A Tough Look At IBM's Hot New PCjr

What is it, what will it do, how much will it cost, and how does it stack up against the rest of the home-market machines?

by Paul Bonner, Associate Editor

The rumors had been flying for months. IBM had a $400 replacement for their Personal Computer— only the new one, known as Peanut, would have more muscle than its predecessor. No wait, said the next rumor, Peanut would actually be a $500 Lisa. In any case, all the experts agreed, one thing was certain. IBM would restore order to the home-computer market through the most efficient means possible: It would blow everyone else out of the water. IBM itself remained silent.

On Halloween the silence broke. "We're showing a new product tomorrow," the IBM spokesperson said. The demonstration was held at the IBM building in New York. There, along with four or five hundred of journalism's finest, I found not a Peanut, but PCjr.

There were two initial reactions from the press. One ran, "Gosh, it looks just like a little version of the IBM Personal Computer, and gee, it has games and spreadsheets and everything." The other reaction was, "Omigod, it's got a chiclets keyboard." (The term "chiclets," when applied to a keyboard, refers to one that's equipped with low, square keys, thinly coated with rubber, which bear an uncanny resemblance to a popular chewing gum.)

Personally, I wasn't sure what I thought. So I went back the next day and played with the machine for a few hours, and I did some digging, talking to people whose opinions I respect, and reflecting on the announcement as a whole. A clearer picture formed, one which allowed me to discern the differences between what IBM is saying about the PCjr, what they're hinting about it, and what they're actually offering. Understanding those differences is important for anyone in the market for a home computer, because otherwise you could end up making a big mistake, either by buying the PCjr when you should have bought something else, or by passing it over for another machine that won't meet your needs as well. Through their publicity releases and initial software offerings for the PCjr, IBM has attempted to establish it as a multifunction home computer. It is, in their eyes:

- an entertainment machine
- a home productivity computer
- a complement to the IBM Personal Computer in your office
- an educational tool
- a communications link to other computers
- a "family" computer

Let's examine the PCjr further, with an emphasis on how well it performs each function and how much each will cost you.

The entertainment machine

For openers, IBM introduced two versions of the machine: an entry model with a list price of $669, and an enhanced version that lists for $1269. Both versions are attractive machines as computers go, looking like smaller versions of the IBM Personal Computer. Both use the same microprocessor as the Personal Computer, both are housed in the same casing, and both have two slots for program cartridges. But there is a significant difference between the two versions. The enhanced version has a disk drive, which means you can use a lot of existing software for the IBM Personal Computer. The entry model has no disk drive, and right now, eight days after the announcement, there are only five program cartridges (IBM PCjr BASIC and four games: Mouser, Scubaventure, Crossfire, and Mine Shaft) that you can run on it. And that means it's a games machine.

In fact, it's a limited games machine. Oh, if you plug in an IBM joystick for $99 and the Crossfire cartridge for $35, you'll have a good game. But you won't have "state-of-the-art." Ken Williams, president of Sierra On-Line, whose company worked with IBM to develop two packages for the PCjr (the cartridge version of CrossFire, and the HomeWord word processor), was quoted the day after the PCjr was released as saying "Our game Frogger, for instance, will never look as good on the PCjr as it does on the Atari or Commodore."

The PCjr is pictured here with the 62-key keyboard on top of the expanded system unit (monitor not included in $1269 price).

No doubt third-party software vendors will provide more programs on cartridges for the PCjr. Nevertheless, ROM cartridges of this type have a small capacity. Most current cartridges are 16k. ROM cartridges with 32k or greater capacity are available, but very expensive. By way of contrast, you can store 360k on a disk for the PCjr.

The small capacity of ROM cartridges is therefore a signficant limitation on the usefulness of the PCjr entry model for applications other than games. Even more limiting is the lack of an efficient data storage device. You *can* use a cassette recorder to store data from either of the PCjr models, but anyone who has ever tried to use cassette storage with any computer can tell you that it's an exasperating experience at best. Without a way to get large, complex programs into the entry model or to get data out of it efficiently, it's unlikely that you will ever have the chance to buy a good word processor, or data base, or anything other than a game for the entry model.

Since one of the program cartridges available is PCjr BASIC, a case can be made that the entry model is an educational tool—a "computer literacy" instructor. But unless you won't mind losing programs you've spent hours

keying-in every time you turn off your computer, you're stuck again, because the only way to save them is on cassette tapes.

