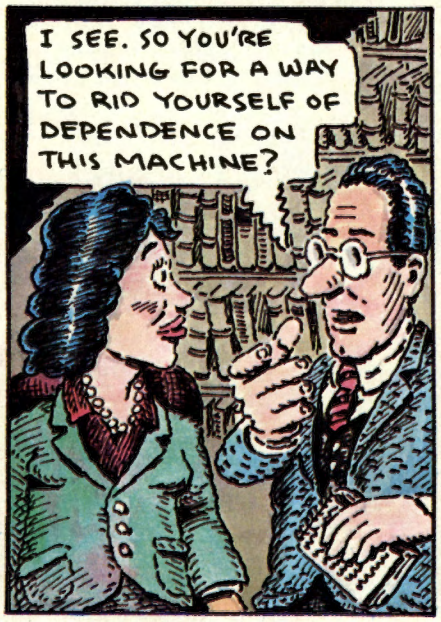



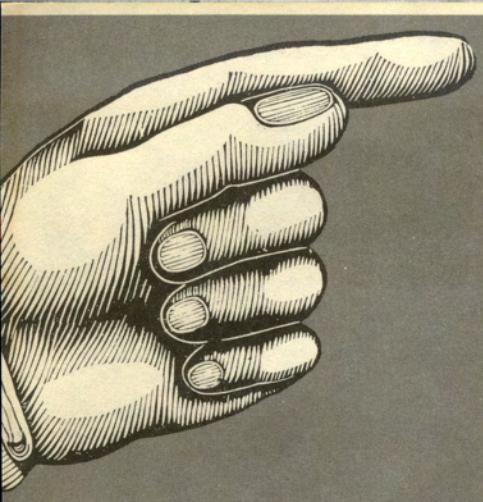

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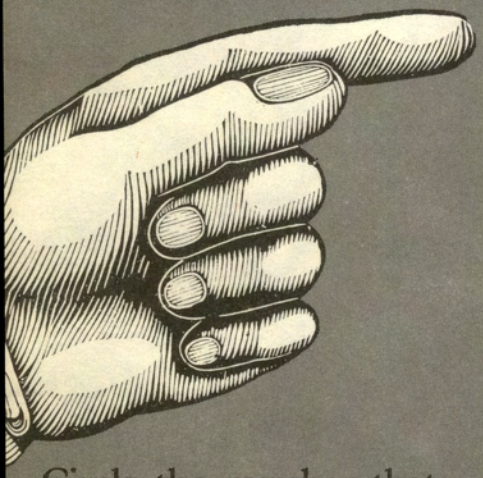

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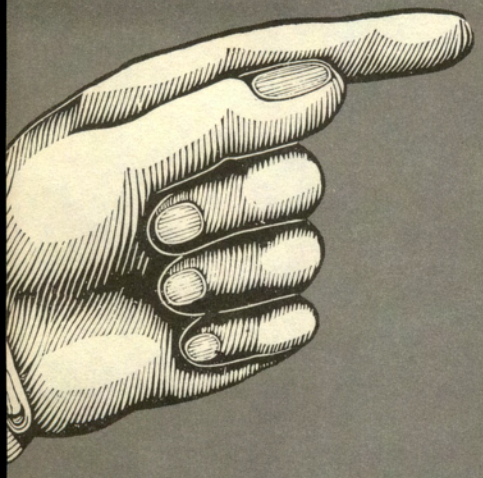

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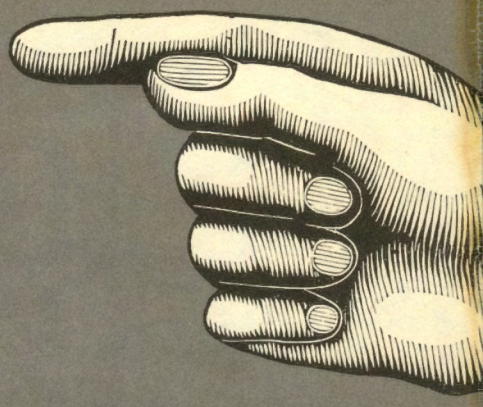

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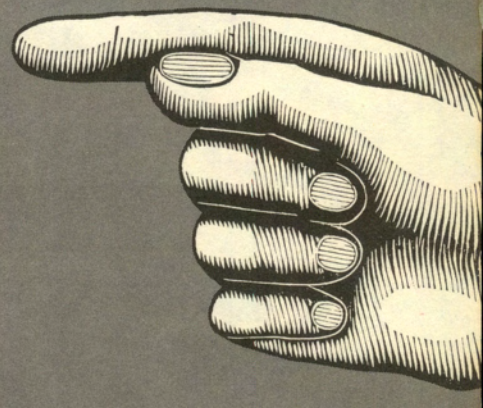

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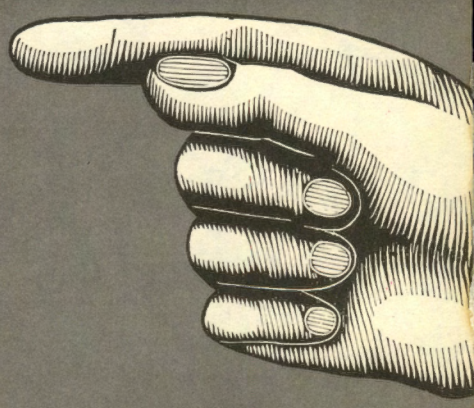

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