IBM's PCjr
—was it worth the wait?

● Now IBM's family of computers includes a family computer, the PCjr. Junior uses the same 16-bit microprocessor and operating-system software as the IBM PC and XT, so it can run most of the same programs. It even has some capabilities that its business-oriented brothers lack, but it is limited in RAM and floppy-disk memory and uses a smaller keyboard. Junior comes in a cartridge-only "entry" model or an "enhanced" model with disk drive. Despite its steep price, PCjr is expected to shake up the home-computer market.

By DANIEL RUBY

To my left, a swarm of video insects buzzed down Main Street. To my right, a video skin diver narrowly eluded a shark's jaws. All around, electronic sound effects bounced off the walls as fascinated players jerked their joy sticks.

No, I wasn't visiting my neighborhood arcade. I was standing in a gray-carpeted, diffusely lighted presentation room in IBM's plush new high-rise headquarters in New York City, where the company's much-rumored Peanut home computer had just been officially unveiled as the IBM PCjr. Not all the 20 or so Juniors set up in the room were running game software; others displayed educational programs or "productivity tools" such as word-processing, budgeting, and telecommunications software. Yet the striking impression was that IBM—famous for its button-down, no-nonsense image —was now playing games.

Although the PCjr marks the first time the computer giant has entered the consumer mass market, nobody thinks IBM is playing games with the corporate bank account. Financial analysts who follow the microcomputer industry expect Junior to be hugely successful, even to the point of returning stability and profitability to the entire depressed home-computer market (see box: "Ballast in a stormy sea").

But what kind of beast is the PCjr? Does it deserve the reverential respect it instills in consumers and competitors? Is it a good buy for home users, or can they find comparable performance at a lower price?

I must emphasize that I have used the PCjr only for several hours during its New York debut. They have

Junior is at home in many guises. Above: The no-disk-drive "entry" model displays a built-in program that teaches users how to use the keyboard. On the facing page, the "enhanced" PCjr runs Multiplan (top), a business - oriented spread-sheet program, and Home-Word (bottom), a new easy-to-use word processor. PCjr's two pieces (right) can be packed in a suitcase for travel or storage.

since been sent to authorized IBM dealers for in-store demonstrations, but they will not be available for sale until February or March. (PS will do side-by-side comparisons of PCjr and competing systems in an upcoming issue.) Nevertheless, conclusions can be drawn.

Friendly little brother

"Technically, there is nothing revolutionary about it," says Esther Dyson, publisher of the influential industry newsletter RELease 1.0. "But it is an amazingly friendly little machine that will take the fear out of computers for first-time users."

Junior has at least two other things going for it. Because it uses the same Intel 16-bit microprocessor and Microsoft operating system as its big brothers, the IBM PC and PC XT, it will run most programs written for those leading business machines (the limitations are discussed later). The other big advantage is the three initials on its nameplate, letters that, in the minds of many, represent quality, reliability, and an assurance that the company will be around for as long as the computer is.

Those weighty letters may also explain the hefty numbers on the price tag. At $669 for the base model and $1,269 for an expanded version, the PCjr is hundreds of dollars more expensive than computers made by Commodore, Coleco, and Atari. In fact, it's in the same range as Apple's best-selling IIe. And neither of the Junior's prices comes close to buying a complete system: A monitor, printer, software, and even simple cables and connectors are all extra. An order form for "suggested configurations" from IBM Product Centers lists hardware packages to $3,000 and beyond. (A starter system for game playing on your TV set will run about $900; a basic word-processing setup with a thermal printer—and still using your own TV—is twice that.) Those are numbers that will put the system out of reach of many family budgets. ("The great unbundling" box shows how the dollars might add up.)

But a great many other families, schools, and even some businesses will stretch their budgets to afford the PCjr. Dyson expects that as many as 500,000 units will be sold in 1984. Let's look more closely at what buyers will get.

Junior comes in two parts: the "system unit" and keyboard. The system unit of the $669 version—IBM calls it the "entry model"—includes the microprocessor, 64K of RAM memory, 64K of ROM (containing a version of