The alternative to tape storage is to buy the optional disk drive and controller ($480) for the entry model. While you're at it you'll probably want to buy the 64k memory-expansion and display-enhancement card ($140), which will give you enough memory to run some of the programs written for the IBM Personal Computer. If you plan to do a lot of word processing, you'll also want an 80-column display to replace the 40-column one that is standard on the entry model.
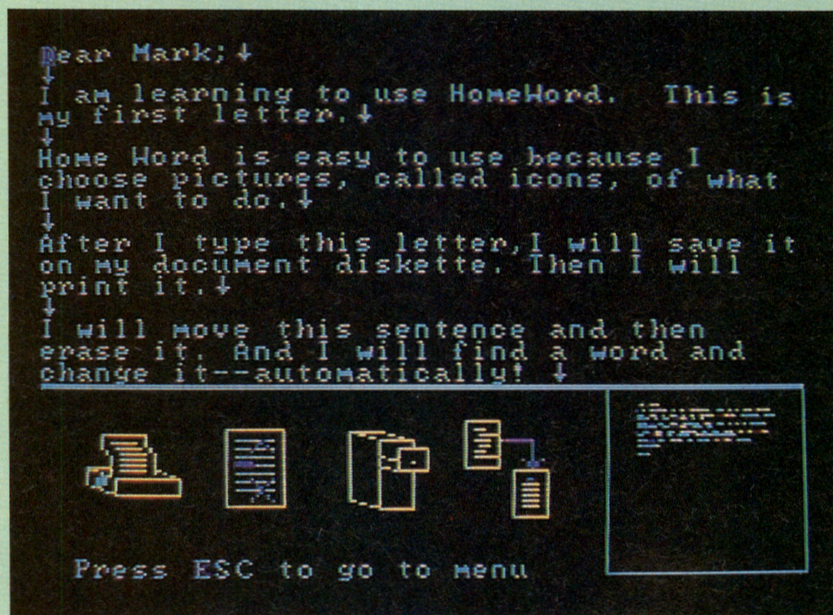
The real thing

Most people who think about buying a home computer get some productive use from it: word processing for letters; a data base for addresses and recipes; a home budget program. IBM has ensured that good software for all those purposes will be available immediately for the enhanced version of PCjr.

For word processing there is HomeWord ($75 on disk) from Sierra On-Line, which is easy-to-use and flexible

Homeword

This word-processing package for the IBM PCjr is designed to be easy for you to use, even if you are a computer neophyte. This software program is menu-driven, and you select menu items by moving your cursor to on-screen icons which display the functions you want. There will be no surprises in the finished product, because a window in the lower right-hand corner of the screen shows you what your document will look like when it's printed.


```
Dear Mark;↓
↓
I am learning to use HomeWord.  This is
my first letter.↓
↓
Home Word is easy to use because I
choose pictures, called icons, of what
I want to do.↓
↓
After I type this letter,I will save it
on my document diskette. Then I will
print it.↓
↓
I will move this sentence and then
erase it. And I will find a word and
change it--automatically! ↓


Press ESC to go to menu
```

PCjr Software

Compatible Software

ADVENTURE/1.00
—cannot set fore- and background colors

ADVENTURE IN SERENIA/1.00
—colors may vary from Personal Computer

ARITHMETIC GAMES (SETS 1 & 2)/1.00
—no color on composite monitor, requires DOS 2.1 and BASIC cartridge

BASIC COMPILER/1.00
—needs storage for Compile/Link, DOS 2.1

CASINO GAMES/1.05
—requires BASIC cartridge

DISKETTE LIBRARIAN/1.00
—requires DOS 2.1 and BASIC cartridge

DOW JONES REPORTER/1.00
—requires DOS 2.1 and BASIC cartridge

EASYWRITER/1.15
—requires DOS 2.1

FILECOMMAND/1.00
—requires DOS 2.1

LOGO/1.00
—requires DOS 2.1

MACRO ASSEMBLER/1.00
—requires DOS 2.1

MULTIPLAN/1.10
—requires DOS 2.1

PERSONAL EDITOR/1.00
—requires DOS 2.1

PFS:FILE/1.05
—requires DOS 2.1

PFS:REPORT/1.05
—requires DOS 2.1

PROFESSIONAL EDITOR/1.00
—requires DOS 2.1

STRATEGY GAMES/1.05
—requires BASIC cartridge

TIME MANAGER/1.05
—requires DOS 2.1

VISICALC/1.20
—requires DOS 2.1

WORD PROOF/1.00
—requires DOS 2.1

New Software

THE IBM PERSONAL COMPUTER DOS 2.1
DOS 2.1 is an enhanced version of DOS 2.0 and has the same functions and storage requirements as DOS 2.0; $65.
For PCjr with disk drive and 64k

IBM PCjr BASIC
IBM PCjr BASIC is an interpretative language that allows direct interaction of commands and language statements. The cassette BASIC is built into the system while cartridge BASIC is optional in the form of ROM built into a cartridge; $75.
For PCjr entry model

MOUSER
This fast-paced, arcade-style cartridge game has the player cast in the role of a farmer whose nine-room farmhouse has been overrun by mice; $35.
For PCjr entry model

SCUBAVENTURE
ScubaVenture is a cartridge game in which each player is in control of a diver searching dangerous recesses of an undersea cavern for sunken treasure; $35.
For PCjr entry model

```
#1      1          2     #2       13
 1 BUDGET       January   1 December
 2
 3 Cash Flow    10000.00  3    10000.00
 4 Mortgage      1400.00  4     1400.00
 5 Labor         1200.00  5     1200.00
 6 Water          250.00  6      250.00
 7 Electric       190.00  7      190.00
 8 Telephone      125.00  8      125.00
 9 Insurance       50.00  9       50.00
10 Advertising    100.00 10      171.03
11 Materials     2500.00 11     7132.79
12 Expenses      5815.00 12    10518.83
13 Cash Left     4185.00
14                       #3       13
15                       13     -518.83
16                       14
17                       15
18                       16
19
COMMAND: Alpha Blank Copy Del Edit Form
   Go Help Ins Lock Move Name Opt Print
   Quit Sort Transfer Value Window Xtern
Select option or type command letter
R1C1  "BUDGET"              94% FINAL
```

Multiplan

This software package runs on the PCjr as well as on the Personal Computer. The screen display pictured here on the PCjr was generated from a program and a data disk that were also running on the Personal Computer. Background and foreground colors can be set for each window with simple keystrokes from the cordless keyboard.

CROSSFIRE
In this arcade-style cartridge game, the player must defend the grid-like streets of a city from a swarm of insects; $35.
For PCjr entry model

MINE SHAFT
Players maneuver a mining car around dangerous mine shafts looking for a fortune in diamonds in this fast-paced cartridge game; $35.
For PCjr entry model

BUMBLE GAMES
Players are guided by Bumble, an imaginary creature from a fictional planet. Children can learn concepts of "greater than" and "less than "; $40.
For PCjr with disk drive, 128k, and BASIC cartridge

BUMBLE PLOT
Bumble Plot is a set of five games building on the graphic skills introduced in the Bumble Games; $40.
For PCjr with disk drive, 128k, and BASIC cartridge

JUGGLES' BUTTERFLY
This package is a set of three games introducing children to a computer before they can read. The concepts of "above, below, left, and right" are explored, as well as introductions to lines and circles; $35.
For PCjr with disk drive, 128k, and BASIC cartridge

ANIMATION CREATION
This creative entertainment program enables the user to make animation sequences on a color display; $40.
For PCjr with disk drive and 64k

MONSTER MATH
Monster Math gives a student the opportunity to add, subtract, multiply, and divide on six different levels. Point totals and best scores are displayed; $30.
For PCjr with disk drive, 128k, and BASIC cartridge

ADVENTURES IN MATH
This game lets young people develop and improve their basic math skills. Students solve basic skills problems as they find their way through three types of castles; $35.
For PCjr with disk drive, 128k, and BASIC cartridge

TURTLE POWER
Turtle Power is designed to help develop computer literacy and introduce children to the Logo programming language. The program is a "drawing board" for children that provides immediate feedback without preliminary instruction; $50.
For PCjr with disk drive and 128k

HOME BUDGET, jr.
Home Budget, jr. is designed to structure a household budget by allocating income to categories of spending. Income and expenses are entered as they occur; $45.
For PCjr with disk drive, 128k, DOS 2.1, and BASIC cartridge

HOMEWORD
This program is an easy-to-learn word processor that includes picture menus, color, and a custom keyboard overlay; $75.
For PCjr with disk drive and 128k

PERSONAL COMMUNICATIONS MANAGER
This package lets the user send or receive correspondence to compatible computers over standard telephone lines. Information services can be automatically accessed; $100.
For PCjr with double-sided disk drive, 128k, and modem

The PCjr's rubber-covered, "chiclet" keys are somewhat difficult to push, and give no audible or tactile feedback.

enough to allow you to turn out a nice looking letter or document. It provides all the basic word-processing features that most home users will ever need in one of the friendliest fashions I've seen. It uses graphic screen icons to tell you what command options are available, and on-screen formatting so you don't have to guess at how your text will turn out. Formatting features not displayed on the monitor—such as boldface type or double-spaced text—are identified on screen by distinctive type reading "Bold Face On" or "Double Space On." You can choose either a 40- or 80-column display, although if you're using a television set rather than a monitor, the 40-column display is the way to go, since televisions lack sufficient resolution to display 80 columns clearly.

When you're considering the price of using PCjr for word processing, you should remember that (as with any computer) you'll need a printer to get a hard copy of what you write. IBM offers a 50 cps (characters per second) thermal printer that utilizes the built-in serial port on the PCjr for $175 plus $40 for a Printer Adapter. If you want to use a dot-matrix printer (for faster and usually higher-quality printing than is possible with a thermal printer), you'll need the optional PCjr Parallel Printer Attachment ($99).

For household budgeting, IBM has Home Budget, jr., ($45 on disk), which they call a reduced version of the Home Budget program available for the IBM Personal Computer. Like HomeWord, it is designed to be easy-to-

learn. For data-base purposes IBM distributes PFS:File 1.05 and PFS:Report 1.05 ($140 and $125 respectively, both on disk) from Software Publishing Company.

The software IBM is distributing for the PCjr is more than adequate for the kind of word processing, budgeting, and data-base management chores of most home users. But what about the hardware itself? Well, you've only got one disk drive to work with, but with 128k of memory, that doesn't prove to be much of a problem. Most, if not all, of the modules which make up these programs can be loaded into memory at once, allowing you to remove the program disk from your drive and replace it with a data disk. But then there's the keyboard.