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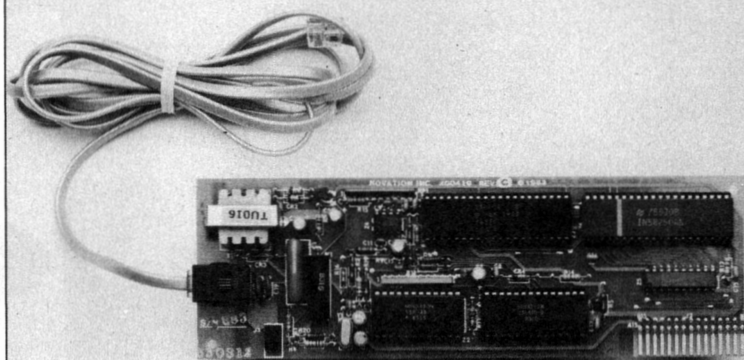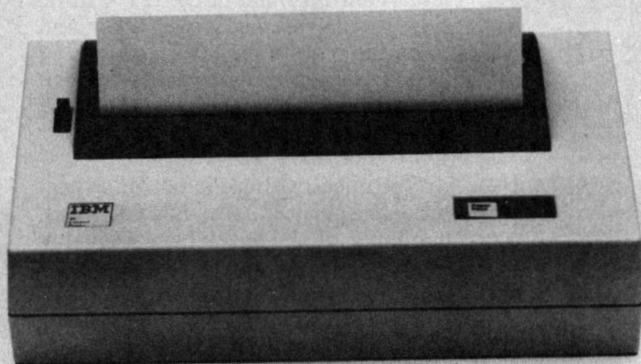
BASIC and a tutorial program), two slots for program cartridges, and an assortment of connector ports for accessories such as a cassette player, serial printer, joy sticks, and a light pen. Built into the system circuit board are capabilities for 16-color graphics and three-voice sound that are said to be more advanced than those of the IBM PC. In this configuration, the computer can display only 40 columns of text on a television set or monitor.

The "enhanced" model adds a disk drive, 64K more user memory, and an 80-column display to the same unit. Except for the circuit-board slots for the added memory and disk-drive controller, only one expansion slot —for an internal modem—is provided inside the unit. An expansion bus allows other peripherals to be added outside, but IBM offers only one add-on board—for a parallel printer—to connect to the bus. Presumably, other manufacturers will offer other add-ons —such as more memory or a second floppy- or hard-disk drive—but IBM has not made this easy. For example, the internal power supply is insufficient to run a second disk drive.

The entry and enhanced models both use the same 62-key cordless keyboard, which communicates with the computer via infrared signals. This optical coupling works from up to 20 feet away, though the keyboard must be aimed toward the computer from an angle of not more than about 10 degrees from perpendicular. A keyboard cable is available as an option.

The keyboard lacks the numeric pad and dedicated function keys of the IBM PC's 83-key keyboard. Also, its rubber-topped keys use a different kind of electrical contact that does not yield the full travel and crisp click of the PC's keys.

First reactions

The keyboard and system unit have both come in for some early criticism. I spoke with product manager Dave O'Connor to find out why IBM limited Junior's expandability and selected the small keyboard with rubber-domed keys.

He told me that the Junior was designed so it could be sold at "the lowest cost, yet still be compatible with the PC family." According to O'Connor,

"a single disk drive and 128K of memory met that requirement.

"Ease of use was also a prime factor with the keyboard. With the infrared couple, users can sit down in an easy chair and play a game from across the room. The type and number of keys were dictated by the infrared design, because a self-contained keyboard has to be powered by batteries. Therefore, the electronic technology is different."

O'Connor emphasizes that the keyboard is able to perform all the functions of the PC keyboard. To activate them, however, users may have to press a sequence of two or three keys instead of one. However, all the keys are programmable, so software written for the PCjr can redefine the keys to perform any desired function. A cardboard overlay to relabel the keys would be supplied with such programs.

More significant than the particular details of the hardware is that all the details are openly published. This same strategy established IBM's domination of the business market because the company was willing to tolerate a parade of PC imitators in return for the bounty of independent software that made the computer so attractive to users.

In Junior's case, IBM published the technical specifications in December with the expectation that the flood of outside hardware and software would begin flowing just as the computer was reaching stores. According to analyst Clive Smith of The Yankee Group, the strategy will likely work again.

"Anything and everything you can think of will be available," he said. "Even if the PCjr doesn't take a dominating market share, its owners will be more affluent than owners of other home computers. There will be plenty of entrepreneurs looking to make their

A software gold mine

Cartridge	Productivity tools	Education
BASIC	Dow Jones Reporter	Adventures in Math
Crossfire	EasyWriter	Arithmetic Games
Mine Shaft	FileCommand	Bumble Games
Mouser	Home Budget, jr	Bumble Plot
ScubaVenture	HomeWord	Juggles' Butterfly
	Multiplan	Monster Math
	Personal Comm. Manager	Turtle Power
	Personal Editor	
Entertainment	pfs:FILE	
Adventure	pfs:REPORT	
Adventure in Serenia	Professional Editor	**Languages and utilities**
Animation Creation	Time Manager	BASIC Compiler
Casino Games	VisiCalc	Logo
Strategy Games	Word Proof	Macro Assembler

IBM peripherals here are easy to add to PCjr. Left to right: Compact printer produces 80 columns of draft-quality print on thermal paper; modem board fits inside computer, needs no telephone; pair of joy sticks permits two-player games.

fortunes satisfying the demand for software and peripherals." Smith expects that there will be PCjr clones as well, but that they will take longer to hit the market.