The keyboard

The PCjr's keyboard has two distinguishing features. One is a gimmick, the other a liability. The gimmick is that the keyboard is cordless, and can be used up to 20 feet away from your computer by using an infrared mechanism to send data from the battery-powered keyboard. The front of the keyboard has two infrared light-emitting diodes (LEDs), the output from which is picked up by an infrared detector in the front of the system unit.

Being able to use your computer from across the room sounds like fun, but how useful is it really? Even a hunt-and-peck typist would probably have difficulty typing and walking at the same time. You can't sit in a rocking chair and use it, because you've got to keep the LEDs on the

The PCjr is a small, lightweight product. One of the reasons why this is so is that its power transformer (the black box shown here) is outside the system unit. The transformer can be placed on the floor, so it doesn't have to take up desk space.

keyboard pointed at the detectors on the system unit. And, unless you've got a 70″ monitor it will be a bit tricky to read the screen from 20 feet away.

From close up, the cordless keyboard can be a drag, too. The infrared beam works like the beam of light from a flashlight—widening as the distance from the source increases. A foot from the keyboard the beam is narrow, so unless the keyboard is pointed directly at the infrared detector, the computer won't receive the characters you type.

The problems with using the infrared keyboard close to the system unit can be easily overcome. IBM offers an optional six-foot cord ($20) to connect the keyboard to the system unit. A good rule of thumb for using the keyboard would seem to be that if you're close enough to the system unit to attach the optional cord, do it.

Remote control of your computer might be nice on
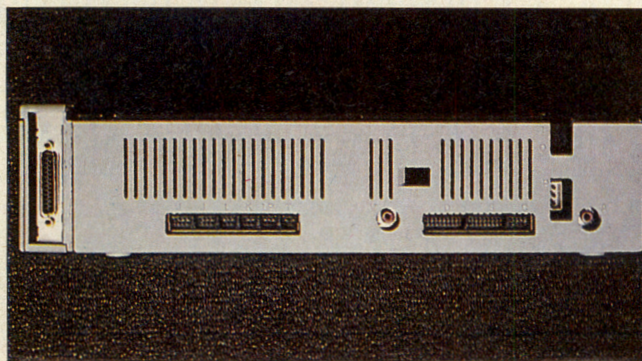
PCjr's rear end features a wealth of input/output ports. An optional parallel port expansion box is on the left, and the connector for the optional internal modem goes into the squarish hole above the large right-hand cutout.

occasion, but it hardly seems like a feature that will be important to you every day. A keyboard on which you can type will be important. And for that reason, the PCjr's "chiclets" keyboard may prove to be its greatest liability. There may be a logical reason for equipping the PCjr with this kind of keyboard, but I don't know of one. What I do know is that the keyboard gives no tactile feedback and no audible feedback, which makes touch-typing very difficult. Admittedly, I am an experienced touch-typist and I demand a lot from a keyboard by way of sensitivity and responsiveness. But when I was experimenting with PCjr I found that the keyboard hadn't picked up characters I was sure I had typed.

A chip off the old block

It may not matter what is said about the PCjr keyboard. Because alone among all the home computers on the market, the PCjr uses PC-DOS (a new version, called 2.1), making it compatible with a large percentage of the software being written for the IBM Personal Computer.

As a result, almost every market analyst who's commented on the PCjr says that what it really has going for it is the growing audience of people who use an IBM Personal Computer in the office and want a compatible machine for the home. Tom Bogan, senior vice-president of Alliance Capital, an investment firm whose Technology Fund specializes in electronic technology issues, goes so far as to say, "The real product is the operating system."

How compatible is compatible? There are certainly some striking differences between the IBM Personal Computer and PCjr—due primarily to PCjr's current limits on memory expansion (128k) and the number of disk drives it supports (one). These limits make it impossible to use any program for an IBM Personal Computer that needs more than 128k of RAM to run or more than one disk drive. But beyond that, IBM says that any program that runs under DOS 2.0 on the Personal Computer will run under DOS 2.1 on the PCjr if the program uses all the IBM conventions for DOS 2.0—which means it will run, provided that it doesn't make any fancy patches or changes in the BIOS (the basic input/output routines of the operating system). How do you find out whether your favorite program has fooled with the BIOS, or whether it will run on the PCjr? If it's an IBM-distributed program you can check the chart of PCjr-compatible IBM-distributed programs (see page 36) and see if it's listed. IBM has tested all of its programs, and they say that those listed are the ones that will work with the PCjr. With software for the Personal Computer that isn't distributed by IBM, your best bet is to take your program to a dealer and see if you can make it work on the PCjr.

A lot of people who use an IBM Personal Computer at work will probably be most concerned with how the PCjr will handle the spreadsheet, word-processing, and database files that they developed on their office computer. As the screen shot on page 37 proves, Multiplan runs just fine on the PCjr. In fact, at the product announcement, a Personal Computer and a PCjr were lined up side by side, both running Multiplan booted from the same disk. The program operation was identical on both machines, even to ·the color. VisiCalc also runs on PCjr, but there is a problem with spreadsheets that goes beyond whether or not the program runs. If the spreadsheet model you developed using 400k or so of memory on your IBM Personal Computer takes up more memory than you have left in the 128k PCjr after loading your spreadsheet program, you won't be able to import it to the PCjr.

There are ways around this problem. Often, a large spreadsheet model is divided into several sections—each of which performs essentially autonomous calculations, supplying only the results of those calculations to other sections of the model. With most spreadsheets, you must keep all of those sections in memory at once, which means that in order to work with a large model, you need a lot of memory. Multiplan, on the other hand, allows you to save the various sections of your model to disk as separate files, and specify that when one file is loaded, the program should automatically look up the data it needs from the other sections on the disk. So, you don't have to load every section of your spreadsheet into memory—just the one with which you want to work.

The overall operating system and file compatibility between the PCjr and the Personal Computer are a lot greater than that offered by almost any other manufacturer's computers. This is a step in the right direction for the industry and a big point in PCjr's favor. It means that even if a program for the IBM Personal Computer will not run on the PCjr, it should not take a great deal of effort for the manufacturer of the program to make the changes that will allow the program to run on the PCjr.

The education machine?

IBM says that the PCjr is designed to be a versatile learning aid, and is hinting broadly that they will make a major effort to market it to schools. That's nice, but how do they back up their claims? Or, to put it another way, what it is that IBM believes makes a computer a versatile learning aid?

IBM cites a number of facts to support its claim, among them the inclusion with each PCjr of a Hands-On BASIC booklet, the optional cartridge BASIC, a book called *BASIC Made Easy For The PCjr* ($13), and Turtle Power ($50), a disk-based program designed to introduce children to the LOGO programming language. But if the
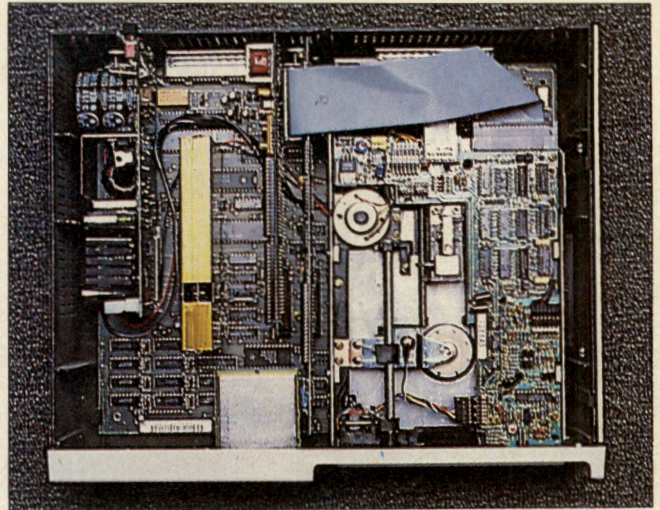
The enhanced model PCjr (above) has a disk drive (right) and a 64k memory-expansion and display-enhancement box (the small copper-colored box on the left. In other respects it's identical to the entry model (below).

The cartridge slots of the entry model are clearly visible in the photograph at right below. When the disk drive is added, the cartridge slots sit directly below the drive. The 60-pin expansion connector for a parallel printer that carries signals identical to those on the Personal Computer's I/O bus is visible at the right of the entry model.
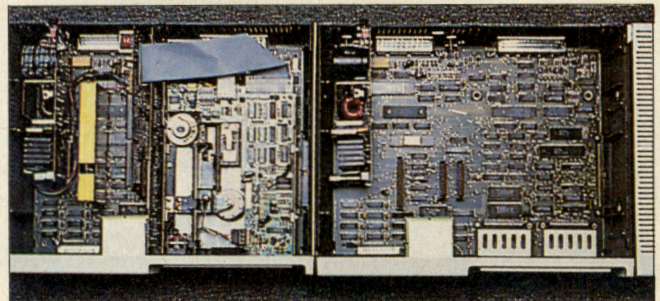
computer is truly to become a learning aid, (and especially if it is to become a versatile one), it should teach you something other than how to program it. For that reason, IBM is distributing three disk-based educational games (Bumble Games—$40, Bumble Plot—$40, and Juggles' Butterfly—$35) from The Learning Company, a leading producer of educational software, as well as a game called Adventures In Math ($35), which is designed to help young people improve their basic math skills.

Nevertheless, I see little to suggest that PCjr was actually designed to be a learning aid. Rather, like most of the

Powerful Products Feature Ease Of Use

■ File Plan ■ Rainbow 100+ ■ Word Juggler IIe

AUTOMATIC SORTING MADE EASY

by Craig Zarley, Associate Editor

Chang Laboratories's new personal-filing software package for CP/M-based systems, FilePlan, helps you keep track of all your lists and records with automatic sorting routines and user-defined prompt lines. The sorting routines are a common-sense departure from those found in other filing software packages because they organize data as it goes into the system, instead of sequencing it as it comes out.