There is plenty of software available right now for Juniors equipped with a disk drive. (See "A software gold mine" box for a listing of programs sold and supported by IBM.) For now, there is no applications software available on cartridge; until there is, entry-model Juniors will remain little more than glorified game machines.

I was able to try out some of the new disk-based software at the press introduction. Both the new word-processing program, called HomeWord, and a modem-control program called Personal Communications Manager seemed to offer every conceivable feature in formats that were easy to learn and use. HomeWord uses graphic images to represent possible functions; you select these using the keyboard or a joy stick (no mouse is available). The control program has multiple menus to guide users through the procedures for sending electronic mail or logging on to a data-bank service. Both programs have provisions for experienced users to bypass the menus for faster operation.

Limits of compatibility

Although the PC and PCjr are mostly compatible, there are some caveats. First, Junior uses a new version of the operating system PC-DOS (the master program that controls the data flow from disk to computer). PC users will need the update to run PCjr programs. Second, PCjr programs that make extensive use of its graphics or sound capabilities—HomeWord, for example—will not run on a PC. Third, programs written for the PC that require more than 128K of memory or two disk drives will not run on Junior. An example is the popular business package Lotus 1-2-3.

IBM's O'Connor is not concerned by such minor incompatibilities. "As the newest and lowest-price member of the PC family, PCjr doesn't have to do everything that the PC and PC XT can do," he said. Despite this, one of the target markets for the PCjr is business people who use an IBM PC at the office. They will be able to take work home and interchange disks from machine to machine, but they will have to leave their most complex spread-sheet and data-base programs at the office and their most dynamic sound and color programs at home.

So what kind of a beast is PCjr? It's a powerful, easy-to-use, and expensive home computer with a large base of software. Does it deserve reverential respect? Probably not. Can consumers find comparable capability at a lower price? Absolutely. Will they buy the PCjr? In record numbers. **P S**

Ballast in a stormy sea

It might have been a catastrophic fire or an upset election. Reporters elbowed each other for a closer look. Others dashed to phones to call in reports. TV lights glared while official spokesmen offered sober pronouncements. Pandemonium reigned.

But the subject of this media barrage was not a matter of life and death or of war and peace, rather a surprisingly modest home computer. For months, speculation about IBM's rumored Peanut computer had run wild around the personal-computer industry. Depending on whom you talked to, it was either little more than a toy or was more advanced than the IBM PC. Either it would flood stores by Christmas, or it didn't exist at all except as a company disinformation campaign. On November 1, rumor became reality.

The PCjr entered an industry that was in disarray. Record losses, bankruptcies, and stock-market plunges had hit computer manufacturers of all types and sizes. Almost every day brought more bad news, culminating the week before IBM's announcement with the decision by Texas Instruments to cut its gigantic losses and quit the home-computer business altogether. The week after IBM's announcement, something unprecedented happened: Atari and Coleco both *raised* prices. By its mere presence, IBM had brought stability to a floundering market.

"People have finally wised up and decided to stop killing themselves," says industry observer Esther Dyson. "With IBM in the game, it's a more rational market. Consumers who have been holding off for two years because the prices kept coming down will realize that now is the time to buy."

But they won't all buy IBM. For whatever reasons, the company may have missed the chance to completely overwhelm the market by positioning PCjr as a high-end, elite product. The consensus of analysts is that the other home-computer manufacturers —Apple, Commodore, Coleco, Radio Shack, and Atari—will still find room to compete on the basis of price, availability, software, or customer base.

PCjr may also have an impact on other segments of the personal-computer market. Because it packs into a suitcase for traveling or storage, it could bite into the swollen market for IBM-compatible portables. And because a fully equipped PCjr will cost up to $2,000 or more, consumers may look favorably on lower-cost, eight-bit, CP/M systems such as Kaypro, Morrow, and Cromemco. These computers are not suited for sound or color graphics, but they offer powerful business capabilities and their own large base of software.

Finally, the PCjr could even affect the IBM PC. "There is some overlap, both in price and function," says IBM's Dave O'Connor, admitting that the PCjr's capabilities and expandability were intentionally limited so as not to cut into sales of the PC. "It wouldn't make sense for us to compete against our own highly successful product."—D. J. R.