When you first start using the program, you'll notice that the screen is set up like a worksheet, allowing you to keep track of your records in a way similar to the way you would keep your paper records: Across the top of the screen there are horizontal columns labeled Field 1 through Field 5. Like most of the lists we keep, the data for each record is entered left to right under each column head. If you want to keep your tax records, for example, you might enter the check number in field one, the date in field two, the description ("office supplies") in field three, the amount in field four, and the category of expenditure ("business") in field five.

Although only five columns appear on the screen at one time, you can create records with up to 32 fields. By hitting the Return key after you reach the right hand column, the screen scrolls left to reveal additional fields.

Because you enter your records in fields from left to right, you can create—and see—15 records at a time on the screen. That means that you can view your records much faster and easier than you can when you have to scroll through electronic files that show only one record at a time on the screen. And when you're entering data, the program automatically saves your data on disk after every 15 records.

Helping yourself

After you've created a short worksheet, you'll want to go to FilePlan's command menu where you can begin to understand the versatility and power of the program. No matter where you are in the program, pressing Escape will take you to the command menu, which lists all of the activities and features of the program, including printing your worksheets, formatting the records, and searching and sorting through files. All you have to do to initiate an activity is read through the menu and enter the number corresponding to the task you wish to perform.

When you enter 7, FilePlan will take you to the Changing Field Formats option, which allows you to tailor your
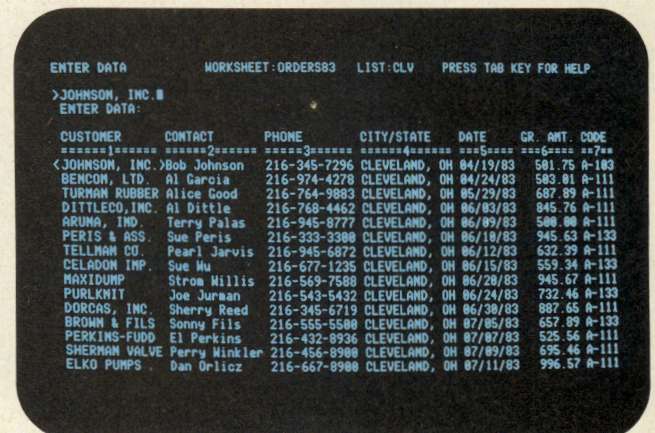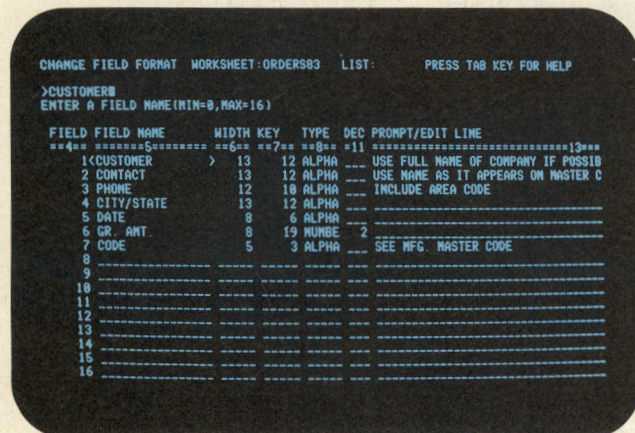
Since the worksheet screen in FilePlan is set up so you can enter data from left to right under each column heading (left), you are able to keep your computerized files in a manner similar to the way you would keep your paper records (right).

users of bulletin boards and on-line personal computer services. By properly identifying themselves in telecommunications systems, they are making the system stronger and less prone to hackers and idiots. To encourage this, Abney assigns a "probationary status" to new users. "You're allowed to place a message. The system notes the message and flags it with an invisible flag. Anyone calling in must wait for the systems operator to release the message before reading it . . . you're probationary until you're registered," Abney says.

Abney's system is one among several bulletin-board packages available that features these or other security measures. (For more information on Forum-80, write Forum Headquarters, 7600 E. 48th Terrace, Kansas City, MO 64129. For information on other packages available, see the "Electronic Bulletin Boards" article in the June 1983 issue of *Personal Computing*, or write to *The On-Line Computer Telephone Directory*, P.O. Box 1005, Kansas City, MO 64111).

Well worth the effort

The solutions Abney points to are generic ones—flagging techniques, multilevel statuses, up-front security, etc.—they could be adapted to other programs featuring on-line or communications capabilities. Whereas such features may demand additional time, and cost, from the computer owner operating on-line systems, no realistic operator today would call such precautions frivolous. Indeed, measures such as Abney's may be the only way to foil the boy geniuses and snoops for a long time to come. Says Lindsay L. Baird, Jr., "There are tens of thousands of young computer enthusiasts out there exercising their native inclination to test and expand their horizons. The net result is that you have thousands out there doing damage."

That damage may be deliberate or accidental, but one thing is clear, says security specialist Belden Menkus: "Hacking is like performing brain surgery in a closed container. Those kids just don't know what they're doing." ∎

System	Base System	Memory Expansion	Add-on Disk Drives	Operating System	Graphics	Sound/ Music	Video Output	Expansion Ports	80-column	Key-board
IBM PCjr	$669 kb, 64k	128k	1	MS-DOS 2.1	hi-res 16 color	yes	TV/comp. RGB	p/s	opt.	ch 62 keys
IBM PC	$1355 kb, 64k	640k	2	MS-DOS	hi-res 8 color	yes	RGB	p/s	yes	fs 83 keys
TRS-80 Color Comp. 2	$239.95 kb, 16k	64k	4	TRS-DOS	hi-res 8 color	yes	TV	p/s	no	fs 53 keys
TRS-80 Model 4	$999 kb, m, cd, 16k	64k	4	TRS-DOS	low-res 2 color	yes	Comp.	p/s	opt.	fs 70 keys
TI-99/4A	$75 kb, 16k	48k	3	TIOS	hi-res 16 color	yes	TV/RGB	p/s	no	3/4 s 48 keys
ADAM	$600 kb, pr, cd, 80k	144k	2	IOS	hi-res 16 color	yes	TV/comp.	p/s	opt.	fs 75 keys
Apple IIe	$1395 kb, 64k	128k	6	Apple DOS	hi-res 6 color	yes	Comp.	p/s	opt.	fs 63 keys
Atari 600XL	$199 kb, 16k	64k	4	Atari DOS 3.0	hi-res 256 color	yes	TV	p/s	no	fs 62 keys
Atari 800XL	$299.95 kb, 64k	no	4	Atari DOS 3.0	hi-res 256 color	yes	TV/comp.	p/s	no	fs 62 keys
Commodore 64	$200 kb, 64k	no	5	built into PET BASIC	hi-res 16 color	yes	TV/comp.	p/s	opt.	fs 66 keys
Commodore VIC 20	$100 kb, 5k	32k	5	built into PET BASIC	hi-res 16 color	yes	TV/comp.	p/s	no	fs 66 keys
Spectravideo 318	$299 kb, cd, 32k	144k	2	built into DISK BASIC	hi-res 16 color	yes	TV/comp.	p/s	opt.	ch 71 keys
Spectravideo 328	$799 kb, dd, 32k	256k	2	built into DISK BASIC	hi-res 16 color	yes	TV/comp	p/s	opt.	fs 88 keys

kb = keyboard
m = monitor
cd = cassette drive
dd = disk drive
pr = printer

hi-res = high resolution
low-res = low resolution
RGB = red, green, blue
TV = television
comp = composite

p/s = parallel and serial
fs = full-size
3/4S = 3/4 size
ch = chiclet
opt = optional

computers on the market, it appears to be a box into which you can fit software. If the software is educational in nature, then the box assumes an educational quality. But the special peripherals that people are developing for educational purposes—touch-sensitive screens, graphics tablets, voice synthesis—are not available even as options on the PCjr at this point. In contrast, all of that hardware—and a keyboard on which you can teach touch-typing—is available for the Apple IIe. So, while not denigrating the effort that IBM put into developing educational software for the PCjr, the hardware platform on which that software must run currently seems no more suited for education than most other personal computers.

The family computer

The PCjr is also being called a "family computer" by a lot of people. I've paid attention to these statements, because frankly, I didn't know what family computing was. IBM has described it by listing al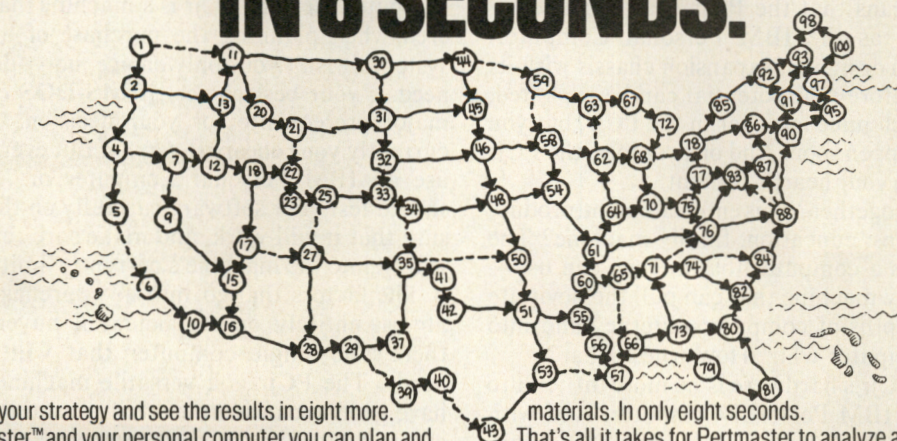l the home-based software that's available for the new machine—word-processing, budgeting, entertainment, education, communications, etc.

Fine. Maybe it's true that members of a family will use packages in each of those areas. But, "family computing" suggests something more than that—something wholesome and heart-warming, like a Norman Rockwell picture of Mom, Dad, and the kids gathered around the old Victor radio listening to "The Shadow." It's a nice image—something that will make even the most cynical among us shed a tear for a world gone by. But a personal computer is almost exclusively that: personal. The growth one experiences from working with a personal computer can be shared, but the experience itself can't be. The closest you get to "family computing" is when Dad agrees to quit playing spreadsheet for awhile so junior can play Bumble Plot.

Communications

IBM has done an exceptional job of combining good software and good hardware to make it very easy for the PCjr

to communicate with other computers—ranging from the IBM Personal Computer in your office to telenetworks like The Source or CompuServe. For $199 you can buy their optional auto-dial, auto-answer 300-baud internal modem. Another $100 will get you the Personal Communications Manager software package, which works on all IBM personal computers. This communications package is loaded with features, including the ability to set up keyboard macros so that by pressing a single key you can dial-up and sign-on to telenetworks, and the ability to interface with the word processor of your choice—enabling you to compose or edit your communications. It also has electronic mail facilities, which appear to be very well implemented. If you want a 1200-baud modem you'll have to wait until IBM or somebody else introduces one, or use one through the serial port on the PCjr.

Just the beginning

There's good reason to believe that—as was the case with the IBM Personal Computer—the initial hardware and software offerings for the PCjr are just the beginning. Even if IBM chooses not to provide all the PCjr enhancements you could want, there's no doubt that someone will. For despite the initial reports that the PCjr has very limited expandability, the door to expansion is actually wide open. The key is a 60-pin connector on the side of the optional parallel printer card. The connector, which can be accessed by removing the right side panel of the PCjr's case, carries signals identical to the signals on the IBM Personal Computer's input/output bus.

What does that mean? An IBM spokesman admitted that in essence, it means that the PCjr has the same expansion capabilities as the IBM Personal Computer. Someone will have to design an expansion chassis with its own power supply before that potential can be exploited, since there's not much juice left over in the PCjr, but you can expect that to happen soon. And once it does, the PCjr will be expandable to your heart's content.

What ties all this together? This entertainment, productivity, communications, education, family machine? The answer, IBM says, is a computer that anyone can use—indeed a user-friendly machine that can pull the novitiate out of the murky depths of computer-illiteracy and into the realm of the computer whiz. How true is that?

Keyboard aside, PCjr's hardware is no more difficult to use than that of the IBM Personal Computer. And with 128k with which to work, and IBM's nice, fast, high-capacity disk drives, software developers will no doubt provide lots of on-line Help facilities with PCjr software just like they do with software for the Personal Computer. So you could say that PCjr is reasonably friendly. But there is one thing about it that could scare many a beginner, and probably not a few people who are reasonably experienced with other computers. Oddly enough, it's the

same thing that people call PCjr's best selling point: MS-DOS as implemented by IBM—otherwise known as PC-DOS.

The problem with the PC-DOS operating system is its lack of "transparency." By transparency, I mean that while working with either PCjr or the IBM Personal Computer, you're all too aware of the (sometimes forbidding) presence of the operating system. With most programs you've either got to boot PC-DOS first and then run your program or install PC-DOS on your program disk. Installing PC-DOS (and BASIC or BASICA if the program is written in one of those languages) is not so difficult once you get used to it, but for a beginner, there might be nothing more frightening than the sight of a lonely A>prompt on the screen.

Does this mean that the PCjr is a bad machine for the beginner? Well, actually not. Because with the growing proliferation of PC-DOS and MOS-DOS computers, learning how to get around PC-DOS is probably a good lesson in computer literacy.

I've criticized the PCjr's shortcomings because I know that IBM has the resources and technological expertise to do better. The PCjr is a good product, but not overwhelmingly good.

True, the PCjr does what it claims to do. But—with the exception of providing PC-DOS compatibility—I don't see that it does anything much better than the Apple IIe or the Atari 1200. And overall, the Apple IIe presents more potential for expandability and growth than the PCjr does today.

For both the newcomer to computing and the business-computer user, the PCjr is a machine that must be considered when planning the purchase of a home computer system. It isn't your only choice, nor—depending on your needs—your best choice. If MS-DOS compatibility is a major prerequisite for your decision, then the PCjr is currently your cheapest way in. But even then, even if you use an IBM Personal Computer or XT at work, you should test your software carefully on the PCjr and make sure that it will work, and make sure that your data files will fit into the machine's currently limited memory.

The factors that go into any purchase decision depend almost entirely on the potential buyer. And certainly, there's no single computer that will meet everyone's needs. The PCjr is a versatile machine that appears to have good expansion potential. Certainly it should not be overlooked when you're shopping for a computer. On the other hand, your needs may be better met by an Apple IIe, an Atari 1200, a SpectraVideo 328, a Commodore 64, or even a VIC 20. In the end, shopping for a computer is like shopping for a car or a refrigerator. There are no guarantees that any one manufacturer's product is necessarily the best for you. I've tried to give you a few points to consider while you shop; the decision is yours. 🔡